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DEVELOPMENT OF REQUIREMENTS FOR A SAFETY ALERT INFORMATION EXCHANGE SYSTEM

Final Report

European Railway Agency

Report No.: 1UOG2WW-14, Rev. 1
Date: 2016-01-16

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Report title:	Final Report	
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Date of issue:	2016-01-16	
Project No.:	PP139159	
Organisation unit:	Manchester Advisory	
Report No.:	1UOG2WW-14, Rev. 1	
Document No.:	1UOG2WW-14	

Applicable contract(s) governing the provision of this Report: ERA 2015 06 SC

Objective:To consult with the railway sector to capture the requirements for a future safety alert system.

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Keywords:
Safety Alerts

Rev. No.	Date	Reason for issue	Prepared by	Verified by	Approved by
A	2015-12-04	First issue for comment	Gavin Astin	Richard Roels	Edward Smith
0	2015-12-18	First issue addressing comments	Gavin Astin	Richard Roels	Edward Smith
1	2016-01-16	Final issue	Gavin Astin	Richard Roels	Edward Smith

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0 EXECUTIVE SUMMARY

The European Railway Agency (ERA) is in the process of implementing a temporary system that will allow actors to rapidly share information about new or increased common risks on the railway. The objective of this system is to inform actors about the existence of such risks, enabling them to revise and improve their own risk management methods and thus potentially avoid accidents. In parallel Det Norske Veritas Germanischer Lloyd has been identifying railway actors' requirements for a long term solution more sensitive to its users' needs. This report addressed the long term solution for such a 'safety alert' system.

The major areas of work completed have been:

1 To identify and investigate existing safety alert systems operating in the railway and non-railway sectors, with a view to identifying best practice.
2 To consult with the railway sector, to establish its needs and concerns, so these can be addressed as far as possible.
3 To develop, from the results of these tasks, a statement of requirements for a long term safety alert system.

Existing safety alert systems were investigated in the aviation, oil and gas and consumer products sectors whilst safety alert systems operating in the European rail market were investigated, together with systems operating in the United States of America and Australia.

A consultation exercise was performed, with many hundreds of railway actors invited to respond to a survey on the subject of safety. The study team also attended railway sector representative body meetings to publicise the work. A "Safety Alert" workshop was also held at ERA's offices in Valenciennes.

The study has concluded with a statement of requirements, responsibilities and associated justifications against each of the following steps of the proposed long term safety alert system:

- Identifying a safety alert (including definition).
- Publishing a safety alert.
- Timescales for publishing a safety alert.
- Safety alert context data (time, date, etc.).
- Safety alert taxonomy/ classification (system, sub-system etc.).
- Safety alert content.
- Languages and translation options for a safety alert.
- Distributing a safety alert.
- Validating a safety alert.
- Receiving a safety alert.
- Safety alert notification method.
- Replying to safety alert.
- Share safety alert actions.

1 INTRODUCTION

1.1 Background and Context

European railway legislation comprises a multi-faceted approach to safety and operations. This includes processes that encourage informed decision making by railway actors.

Informed decision making requires good quality and timely information to be available. In this respect a railway actor should have its own systems for information capture and sharing which for certain occurrences should include sharing information with an actor's National Safety Authority (NSA) and/or National Investigation Body (NIB). In turn limited information will be made available to the wider railway community through the register of accident and incident investigations by NIBs and secondly through Common Safety Indicator (CSI) reporting, both via the ERAIL (European Rail Accident Information Links) portal. However differences in the working of NIBs and the fact that the CSIs only address significant accidents and some incidents limits the ability of these sources to support risk based decision making.

The nature of railway operations means that many safety risks are common to many railway actors. Increasingly equipment and operations are also harmonised and standardised. For this reason, quickly sharing information about new or increased significant risks can allow other actors to revise and improve their own risk management methods and may avoid accidents.

This project set out to determine how this may be achieved, and is one of number of related activities being undertaken by the European Railway Agency (the Agency). This work relates to the long term safety alert solution as indicated in Figure 1.

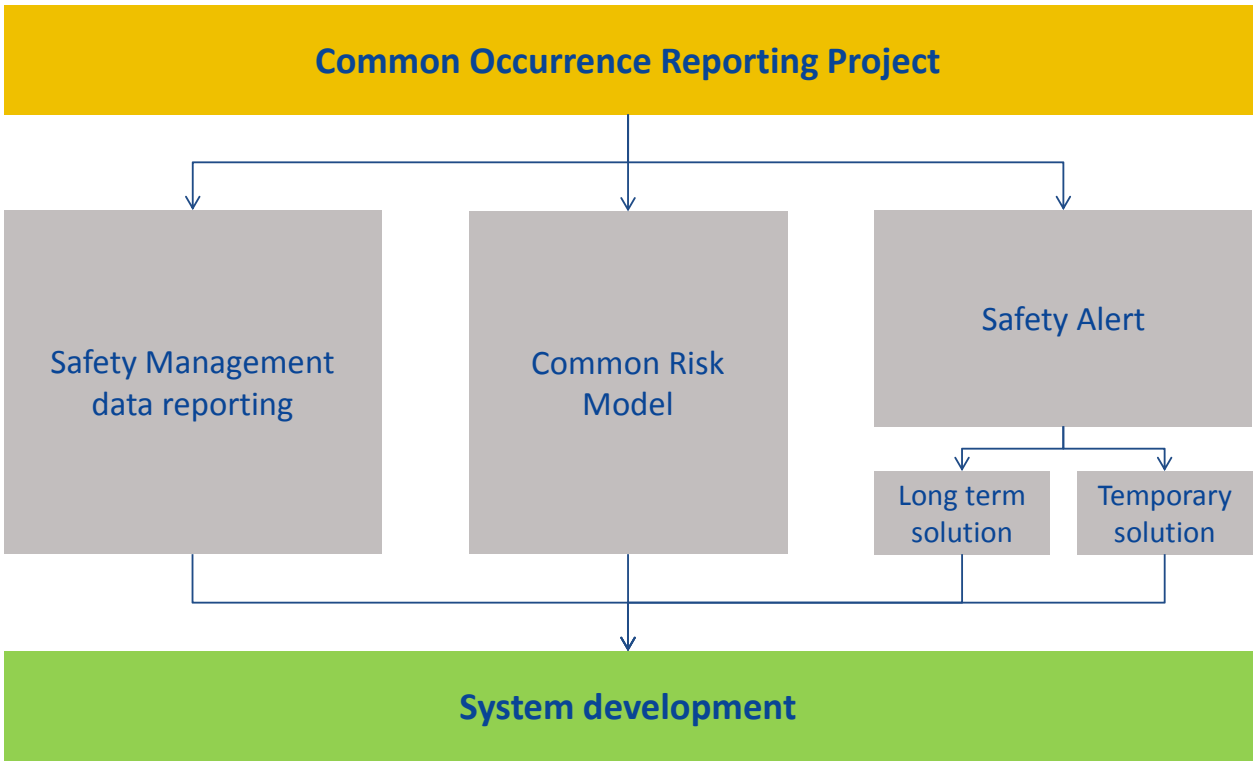


Figure 1 Safety alert and related studies

1.2 Related Legal Considerations

There are several relevant legal considerations underpinning the requirement for information sharing:

The Railway Safety Directive (RSD) 2004/49/EC, Art. 4(3) requires that the risk control measures are implemented, where appropriate with cooperation between actors:

> *"Member States shall ensure that the responsibility for the safe operation of the railway system and the control of risks associated with it is laid upon the infrastructure managers and railway undertakings, obliging them to implement necessary risk control measures, where appropriate in cooperation with each other…"*

Further, revisions to the RSD are to make the requirement for information sharing more explicit:

> *"Railway undertakings, infrastructure managers and any actor … who identifies or is informed of a safety risk relating to defects and construction non-conformities or malfunctions of technical equipment, including those of structural subsystems, shall, within the limits of their respective competence … report those risks to the relevant parties involved, in order to enable them to take any necessary further corrective action to ensure continuous achievement of the safety performance of the Union rail system.*
> *The Agency may establish a tool that facilitates this exchange of information among the relevant actors, taking into account the privacy of the users involved, the results of a cost-benefit analysis as well as the IT applications and registers already set up by the Agency"*

The Preface to Agency Regulation 81/2003, Item 11 emphasizes that an effective flow of information between operational actors needs to be assured:

> *"In the field of safety, it is important to ensure the greatest possible transparency and an effective flow of information. An analysis of performances, based on common indicators and linking all players in the sector, does not yet exist and such a tool should be introduced."*

The Regulation on the certification of entities in charge of maintenance, Entities in Charge of Maintenance (ECM) Regulation, 445/2011, Art.5(5) and Art.5(2) and its Annex III (I7.4j) requires parties to exchange safety related information between them, with the application starting in 2015.

> *"All contracting parties shall exchange information on safety-related malfunctions, accidents, incidents, near-misses and other dangerous occurrences as well as on any possible restriction on the use of freight wagons."*
>
> *"All parties involved in the maintenance process shall exchange relevant information about maintenance in accordance with the criteria listed in sections I.7 and I.8 of Annex III."*
>
> *"(j) emergency information concerning situations where the safe state of running is impaired, which may consist of:*
>
> *(i) the imposition of restrictions of use or specific operating conditions for the freight wagons maintained by the organisation or other vehicles of the same series even if maintained by other entities in charge of maintenance, whereby this information should also be shared with all involved parties;*
>
> *(ii) urgent information on safety-related issues identified during maintenance, such as deficiencies detected in a component common to several types or series of vehicles"*

The Common Safety Method for monitoring (1078/2012), Art.4(1) includes an obligation on Railway Undertakings (RUs), Infrastructure Managers (IMs) and ECMs to ensure that safety relevant information is exchanged between them.

> *"Railway undertakings, infrastructure managers and entities in charge of maintenance, including their contractors, shall ensure through contractual arrangements that any relevant safety-related information resulting from applying the monitoring process set out in the Annex is exchanged between them, to enable the other party to take any necessary corrective actions to ensure continuous achievement of the safety performance of the railway system."*

1.3 Scope and Objectives

The overall objectives of this work were to:

- Research and propose a long term safety alert information exchange (hereafter shortened to safety alert) system sensitive to its users' requirements.
- For the proposed safety alert system to be consistent with the revised RSD and *"…relating to defects and construction non-conformities or malfunctions of technical equipment,"*

The study duration was approximately six months, with a completion deadline end December 2015.

2 METHODOLOGY

2.1 Overview

The study was organised into the following tasks:

1. Review of existing safety alert systems, rail and non-rail. (**Task A.**)

   The task objective was to gather information on existing reporting regimes and technical reporting systems, including scope, method, definition or taxonomy/ categorisation for reporting of information, including information flows. Analysis was undertaken to allow identification of common features and to appraise existing practices.

   That task was divided into two sub-tasks:

   a. Research into safely alert systems already known about, and pre-selected.

   b. Research into existing railway safety alert systems identified during the project.

2. Identification of railway actors' needs and concerns related to a potential railway safety alert system. (**Task B.**)

   The task objective was to define how a target system might work to satisfy all the safety related information needs, including those specified in legislation and as part of a safety management system. This included a mapping of needs and expectations identified during consultation, and taking cognisance of existing practice.

3. Definition of business requirements for the development of the safety alert system. (**Task C.**)

   The task objective was to define the requirements for a safety alert system. It includes the needs of different types of users including their roles, access and publication rights, workflow(s) and notification methods, including language.

These work tasks and approaches used to achieve their objectives are summarised below:

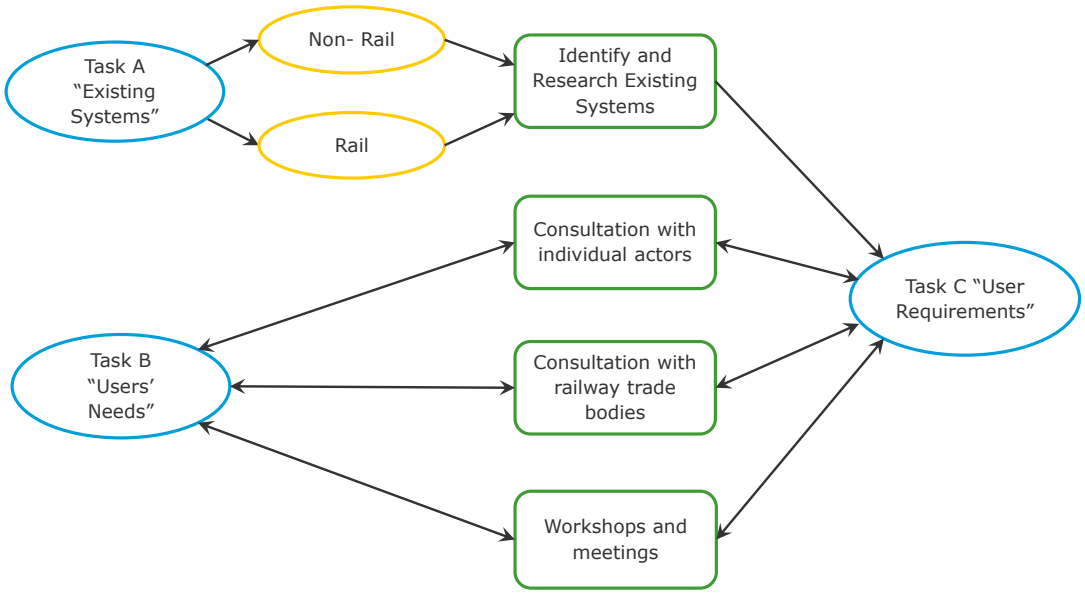


Figure 2 Safety alert systems study methodology

Each task is more fully described below.

2.2 Task A – Research Existing Safety Alert Systems

2.2.1 Non-Rail Systems

The objective for looking at non-rail systems was to identify transferable lessons that will benefit the EU rail safety alert system.

2.2.1.1 Safety Alert Systems Pre-Selected for Study

The following non-railway safety alert systems were pre-selected for study:

1. RAPEX, the Rapid Alert System for dangerous non-food products allows producers, distributors and Member States to exchange information on products posing a risk to health and safety of consumers and on the measures taken by these countries to remove that risk at EU level. Whilst not a rail system, RAPEX may share a number of similarities to a possible future EU-wide rail safety alert system in terms of: operating at an EU/member level, sharing safety information, requiring timely follow-up action, having a regulatory framework, dealing with language differences and dealing with confidentiality issues.
2. In the aviation industry, the EUROCONTROL / SKYBrary safety alerts system was selected for review. It was selected because the system is transport and high-hazard based, operating across EU member states and requiring input and coordination from multiple stakeholders with different languages.
3. Oil and Gas. Two oil and gas systems were reviewed, the International Oil and Gas Producer's (IOGP) 'Safety Notices' system and the Step Change in Safety's 'Safety Alerts' system. These systems enable the direct sharing of safety alert information between companies that manage risk directly. The two oil and gas systems cover operational and engineering practices (as well as products) which is also a possible feature of the EU-wide rail system.

2.2.1.2 Analysis Method

For each non-rail system listed above, web information was referred to initially and then contact was made with various representatives for each system to address specific questions. Supporting procedures and presentations were also received from those interviewed. Information was sought to address the following topics:

- Taxonomy / information.
- Work and information flows.
- What constitutes an event?
- Sharing mechanisms.
- Timescales / priorities.
- Responsibilities.
- Scope of activity.
- Access and confidentiality.
- Languages used.

Owing to the structure and design of some of the systems, some of the topics were not applicable. The detailed results from each system were recorded on a series of templates (Appendix A to Appendix D).

2.2.2 Rail Systems Pre-Selected for Study

2.2.2.1 Safety Alert Systems

Analysis of systems operating in the railway sector was divided into those known about prior to our consultation and those identified during consultation. Those known about prior to consultation and studied were:

1. For Great Britain the National Incident Reporting (NIR) Online system was reviewed, it is concerned with reporting high risk defects relating to rail vehicles. Also consideration was given to a Rail Notices system used to share urgent operating notices and information. Supporting Railway Group Standards were also referred to. These systems are not 'Safety Alert' systems in the traditional sense of a standalone document published for wider dissemination; the information contained in both systems are specific to a particular audience group and are 'live' in that the information being share across the network can be updated, commented on, and acknowledged.

2. For the USA, a multi-modal safety alert reporting system maintained by the National Transportation Safety Board (NTSB) was identified. It is slightly different in content and context to the safety alert system being considered in this report (the NTSB being an accident investigation body) in that it publishes confirmed findings following an accident investigation. It was nevertheless studied as the issue of validity and accuracy of findings was considered to be a concern that European railway actors would have, and this option could represent a solution to that concern.

3. For Australia, the Office of the National Rail Safety Regulator (ONRSR) runs a safety alert system that was selected in order to see how a rail regulator has approached the issue, and to learn how they identify and disseminate Safety Alerts.

2.2.2.2 Analysis Method

The analysis method followed that used for non-rail systems and included a review of: web information, accessing systems as a registered user and reviewing supporting standards and correspondence with system owners.

2.2.3 Rail Systems Identified During Consultation

A number of safety alert systems (or systems with similar objectives) were identified during consultation. These were identified by a survey of railway actors against the following factors:

- Scope and basis of participation (voluntary or mandatory).
- Type of information shared.
- Data structures used for reporting.
- Quantities of safety alerts raised and received.
- Languages and translation.
- Data confidentiality.
- Information flows.

The survey used is provided in Appendix F.

2.3 Task B – Identifications of Users' Needs

2.3.1 Surveys and Interviews

A survey of railway actors was the principal means of identifying users' needs for a future railway safety alert system. The survey was available on-line or, if preferred, in document format.

All actors represented by the Network of Representative Bodies (NRB; a group of key stakeholders representing the interests of the European rail sector) were invited to participate. The NRB includes the Association of the European Rail Industry (in French Union des Industries Ferroviaires Européennes; UNIFE) the Community of European Railway and Infrastructure Companies (CER) and the Association of European Rail Infrastructure Managers (EIM) amongst others. In addition in excess of 200 ECMs and Vehicle Keepers were approached.

Survey questions covered the following general categories:

- Level of detail and classification of safety alerts.
- Question exploring whether respondents thought safety alerts should be given a level of importance and how this may link to reporting timescales.
- Type of information to be reported.
- Responsibilities for raising and publishing safety alerts.
- Notification process and methods.
- Safety alert language options and translation.
- Balance between fixed and free text.
- Confidentiality, anonymity, discoverability and legal issues.

Where appropriate follow-up discussions were held with respondents to clarify or further discuss some points.

Note that the survey asked respondents if they were an OEM/Supplier, IM, RU, ECM, Vehicle Keeper or "Other" stakeholder and the results are analysed in these groupings. If the respondent indicated they fulfilled more than one function (e.g. IM and RU) they are counted in both these categories, etc.

2.3.2 Meetings and Workshops

The project also addressed the following meetings to elaborate on the project aims and to offer represented groups to raise questions or concerns:

- Network of Representative Bodies meeting 21st September 2015. The Agency presented on the overall programme of work as shown in Figure 1. DNV GL presented the approach to the safety alert long term solution.
- Freight Focus Group 21st October 2015. The Agency presented on the overall programme of work as shown in Figure 1. DNV GL presented the approach to the safety alert long term solution, together with some initial findings available at that time.
- Safety Alert Workshop 29th October 2015. The Agency presented on the overall programme of work as shown in Figure 1. DNV GL presented the approach to the safety alert long term solution, together with some initial findings available at that time.

- NSA Network meeting 25th November 2015. The Agency presented on the overall programme of work as shown in Figure 1. DNV GL presented the approach to the safety alert long term solution, together with some initial findings available at that time.

2.4 Task C – Statement of Requirements

The user requirements for a safety alert system – identified during Task B – were assessed taking account of feedback received and taking note of existing safety alert and information sharing systems that exist in other sectors.

These inputs, together with the stated objectives of the safety alert system, led to the development of a statement of requirements.

3 TASK A RESULTS

3.1 Study of Pre-Selected Safety Alert Systems

3.1.1 Consumer Products - RAPEX

3.1.1.1 System overview

The RAPEX system allows the participating EU Member States and the European Commission to quickly exchange information on consumer products posing a risk to health and safety of consumers and on the measures taken by these countries to remove that risk (RAPEX was established under Directive 2001/95/EC - the General Product Safety Directive).

Each participating Member State has a nominated RAPEX Contact Point whose role it is to send and receive notifications to and from the RAPEX unit at the European Commission. RAPEX notifications are equivalent to a Safety Alert. RAPEX Contact Points also receive and disseminate information to Competent Bodies in their own country.

3.1.1.2 Creating a RAPEX notification

A RAPEX Contact Point will receive information about a potentially dangerous product from within their own country, typically through a Competent Body or a 'Market Surveillance Authority' that monitors consumer goods. The RAPEX Contact Point has to collate information about the dangerous product and decide whether it fulfils set criteria for a formal notification to be issued. The criteria are:

1. The product is a consumer product.
2. The product is subject to measures that prevent, restrict or impose specific conditions on its possible marketing or use *(i.e. the product is regulated in some way and can fail to comply with regulations).*
3. The product poses a serious risk to the health and safety of consumers.
4. The serious risk has a cross-border effect.

To determine whether the product poses a serious risk, the RAPEX Contact Point prepares a Risk Assessment which follows a standard format. The RAPEX Contact Point also records any preventive or restrictive measures taken by national authorities or voluntarily by a producer/distributer. All information gathered by the RAPEX Contact Point is entered into a RAPEX application; a web-based system that is accessible only to RAPEX Contact Points and the European Commission. Full details of data collected are listed in Appendix A. The RAPEX unit within the European Commission receives the information (that will form a RAPEX notification) and checks all of the details (the RAPEX Contact Point may have to clarify certain details). At this stage all information is necessary for the publication of a RAPEX notification.

3.1.1.3 Disseminating a RAPEX notification

Once the European Commission's RAPEX unit is satisfied that all details are complete, it will forward the information to the RAPEX Contact Points in all participating Member States. Every Friday all RAPEX notifications for the week are also made publically available on the RAPEX website. www.ec.europa.eu/rapex.

The RAPEX Contact Point disseminates the information to relevant Competent Authorities in their own countries and Market Surveillance Authorities who, in turn, check if notified products are found on the national market. They also provide results of market surveillance activities to the RAPEX Contact Point

who records what measures have been implemented in the RAPEX application (which also appears on the RAPEX website). Measures include:

- Ban the supply and the offer to supply.
- Withdrawal from the market.
- Recall from consumers.
- Destruction of the product.

3.1.1.4 Other relevant features

Emergency Notifications: for products that pose a life-threatening risk, and/or there have been fatal accidents and in other cases where a RAPEX notification requires emergency action by all Member States, the notifying Member State prepares and submits to the Commission a RAPEX notification classified as 'Article 12 notification requiring emergency action'. The process is largely the same for conventional notices, the main difference is that timescales are accelerated (and confirmation by telephone is required).

Consultation with suppliers / distributors: Market Surveillance Authorities may consult with a company involved/ implicated in a notification to help support the creation of the notification. The Market Surveillance Authority may share results of the Risk Assessment. Manufacturers may disagree with the Risk Assessment and the manufacturer may seek to suspend a notification; this is done via the Commission.

Language: RAPEX notifications on the website are in English. However countries participating in RAPEX can raise notifications in English, French, Spanish, German and Italian. Translation of the original notification into English is undertaken by the Commission, although some Member States undertake their own translation, or only issue the notification in English. The internal RAPEX application has different language options so users can select their own language and complete the notification in their preferred language.

Confidentiality: Under the General Product Safety Directive, the public has the right to be informed about dangerous products posing a risk to their health and safety. However there are various provisions that enable parts of a notification to remain confidential if there is a desire to pursue a prosecution or other legal action. Market Surveillance Authorities decide what is submitted for inclusion on the notification, although the RAPEX contact point and ultimately the Commission can request that changes be made. The RAPEX application (accessible only to Contact Points and the Commission) contains all personal details (names, contact details, importer and distributor etc.) and these are not issued on the public website. Manufacturers and distributors have no right to anonymity.

Numbers: There are approximately 2,000 to 2,500 safety notifications produced through the RAPEX system per-annum. To give some context, this reflects that there are millions of domestic products that fall within the regulatory framework to which RAPEX applies. The rail system under consideration in this report will likely be addressing a much smaller supply.

3.1.1.5 Indicative Example

An illustrative example is provided below.

The Rapid Alert System for Non-Food Products (RAPEX)

Notification Reference: A12/0428/15

Risk level	Serious risk
Product user	Consumer
Notifying country	Germany
Product category	Motor vehicles
Product	Bus
Brand	[redacted]
Name	
Type/number of model	Types: 628 02, 628 03, 628 04, 628 05 EC type approvals: e1*2007/46*0087*, e1*2007/46*0090*, e1*2007/46*0089*, e1*2007/46*0903*
Batch number/Barcode	Vehicles manufactured between February 2013 and May 2014 are affected.
OECD Portal Category	77000000 - Automotive
Description	Bus
Country of origin	Germany
Counterfeit	
Risk type	Injuries
Risk description	The maintenance panel at the back of the bus on the left-hand side can open of its own accord while the bus is in motion. The locking mechanism is inadequate.
Measures adopted by notifying country	**Voluntary measures:** Recall of the product from end users
Products were found and measures were taken also in	Sweden, Slovenia, Denmark, The Netherlands
Images	**No pictures are available**

Figure 3 Illustrative RAPEX notification[1]

[1] "Weekly overview reports of RAPEX notifications, published free of charge in English on http://ec.europa.eu/rapex, © European Union, 2015. The official contact points of the Member and EFTA-EEA States provide the information published in these weekly overviews. Under the terms of Annex II.10 to the General Product Safety Directive (2001/95/EC) responsibility for the information provided lies with the notifying party. The Commission does not take any responsibility for the accuracy of the information provided.". Please note Figure 3 was published in English. http://ec.europa.eu/consumers/consumers_safety/safety_products/rapex/docs/notice_en.pdf

3.1.2 Aviation - EUROCONTROL / SKYbrary Safety Alerts Board

3.1.2.1 System overview

The EUROCONTROL Safety Alert Board enables companies involved in the provision of Air Traffic Management (ATM) to share safety alerts. The objective of the safety alert service is to inform aviation safety professionals about an identified issue or problem by sharing 3 types of safety alert message:

- Safety Warning Messages (red alert) - an issue of immediate safety concern.
- Safety Reminder Messages (blue alert) - a known issue which requires renewed awareness.
- Request for Support Messages (brown alert) – an issue for which the community is seeking a solution.

Full details of the system, in taxonomy form, are included in Appendix B.

3.1.2.2 Creating a EUROCONTROL Safety Alert

The content for a safety alert can be proposed by any ATM provider or relevant stakeholder group. The initiator gathers information for the safety alert and submits it (via email normally) to the Safety Alert Coordinator in EUROCONTROL. The Safety Alert Coordinator creates a draft based on the information provided and his/her own initial research. The draft is sent to the originator to make sure changes are correct. The Safety Alert Coordinator consults EUROCONTROL experts, before going to external consultation with industry stakeholders. Suitable amendments to the safety alert are made along the way. The format of a safety alert varies according to the topic of the alert, although there are typically around 4/5 sections and each alert is around a page of A4 text.

3.1.2.3 Disseminating a EUROCONTROL Safety Alert

A safety alert is disseminated to those that have subscribed to receive safety alerts via email. All subscribers receive all alerts. Safety alerts are also made available on the safety alerts section of SKYbrary which is an industry website used for aviation safety knowledge, however some very specific safety alerts may only be issued to certain groups (i.e. may not be published on SKYbrary). Alerts are also re-produced/detailed in the next edition of the EUROCONTROL safety magazine "HindSight"

3.1.2.4 Other relevant features and observations

Acknowledgement: there is no facility or requirement for recipients to indicate that they have received a safety alert.

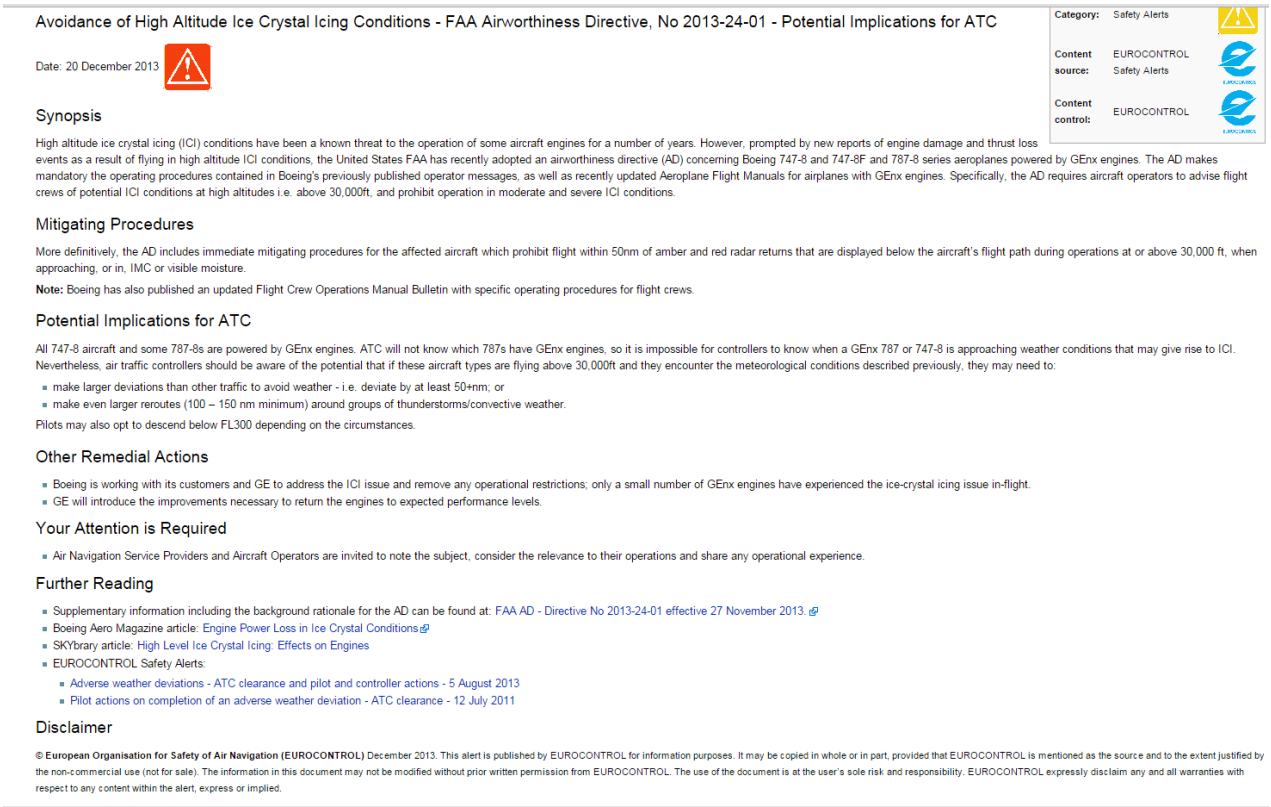
Timescales: there are no defined timescales by which a safety alert has to be published, but the Safety Alert Coordinator indicated that they try and publish rapidly and certainly within 5 days (for a red alert).

Language: all alerts are in English only.

Numbers: 6-7 alerts per annum (all types).

3.1.2.5 Indicative Example

An indicative example is shown below.



Avoidance of High Altitude Ice Crystal Icing Conditions - FAA Airworthiness Directive, No 2013-24-01 - Potential Implications for ATC

Category: Safety Alerts

Content source: EUROCONTROL Safety Alerts

Content control: EUROCONTROL

Date: 20 December 2013

Synopsis

High altitude ice crystal icing (ICI) conditions have been a known threat to the operation of some aircraft engines for a number of years. However, prompted by new reports of engine damage and thrust loss events as a result of flying in high altitude ICI conditions, the United States FAA has recently adopted an airworthiness directive (AD) concerning Boeing 747-8 and 747-8F and 787-8 series aeroplanes powered by GEnx engines. The AD makes mandatory the operating procedures contained in Boeing's previously published operator messages, as well as recently updated Aeroplane Flight Manuals for airplanes with GEnx engines. Specifically, the AD requires aircraft operators to advise flight crews of potential ICI conditions at high altitudes i.e. above 30,000ft, and prohibit operation in moderate and severe ICI conditions.

Mitigating Procedures

More definitively, the AD includes immediate mitigating procedures for the affected aircraft which prohibit flight within 50nm of amber and red radar returns that are displayed below the aircraft's flight path during operations at or above 30,000 ft, when approaching, or in, IMC or visible moisture.

Note: Boeing has also published an updated Flight Crew Operations Manual Bulletin with specific operating procedures for flight crews.

Potential Implications for ATC

All 747-8 aircraft and some 787-8s are powered by GEnx engines. ATC will not know which 787s have GEnx engines, so it is impossible for controllers to know when a GEnx 787 or 747-8 is approaching weather conditions that may give rise to ICI. Nevertheless, air traffic controllers should be aware of the potential that if these aircraft types are flying above 30,000ft and they encounter the meteorological conditions described previously, they may need to:

- make larger deviations than other traffic to avoid weather - i.e. deviate by at least 50+nm; or
- make even larger reroutes (100 – 150 nm minimum) around groups of thunderstorms/convective weather.

Pilots may also opt to descend below FL300 depending on the circumstances.

Other Remedial Actions

- Boeing is working with its customers and GE to address the ICI issue and remove any operational restrictions; only a small number of GEnx engines have experienced the ice-crystal icing issue in-flight.
- GE will introduce the improvements necessary to return the engines to expected performance levels.

Your Attention is Required

- Air Navigation Service Providers and Aircraft Operators are invited to note the subject, consider the relevance to their operations and share any operational experience.

Further Reading

- Supplementary information including the background rationale for the AD can be found at: FAA AD - Directive No 2013-24-01 effective 27 November 2013.
- Boeing Aero Magazine article: Engine Power Loss in Ice Crystal Conditions
- SKYbrary article: High Level Ice Crystal Icing: Effects on Engines
- EUROCONTROL Safety Alerts:
  - Adverse weather deviations - ATC clearance and pilot and controller actions - 5 August 2013
  - Pilot actions on completion of an adverse weather deviation - ATC clearance - 12 July 2011

Disclaimer

Figure 4 Illustrative EUROCONTROL Safety Alert[2]

3.1.3 Oil and Gas Safety Alert systems

Step Change in Safety's 'Safety Alerts' and International Association of Oil and Gas Producers (IOGP) 'Safety Alerts' are two separate systems used in the Oil and Gas Sector. Step Change in Safety is describes itself as 'a not-for-profit, member-led organisation which aims to make the UK the safest oil province in the world to work in'. Founded in 1997, it is now wholly owned by its 137 member organisations. It has a board of directors, including member representatives, unions, HSE (UK regulator) and safety representatives.

IOGP's 'vision' is 'to work on behalf of the world's oil & gas exploration and production (E&P) companies to promote safe, responsible, and sustainable operations' (it's scope excludes processing of crude oil and raw gas and refining into products and transportation). It is funded by its 78 members.

The Step Change in Safety and IOGP systems share a number of similarities and so have been grouped together here for consideration[3].

[2]

[3] One of the main differences between IOGP Safety Notices and Step Change in Safety's Safety Alerts relate to the geographic scope, with Safety Notices having a global remit whilst safety alerts being focussed on the North Sea.

3.1.3.1 System overview

The purpose of Step-Change in Safety's Incident Alerts Database is to facilitate the sharing of safety information and improve the lateral learning across the industry. It replaced a previous version called SADIE (Safety Alert Database and Information Exchange) that produced safety alerts; however advice from Step-Change in Safety indicated that safety alerts could be enhanced by creating a more engaging format and content. There is no one defined format for safety alerts, each varies according to the topic. Nevertheless, alerts typically have a very short description of: the work involved, the incident itself, what good practice applies, causes and consequences, specific equipment and the main contributing factors. Defining what readers need to know and how best to communicate and fulfil that need, help define the alert format and content.

The aim of the IOGP Safety Alerts system is to provide a mechanism to allow organisations to share information on incidents they have experienced which either led to, or had a significant potential to lead to, major injury or fatality. As a minimum, a description of the incident is enough to allow an organisation to establish whether their own arrangements are sufficiently robust to prevent a similar type of incident occurring.

Beyond general duties to manage risk, companies operating in the sector are not subject to explicit legislative requirements to share information. Both systems rely on participating companies seeing the benefit of sharing information in this way.

The information conveyed in across both systems combines more occupational type risks and major accident hazard events.

3.1.3.2 Creating Safety Alerts

Both systems have a pre-defined form that a company seeking to raise a safety alert completes (web or MS Word) which is then submitted to Step Change or IOGP who undertake a review and check of the information. Depending on the level of completeness, several iterations may be required. Copies of these forms can be found in the appendices Appendix C – Step Change in Safety and Appendix D for IOGP Safety Alerts).

3.1.3.3 Disseminating Safety Alerts

Both Step Change in Safety and IOGP follow very similar processes for dissemination of safety alerts, which is described below. Once the safety alert is ready, it is published on respective websites and an email is issued to individuals that have previously signed-up to receive such alerts. When subscribing in the first place, a simple validation check is performed to enable the receipt of future emails. The email alerts contain the same detail as that published on the websites. There is no tracking of safe receipt of emails, nor checking if any action has been taken.

3.1.3.4 Other relevant features and observations

Good practice & Recommendations: Alerts are typically accompanied with 'good-practice' or 'corrective actions and recommendations' that set out ways to prevent incidents from happening in the future; these are useful in that companies on rare occasions may choose not to include details of company failings that may increase the likelihood of legal action. By describing incident in factual terms and how to prevent it, it avoids having to describe the failings that led up to the incident, but enables the sharing of key lessons.

Disclaimers: Alerts are accompanied with a Disclaimer that attempts to avoid any subsequent risk or legal exposure should the alert misinform (applicable for both Step Change in Safety and IOGP systems).

Comments/ discussion: The Step-Change in Safety's system provides a comments feature whereby registered members can record their views on the Alert in a forum format, the following link shows an example: https://www.stepchangeinsafety.net/safer-conversations/safety-alerts/re-spooling-line-winch.

Numbers: Step Change in Safety produces around 25-100 Safety Alerts per annum. IOGP's produces around 5-15 Safety Alerts per annum.

3.1.3.5 Indicative Examples

An illustrative example is provided below for Step Change in Safety[4] and overleaf is an IOGP[5] example.

Step Change Safety Alert Template

STEP CHANGE IN SAFETY

Alert Title

Minor hydrocarbon release during calibration of pressure transmitter

What leaked and where from? E.g.: "Lube oil leak from compressor system open vent"

Incident Date

August 2011

The date on which the incident occurred, not when this form was completed

Location Type

Fixed production installation

E.g. Floating/Fixed Production, Drill Rig, Vessel, etc.

Specific Equipment Involved

Topsides hydrocarbon piping and instrumentation

Give as much detail as possible about the equipment involved

Description of What Happened

During a task to calibrate a pressure transmitter, the instrument technician identified the isolation vlave from the scaffold and incorrectly assumed that it was in the isolated state. He opened up a bleed to drain liquids and initially drained approximately 5 litres of fluid from the line to the bucket. The flow stopped and then after approximately 20 seconds, hydrocarbons (mostly gas) at 60bar were released from the half inch line for a maximum of 20 seconds. The technician closed the valve and made the area safe. Two gas detectors in the area came into low alarm (11% and 15%). The total quantity of hydrocarbon released has been estimated at 0.833kg.

Be as detailed as possible. Give equipment history and approximate time(s) of actions/occurrences related to the incident

Cause of Incident

Incorrect isolation of pressure transmitter

Build from OIR/12 checklist

Incident Consequences

Hydrocarbon release

Include the release itself and any subsequent emergency actions/dangerous occurrences

Lessons Learned

- The need to verify adequate isolations are in place before breaking containment on a system.

Include a few bullet points clarifying what was learned from the incident

Recommendations/Actions

- All routines with personal mechanical isolations to be updated to include the requirement for the Area Operator to verify the location of the personal mechanical isolation and isolation tag at site check.
- Review the current personal isolation training programme to ensure that all elements of personal mechanical isolations are adequately understood and covered.
- Time out for safety to be held with all instrument technicians across all shifts to roll out personal isolation standards, correct use of earth straps, placement of isolation tags and limitations of personal isolations.

Include a few bullet points stating any recommendations/actions that will be made/taken as a result of the lessons learned

Contact Details (Optional)

If you would like your submission to be anonymous, leave this section blank

Figure 5 Illustrative Step Change Safety Alert

[4] Use of material from this source is allowable, subject to rules published here https://www.stepchangeinsafety.net/term-conditions.

[5] Use of material from this source is allowable, subject to rules published here http://www.iogp.org/Terms

Safety Alert

SHALLOW GAS LEADS TO WELL CONTROL INCIDENT

Country: ---

Location: ---

Incident Date: --- *Time:* ---

Type of Activity: *Drilling, workover, well services*

Type of Injury: ---

Function: *Drilling*

- The well is located in a well-known, shallow gas prone area.
- Deep gas wells with high pressurized layers.
- Crowded platforms with wells anti-collision complex management.
- SIMOPS including construction and well intervention
- After each incident, procedures for shallow section drilling were enhanced.
- The sequence of events were:

  0:00 – Skid rig on well.

  Batch drilled 12 ¼'' hole section + 9 5/8'' intermediate casing

  08:30 – Cleaned out CP 24'' with 17 ½'' BHA to 131m

  16:30 – Drilled 12 ¼'' hole to 286m with 1.15+ SG mud. Heavy losses (67 m3/h)

  20:20 – Homogenize mud to 1.12 SG

  20:33 – Resume drilling to 296m. Heavy losses (70 m3/h)

  21:10 – Spot 10m3 LCM pill. POOH wet.

  22:20 – Well swabbing and started to flow. Closed diverter. Started pumping 1.12 SG mud at high flow rate.

  23:04 – Pumped kill mud 1.50 SG, followed by sea water at high rate.

  00:30 – Flow outside CP. Well out of control. Full rig evacuation.

What Went Wrong?:

The cause of the incident could be listed as follows:

1. Supervision on rig
   - POOH wet (no pump out)
   - Continue with pulling operations, despite swabbing, until well kicked in. Shallow gas procedure not followed
2. Mud weight
   - Inconsistency in MW control and reporting
   - Pack off at 291m interpreted as a (new) loss zone
3. Documentation
   - No comprehensive instructions concerning total loss situation

Corrective Actions and Recommendations:

- Maintain a continuous awareness on shallow gas hazard, even when the shallow gas section has already been penetrated in other wells. This aims at avoiding routine approach hence complacency.
- The standard drilling Instructions should be enriched and reinforced with lessons learnt e.g. Management of Change, the required concentration of KCl for the top hole section, the threshold of heavy losses, hole cleaning procedure for the top hole, responsibility assignment for key personnel, 'Ready to drill' checklist.

Source Contact:

safety alert number: 262

IOGP Safety Alerts http://safetyzone.iogp.org/

Disclaimer

Figure 6 Illustrative IOGP Safety Alert

3.1.4 Railway – National Incident Reporting in Great Britain

3.1.4.1 Guidelines

In the GB rail industry, there are two relevant national systems that are available under nationally applicable Railway Group Standards:

- GE/RT8250 - Reporting High Risk Defects
- GO/RT3350 - Communication of Urgent Operating Advice

The Rail Safety and Standards Board (RSSB) coordinates the development and publication of these standards under the control of the GB rail industry. Railway Group Standards set out National Technical Rules and National Safety Rules for the GB mainline railway. GE/RT8250 - Reporting High Risk Defects is focussed on topics relating to rail vehicles. GO/RT3350 - Communication of Urgent Operating Advice is more operational in focus, but does include topics relating to some equipment failures. Neither system covers information associated with: track, electrification and signal & telecommunications equipment; the Infrastructure Manager has arrangements to deal with these topics. Both systems have very similar supporting websites and follow similar administrative processes and neither system has a centralised review of the information before it is disseminated (i.e. it is the responsibility of the company raising the alert to ensure it is accurate). Detailed information relating to GE/RT8250 – Reporting High Risk Defects was obtained and is presented in Appendix E in template form. Reference to this template and the Railway Group Standards is made in the following subsections.

These systems are not 'Safety Alert' systems in the traditional sense of a standalone document published for wider dissemination; the information contained in both systems are specific to a particular audience group and are 'live' in that the information being share across the network can be updated, commented on and acknowledged.

Rather than attempt to define what information warrants sharing, both Railway Group Standards ask questions of the reader to help them define whether the information they have warrants national dissemination. This is covered in the following subsections.

3.1.4.2 High-risk defects on rail vehicles (Railway Group Standard GE/RT8250)

Historically, any safety-related defect found on rail vehicles, equipment and plant and machinery used in the railway environment could be reported using the NIR system if a competent engineer within a rail industry company decided that the defect was of a type that had the potential to pose an urgent high risk to other operators of the same or similar items. There are no explicit notification criteria or equivalent in the associated Group Standard, however the following text from the Group Standard is relevant:

'Railway undertakings shall share details of high risk defects with other railway undertakings operating similar rail vehicles and vehicles fitted with similar components, systems or subsystems (for example, through user working groups or technical committees). This is especially important where common systems such as AWS and TPWS [train protection systems] *are involved. […] Where a safety-related defect has the potential to pose an urgent high risk to other operators of similar rail vehicles and vehicles fitted with similar components, systems or subsystems, the railway undertaking shall use NIR-Online'*

The standard and supporting NIR website also permits users of other rail vehicles, equipment and plant & machinery to utilise the facilities provide by NIR-Online to communicate urgent high risk defects, but only if the defect falls also within the following:

- Items of mechanical and electrical equipment, including portable/transportable infrastructure plant and work equipment.
- Plant and work equipment used for, or in association with, the construction, alteration, renovation, repair, maintenance or inspection of railway infrastructure.
- Equipment used on stations to move people or materials.
- Items of equipment associated with the maintenance of rail vehicles and plant & machinery.
- Other rail vehicles operating on infrastructure outside the scope of Railway Group Standards (for example, in depots).
- Possession-only rail vehicles.

3.1.4.3 Communication of Urgent Operating Advice (Railway Group Standard GO/RT3350 - Communication of Urgent Operating Advice)

Within this standard, there are effectively two steps to define what information warrants sharing:

1. Determine whether an operating incident, irregularity or equipment defect should be categorised as high risk (i.e. can cause: Death, ill health or major injury to persons, or derailment or collision of trains).
2. Determine whether there is a likelihood that the defect or operating incident could recur. To do this it requires establishing whether there has been a misunderstanding or misinterpretation of rules, regulations or instructions involving a group of people (all staff, or those carrying out specific job roles) […] because specific rules, regulations or instructions are ambiguous (i.e. not a shortcoming in training or development) and where misunderstanding or misinterpretation could possibly affect others.

The standard includes events relating to both the use of equipment and shortcomings associated with procedural aspects themselves. It sets out examples defects that would fall within the scope of the standard as follows:

- Preparing trains for movement.
- Securing loads on rail vehicles.
- Providing oral or visual communication necessary for the control of train movements.
- Protecting persons working on or near the line, passengers or members of the public from trains or electric traction current

The standard also includes some relevant examples of the types of events that warrant dissemination:

1. Failure of load restraining components due to over-tightening which leads to loads that are not secured.
2. Misunderstanding of parking brake operation on a particular type of rolling stock which results in the train running away.
3. An incident/irregularity which results from a misunderstanding or misinterpretation of rules or instructions.
4. Winter/summer weather precautions that fail to mitigate against component parts overheating or freezing and failing in traffic.

5. Operational coupling incidents that have resulted in component damage.

3.1.4.4 Functions of the NIR-Online website

The following features of the NIR-Online system (which relates to the reporting of high risk defects on GB rail vehicles) are worth highlighting:

Access: The system is available for use by all rail industry stakeholders who register to use it, following verification. Subscribers will be notified of NIR updates

Different report status: Raise and update an NIR (with reports containing 'Complete', 'Initial', 'Interim' and 'Concluding' statuses)

Comment facility: Comment on NIRs (e.g. whether notice is applicable to your operation, actions taken)

Numbers: There are 4,500 NIRs from 1990 to 2015. Recent use of the system indicates around 150-225 reports are generated per annum. These relate to defects of components, systems or sub-systems on rail vehicles as described in Section 3.1.4.2 above. Theoretically other Member States may produce a similar number of events (to the GB NIR system). However the events reported as part of the GB NIR system relate to the GB rail context and so would not normally be relevant to other EU railways thus there would be limited value in disseminating all these alerts across all EU rail companies. Further, some reports appear to be failures that have a performance and not a direct safety implication (e.g. gearbox failures). Centralised review of reports/alerts to establish relevance, in an EU context, may have the effect of reducing numbers.

In addition to NIRs, there are between 3 and 6 notices from the Rail Notices website per annum (based on years 2009-2014). These relate to operational incidents, procedural inadequacies and incidents associated with the use of equipment as described in Section 3.1.4.3 above.

Supporting information: The system permits uploading of photographs and supporting documentation

Search: All reports can be searched using various parameters, and searches can be saved.

Actions: Where applicable, users can monitor the completion of their reports and actions under 'My Actions'.

3.1.4.5 Indicative Example

An illustrative example is shown below.

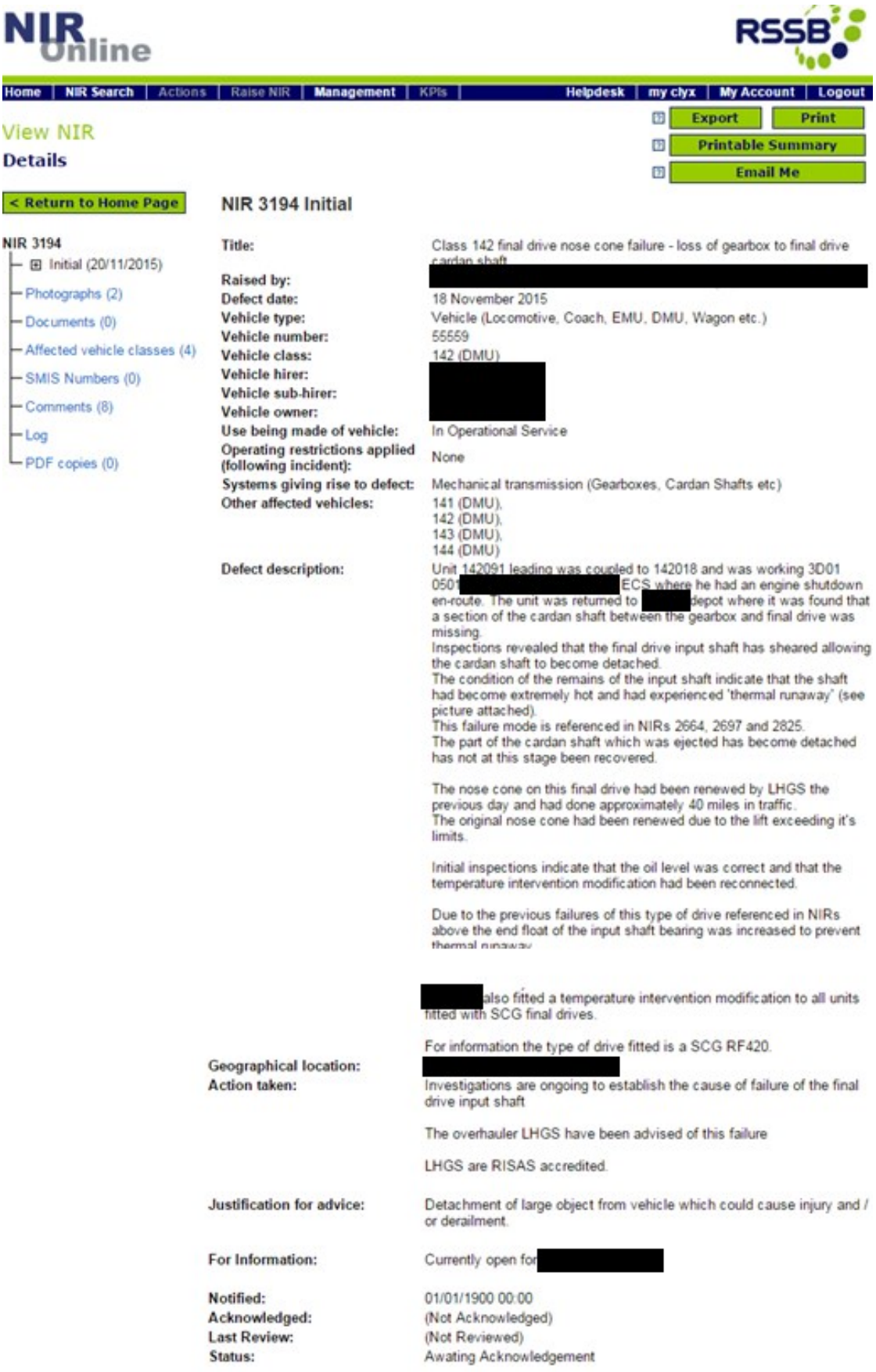


Figure 7 Illustrative NIR Online Entry

3.1.5 Australia

3.1.5.1 Description

The main railway safety regulator in Australia, the ONRSR, has a safety alerts system that was reviewed. The ONRSR has jurisdiction in six of the eight states/ territories and it has several mechanisms to share information with the rail industry. ONRSR issues safety alerts for issues that are:

- Safety critical.
- Affect the wider industry or industry group.
- Urgently to be shared with the industry/industry group.

These criteria help to ensure that only essential information is shared and helps to avoid 'flooding' the industry with safety alerts, which risk being overlooked by recipients. Local issues that only affect a small group of operators may be distributed to them directly, without making it to a safety alert or bulletin. The ONRSR uses its own judgement to determine whether to issue a Safety Alert on a case-by-case basis, this reflects that there is no defined formalised system underpinning judgments; this is not a shortcoming in the approach taken, just reflective of the small numbers of alerts produced (circa 1-5 per annum) which do not warrant such a system. Safety alerts are distributed to the safety managers of all accredited operators and any subscribers via email and also published on the ONRSR website.

The ONRSR coordinates with the other regulators in Australia before issuing of the alert, enabling regulators in the other states issue the same alert under their banner at the same time.

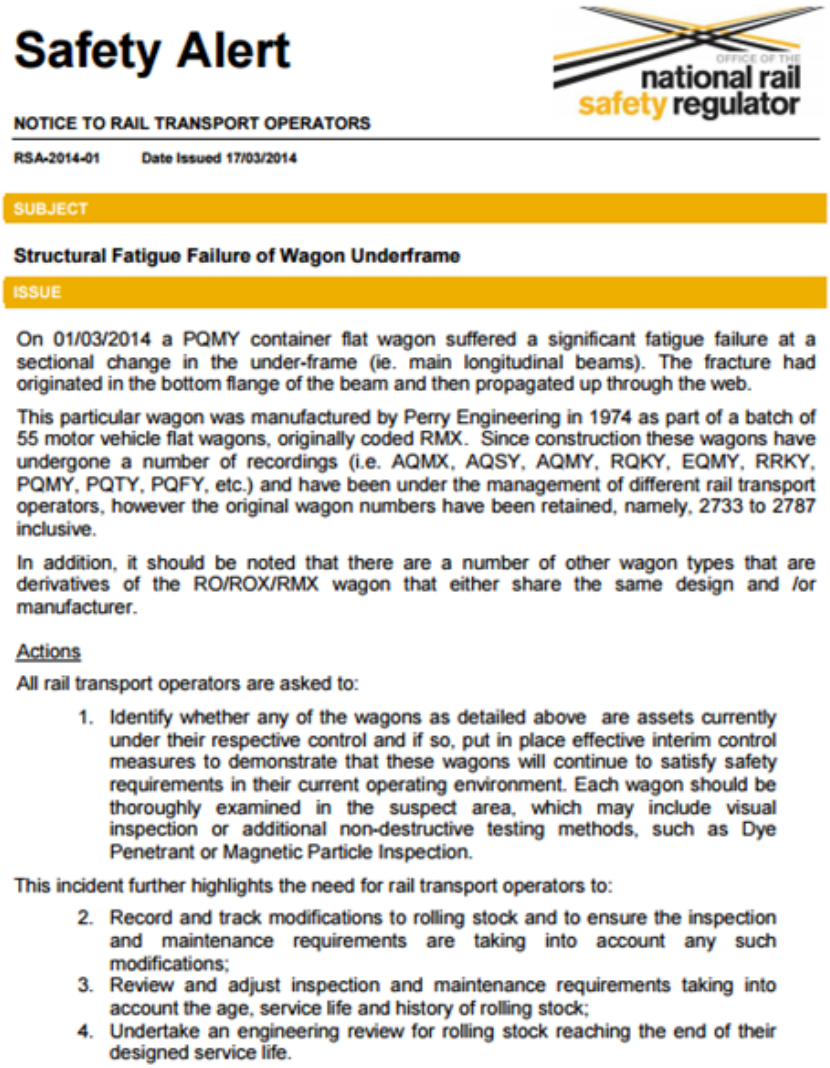
Most topics for which a safety alert is prepared, are identified through ONRSR's audit and compliance activities, incidents (notifiable occurrences), and subsequent investigations, confidential reporting schemes, or from operators who highlight issues to the ONRSR. This means that the safety alerts produced are not the result of a 'reporting' system, but rather represent a communication channel for ONRSR to disseminate findings.

There is no formal acknowledgement of alerts required by the system from accredited operators, nor tracking of reactions to alerts. There is no underpinning taxonomy or categorisation to the system as the number of alerts produced, circa 1-5 per annum, does not justify it.

3.1.5.2 Indicative Example

An illustrative example is shown below[6].

[6] Use of material from this source is allowable, subject to rules published here http://www.onrsr.com.au/website-accessibility/copyright-and-disclaimer



Safety Alert

NOTICE TO RAIL TRANSPORT OPERATORS

RSA-2014-01 Date Issued 17/03/2014

SUBJECT

Structural Fatigue Failure of Wagon Underframe

ISSUE

On 01/03/2014 a PQMY container flat wagon suffered a significant fatigue failure at a sectional change in the under-frame (ie. main longitudinal beams). The fracture had originated in the bottom flange of the beam and then propagated up through the web.

This particular wagon was manufactured by Perry Engineering in 1974 as part of a batch of 55 motor vehicle flat wagons, originally coded RMX. Since construction these wagons have undergone a number of recordings (i.e. AQMX, AQSY, AQMY, RQKY, EQMY, RRKY, PQMY, PQTY, PQFY, etc.) and have been under the management of different rail transport operators, however the original wagon numbers have been retained, namely, 2733 to 2787 inclusive.

In addition, it should be noted that there are a number of other wagon types that are derivatives of the RO/ROX/RMX wagon that either share the same design and /or manufacturer.

Actions

All rail transport operators are asked to:

1. Identify whether any of the wagons as detailed above are assets currently under their respective control and if so, put in place effective interim control measures to demonstrate that these wagons will continue to satisfy safety requirements in their current operating environment. Each wagon should be thoroughly examined in the suspect area, which may include visual inspection or additional non-destructive testing methods, such as Dye Penetrant or Magnetic Particle Inspection.

This incident further highlights the need for rail transport operators to:

2. Record and track modifications to rolling stock and to ensure the inspection and maintenance requirements are taking into account any such modifications;
3. Review and adjust inspection and maintenance requirements taking into account the age, service life and history of rolling stock;
4. Undertake an engineering review for rolling stock reaching the end of their designed service life.

Figure 8 Illustrative ONRSR Safety Alert

3.1.6 United States of America

3.1.6.1 Description

The NTSB operates a multi-modal safety alert system (covering aviation, highway, marine, railroad and pipeline).

The Railroad Division has the responsibility for railroad accident investigations involving passenger railroads, freight railroads, and commuter rail transit systems, and for raising related safety alerts for the railroad sector. The accidents typically investigated involve collisions or derailments; some of these accidents lead to the release of hazardous materials. The safety alerts raised by this system are therefore lessons learnt from previous accident investigations.

The structure of the publications is as follows:

- Problem statement providing a short free text description of the issue being raised.
- Description of the consequences of the event, in free text format.
- Statement of how the same event can be mitigated in future, in free text format.

Typically a safety alert is two pages in length. The content is typically operational guidance to prevent known accident causes, and generic in nature – for example not identifying specific organisations and/ or equipment.

Publication of the safety alert is made on a bulletin board, which has public access.

3.1.6.2 Indicative Example

Only one railroad safety alert is present, compared to 45 in other sectors – largely aviation. http://www.ntsb.gov/news/press-releases/pages/pr20150102.aspx

This particular example (summarised for brevity) refers to the **problem** as follows:

- Under some conditions, if LED and incandescent signals are installed in proximity to one another, the LED signal may appear brighter or closer, causing crews to confuse the sequence of the signals as they approach. This effect may be more pronounced the closer the train gets to the signals.

The **consequence** description was (summarised for brevity):

- The eastbound train was traveling on the main track and passed the front of the westbound train, which was still moving onto the siding track. The incandescent signal at the east end of the main track was displaying red or "stop," while the LED signal beyond that was displaying green or "proceed". Event recorder data show the engineer of the eastbound train advanced the throttle and increased the speed of the train as it continued past the westbound train.

  However, the end of the westbound train was still on the main track as the eastbound train passed, causing the eastbound train to collide with the side of the westbound train. Two locomotive units and four multi-platform intermodal cars on the eastbound train derailed; five multi-platform intermodal cars derailed from the westbound train. The train crew was not seriously injured in the accident, and there was no fire. The railroad estimated damages at $3.2 million.

The **statement of mitigation** was:

- Identify locations where the close spacing of signals may cause a signal to either mask or visually dominate another signal—especially at locations where LED and incandescent light units have been installed in close proximity.
- Evaluate the railroad computer aided dispatching (CAD) software to prevent stacked requests from lining routes non-sequentially at multiple control points—particularly at locations where signals are located near one another.
- In addition to performing all mandatory operational tests on signals, railroads should conduct a hazard analysis that includes testing signal visibility (conspicuity test) with input from train crews.
- Configuration management is critical in evaluating the safety of proposed changes to railroad systems, including signals and train control, motive power, rail cars, methods of operation, and track. Implement procedures to notify all personnel of changes they may encounter.

3.2 Study of Safety Alerts Systems Identified through Survey Responses

3.2.1 Numbers of Actors using a Safety Alert system (Q5)

Our survey identified 52 railway actors [7] that share safety alert information outside their own organisation. The majority (>80%) share this safety alert information with organisations outside of their own Member State (many ECMs quoting Regulation 445/2011 making this a mandatory requirement).

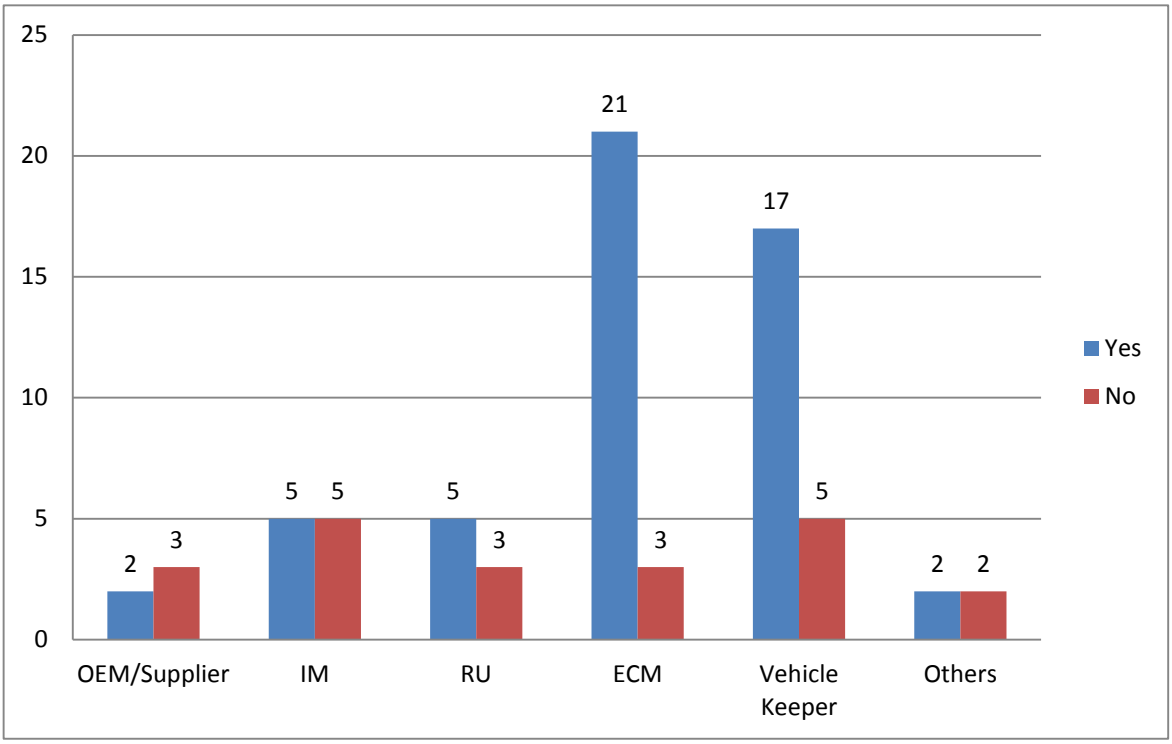


Figure 9 Safety Alert systems in the European Rail Sector (by actors responding to our survey)

3.2.2 About the Information shared

3.2.2.1 Events leading to a Safety Alert (Q9)

The majority of respondents sharing safety alert information, even those stating that the requirement for sharing safety alerts was mandatory, indicated that the type of events that should be the subject of a safety alert was not well defined. Example responses, quoted as written, were:

1. *"All urgent risks for rail safety (i.e. track failures, vandalism etc.) No specific list of alerts which have to be shared."*
2. *"There is no formal decision-protocol. Is being done on voluntary basis, depending on the contact that individual employees have."*
3. *"Review by myself as European Engineering Manager.*
4. *"The information shared is safety related information that may affect other operators/ECM's of the same equipment or one that used the same supplier (commonality)."*

[7] Out of a sample size of 73. Of these 73, one is an association of 23 RUs; this association's members share information internally within their own MS, but not with other MSs. Some of the other responses are from parent companies representing a large numbers of individual companys.

It is possible that those recognising the value of a reporting/ sharing system of this type may have been more likely to respond to this survey.

5. *"All contracting parties shall exchange information on safety-related malfunctions, accidents, incidents, near-misses and other dangerous occurrences as well as on any possible restriction on the use of wagons."*
6. *"Information are given about safety related problems if third parties…could be concerned by the same problem. "*
7. *"Example reasonable doubts on axle maintenance."*
8. *"When the problem can be found on other vehicle."*
9. *"No formal definition. Incidents/cases that were never heard before, that surprise experienced staff members."*
10. *"There have been adopted processes for decision-making in the RUs SMSs. The decision is made based on a classification of the hazards and a risk assessment. One criterion for classification is the extent of the risk to the company. There will be developed measures to minimize risk, risk control, risk management or risk perception or matched and possibly implemented activities required of it."*
11. *"According to the EU product liability directive (https://osha.europa.eu/en/legislation/directives/council-directive-85-374-eec), a certain amount of information needs to be exchanged between the various types of actors. The directive is furthermore complemented by local rules within the MS, which in some cases would require certain information exchange. Exchanges are done on a case-by-case basis, based on clear rules. Voluntary exchange takes place also with customers regarding products out of warranty, and similar."*

3.2.2.2 Safety Alert Threshold and Importance Levels (Q10 and Q11)

Asked if the information shared was prioritised in any way (by allocating a level of importance), the consensus was that it was not. Example responses, quoted as written, were:

1. *"We are using our risk analysis procedure. Our system is based on standard EN 50126 and regulation 402/2013."*
2. *"No, the importance of the information should be judged by the receiver."*
3. "*Only High level of importance*" [are raised as safety alerts].
4. *"Red, green and alert "*
5. "Only problems with high importance are reported to third parties. "
6. *"There are no levels of importance defined."*
7. *"Importance based on SR742.161* [Verordnung über die Sicherheitsuntersuchung von Zwischenfällen im Verkehrswesen, „Regulation on the Safety Investigation of Incidents in Transportation"]*. If not mandatory, then defined by safety team."*
8. *"A risk assessment is made, if the people or material's safety is committed, we decide to inform the sector through UIP and authorities through NSA. We have procedures through our Safety Management System, if it is high importance, we can activate a crises process which defines and coordinates action plan and communication with UIP and the media if necessary."*
9. *"There are no set level used. The urgency arises from the wording of the email."*

10. *"No, it should be shared only information with high importance (e.g. Production mistakes in Wheelsets, no broken draw hook etc). If we receive "high importance" alert in next 24 hours we decide if for us relevant and then we make the action in our fleet."*
11. *"No. There are only defects and damages reported, for which emergency measures were necessary. This is based on individual decisions. The levels of importance and measures are defined on the basis of an individual decision. Then accordingly the flow of information to other actors is set."*
12. *"There is no ranking of the importance of an alert, however different users are required to respond to alerts within different timescales in accordance with the types of role they perform."*
13. *"Actual severity, potential severity, potential frequency. Different levels of importance are used, in order to automatically notify different levels of management along the organisation. Accidents with injuries or fatalities are highlighted with a different colour. Time constraints for the management of the events are not included, as all events are always investigated and managed at the highest possible speed."*

3.2.2.3 Safety Alert Taxonomy and Structure (Q12)

We asked if information sharing followed a specific format or taxonomy or categorisation. The preceding responses would suggest this was unlikely and this was confirmed by responses received:

1. *"No taxonomy, but time, date, location. Type of hazard and event description as free text format."*
2. *"Should be organised like an incident database."*
3. *"Yes."* [but without further explanation.]
4. *"Yes, we have time date location etc. The main elements are:- What we found during the incident or failure and what we are doing for our investigations. Quite often we put out 3 issues as the investigations unfold."*
5. *"No predefined structure."*
6. *"Are we / third parties concerned? - type of hazard."*
7. *"We got E-mails from other keepers and mostly it is about wheels."*
8. *"Month", "No.", "Date Event", "Categories", "Product group polluter Reporting point location of the occurrence train RID insurance case?" "Event message to xxx" "" event analysis by xxx" "measures"*
9. *"Alert system we send is structured: date and place, event description, impact, injuries/fatalities, environmental damage, pollution, type of wagon, product loaded, action plan and name of person in charge."*
10. *"This is given by the Excel-table schema. This includes internal number, date, source of information, type of information, relevance to safety, own cars affected, responsibility and tracking and completion."*
11. *"Yes, we can sort it on the type of components and data."*
12. *"No formal structure; depends on the case."*

13. *"No. The message is freely formulated text. The information is systematically recorded in a process and categorized according to a predetermined pattern."*

14. *"Yes. Our database covers all our products. It includes a respective taxonomy. The vehicle part of this taxonomy is based on EN15380, it includes established hazard groups and accident groups."*

3.2.3 Quantities and Languages

3.2.3.1 Safety Alerts Sent and Received (Q13 and Q16)

The quantum of safety alerts sent and received, expressed as an average per individual actor, is shown below[8].

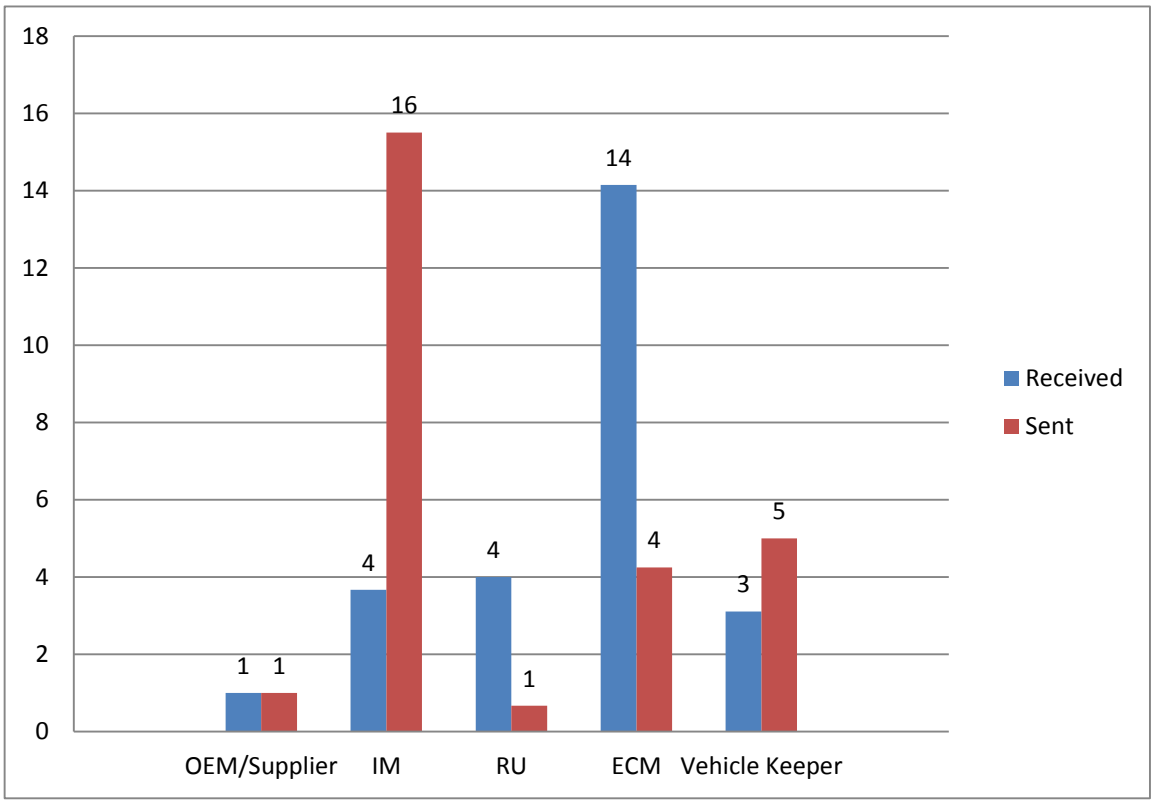


Figure 10 Average number of Safety Alerts sent and received (by actors responding to our survey)

3.2.3.2 Languages Used (by those operating a safety alert system outside their own MS) (Q14 and Q17)

Concerning languages in which safety alerts are received, the survey asked "*What are the top 5 most common languages that you receive alerts in?*" All respondents answering this question stated English. The next most common language was German. Other languages were identified although these were significantly less common.

Concerning sending safety alerts, the survey asked "*What languages are used to add alerts your organisation produces?* " For those organisations raising alerts in languages other than their national language, only English and German were specified.

[8] Note if there are 100 safety alerts sent and there are 10 respondents in that group using a safety alert, the average for that group is 10. Responses from actors in the category "others" have not been assessed here, despite them using safety alert systems. For respondents in the "other" category the usage of safety alerts is divided between individual actors in different groupings (including but not limited to those we present), the quantity of which is unknown.

3.2.4 Anonymity, Confidentiality and Information Flow (Q18, Q19 and Q20)

We asked respondents if their systems allowed identification details to be withheld from the safety alert (e.g. raising a safety alert, but not identifying the organisation raising it, or parties involved etc.).

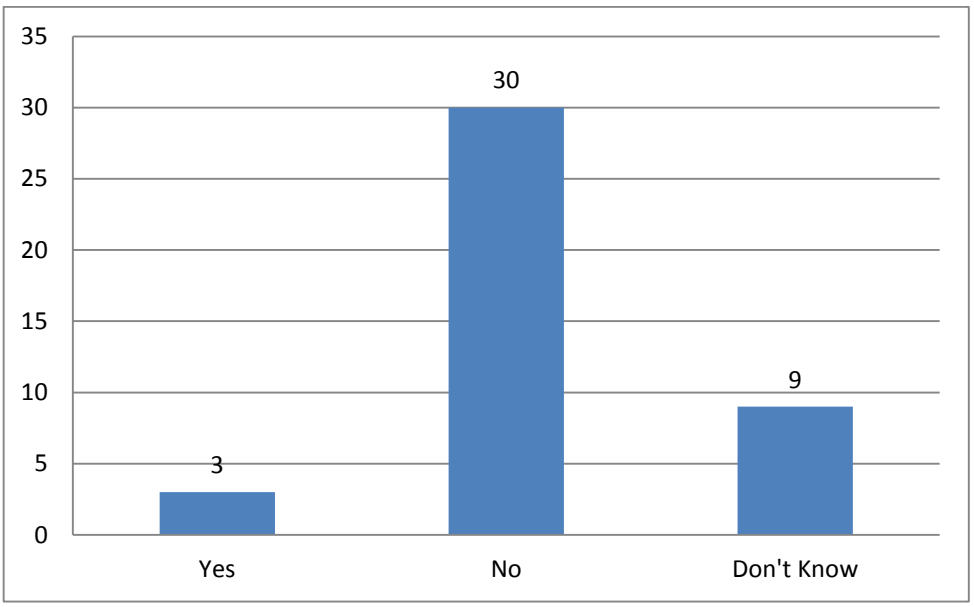


Figure 11 Can Safety Alerts be raised anonymously (by actors responding to our survey)

We asked respondents if their systems allowed confidential reporting (Q19); this question was poorly answered with respondents instead addressing this topic in the following question on information flows. The question on information flows asked if it was possible to specify that alerts are only sent to selected people/ organisations, and if so how this selection was made (manually or using specified criteria).

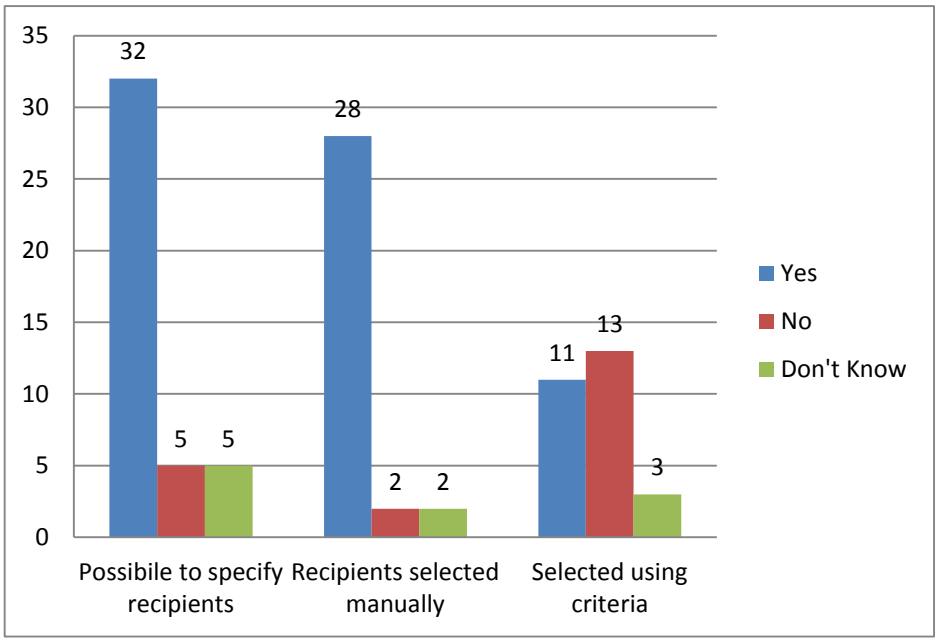


Figure 12 Safety Alerts information flows (by actors responding to our survey)

3.2.5 Final Comments

Final comments were invited on the use of existing safety alert systems and the following received, quoted verbatim:

- *"We don't have a system. We are currently thinking about a formal procedure to use information from other players in Europe to feed our learning cycle."*
- *"Look at NIR online in the UK."* [From a respondent in Germany.]
- *"It is important to control what is issued and ensure that information is not just issued by all. Our experience is that this can happen and it will be unmanageable."*
- *"The information exchange is organized by the national association or amongst the GCU signatories by e-mail. In addition, safety relevant topics can also be shared and discussed in the working group on safety relevant topics of the VPI."* [Vereinigung Der Privatguterwagen-Interessenten, (German) Association of Private Wagon Owners].
- *" …Our own systems as ECM are internal built to follow up wagons. In our SMS we got alarm lists and process how to handle alert and safety matters. This is also to be found on our ISO 9001 certified way of working."*
- *"We appreciate a transparent common European database of all alerts."*
- *"Easy register of information they we receive from NSA, RUs etc. We are small company and the system has to be easy and well arranged."*
- *"…round table for information about incident occurrence in the last x month. Safety directors UIC: immediate information about accidents involving trains esp. with fatalities (passengers) seldom: safety notice about system failures leading to accidents."*
- *"The system consists of an Excel spreadsheet, will assess the information from the sector that might be relevant to safety. This information will be reviewed internally by the ECM leader and the quality manager. If necessary measures are taken, third parties informed via e-mail and the development in this matter will be tracked on the table."*
- *"We also hold a call with all responsible for the safety alerts of all company regions and business units every 6 weeks. We discuss all new alerts and their status, as well as all closed cases, including lessons learned from them."*

4 TASK B RESULTS - USERS' REQUIREMENTS FOR A FUTURE RAILWAY SAFETY ALERT SYSTEM

4.1 Survey Results

4.1.1 What is a Safety Alert (Q25)

We asked which types of safety events could be considered within the scope of a safety alert, based on their potential outcomes. Four indicative types of outcomes were identified in the question:

1. Accidents involving the movement of trains (e.g. those defined in the Railway Safety Directive)
2. Any accident involving a passenger (which would include those defined at point "1" above, AND additional accidents such as those that may occur at the train/ platform interface, etc.)
3. Any accident on railway premises (which would include those defined at point "1" and "2" above, AND additional accidents possibly including maintenance accidents, etc.)
4. Any accident with the potential for loss of life however caused.

Respondents were asked to comment on these criteria, or add a different set, that may better reflect their requirements.

From those who expressed a preference, a clear picture emerged for accidents of "type 4" (circa 66%). This was particularly the case for ECMs and Vehicle Keepers whose own personnel would not be covered by "type 1" and "type 2" outcomes.

Additionally, comments offering alternative options included, quoted verbatim:

1. "*Criterion should not be a (near) accident, but should be that the hazard is new and can pop up at other users in Europe using the same equipment, software, etc. The hazard itself should have the potency to create an accident.*"
2. "*…Never mind the type of involvement, it is the possibility that the hazard can occur elsewhere in Europe that is important, with casualties as a consequence.*"
3. "*…In my view it should be specified as:- Any accident / incident / defect found that has the potential to affect safety and is relevant to other users of the same equipment or supplier.*"
4. "*All 4 events* [referring to the indicative examples provided in the survey], *plus attack on data communication network*."
5. "*None of the above mentioned* [referring to the indicative examples provided in the survey]*. Only extraordinary damage which needs preventive actions should be reported.*"
6. "*The levels here are too low since this would generate an overwhelmingly excessive number of reports. The trigger needs to be set quite high so that only incidents with significant injury potential are reported by the system.*"
7. "*Being only ECM, we are only interested in incidents linked to maintenance…that are new or unknown…*"
8. "*Critical technical failures that might affect other actors are reported. Non-critical incidents, normal wear are not reported.*"
9. "*If such a system should be introduced, then, in our view, only safety events with system-wide risks should be included, regardless of the classifications above. A safety alert always can be*

based only of an individual contemplation and on an individual decision. Accidents per se should not be included in the safety alert system, because the information "accident" at first does not allow any further conclusion for the own organization. Relevant would be, in our view, the following criteria:

- *Safety recommendation of accident investigation bodies (NIBs).*
- *Secured accident cause(s) with immediate action relevance for organizations outside the party involved in an accident (if not already safety recommendation of the NIB exists).*

10. *Damages and defects in components of the rail system, with immediate action relevance for more than one actor."*
11. *"A safety-related defect that caused or had the potential to cause:*
    - *The death or injury of any person.*
    - *An accident to the rail vehicle itself.*
    - *An accident to any other rail vehicle, equipment or plant & machinery.*
    - *Damage likely to endanger the safety of. Any person or animal; Trains; The infrastructure; The environment.*

    Obviously the 'high value' information will relate to those safety alerts which have potential to impact others beyond the originator of the alert. This won't always be known immediately, so there is risk of information overload by alerting all recipients and in doing so de-value the reporting system. Efforts have been made to target information based on types of operations e.g. train operations, station operations, etc, but this is not easy in practice… and runs the risk of omitting certain organisations that, in particular circumstances, would benefit from an alert.

    Alerts should be raised by customers to concerned manufacturers asap when it is clear that the root cause is not purely operational, but may involve a defect in a product. Manufacturers should raise alerts to customers only after the root causes are known and it is clear that they are systematic and concern really also other customers. In our experience with our internal system, if an alert is raised before the root causes are known, then nobody is able to do anything with this information and needs to wait until it is known what were the causes and what do they mean in terms of mitigation measures."
12. *"Alerts should be only raised by and exchanged between the "risk-owners" = the ones, who can actually take measures to control the risk. E.g.: if the accident has happened due to a defect in the product, then it is an obligation of the manufacturer to raise this information and send it to its concerned customers (not to all customers but only to those, who are concerned!). Customers should inform manufacturers (only the ones that are concerned!) about an event with their product, however this alert should not go to other manufacturers or customers. To start with, only information about (all) events with injuries and fatalities, or with a high potential risk should be exchanged."*

4.1.2 Should a Safety Alert be given a level of "Importance" (Q26)

We asked whether safety alerts should be given a level of importance[9]. The question offered some indicative potential importance categories, as follows:

1. "High" perhaps for a safety event that is an immediate hazard to other actors using the same product (for example identification of a new failure mode in safety critical equipment.)
2. "Medium" perhaps for a safety event that may require action within a time period (for example equipment that is supposed to last 50,000km but is showing significant signs of wear after 20,000km)
3. "Low" perhaps to reflect a safety event that does not pose an immediate hazard but may require attention at the next inspection.

The question asked respondents to comment on these criteria, or to specify an alternative approach.

The majority (circa 61%) of those choosing to comment agreed with the categorisation offered in the question. However, a number of additional comments were made disagreeing with the concept of levels of importance at all, examples include, quoted verbatim:

1. *"This is not very useful, because the parties' receiving the alert can be in all stages mentioned. So the level of importance should be assigned by the receiving party."*
2. *"No level should be given as it should be for individual companies to decide the level in accordance with its own business."*
3. *"… (Different classifications would lead to difficulty ensuring a consistent classification of high-medium-low, but consistent with a risk based approach.)"*
4. *"No, if safety alerts = high importance always."*
5. *"No, different classifications would lead to difficulty ensuring a consistent classification of high-medium-low. Impact can only be assessed individually. Safety alerts should only focus on the serious incidents. Safety alerts should always be connected directly to a need for action. The examples in the above scheme also raises questions: For example, there would be "medium" an immediate risk to components> 20.000 km. But how will a "sender" estimate, at what stage third-party components are?"*
6. *"It is difficult to predict the consequences of a defect upon other actors' equipment or operations. It would be better to rate the incident on the consequences of the actual accident caused or averted. Perhaps this could use the CSM DT* [Common Safety Method for Risk Evaluation Design Target] *criteria."*
7. *"The level of importance will depend more on the recipient than anything else."*

[9] Importance in this context refers to the timescale for taking action. It is not a measure of risk.

4.1.3 How quickly should a Safety Alert be published? (Q27)

The survey asked "*How quickly do you think a safety alert should be raised?"* Respondents were able to select fixed field answers *"Within 24 hours"*, *"Within one week"*, *"Within one month"*. Alternatively, respondents were able to suggest their own timescale criteria.

No clear preference was observed, with an equal number of respondents answering *"24 hours"* and *"one week".* Many respondents commented that the timescales for publishing a safety alert should be linked to its importance (i.e. Q26).

A second grouping of comments made the observation that a safety alert should be published as soon as parties can be informed appropriately, summed up by one respondent who commented:

- *"There is no single right answer here. It depends upon how well the investigation has developed in relation to establishing the facts, or otherwise unhelpful knee-jerk reactions would result. Sometimes however, for a widely used component that had failed catastrophically, it is best to alert the industry that the occurrence has happened, without knowing why. (…an Initial Report to alert the industry to the occurrence; an Interim Report to provide an update on progress of the investigation and a Concluding Report to report on the "root cause" of the failure and effectively close the incident)."*

4.1.4 What information should a Safety Alert contain? (Q28)

The survey asked "*what information do you think a Safety Alert should contain?"* Some generic content was suggested for context (time, date etc.) and respondents were asked to elaborate in free text format what their additional requirements might be.

The main points and requirements raised may be summarised as follows:

- High-level breakdown to isolate the safety alert to its correct subsystem. (There was no specific request for a detailed hierarchical breakdown beyond this.)
- Time, date and location to describe where and when the subject of the Safety Alert occurred (although some respondents considered this not essential).
- Environmental conditions at the time.
- Precise details of the nature of the event being reported (failure mode, etc.)
- Description of the "risk"/ type of accident that had or could have occurred.
- The ability for photographs or drawings to be uploaded to support the written text.
- Operational context.
- For equipment (including components) based safety alerts:
    - Its type and manufacturer, if known
    - Age/ usage of the equipment/ component
    - Pertinent supporting operating maintenance or operational information
    - Information enabling the specific equipment/ component type to be isolated from others that are similar

- Metadata: time and date, place and nature of the event or the finding, category of component / area, relevance for IM / RU / ECM, status of the reporter (IM, RU, ECM, manufacturers, authority).
- Event information: description of determination / the cause, evaluation of the damage / defect (e.g., single loss / damage series, ...), measures already taken / planned measures (in the sense of best practice). For the eventual defect as detailed as possible together with any maintenance or operational information.

Other respondents asked for root cause analysis to be provided and some for improvement actions and advice.

4.1.5 Who should publish a Safety Alert (Q29)

The survey asked about responsibilities for raising safety alerts. The following options were provided:

1. *"Any organisation can publish a safety alert without external consultation or external verification (e.g. an RU could publish a safety alert for a product, without consulting the product supplier/ manufacturer/ designer)."*
2. *"Any organisation can publish a safety alert without external consultation or external verification so long as the product supplier/ manufacturer/ designer is informed first."*
3. *"Any organisation can raise a safety alert but only the product supplier/ manufacturer/ designer can publish it."*

A free text box was provided for additional comments.

Responses received were as follows, noting that bullet 1 (above) is annotated "no restrictions", bullet 2 "inform supplier" and bullet 3 "Published by supplier"

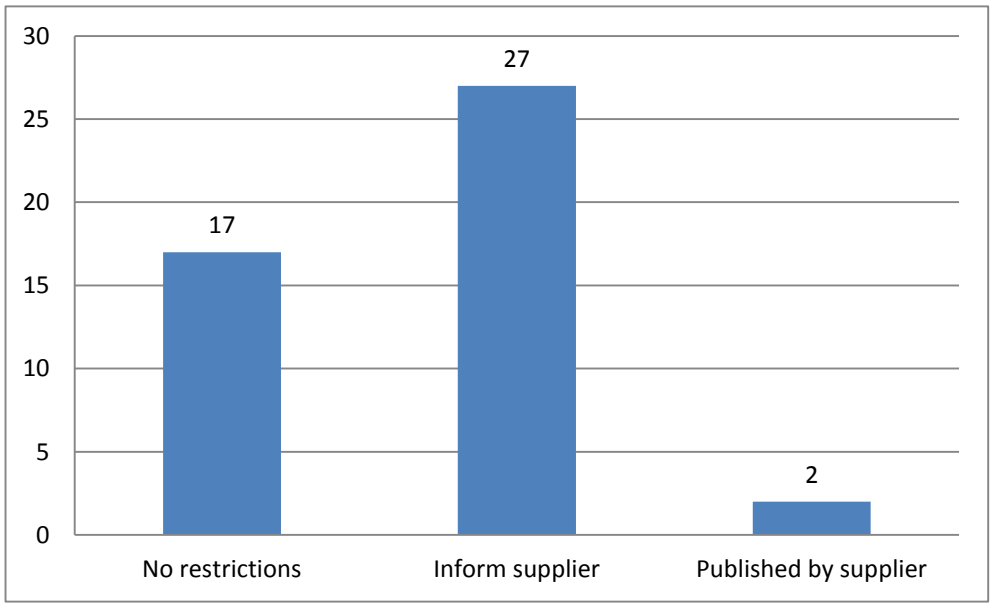


Figure 13 Publishing Safety Alerts (by actors responding to our survey)

Additional comments, quoted verbatim, were:

- *"Through Rail Authority, the Rail Inspection, verified."*
- *"A principle of transparency should be applied."*

- *"Misuse of the system must be excluded. It should not be possible for anyone to put their suppliers or competitors under pressure by sending false or incomplete safety alerts."*
- *"Some mistake of user against the instruction for use can be happen, but sometime are no extra instruction and no more exist producer. The base is not search for the culprit but preliminary act."*
- *"This will not work, several hundred alerts will be published every day."*
- *"It is important second wiev to the fall - when is not possible take the supplier etc, than NSA or NoBo."*
- *"We think that responsibilities for raising safety alerts could be given to any actors with safety critical tasks, however the responsibilities for publishing the alerts should be given only to the NSAs which are responsible for the supervision of the whole railway system and they may effectively filter the necessary information to be shared."*
- *"The safety alert must be controlled to avoid misuse and false alerts."*
- *"Due to different technical systems of the vehicles, due to the different products (e.g. As passenger transport, dangerous goods transport, load safety) and the use of the vehicles (e.g. as an Europe-wide use of freight-wagons) in the freight and passenger transport and associated safety topic areas an safety alert system has to provide clear indications for the users."*
- *"The ability to raise an alert should be dependent on the competence of the individual raising the alert, rather than the role of the company. Certain organisations could reasonably be expected to have staff of a suitable level of competence."*

4.1.6 Who should receive Safety Alerts (Q30)

The survey asked:

"Who should safety alerts be sent to?

- *Everyone from the railway sector registered to use the system*
- *Organisations within the same group (ECMs to ECMs etc.)*
- *Those that the organisation raising the safety alert chooses*
- *Safety alerts should not be sent to anyone. Instead they should be published on a safety alert "bulletin board"*

Other (please specify)"

Responses against each category were as follows:

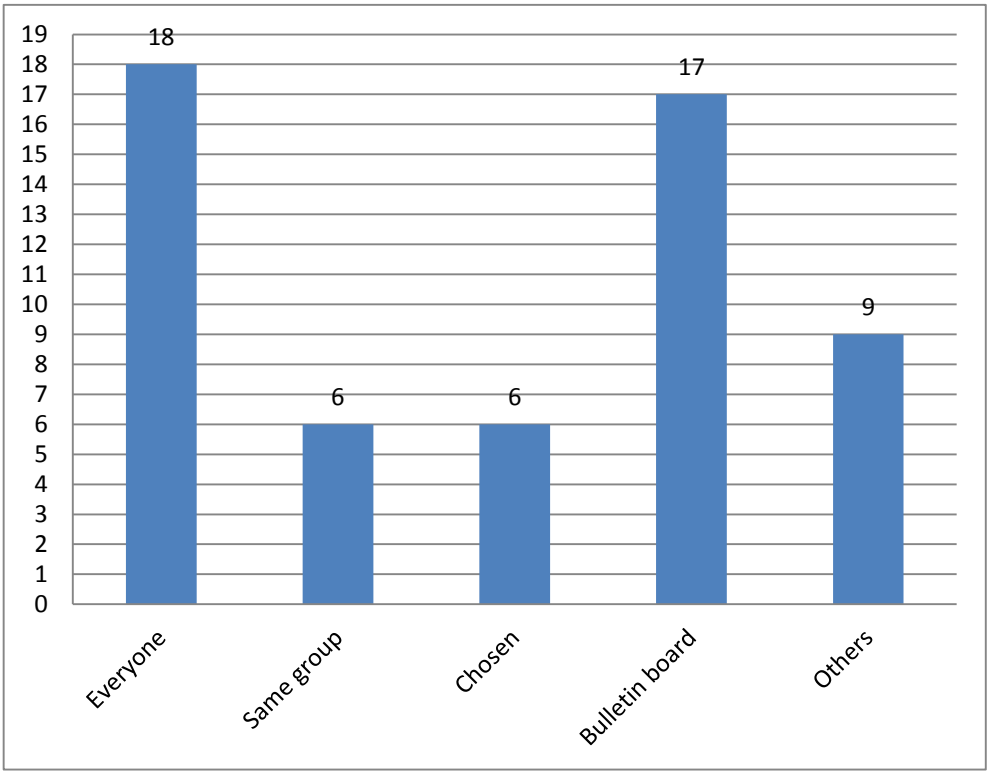


Figure 14 Publishing Safety Alerts (by actors responding to our survey)

Additional comments were received as follows, quoted verbatim:

- *"After Sales department."*
- *"The bulletin board must only be accessible by authorized organisations."*
- *"Combination of 3rd and 4th option. Organisation raising the alert should choose recipients, those who organisation thinks could be primary affected or is particularly interested in (based on the type of alert and accident). At the same time the alert should be published in "bulletin board" for others."*
- *"A "bulletin board" with the possibility of filtering on different categories of events."*
- *"Organisation should be able to select what types of alerts it wants (like a newsletter selection)."*
- *"Those identified to receive such alerts should be given the option to choose the type of alert that they would like to receive."*
- *"Depends on the number/year. Only active information of companies that could have the same problem."*
- *"Only directly concerned parties shall be informed."*

4.1.7 Safety Alert notification method (Q31)

The survey asked:

"How should safety alerts be notified to interested parties?:

- *By SMS / text message*
- *By push notification from a smartphone application*
- *By e-mail*
- *Notifications should not be sent to anyone. Instead individual actors should collect safety alerts from a "bulletin board"*

Other (please specify)"

Responses against each category were as follows:

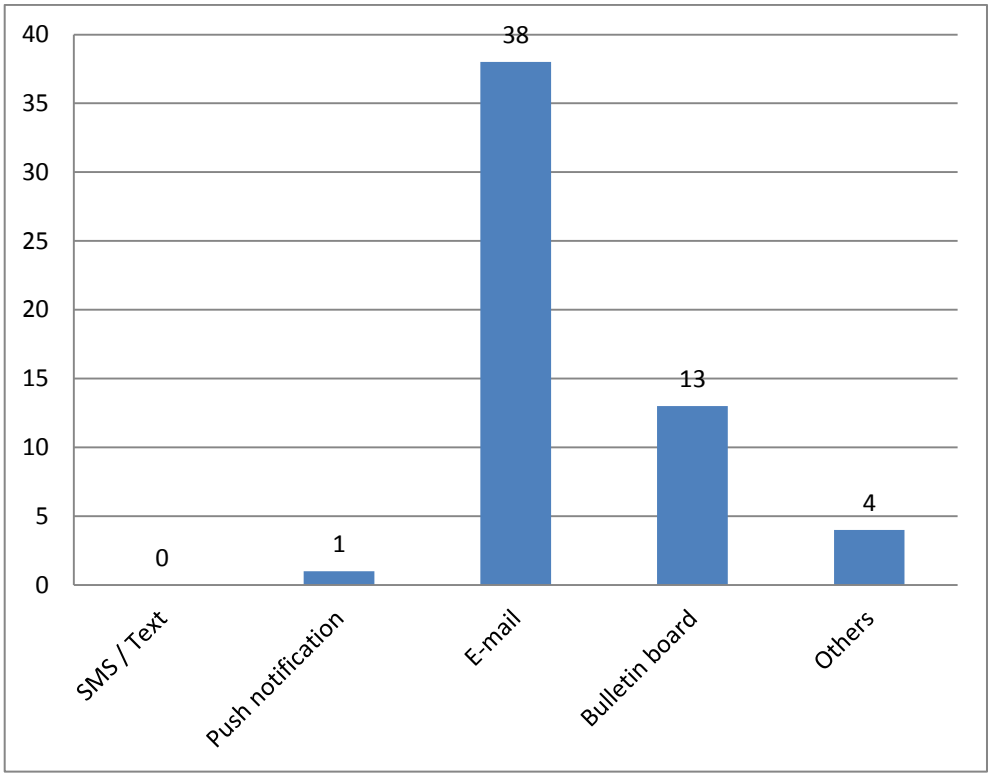


Figure 15 Safety Alert notification method (by actors responding to our survey)

Additional comments as follows, quoted verbatim:

- *"By email with a link to a bulletin board to get the details."*
- *"Authorized organizations can take a subscription for certain employees to receive an e-mail-notice with a link to the bulletin board."*
- *"Those identified to receive such alerts should be given the option to choose how they would like to be notified of such alerts."*
- *"Also published on bulletin board."*

- *"Our systems use email notifications which users can turn off if they would rather review in batches. We have previously used SMS as well but this proved costly and was there was an increasing amount of red tape."*

4.1.8 Safety Alert Notification languages (Q32)

The survey asked:

"In what language should safety alerts be raised?

- *Originator's national language only.*
- *Fixed text fields supported by a more detailed description in the originators national language.*

Other, please describe"

Responses against each category were as follows:

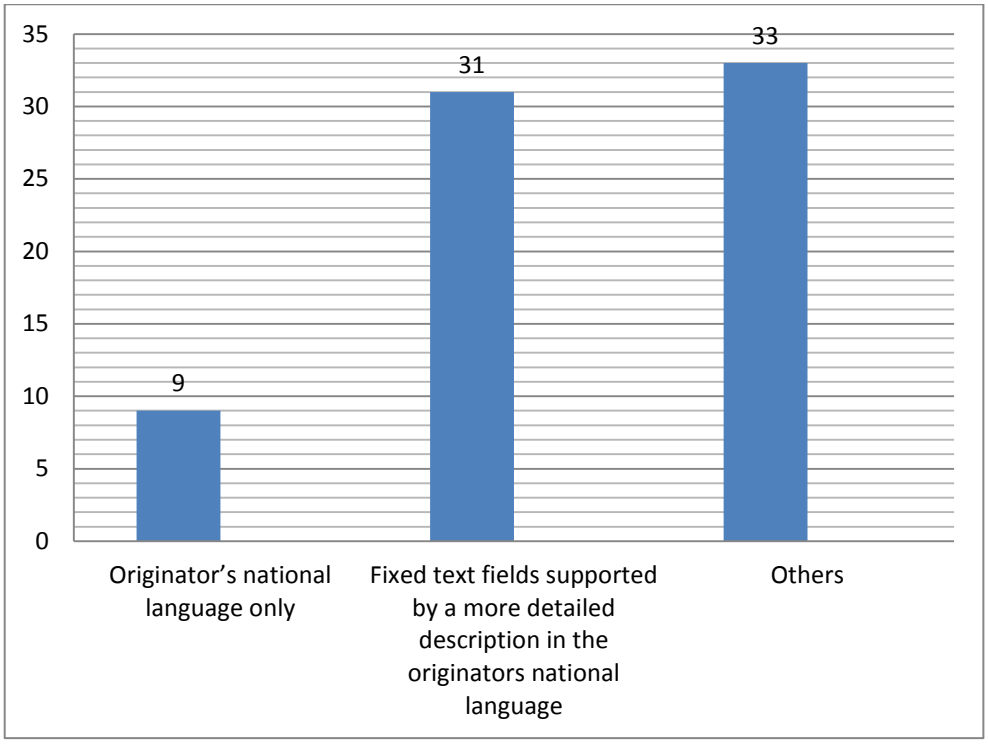


Figure 16 Safety Alert language options (by actors responding to our survey)

The following additional comments (in the "Others" field) were made, quoted verbatim:

- *"National language + English, French or German."*
- *"If doable by the issuer the alert should be in English or another major language. It is more important that the alert goes out, then what language it is in."*
- *"It is useless if it can be sent in any European language. Only English must be used."*
- *"Preferably all in English, or fixed fields in English, other free text details in the national language."*
- *"It has to be a European standard language probably English."*
- *"English."*

- *"English."*
- *"The safety alerts should be published on the originators language and in English to allow a quick and easy exchange of information."*
- *"Multilanguage like Linked-In for instance."*
- *"English."*
- *"A common language of English should be adopted - for the key points. The contact details of the originator should also be identified."*
- *"English."*
- *"A safety alert should be raised in the originator's national language and in English."*
- *"English should be the universal language."*
- *"It is fundamental that the messages should be immediately understood, above all when the importance is high. Therefore it would be appropriate to send them in the language of the consignee. Otherwise it could really happen that it won't be possible to understand in 24 hours what is necessary to do. But if it's impossible to translate the message into the various languages of the consignees, it should be at least written in the languages accepted by the CUU: French, English, or German."*
- *"Same language for all notices, e.g. English (not of use if 50% of the notices are in a language not understood in my company)."*
- *"Fixed text fields, supported by a detailed description both in the national language and in English. The contact details of the originator should also be identified."*
- *"A minimum required information to allow for investigation and measures should be provided in English. Supporting documentation can be provided in the local language."*

4.1.9 Use of Fixed Text and Free Text (Q33)

The survey asked:

"What thoughts do you have on the balance between fixed text fields and free text? (For example accident type and cause as fixed text and description as free text, etc.)."

Those answering this question responded as follows, quoted verbatim:

- *"Not important."*
- *"I expect that it is not possible to find many fields that can be fixed text. But if possible, it is preferred."*
- *"It seems difficult to use fixed text fields if you consider any component can be concerned, any manufacturer, any environmental condition...."*
- *"Fixed text for specific details, e.g. vehicle number date time location and who has raised the alert."*
- *"Type of accident should be fixed text. Cause can hardly* [be] *mentioned at short notice, since it requires an investigation to determine the cause of the accident."*
- *"Maybe some fixed fields for date and time by free text and the ability to add pictures."*

- *"Fixed fields might restrict the possibility to convey a correct and complete message."*
- *"Fixed and mandatory text fields are necessary to provide a certain structure of the safety alerts and to make it easier to classify whether or not an alert is relevant. However, fields for free text should be available to provide additional information, i.e. about the affected components or the cause of the incident."*
- *"OK, but photo is necessary sometimes too."*
- *"I think free text is the best because you can describe more and more details."*
- *"For selective distribution and statistics fixed text is needed."*
- *"Fixed text makes the system more user friendly and searching and filtering easier, but unless the fixed text fields are carefully developed they could significantly restrict the functionality and therefore usefulness of the system. The usefulness of the ability to upload photos of the failure and drawings of the affected components is also considered essential."*
- *"All the static information should be reported as fixed text; description and other detailed information should be reported as free text."*
- *"Fixed text fields allows not to forget any information, there should also be a free text area for any other comment."*
- *"For a more detailed description of the incident as possible a free text field should be available. Data such as date, country and affected Involve (RUs, ECMs, holders, ...) should be able to be entered via standardized fields."*
- *"We think that fixed text should cover next: -date -time -accident type -cause Description of the event should be as free text."*
- *"The fixed text should necessarily identify the content of the safety alert without possibility of mistake and the circumstances in which the event happened. The free text should add any other info, that could contribute to the identification of the event scenario as well as the check from the receiver of the repeatability of the event for the managed /used vehicles (ECM, keeper) as regards the own activates (RU, IM, etc...)."*
- *"So much what possible fixed text."*
- *"Possibly a combination of fixed text and let free text only for additional voluntary notes."*
- *"Fixed: 50%; free: 50%; safety alerts should be for new failures also, so free text is needed."*
- *"The fixed text fields must allow a first relevance test for the company: Am I affected by this message? Do I have to take care of the facts in? As many as possible structured and fixed text fields. Fixed text fields make the system more friendly for users and searching and filtering will be easier, but unless the fixed text fields are carefully developed they could significantly restrict the functionality and therefore usefulness of the system. For accurate analysis, a free text, however, is absolutely necessary."*
- *"Fixed text fields are useful to enable consistency which then benefits searches and analysis... That said there needs to be a way of adding items which are new, or have been overlooked. Perhaps these items should then be reviewed by some overseeing body for addition to the fixed text list."*

- *"The accident type needs to be classified. The description of the event itself needs to be done in a free text..."*

4.1.10 Translation options (Q34)

The survey asked:

"What options for translation should be offered:

- *None; on-line translation tools are adequate.*
- *A glossary of common terms and their translations should be developed and included.*
- *Other (please specify)."*

Responses against each category were as follows:

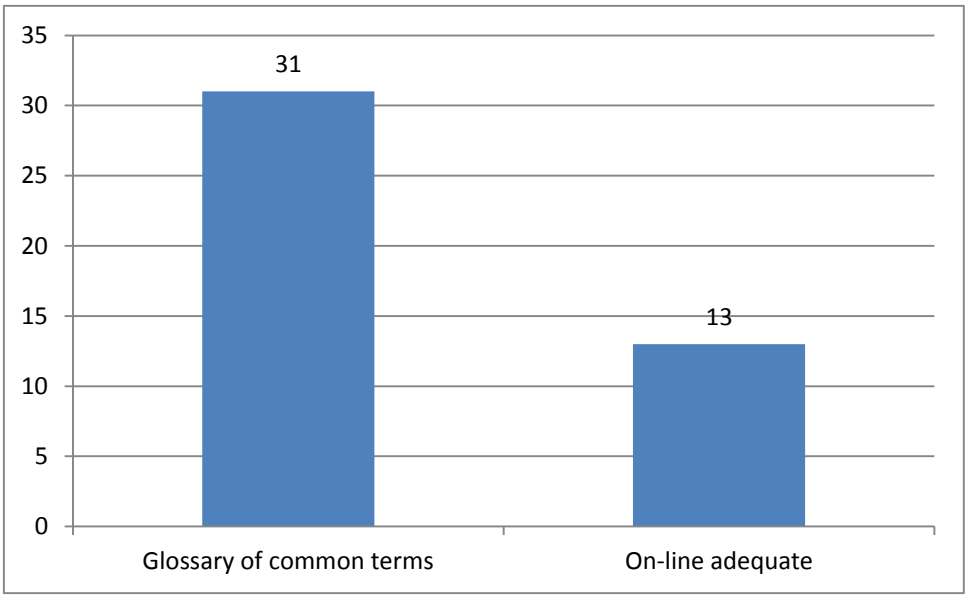


Figure 17 Safety Alert translation options (by actors responding to our survey)

Those selecting "other", responded as follows, quoted verbatim:

- *"When you see the size of UIC glossary with only 4 languages, it seems difficult to provide such a tool in all European languages."*
- *"Alerts should be produced in line with other ERA documents with regard to language i.e. English, German, French."*
- *"If the safety alerts are always published in English, official translations are not necessary."*
- *"National and English version appreciated."*
- *"In our experience on-line translation tools are of limited use for technical information. The glossary of technical descriptions for all railway components would be difficult to develop and therefore the system should use only English."*
- *"All the safety alerts should be translated in English."*
- *"One language only, e.g. English."*
- *"A glossary would be ideal. A glossary of common terms and their translations should be developed and integrated - a good glossary already exists, the UIC lexicon. This lexicon could be*

further optimized and if a learning function then would still exist, could be corrected misinterpretations."

- *"Any help would be useful, however it is not clear if this is not an over complication of this present task."*

4.1.11 Legal and related issues (Q35 and Q36)

The survey asked (Q35):

"Does your organisation believe that it might be exposed to a significant legal risk if:

- *It has not acted on alerts originating from the system (e.g. prosecution for an accident that resulted from failing to properly act on information in a safety alert).*
- *It fails to raise a safety alert that would have prevented an accident?"*

Responses against each category were as follows:

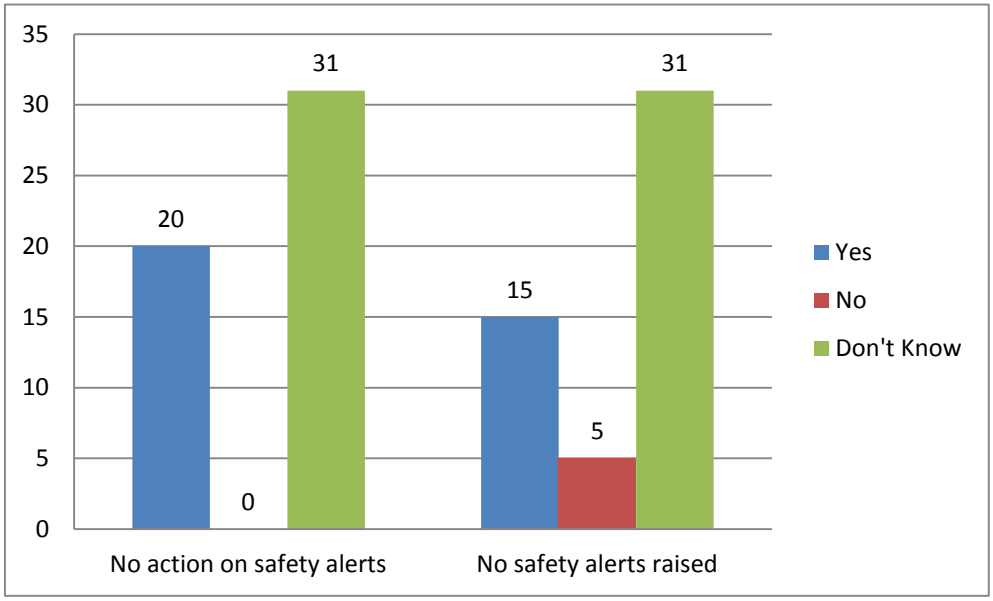


Figure 18 Safety Alert legal concerns (by actors responding to our survey)

Those choosing to comment (Q35 and Q36) stated the following, quoted verbatim:

- *"This is why the alert-system should be confidential and organisations must choose themselves to be part of the system or not. "*
- *"There is no jurisprudence on that matter."*
- *"In principle yes but it has never happened."*
- *"It is often difficult to evaluate whether or not a technical defect is a singular case or a serial damage and therefore to decide whether or not an incident should be shared with others by sending a safety alert."*
- *"Remember ESCHEDE - there was the alerts from NDT of wheels."*
- *"The use of the system should be on a voluntary basis based on good faith."*
- *"We believe that in both cases we might to be exposed to a significant legal risk."*

- *"As we don't know how each actor of the system manages its own part and due to the fact that we haven't close agreements with all actors, legal risks shouldn't exist in the a.m. cases."*
- *"If the knowledge about a safety alert is seen as "common knowledge" resp. "state of the art" then legal risk rises."*
- *"Legal risk in case of raising a safety alert if the supplier of the defective part does not agree on the cause of the defect."*
- *"Having to pay for damages caused by not having acted on an alert."*
- *"Our main concern is that too many alerts for non-critical incidents might be sent if a standardized platform would be introduced. This would increase the workload for the follow-up of incidents and might result in an overburdening of the staff responsible for the follow-up of critical incidents".*
- *"…magistrates could persecute a RU if no actions were taken after receiving a safety alert."*
- *"As we said, we believe that in both cases we might to be exposed to a significant legal risk. In the first case you have been warned, somebody can ask what have you done. On the next case if you do not rise safety alert somebody can ask what have you done, you knew but you did not raise a safety alert and prevent an accident."*
- *"An RU is responsible for the train it runs."*
- *"The could be possible problems in demonstrating the causes of the damage, i.e. if a safety alert identifying a constructive anomaly is published, the manufacturer could not agree and proceed with a lawsuit for defamation to who has originated the safety alert. The legal expenses and the management part of this dossier would be therefore at the charge to who has raised the safety alert."*
- *"…concerns are related to our national provisions on safety responsibilities."*
- *"You knew about it (received an alert) and did nothing = negligence. You knew about it and didn't tell: depends on the case."*
- *"It can be assumed that in such cases the effectiveness of the by Regulation 1158/2010 Annex 2 section O required procedures and related processes will be examined by investigation authorities. Before introducing a safety alert system, a legal review about this whole system must be carried out for each country. An accurate assessment is possible only when the draft of such a system will exist. Then this must be regarded juridically. To check up would be in particular the following legal risks: Incorrect configuration of the data (e.g. false indication relevance), Incorrect interpretation of free text, Incorrect translation of free text, Time allowed for taking measures necessary, Tendency to over-cautious safety alerts related information overkill"*
- *"As it stands use of … are mandated so failure to raise an alert could be seen as a failure to comply with the standard. As acknowledgements of alerts are recorded companies do not have any excuse for not acting up the notice, so they would be exposed to legal risk if they chose to ignore a notification which warns of a potential risk which has been identified elsewhere."*
- *"The answer to the above depends on the way how this alert system is created. If there is a legal basis, which gives obligation to enter data in the system and to react upon it, then there will be a legal basis for any sort of legal risk. If this is created as a free-will stand-alone database, which*

is filled, or not by data, if anyone can bring any sort of spam information, and similar then it could not be taken seriously. The answer to this question probably depends on some very specific formulations in very specific types of local legislation, which in the moment could hardly be foreseen or investigated."

4.1.12 Should Safety Alerts be able to be raised anonymously (Q37)

The survey asked:

"Should a future system offer anonymity for an organisation raising a safety alert? (i.e. an organisation can raise an alert without being named on the alert itself)."

Responses were as follows:

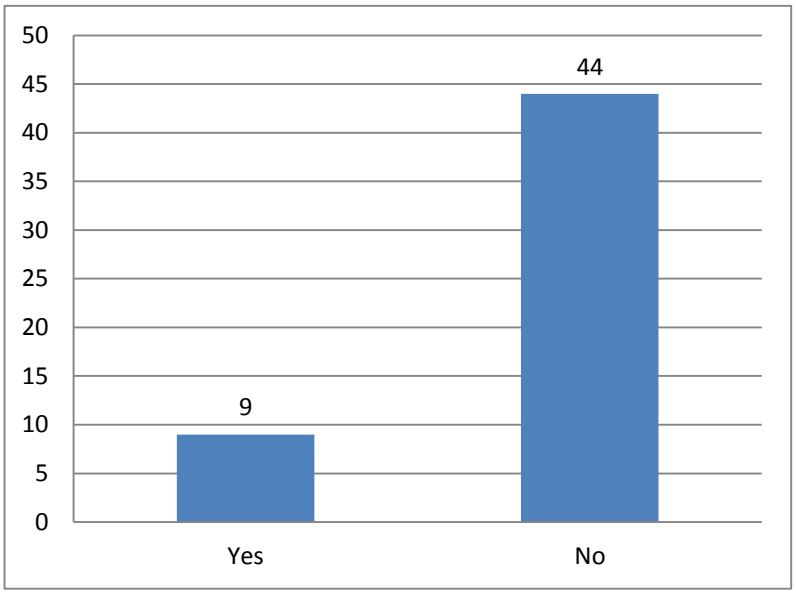


Figure 19 Safety Alert anonymity (by actors responding to our survey)

In general, those answering "No" to this question had strong views that anonymity should not be allowed as this would hinder investigation of the event being described, and possibly allow for malicious use of the system.

4.1.13 Identifying others failings (Q38 and Q39)

The survey asked (Q38):

"Should a railway actor be able to raise a safety alert that identifies possible failings of another company? (e.g. an RU naming a company that supplied it with a bearing that has failed catastrophically).

- *Yes*
- *No*
- *Under certain conditions"*

The survey then asked (Q39):

"If your answer to the previous question was 'under certain conditions' please identify which conditions:

- *Only factual information can be included on an alert (e.g. company name, part numbers etc. to help locate other similar equipment).*
- *Agreement is obtained from the organisation implicated that it can be identified on the alert.*

- *Other (please specify).”*

Responses were as follows (Q38):

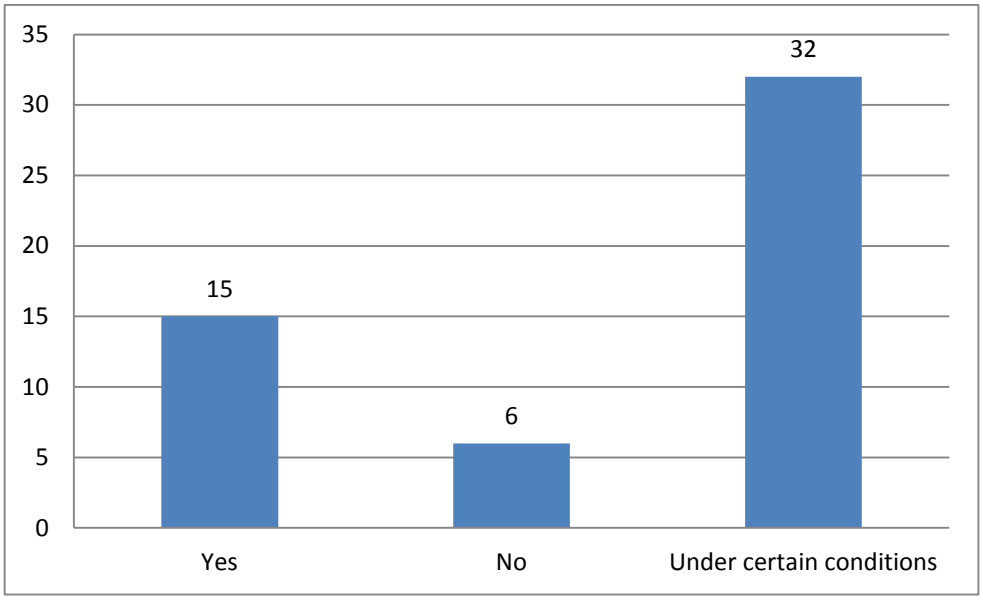


Figure 20 Safety Alert identifies others failings (by actors responding to our survey)

Of those answering “under certain conditions”, about 60% agreed with the statement (Q39):

- *“Only factual information can be included on an alert (e.g. company name, part numbers etc. to help locate other similar equipment).”*

The remaining 40% were equally divided between the remaining two options:

- *“Agreement is obtained from the organisation implicated that it can be identified on the alert.*
- *Other (please specify).”*

Additional comments were, quoted verbatim:

- *“Only if RU/product supplier/ manufacturer/ designer is informed first, and do nothing.”*
- *“Demonstration with technical surveys and expertise done in certified laboratories/ bodies according to the standards in force.”*
- *“To ensure effective demarcation of the damage to be able to describe (relevance for others), it's necessary. For example, if the wheel disks on the axle of a specific batch have been shifted, the RU / ECM has no choice, as just to name this batch. Otherwise, all railway companies in Europe had to arrange special tests on their axles immediately, although perhaps only a small number of axles are affected. This limitation also is a requirement from DIN 27200 (relevance analysis). So if not all railway companies in Europe have to do this relevance analysis, you have to provide them with the safety alert. If it is a very serious safety event, which carries an immediate danger to other players with the same product (for example, the identification of a new error in safety-critical devices).”*
- *“After a minimum investigation of root causes the customer should inform (only!) the concerned manufacturer(s) regarding an incident with its equipment, where the equipment has failed. After an investigation of the root causes, the manufacturer should inform its customers (only those that are directly concerned!) about a safety-related defect, of a certain gravity.*

4.1.14 Final comments (Q40)

Final comments were invited and received as follows, quoted verbatim:

- *"Some safety alert could be predictable but not all. For those predictable tools should be developed (predictive maintenance, LCC, virtual test). For the ones unpredictable, the question remains without answer."*
- *"We don't want to see a new gigantic database with continuous flow of data on accidents or failures. Instead, analysed information of accident precursors and root causes is important."*
- *"The system should be designed to help the railway sector to become more safe. It should be legally settled in the Directive that information from the alert-system cannot be used in court to define liability or guilt."*
- *"Please look at the UK's NIR online system. This has worked successfully for years and allows a quick notification to the industry, and for businesses to review the information and decide if it is relevant to their business."*
- *"It is vital that safety alerts are classified in different groups, e.g. "Infrastructure", "Wagons" ... Within these different groups of alerts, clear rules should be implemented about what must be reported and what not. Only severe singular damages or proven serial damages should be reported. Examples: - broken axles --> should be reported - crack in a welding seam on the underframe of an old wagon --> should not be reported because such cracks are often detected on older wagons and it is not always possible to identify other affected wagons."*
- *"In Q37, the reason we think that anonymity is unwelcome in that further information could not be obtained by the recipients of the safety alerts. In addition, the pan-European safety alert system should interface with existing systems that are already in use by several member states. Unless the system automatically interfaces with existing systems and does not create a need for a duplication of effort i.e. the data is only entered once. If this does not happen the system will not be used, since this is simply adding an additional burden for the sector."*
- *"We have no established systems for sharing safety alerts between railway actors, but we share safety information with others (mainly with RUs, information about accidents and incidents)."*
- *"It would be suitable to fix a single way to get and send the information as well as the updates."*
- *"Be easy so much like possible."*
- *"We would like to underline that such an information system without NSAs' controls could lead to uncontrolled warnings with the aims to damage competitors. Further we are strongly convinced that this information system could bring concrete benefit only to those actors which exchange subsystems or interoperability constituents among them. And last but not least it is utterly important that safety alerts are followed by a feedback, because they may launch resources consuming actions which remain without any lesson learned for the sector. For this reason we think that the safety alert system is to be designed considering all the risks and opportunities, and also including the role of the NSAs as a focal point for ensuring the correctness of the process and the collection of results."*
- *"If the number of safety alerts is too big, it will be difficult to handle it. Safety alerts must keep a certain sense of urgency."*
- *"Only serious hazards shall be reported: large potential of damage, high probability of occurrence, low probability of discovery. Hence the number of alerts should be manageable also.*

A load on the system with irrelevant or useless information should be avoided. Receiver and Transmitter should only be companies that participate on railway operations (RUs, IMs, wagon keepers, ECM), but also the manufacturers of components structural subsystems of the railway and safety authorities (ERA, NSAs, NIBs). Anonymity of the sender must be excluded. The message should be configured with standardized metadata, to check and deciding quickly on its own relevance.

The basic question is by whom the relevant data will be put into the system? Who will validate the data and the finally release and thus the responsibility (liability) for the correct and comprehensive presentation of the facts? The respective roles of the ERA, NSA, NIB, CeBo and sector (IM, RU, ECM, keeper, manufacturers, ...) in the use and application of this tool must be clearly defined and responsibilities must be assigned to exactly the one who is able to assume this responsibility. An extensive legal analysis in all Member States is essential before the first use this tool. It is not enough to provide an IT-tool available, but it is also its input and its use to define. The ERA (and also the NIBs and NSAs) will have a key role to ensure the quality of the information provided and to ensure the improvement of safety and cooperation.

The question of whether a safety risk is often also depends on the working environment in which a component is installed. I.e. for defects in components that constitute from the point of view of an IM no safety risk, can show at a only marginally deviating working environment at another IM quite different behaviour and possibly have a serious impact. In this context, the then resulting liability for the data supplier would be (scope, description, adjustment yes / no, etc.) of fundamental importance. If the safety risks are communicated by means of a computerized platform at firmly defined points of the participating railways, etc. within the EU, this could bear risks in the transmission of information that has to be evaluated. The unavailability of the recipient or the inaccurate representation of the relevant data (description of the work environment) could cause that required measures are not or not fully launched by the receiver, which could lead to criminal and legal liability consequences for sender or recipient.

Here the question arises, whether the database should have only a supporting role, or whether a manufacturer by entering a safety risk into the safety alert system could circumvent its product liability. In addition to the question of whether this approach would be contrary to national laws, among the recipients an uncertainty will be created here, since they would immediately consult the manufacturer with the question whether the lack of their products is relevant too."

- *"The alert system needs to be supported by a legal basis to set an obligation to use it. Otherwise it will be confusing to the railway community and it will possibly remain unused, similarly to the database, which is already existing:*
    - *Anonymous alerts are an absolute no-go.*
    - *Broadcast-alerts are also an absolute no-go. Only concerned parties should be informed.*
    - *Information should be intered into the database only after a certain minimum amount of investigation work has taken place.*
    - *The information should oblige all involved actors to be active (not only the OEM).*
    - *If other actors (e.g. sub-suppliers, etc) are involved, then they should follow the same type of communication model.*

All requirements and processes regarding the Safety Alert System need to be decided on and agreed within a Working Party launched by ERA on this subject. Taking any sort of decisions, with such a big and costly impact on the industry, based on offline work and single voluntary workshops with limited time for discussions and traceability of results is not acceptable."

4.2 Other Inputs

4.2.1 Group of Representative Bodies

The Group of Representative Bodies (GRB), via the Community of European Railway and Infrastructure Companies (CER), made the following recommendations.

"Safety alert threshold: *Failure or risk of failure, having led or potentially leading to all kinds of accidents as defined in the RSD (incidents, accidents, serious accidents and significant accident). Such failure or risk of failure may concern more than one stakeholder.*

Railway accidents are defined as: *Damage likely to endanger the safety of:*

- *Any person.*
- *Trains.*
- *The infrastructure.*
- *The environment.*

Categorisation 1st level *(7 categories, but allow multiple choices):*

1. *Infrastructure (INF & SRT).*
2. *Energy (ENE).*
3. *Trackside Command Control and Signalling (CCS).*
4. *On-Board CCS (CCS).*
5. *Rolling stock (Loc&Pas).*
6. *Operation and traffic management (OPE).*
7. *Maintenance.*

Categorisation 2nd level*: for Infrastructure, Energy, Trackside and On-board CCS (both), Operation and traffic management use the corresponding TSI. For maintenance: no second level. For rolling stock, differentiate the types:*

- *Freight wagons.*
- *Locomotives.*
- *Passenger coaches.*
- *On-track machines/ work vehicles.*
- *Electrical Multiple Unit.*
- *Diesel Multiple Unit.*

Categorisation 3rd level *(only for rolling stock):*

- *Use GCU Appendix 9, Annex I categories for freight wagons (a): 1 - Running gear, 2 – Suspension, 3 – Brake, 4 - Wagon underframe and bogie frame, 5 - Buffing and draw gear, 6 - Wagon body, 7 - Loads and load units (ILU).*
- *Use EN15380 for the other rolling stock types (b-f).”*

“Additional remark:

- *The breakdown structure according to EN 15380 “Railway applications - Classification system for railway vehicles” is only available for railway rolling stock. GRB recommends ERA to request the corresponding breakdown structures for the other subsystems from CEN/CENELEC (RfS).*

Finally, we use the opportunity to reiterate hereby our call to consider the following constraints for the “Study into a long term safety alert system”:

- *Take into account the different juridical systems in Europe.*
- *Individuals reporting on occurrences or safety-related defects shall in no case be concerned with apportioning blame or liability.*
- *Businesses should not be endangered through confidentiality threads/breaches.”*

4.2.2 UNIFE

UNIFE, representing the supply sector, made the following comments:

- *“As defined in the Safety Directive, the safe operation of the railway systems lays the primary responsibility on the Railway Undertaking and Infrastructure managers, supported by the ECM in maintaining the railway equipment in their correct and safe state. Railway manufacturers are taking responsibility for their products as laid out in EU legislation on product liability.*
- *Any information on assumed safety deficiencies of technical components are strongly linked to the operational context of the specific case reported and shall not be treated separately. The context information is available only to RUs and IMs.*
- *The aim of industry internal process is to anticipate and prevent potential negative consequence to safety resulting from insufficient design.*
- *Manufacturer internal “safety processes” cannot usefully contribute to a harmonised approach at European level within the current legal framework (no design authority concept).*
- *National safety alert systems are already in place, implemented under consideration of national legal specifics and national needs.*
- *The new occurrence reporting shall not duplicate already existing reporting and shall not create any additional costs for the railway sector.*
- *In UNIFE’s view, additional reporting obligation for manufacturers is not necessary as the existing regime of information exchange between the railway supply industry, the operators and the authorities is established, is working and is sufficient.*
- *The long term aim, as with most EU legislation, should be to replace national systems with one EU–wide system.*

- *The industry is expected to enter safety-related deficiencies of our products in a database (or any other actor may do so). Anything related to a hazard shall be reported, any defect, non-conformity, malfunction, failure, error, misconfiguration…*
- *Everyone can access these data. Only NSA and NIB are not able to access the database, but in many countries RU and IM have reporting duties.*
- *This is a complete change of the reporting practice as of today, where the industry reports safety-related deficiencies to all concerned authorities and customers on a need-to-know basis.*
- *Harmonisation of data: for each reporting system the lowest level of detail to be reported needs to be defined:*
    - *How the database will be evaluated needs to be clearly defined:*
        - *Lessons learnt from the data reporting for the fulfillment of the Common Safety Targets.*
    - *Before creating new reporting categories, the problems with existing ones needs to be rectified:*
        - *Even after several years, the reporting discipline for existing systems is not harmonized: while some countries report hundreds of hazards per year, other countries have never reported a single one (e.g. EU Railway Safety Performance in 2014).*
- *The definition of the categories should be broadly agreed amongst all railway actors.*
- *The breakdown needs to be changed to be consistent with EN15380.*
- *If EN15380 is used, the breakdown across different types of trains is removed.*
- *Data Protection: if, as suggested by ERA, data can be entered in the system anonymously and would be public to everyone, rather than only to the directly concerned parties, it could cause considerable image-destructive effects on manufacturers, which should certainly be avoided:*
    - *Anonymous alerts should not be allowed, because of potential misuse.*
    - *Reports must not be broadcast to everybody, because only the affected parties shall be informed.*
- *Need to define why, when, by whom and how an alert should be raised and who will validate the information.*
- *Need to define rules on who can enter data but also who can access and read which bits should be detailed and agreed with all affected parties at the system specification phase*
- *Clear definition of actors IM, RU, ECM (with a correct legal reference) and their roles*."

It was noted that few UNIFE members chose to respond to the survey.

4.2.3 Freight Focus Group, NSA Network Meeting and Safety Alert Workshop

At the Freight Focus Group the Agency gave a presentation on the temporary SA solution and DNV GL on the long term SA solution. These presentations were of the overall programme of work and its objectives. The following points were made:

- The issue of "what happens next" was raised several times – meaning what happens after receipt of a safety alert.
- That it would be used if it fulfilled the requirements of ECM Regulation 445/2011 Art. 5(5) and Art. 5(2) and its Annex III.
- Concerns about the content and potential quality of the information reported were made.

At the Safety Alert Workshop and NSA Network Meeting DNV GL's gave a short presentation of non-rail applications of a safety alert system, and some general observations from the consultation exercise that was running at the time. The following points were raised relating to the long term SA solution (in no particular order):

- Need to define why, when, by whom and how an alert should be raised and who will validate the information.
- Need to define who can access and read SAs (and which bits).
- Clear definition of actors IM, RU, ECM (with a correct legal reference) and their roles.
- Cost.
- Coherence with other Agency standards and databases (e.g. rolling stock database, RINF, TSIs etc.).

Other contributions included:

- The possible use of General Contract of Use (GCU) for Wagons to inform the taxonomy.
- Operational failures are major contributors to safety degradation.
- The potential for the system to generate "spam".
- NSA role.

5 TASK C – STATEMENT OF REQUIREMENTS

5.1 Barriers to Success

The following two issues are seen, if not addressed, as major barriers to the success of a safety alert system.

5.1.1 Quantity of Safety Alerts

5.1.1.1 Problem

This issue has been raised by many survey respondents who have clearly indicated they believe a system that generates many hundreds or even thousands of safety alerts per annum will prove to be a burden to those who have to raise and respond to them, and potentially introduce substantial costs to the sector. It will also detract from the intent of quickly sharing information about new or increased significant risks if such messages are buried amongst more routine occurrences.

It will also impact on the structure of the system designed to manage them. Should the quantity of safety alerts be large a detailed categorisation/ taxonomy will be required to capture them, although such a taxonomy may enable the targeting of safety alerts to specific audience groups.

5.1.1.2 Possible Definition

To meet the twin objectives of developing a long term safety alert solution that is sensitive to the needs of its users, whilst being consistent with the stated objectives, a guideline definition is proposed for consideration:

A safety alert represents a notification or description of an event[10] that is novel or unexpected and therefore is likely to be poorly controlled. The event led to or had the potential to lead to a serious injury or fatality(ies) and is likely to exist outside the organisation suffering it.

In the context of a risk assessment, the event is likely to have been not identified at all, considered not credible or to have been assessed as having a frequency of occurrence so low as to make the resulting hazard(s) "*acceptable*".

A definition leading to a relatively small number of safety alerts is also consistent with other established and mature systems in other sectors.

5.1.2 Legal Implications

5.1.2.1 Problem

A number of potential problems have been raised on this topic, including:

1. Raising a safety alert that implicates others (equipment supplier or manufacturer for example).
2. Failing to raise a safety alert (or inaccuracies in the associated data) when doing so (accurately) may have prevented an accident.
3. Failing to act on a safety alert, and that inaction leading to an accident.
4. Interference with national laws or product liability laws.

[10] To be compliant with the revised RSD, the event in question must be reported only if it is a *safety risk relating to defects and construction non-conformities or malfunctions of technical equipment*

5.1.2.2 Discussion

The issues raised are valid, although in some cases circular. For example, an organisation may choose NOT to issue a safety alert relating to a defect of equipment in order to avoid legal action from a supplier. That defect of equipment may result in an accident within a second organisation, which may in turn choose to claim damages from the first organisation for NOT issuing a safety alert.

The position RAPEX takes (see Section 3.1.1.4) may be useful background here (where safety alerts are raised and are covered legally in doing so by the General Product Safety Directive).

It is thus proposed that the safety alert system is voluntary and considered to offer a supporting role; not as a replacement for existing national or product liability laws. One survey respondent stated:

- *"It should be legally settled in the* [Railway Safety] *Directive that information from the alert-system cannot be used in court to define liability or guilt."*

5.2 Mandatory vs Voluntary Obligations

Considering the requirement to share information amongst actors (including safety alerts), this is considered to be made **mandatory** by the revised RSD, which states:

> *"Railway undertakings, infrastructure managers and any actor … who identifies or is informed of a safety risk relating to defects and construction non-conformities or malfunctions of technical equipment, including those of structural subsystems, shall, within the limits of their respective competence … report those risks to the relevant parties involved, in order to enable them to take any necessary further corrective action to ensure continuous achievement of the safety performance of the Union rail system.*

For events that are not "*defects and construction non-conformities or malfunctions of technical equipment",* the requirement to report them is considered **voluntary**.

The revised RSD further states:

> *"The Agency may establish a tool that facilitates this exchange of information among the relevant actors, taking into account the privacy of the users involved, the results of a cost-benefit analysis as well as the IT applications and registers already set up by the Agency"*

Whilst ERA may establish such a [safety alert] tool, the use of that tool is **voluntary**, but noting that the requirement to report remains **mandatory** and therefore must be achieved by alternative means should the tool not be used.

5.3 End-to-End System Responsibilities and System Functionality

Considering the safety alert tool mentioned above, we have summarised the main components that it may contain, in an approximate chronological order in the table below. This table identifies responsibilities and functional requirements of an IT system to support it.

Mandatory/ voluntary in the table refers to the use of the tool (unless stated otherwise) with regard to it providing the functionality that the study has found is required of it.

Step	Responsible	Discussion/ Content	Reason	Mandatory/ Voluntary	Comment
1. Identification of a safety alert	Organisation suffering the event.	An agreed definition should be generated, a proposed example is presented.	Strong consensus for safety alerts to be manageable in number, and be urgent in nature.	Mandatory for the agreed definition of a safety alert to be applied when using this tool.	Consistent with mature systems in other sectors.
2. Publish a safety alert	Organisation suffering the event, informing the design authority (if known). IT system.	The organisation suffering the event knows the context and the facts related to it. If the design authority is a registered user, they should receive automatic notification. (It may be considered that a short time window is allowed for the design authority to respond to the proposed safety alert prior to it going live.)	Strong consensus in survey for the organisation suffering the event to publish it, and to inform the design authority.	Publication of a safety alert is mandatory, using this tool is voluntary.	Offering the design authority the opportunity to respond prior to going live may encourage more to register.
3. Safety alert publication timescales	Organisation suffering the event.	To be published when sufficient details are known for an accurate representation to be provided. If the safety alert is considered something that needs to be shared immediately, an interim notification may be raised and updated later.	To avoid inappropriate responses by persons receiving the safety alert.	Use of the guideline rules for publication timescales should be mandatory when this tool is used.	It is suggested that investigation of an event qualifying as a safety alert should be fast-tracked (due to its unexpected nature).

Step	Responsible	Discussion/ Content	Reason	Mandatory/ Voluntary	Comment
4. Safety alert context data	Organisation suffering the event. IT system.	Context data may include: • Time and date (fixed field, using standard calendar dating tools.) • Place (free text). • Location on railway (plain track, siding, station, etc. as free text). • Environmental conditions (free text). • Raised by whom (organisation name, identified by login details). • Organisation type (IM, RU, ECM, OEM/ Supplier or Vehicle Keeper) (maybe identified by login details, depending on how the user registers). • Other context pertinent information (free text).	Identified in many survey responses.	Use of the agreed format should be mandatory when using this tool.	

Step	Responsible	Discussion/ Content	Reason	Mandatory/ Voluntary	Comment
5. Safety alert taxonomy/ classification	Organisation suffering the event. IT system.	"Light touch" taxonomy/ classification for filtering purposes, based on TSIs: • Infrastructure (INF) (fixed field). • Safety in Railway Tunnels (SRT) (fixed field). • Command, Control and Signalling (CCS), divided into trackside and on-board (fixed field). • Energy (ENE) (fixed field). • Rolling stock (LOCPAS) (Broken down into freight wagons (WAG); Locomotives; passenger coaches; on-track machines and vehicles; electrical multiple units and diesel multiple units (fixed field). • Operation and traffic management (OPE) (fixed field). • Telematic Applications (TAF and TAP) (fixed field). • Maintenance (fixed field). • Other (free text).	Based on recommendation from GRB.	Use of the agreed taxonomy should be mandatory when using this tool.	A detailed taxonomy/ classification is not required if the quantity of safety alerts is small. However, it is useful for alert filtering and statistical analysis.

Step	Responsible	Discussion/ Content	Reason	Mandatory/ Voluntary	Comment
6. Safety alert content	Organisation suffering the event. IT system.	Free text fields. Possible subject areas: • Subject matter. • Part number/ identification detail. • Problem identified. • Action taken (optional). • Contact detail (individual or organisational). • Supporting details (possibility to upload photographs or other related information). Reporting of facts only.	General consensus is for free text. Fixed text fields are unlikely to be identifiable for events that qualify as safety alerts.	Use of the agreed content and data should be mandatory when using this tool.	Consistent with mature systems in other sectors.
7. Safety alert publication language	Organisation suffering the event. IT system.	English, with a copy in national language. The use of a lexicon of common terms (such as UIC) is possible although of limited use for free text fields.	Strong consensus that the main reporting language should be English.	Reporting of main details should be in a common language. Mandatory.	Translation services may be required.
8. Distributing a safety alert	Organisation suffering the event. IT system.	Option to forward the safety alert to selected recipients. It may be required to distribute a safety alert within the originators Member State only. This option should be available.	There may be a requirement to forward to NSA or NIB, indicated is some survey responses.	Forwarding to others is Voluntary.	
9. Validating a safety alert	Organisation suffering the event.	As Step 3.	As Step 3.	It is a mandatory requirement when using this tool that the originator validates (as far as possible) the details of the safety alert prior to publication.	There is no external organisation able to provide this function at present (without imposing significant costs on the sector).

Step	Responsible	Discussion/ Content	Reason	Mandatory/ Voluntary	Comment
10. Receiving a safety alert	Organisation wishing to receive a safety alert. IT system.	Select safety alerts to receive: • All safety alerts. • Those within the same actor group, Step 4. • Those within selected asset groups, Step 5.	Decision on which safety alerts to receive is made by each organisation.	Voluntary. It is up to the receiving organisation to select which alerts to receive.	
11. Safety alert notification method	IT system	E-mail notification to user's registered e-mail address. Link to bulletin board containing details.	Strong consensus for this option in the survey.	It should be a mandatory requirement for e-mail to be the method of notification.	Consistent with mature systems in other sectors.
12. Reply to safety alert	Organisation receiving a safety alert. IT system.	To ask for clarification, or to add further detail.	To avoid inappropriate action being taken (a concern in the survey). To add detail if the content of the safety alert is already known.	Voluntary	This is different to the action that may be taken on receipt of a safety alert.
13. Share safety alert actions	Organisations raising and receiving a safety alert. IT system.	The action taken option (in Step 6) should be accompanied with a share response and receive information feature. This would allow organisations to share their solution with those who asked to receive information on that safety alert. This may also enable monitoring of the success of the safety alert system.		Voluntary	

Table 1 Safety Alert Specification

5.4 Other Considerations

5.4.1 Registration and Administration

Each organisation registering to use the system should do so with a monitored e-mail address. This will be used by the IT system to direct safety alerts. Access should be password controlled. It is proposed that access rights are 'read only' and 'read and write'. It is up to the organisation registering to receive alerts to make a judgement about who is given access rights and at what level.

Which organisations are allowed access to the safety alert system was not considered as part of this project, and should be considered by the Agency or whoever grants access rights.

A mechanism should exist to report misuse of the system and to withdraw safety alerts. This role is likely to be fulfilled by the Agency.

5.4.2 Anonymity and Commercially Sensitive Information

An organisation raising a safety alert should be named on that safety alert; raising safety alerts anonymously was strongly opposed.

There should be no requirement to release commercially sensitive or confidential information on a safety alert, either relating to the organisation raising a safety alert or when describing the circumstances if it involves other organisations. What constitutes such information should be a decision made by the organisation raising the safety alert.

5.4.3 Action taken on receiving a Safety Alert

The decision on what action should be taken on receiving a safety alert is a decision for that organisation to make based on an assessment of the level of exposure. It is likely this will be governed by their risk management systems, the requirements of EU and national legislation, other priorities and the level of safety management system supervision by their NSA.

5.4.4 Interface with Other Systems

It has been proposed that the safety alert system is voluntary and considered to offer a supporting role at the EU level; not as a replacement for existing national or product liability laws.

Further, during this work existing railway information and safety alert systems have been identified ranging from informal systems operating by e-mail to formal systems with feedback loops such as NIR – Online.

For those operating an informal e-mail based system, this proposed solution may provide some structure to the reporting of safety alerts. Allowing the use of national language (Step 7 in the table above) and distribution with a single Member State (Step 8) may thus facilitate internal safety alert reporting.

For those operating formal systems, it is proposed that events presently being logged be considered in the context of safety alerts, and the definition of such events when agreed. A small sub-set may qualify for reporting as safety alerts to the wider railway sector, which could be achieved by copying those details into a safety alert system, or implementing a function to automatically duplicate them in such a system.

6 LIST OF ACRONYMS

Abbreviation	Meaning
Agency	European Railway Agency
ATM	Air Traffic Management
CER	Community of European Railway and Infrastructure Companies
CSI	Common Safety Indicator
DNV GL	Det Norske Veritas Germanischer Lloyd
ECM	Entity in Charge of Maintenance
EIM	Association of European Rail Infrastructure Managers
ERAIL	European Rail Accident Information Links
EU	European Union
GB	Great Britain
IM	Infrastructure Manager
IOGP	International Association of Oil & Gas Producers
NIB	National Investigating Body
NIR	National Incident Reporting
NRB	Network of Representative Bodies
NSA	National Safety Authority
NTSB	National Transportation Safety Board
ONRSR	Office of the National Rail Safety Regulator
RAPEX	Rapid Alert System for dangerous non-food products
RSD	Railway Safety Directive
RSSB	Rail Standards and Safety Board
RU	Railway Undertaking
SADIE	Safety Alert Database and Information Exchange
UNIFE	Union des Industries Ferroviaires Européennes
USA	United States of America

APPENDIX A
TEMPLATE FOR RAPEX SYSTEM

RAPEX system	
Key Facts	
System name	The Rapid Alert System for dangerous non-food products (RAPEX)
System owner	European Commission
Contact / information references	• http://ec.europa.eu/consumers/consumers_safety/safety_products/rapex/ • Interview with Michael Porter (UK RAPEX contact point manager) 15 September 2015) • Email Correspondence with Michael Porter (UK RAPEX contact point manager 15/17th September) • Commission guidelines for notification of dangerous products (2004/905/EC) • EU Commission RAPEX Guidelines (PowerPoint) presentation (supplied by Michael Porter), dated 2007. • Email Correspondence with European Commission RAPEX Team Leader (Mr. André Berends); 25-29th September 2015. (This was after attempting to contact RAPEX contact points in Denmark and Netherlands who referred us to the Commission for some items). • Email Correspondence with Victoria Griffiths (a colleague of Michael Porter) on a separate system (ICSMS) for consideration as part of a 3rd sector (not pursued as no Safety Alert mechanism).
Description	Allows the participating countries and the European Commission to exchange information on products posing a risk to health and safety of consumers and on the measures taken by these countries to do away with that risk (excludes food, pharmaceuticals and medical devices).
System characteristics	
Detailed description	
Under Directive 2001/95/EC - the General Product Safety Directive (GPSD), RAPEX was established in order to: • provide a rapid information exchange mechanism between Member States and the Commission on preventive and restrictive measures taken in relation to consumer products posing a serious risk to the health and safety of consumers; • inform Member States and the Commission of the conclusions of follow-up action taken by national authorities with regard to information exchanged through RAPEX. RAPEX consists of several complementary components, which are crucial for effective and efficient operation. The most important are: • the legal framework, which regulates how the system operates • the on-line application ('RAPEX application'), which allows Member States and the Commission to exchange information rapidly via a web-based platform (this was described as being very easy to	

use and intuitive, highlighting gaps in mandatory information, indicating tasks to be performed and language selection options).

- the RAPEX Contact Points network, which consists of the single RAPEX Contact Points responsible for operating RAPEX in all the Member States
- the national RAPEX networks established in all Member States, which include the RAPEX Contact Point and all the authorities involved in ensuring consumer product safety
- the Commission RAPEX Team in the department responsible for the GPSD, which examines and validates documents submitted through RAPEX, and maintains and ensures correct operation of the RAPEX system
- the RAPEX website (www.ec.europa.eu/rapex), which provides summaries of RAPEX notifications
- RAPEX publications, such as RAPEX statistics, RAPEX annual reports and other promotional materials

There are two types of RAPEX notification:

- Member State prepares and submits to the Commission a RAPEX notification
- Where a product poses a life-threatening risk, and/or there have been fatal accidents and in other cases where a RAPEX notification requires emergency action by all Member States, the notifying Member State prepares and submits to the Commission a RAPEX notification classified in the RAPEX application as 'Article 12 notification requiring emergency action'.

In the context of RAPEX Market Surveillance Authorities are organizations that have a responsibility to identify defects that pose a serious consumer risk. Market Safety Authorities typically have a regulatory / enforcement role relating to products within a Member State, covering a wide geographic area. Market Surveillance Authorities that receive a notification have the responsibility for ensuring that companies take appropriate action in response to a notification. RAPEX contact points record what action has been taken by recipients of notifications.

Scope

- Scheme applies to preventive and restrictive measures taken in relation to consumer products
- measures ordered by national authorities and measures taken 'voluntarily' by producers and distributors are reported via the system
- Every Friday, based on this information provided by the national authorities, the Commission publishes a weekly overview of latest alerts.
- Consumer products are defined as:
    - 'products intended for consumers' – products that are designed and manufactured for and made available to consumers;
    - 'migrating products' – products that are designed and manufactured for professionals, which are likely, however, under reasonably foreseeable conditions, to be used by consumers.
- Product must pose a serious health and safety risk to consumers as defined by a risk assessment conducted by an authority of a Member State.
- System is at an EU level; member states need their own systems to collect and issue information to respective RAPEX contact points (at a national level).

Notification criteria

Member States have a legal obligation to notify the Commission when the following four notification criteria are met:

- the product is a consumer product
- the product is subject to measures that prevent, restrict or impose specific conditions on its possible marketing or use *(i.e. the product is regulated in some way and can fail to comply with regulations)*
- the product poses a serious risk to the health and safety of consumers,
- the serious risk has a cross-border effect.

Taxonomy / information

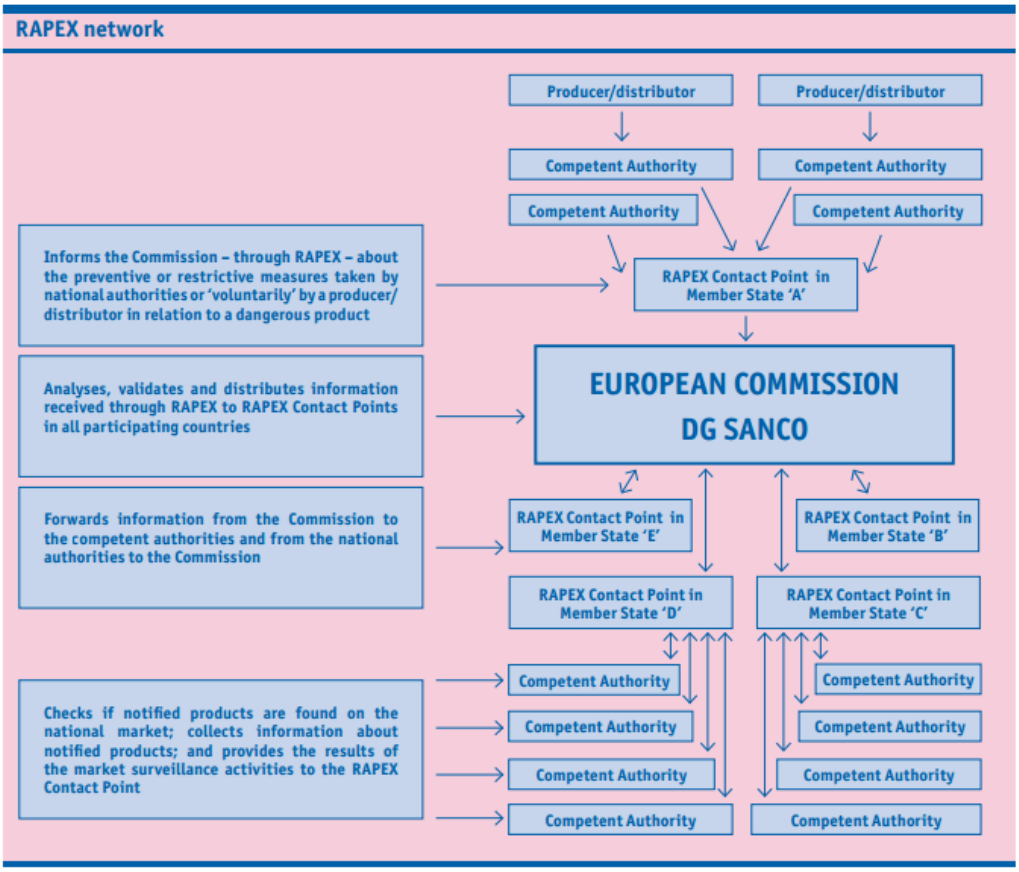
There are notification and reaction forms, the RAPEX guidelines has detailed templates for each. To summarise data collected, for each notification reference, the following information is included:

- Risk level
- Product user
- Notifying country
- Product category
- Product
- Brand
- Name
- Type/number of model
- Batch number/Barcode
- OECD Portal Category
- Description
- Country of origin
- Counterfeit
- Risk type
- Risk description
- Measures adopted by notifying country
- Products were found and measures were taken also in
- Images

Specific screenshots of the RAPEX application, including fields not included on the public version are included in the table below.

Information flows

The following process sets out the process and information flow arrangements of the RAPEX network.

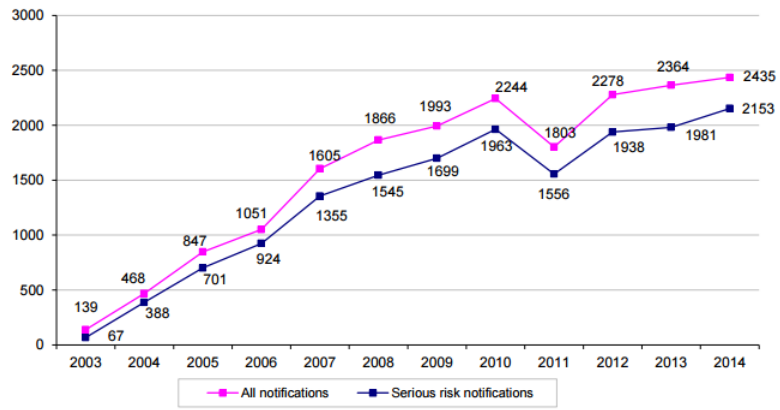


http://ec.europa.eu/consumers/consumers_safety/safety_products/rapex/reports/docs/rapex_annual-report_2007.pdf

Number of reports

The following extract indicates a total of 2,400 notifications per annum are made (circa 200 per month).

Graph 1 — Total number of notifications (including professional products and products posing other risks than health and safety): evolution 2003-2014



http://ec.europa.eu/consumers/consumers_safety/safety_products/rapex/reports/docs/rapex_report_2014finalweb_en.pdf

Timescales / Priorities

RAPEX guidelines set out a number of timescales for the different actions it requires. Many of these are prefaced with the requirement to act 'as soon as possible'. The following is a summary of the guidelines that go into considerable detail:

Member states:

- Originator notification: send 'Article 12 notification' = 10 days (requiring emergency action = 3 days) after decision to implement obligatory measures or receipt of information on 'Voluntary measures'.
- Recipient reaction follow-up = 45 days after receipt of notification (20 days for emergency notification), to identify whether product was on market or to perform an additional risk assessment.
- Recipient reaction (after finding product on national market, after completion of a risk assessment with different results) = 5 days (emergency notification = 3 days).

Commission:

- Validate information (emergency action = 3 days, article 12 notification = 5 days, notification for information = 10 days)
- Validate reaction (emergency action = 3 days, article 12 notification = 5 days, notification for information = 10 days)

Other than the timescales set out above, the only material difference in the response taken to an Article 12 (serious) and Article 12 (emergency) notification is that telephone is used to confirm receipt of the notification.

Measures

Preventive and restrictive measures can be taken in relation to dangerous products either on the initiative of a producer or a distributor who placed and/or distributed it on the market ('voluntary measures') or as ordered by an authority of a Member State competent to monitor the compliance of products with the safety requirements ('obligatory measures'). The measures completed by a Member State are reported through RAPEX. Examples of measures include (cited in art. 8 GPSD):

- Ban the supply and the offer to supply
- Withdrawal from the market
- Recall from consumers
- Destruction of the product

Responsibilities

In addition to responsibilities set out under 'detailed description', the following is relevant:

- Both obligatory and voluntary measures are notified through RAPEX by the national RAPEX Contact Point, which is responsible for all information transmitted through the system by its country
- Before an authority of a Member State decides to submit a RAPEX notification, it always performs the appropriate risk assessment in order to assess whether a product to be notified poses a serious risk to the health and safety of consumers and thus whether one of the RAPEX notification criteria is met.

Language

RAPEX notifications on the website are in English. However countries participating in RAPEX can send notifications in EN, FR, ES, DE and IT. Translation of the original notification into English is undertaken

by the Commission, although some Member States undertake their own translation, or only issue the notification in English.

The internal RAPEX application has different language options so users can select their own language and complete the notification in their preferred language.

Upon receipt of a Notification, Member States also provide the public with information in the national languages on products posing a serious risk to consumers and on measures taken to address this risk. Such information can be distributed via the internet, on paper and by electronic media, etc. Administration and language issues are an issue of competence of the Member States.

Access / Confidentiality

Under Article 16(1) of the GPSD, the public has the right to be informed about dangerous products posing a risk to their health and safety. There are various provisions that enable parts of a notification to remain confidential and are subject to examination by the commission. Feedback indicates that this is if there is a desire to pursue a prosecution or other legal action. Market Surveillance Authorities decide what is submitted for inclusion on the notification, although the RAPEX contact point and ultimately the Commission can request that changes be made.

The RAPEX application (accessible only to Contact Points and the commission) contains all personal details (names, contact details, importer and distributor etc) and these are not issued on the public website.

Liabilities

The primary responsibility is for the economic operator (manufacturer / distributor) to ensure that it only places safe goods on the market and this is laid down in European legislation. If a problem is detected, the company must take measures to solve this situation and inform relevant authorities. The authorities have the responsibility to have a proper market surveillance system in place with the powers to allow them to intervene on unsafe products found on the market.

Whether a product has been notified in RAPEX or not is independent of this general principle. Note in this respect that the following criteria apply for notifications in our rapid alert system.

Member State Market Surveillance Authorities may consult with a company involved/implicated in a notification for information to help support the creation of the notification. The Market Surveillance Authority may share results of the Risk Assessment. Manufacturers may disagree with the Risk Assessment and the manufacturer may seek to suspend the notification; this is done via the Commission.

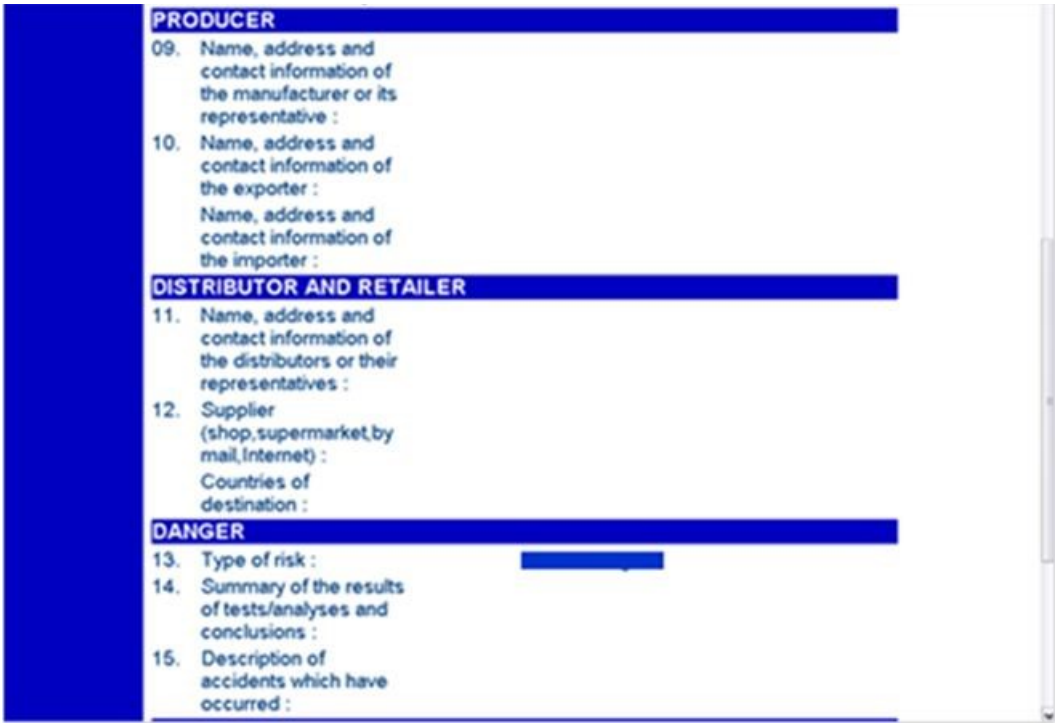
RAPEX success story

"For 10 years the EU Rapid Information system (RAPEX) has been guarding European consumers against un-safe non-food products. In 2013 a total of 2,364 measures were taken by EU Member States. This figure indicates a 3.8% rise in alerts compared to 2012 and continues the increasing trend which has been apparent since the establishment of RAPEX in 2003.

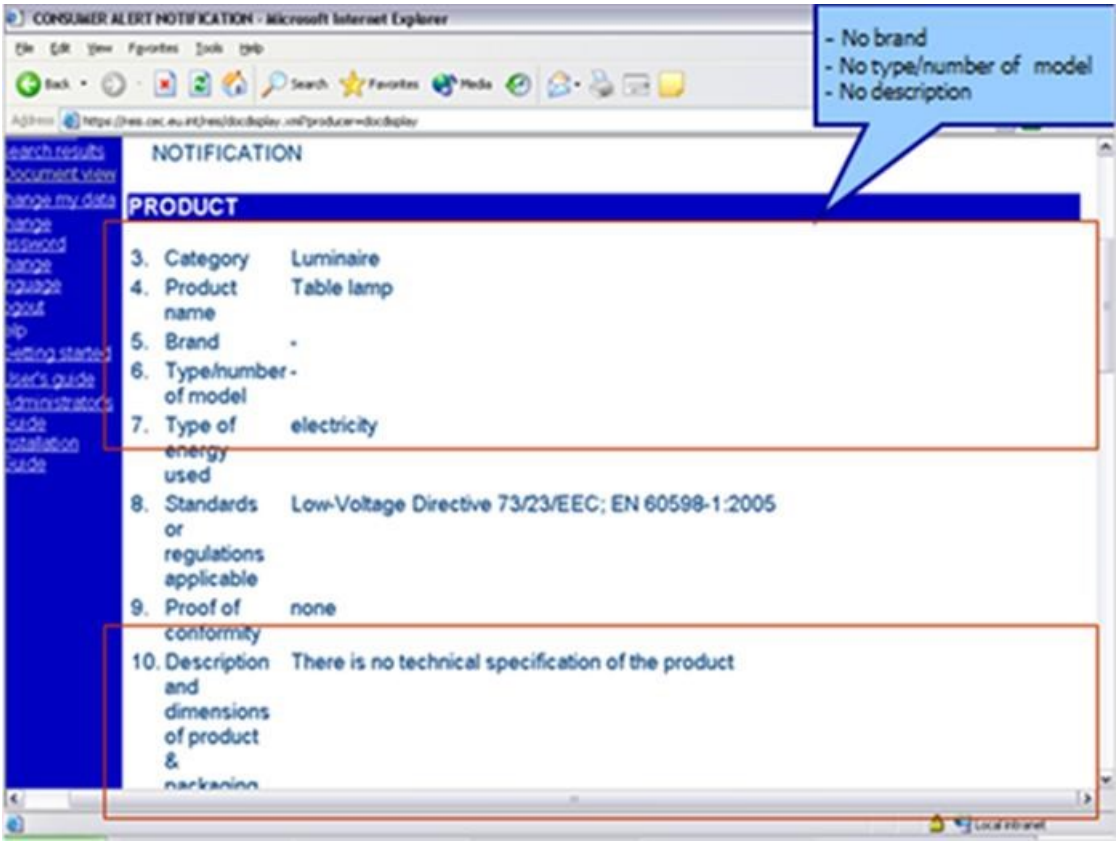
"RAPEX shows that Europe is vigilant and cares for the safety of our 500 million citizens. It is a success story of cooperation between national authorities and EU institutions for the benefit of our citizens. The 10th anniversary of RAPEX is testimony to the ever increasing importance that enforcement authorities give to co-operation in ensuring a safer Single Market." – said Neven Mimica, EU Commissioner for Consumer Policy."

http://europa.eu/rapid/press-release_IP-14-311_en.htm

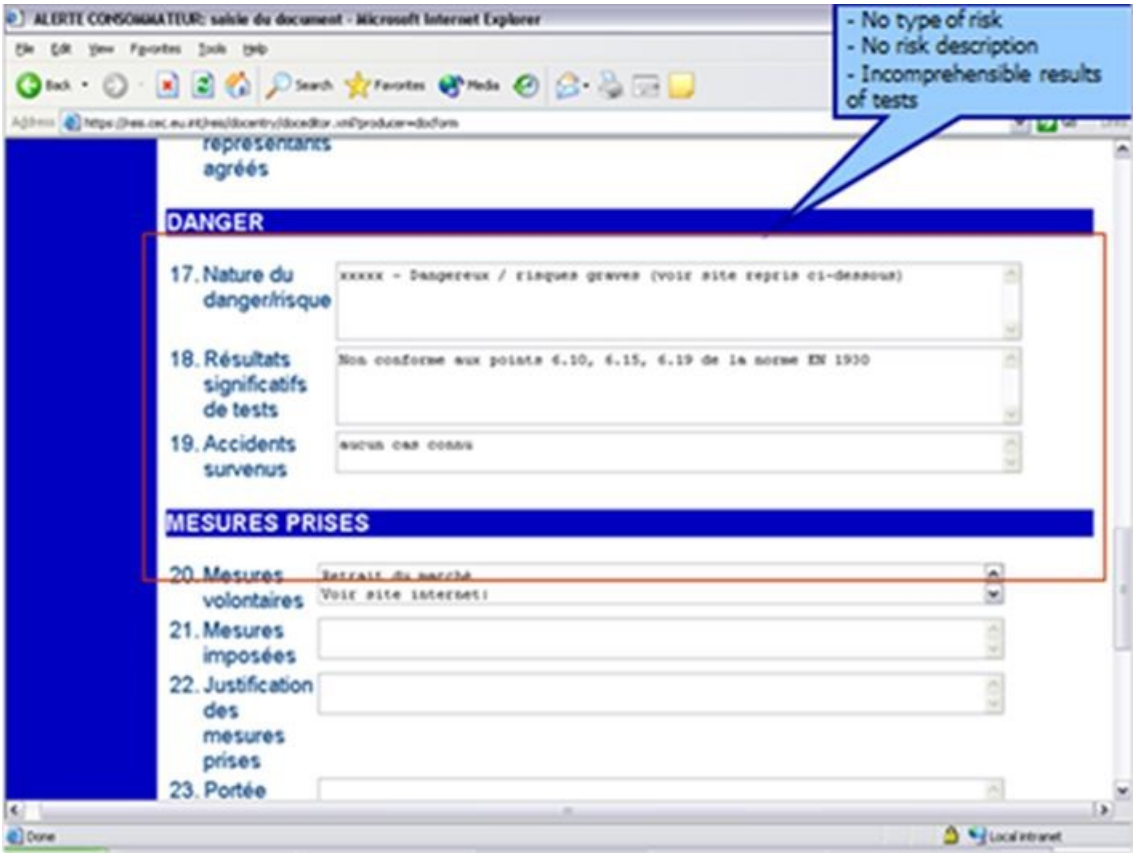
RAPEX application (software used by Commission and RAPEX contact points).

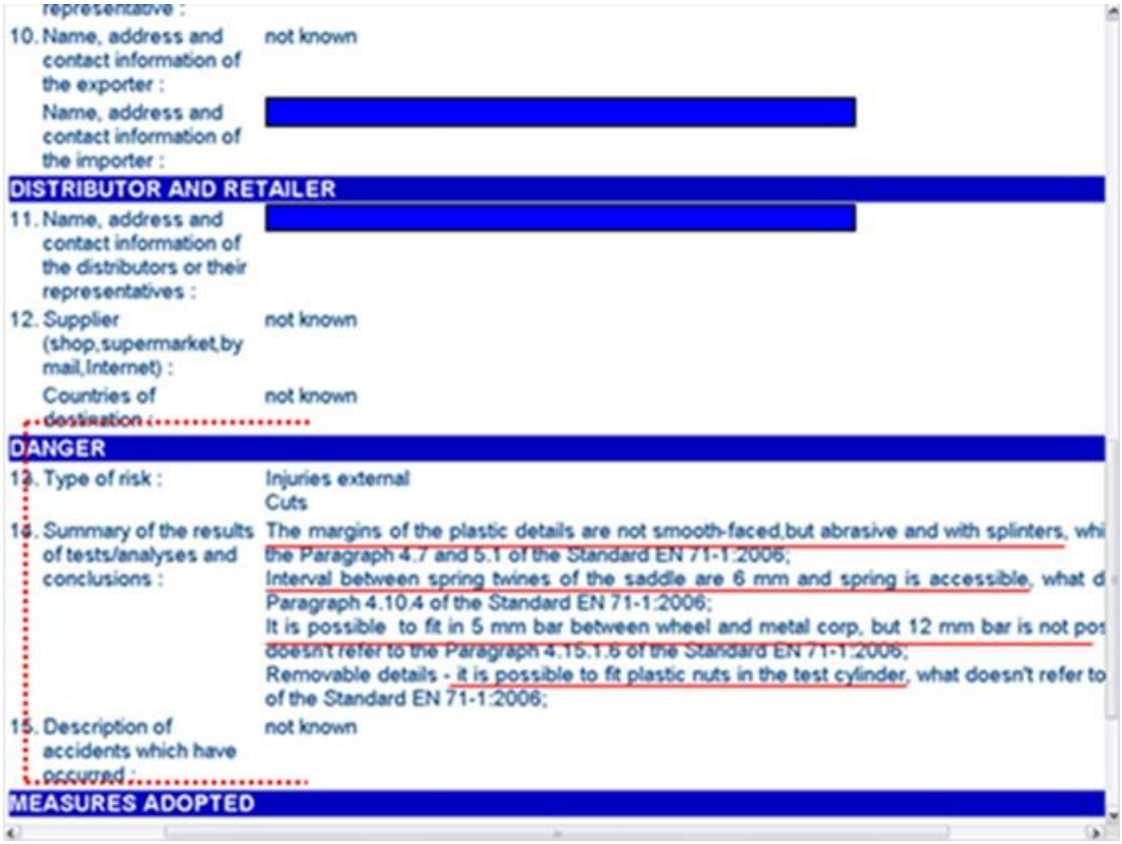


Product identification

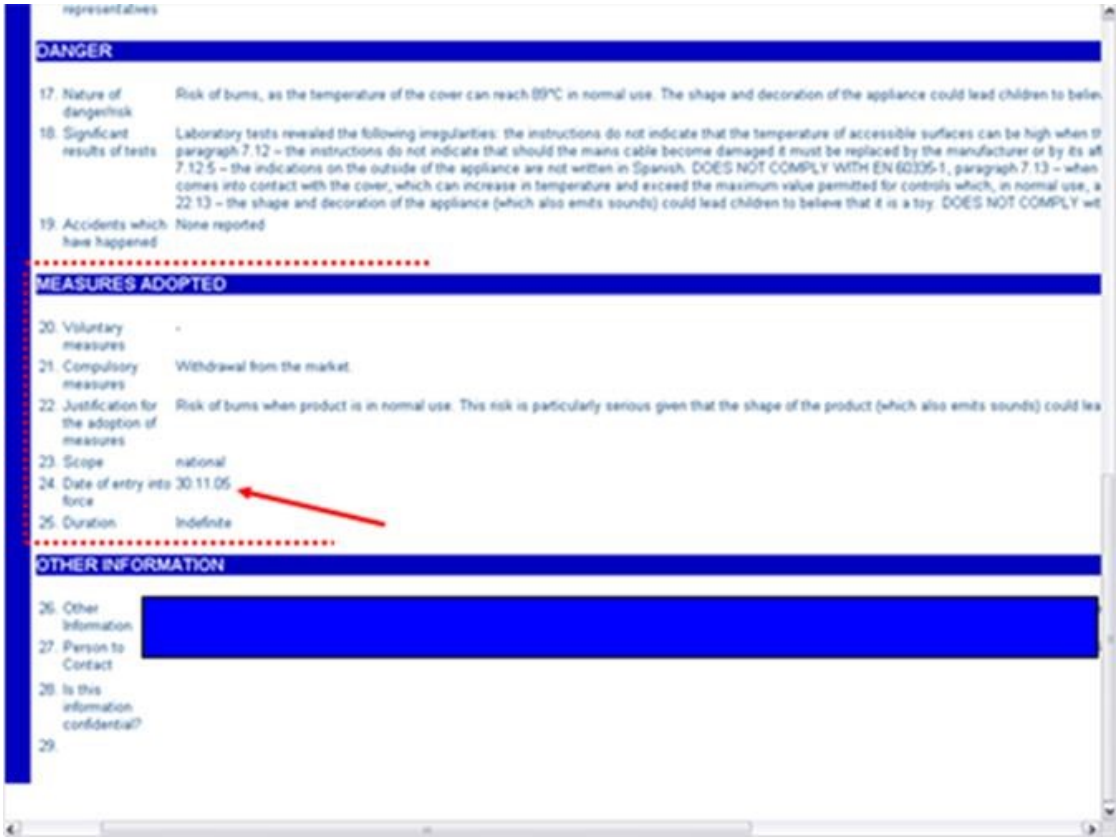


Risk Description





Delays



representatives

DANGER

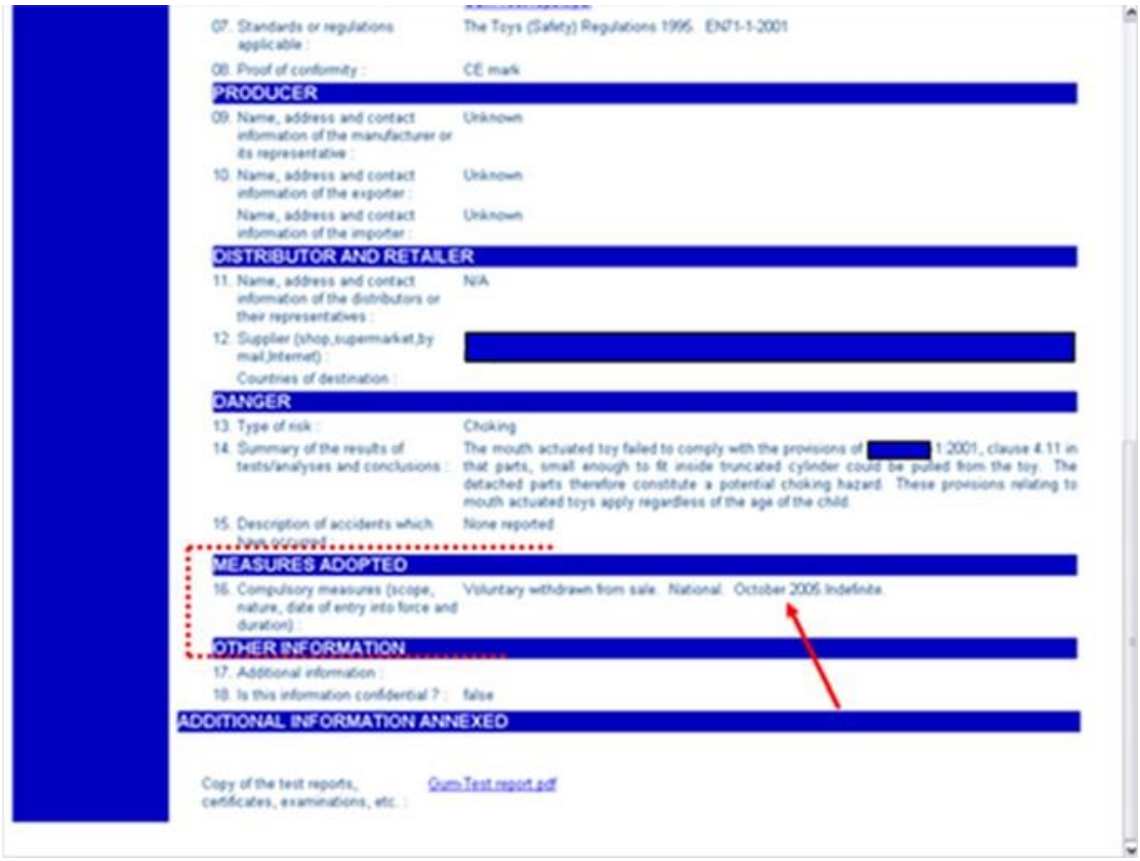
17. Nature of danger/risk	Risk of burns, as the temperature of the cover can reach 89°C in normal use. The shape and decoration of the appliance could lead children to belie
18. Significant results of tests	Laboratory tests revealed the following irregularities: the instructions do not indicate that the temperature of accessible surfaces can be high when t paragraph 7.12 – the instructions do not indicate that should the mains cable become damaged it must be replaced by the manufacturer or by its aft 7.12.5 – the indications on the outside of the appliance are not written in Spanish. DOES NOT COMPLY WITH EN 60335-1, paragraph 7.13 – when comes into contact with the cover, which can increase in temperature and exceed the maximum value permitted for controls which, in normal use, a 22.13 – the shape and decoration of the appliance (which also emits sounds) could lead children to believe that it is a toy. DOES NOT COMPLY wit
19. Accidents which have happened	None reported

MEASURES ADOPTED

20. Voluntary measures	-
21. Compulsory measures	Withdrawal from the market.
22. Justification for the adoption of measures	Risk of burns when product is in normal use. This risk is particularly serious given that the shape of the product (which also emits sounds) could lea
23. Scope	national
24. Date of entry into force	30.11.05
25. Duration	Indefinite

OTHER INFORMATION

26. Other information	[redacted]
27. Person to Contact	
28. Is this information confidential?	
29.	



07. Standards or regulations applicable :	The Toys (Safety) Regulations 1995. EN71-1-2001
08. Proof of conformity :	CE mark

PRODUCER

09. Name, address and contact information of the manufacturer or its representative :	Unknown
10. Name, address and contact information of the exporter :	Unknown
Name, address and contact information of the importer :	Unknown

DISTRIBUTOR AND RETAILER

11. Name, address and contact information of the distributors or their representatives :	N/A
12. Supplier (shop,supermarket,by mail,Internet) :	[redacted]
Countries of destination :	

DANGER

13. Type of risk :	Choking
14. Summary of the results of tests/analyses and conclusions :	The mouth actuated toy failed to comply with the provisions of [redacted] 1:2001, clause 4.11 in that parts, small enough to fit inside truncated cylinder could be pulled from the toy. The detached parts therefore constitute a potential choking hazard. These provisions relating to mouth actuated toys apply regardless of the age of the child.
15. Description of accidents which have occured :	None reported

MEASURES ADOPTED

16. Compulsory measures (scope, nature, date of entry into force and duration) :	Voluntary withdrawn from sale. National. October 2005 Indefinite.

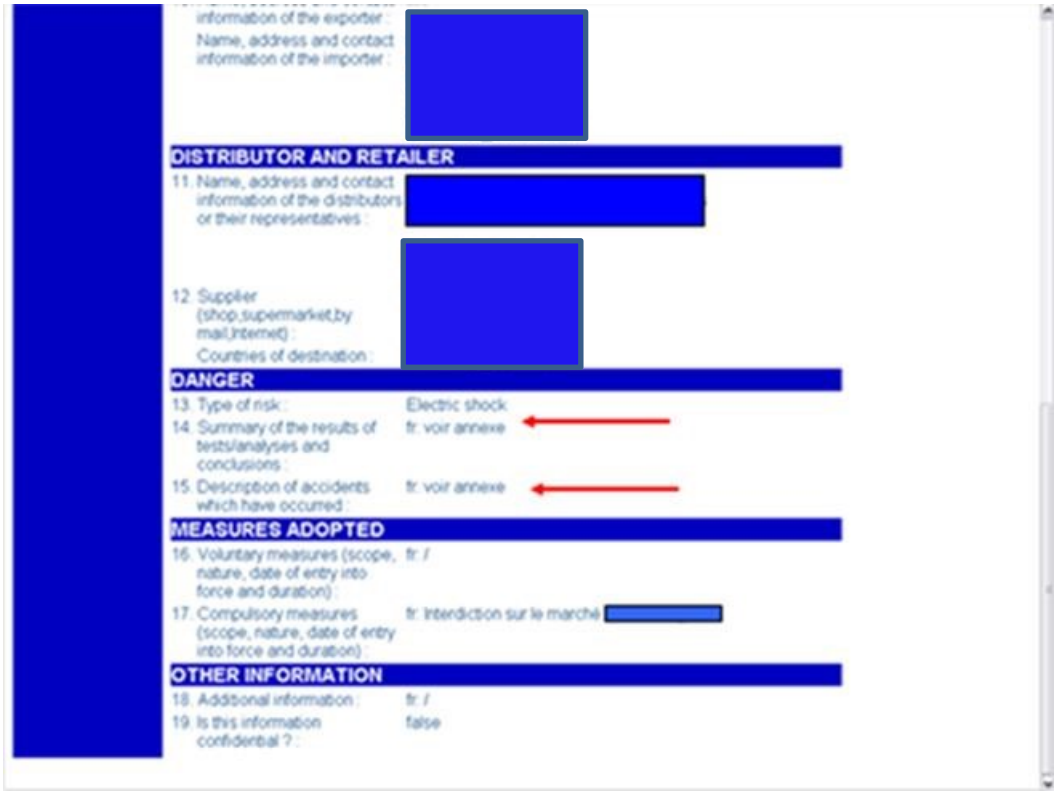
OTHER INFORMATION

17. Additional information :	
18. Is this information confidential ? :	false

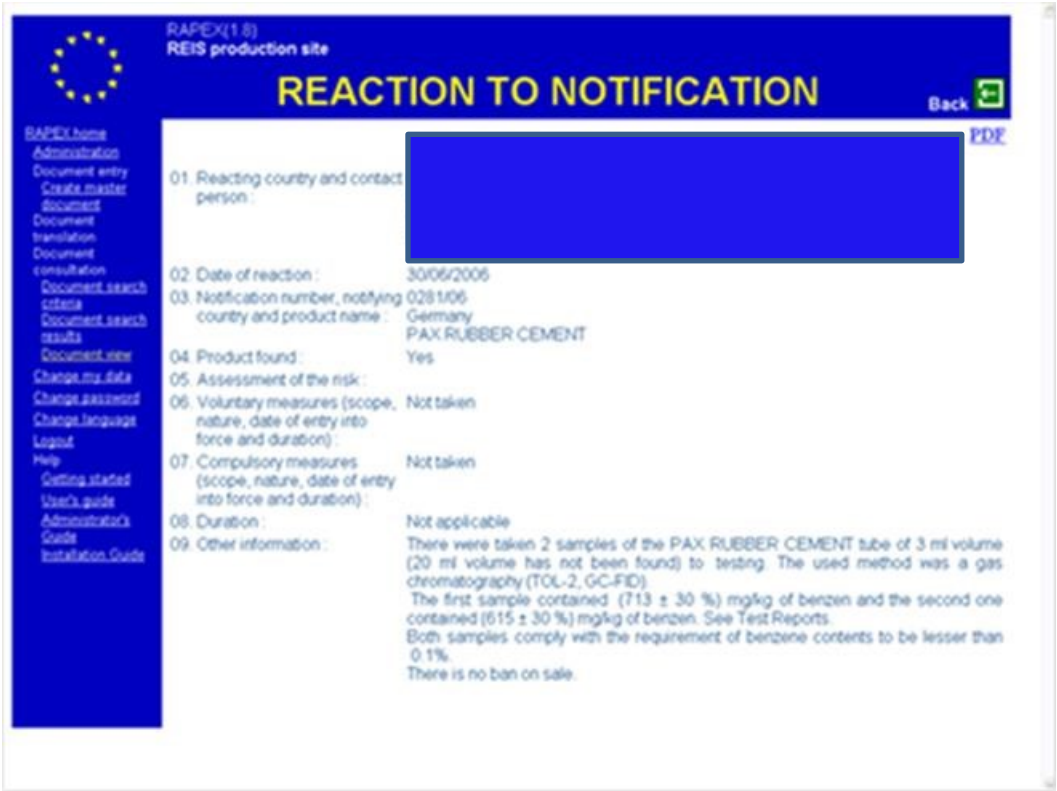
ADDITIONAL INFORMATION ANNEXED

Copy of the test reports, certificates, examinations, etc. :	Gum Test report.pdf

Annexes



Reaction to notification



APPENDIX B
TEMPLATE FOR EUROCONTROL / SKYBRARY SAFETY ALERTS BOARD

EUROCONTROL	
Key Facts	
System name	Safety Alerts Board
System owner	EUROCONTROL
Contact / information references	▪ http://www.eurocontrol.int/articles/safety-alerts-board ▪ EUROCONTROL Safety Alerts Concept document (2014-09-30_NOM-SAF_Safety Alerts Concept_v1) as provided by Richard Lawrence (EUROCONTROL Safety Alert Coordinator) ▪ Email exchange with Richard Lawrence (EUROCONTROL Safety Alert Coordinator – 30 September 2015)
Description	The EUROCONTROL Safety Alert Service is part of the safety information exchange initiative. The objective of the Safety Alert service is to inform aviation safety professionals about an identified issue or problem by sharing 3 types of Safety Alert messages: • Safety Warning Messages (red alert) - an issue of immediate safety concern. • Safety Reminder Messages (blue alert) - a known issue which requires renewed awareness. • Request for Support Messages (brown alert) – an issue for which the community is seeking a solution. The EUROCONTROL Safety Alert Service is overseen by the Safety Improvement Sub-Group (SISG) which is part of the EUROCONTROL Safety Team.
System characteristics	
Detailed description	
The Vision for the EUROCONTROL Safety Alert Service is to establish: *A vibrant network that delivers urgent safety information, to everyone concerned from everyone who knows, via a EUROCONTROL value-added mechanism.* The objective of the EUROCONTROL Safety Alert Scheme is to rapidly spread a safety finding, a safety concern or a request for help. The emphasis is on: • Initiation (triggering) by a Network stakeholder – the Network itself alerts with the facilitation of the Network Manager. This is different from issuing alerts by the NM. • The instantaneous distribution of safety critical information. • NM is the guardian of the process and not a source of the alerts. The system addresses the following user needs: • Be notified of safety issues • Notify EUROCONTROL about an emerging safety issue that warrants the distribution of a Safety Alert (subscribers and recognised bodies only). • Request support from the ATM community about a safety issue I am experiencing	

(subscribers and recognised bodies only)

The Safety Alerts are delivered upon subscription but can also be freely accessed via SKYbrary.

EUROCONTROL processes these inputs, investigating the relevant standards, validating with experts in different fields and aggregating the results with already known experiences; then it sends the information back to the network in the form of a Safety Alert.

The EUROCONTROL Safety Alert system resides as part of EUROCONTROL's Network Manager Safety Knowledge Management Landscape as defined below in Figure 21.

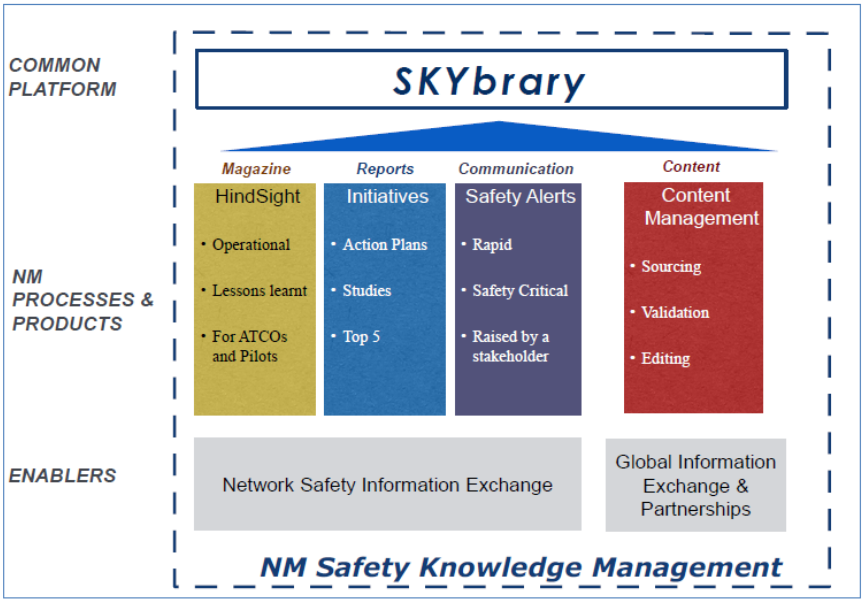


Figure 21 – EUROCONTROL Safety Alert system landscape

Principles

There are a number of principles for the scheme as reported by EUROCONTROL:

- **Content** - Safety Alerts are based around facts; interpretation and conjecture are avoided.
- **Criteria** - each Safety Alert needs to satisfy a set of guidance criteria.
- **Purpose** - EUROCONTROL Safety Alerts are issued for the purposes of safety improvement only - they are not used to convey 'political' messages, nor are they regulatory in nature.
- **Confidentiality** - A single point of focus (through the appointed NM/SAF Safety Alerts Coordinator) is maintained to ensure confidentiality and de-identification of data and information as may be appropriate to each message.
- **Authenticity** - The validity and veracity of each Safety Alert is assured through appropriate coordination and consultation with appropriate EUROCONTROL Agency/NM expertise or other expert judgment.
- **Speed** - Safety Alerts are dealt with promptly and, within the constraints of necessary research and consultation, are issued as expeditiously as possible.
- **Feedback** - The originators of each Safety Alert are provided with direct feedback (this is particularly important for Request for Support Messages.

Criteria for issuing

The EUROCONTROL Agency issues a Safety Alert in the case of a reported actual or potential safety critical situation that can (re)occur in different local circumstances and different locations. The triggers are:

• Occurrence scenarios.

• Circumstances, contributory or causal factors.

• Changes in the systems (human, equipment and procedures) and the environment that may affect the risk.

CRITERIA FOR ISSUING SAFETY WARNING MESSAGE (SWM) Red Alert

The EUROCONTROL Agency issues a Safety Warning type of Safety Alert (SWM) (sparingly) in the case of situations that under the worst credible environmental/circumstantial conditions for which the operation is designed and approved, there is:

- No other barrier left to recovery from such a situation than 'see and avoid'.
- More than the 'see and avoid' barrier to recovery, but for which there are no existing efficient International Civil Aviation Organization (ICAO) preventive provisions.
- More than the 'see and avoid' barrier to recovery and for which there are existing efficient ICAO preventive provisions, but these provisions are not universally implemented.

CRITERIA FOR ISSUING SAFETY REMINDER MESSAGE (SRM) Blue Alert

The EUROCONTOL Agency issues a Safety Reminder type of Safety Alert (SRM) in the case of situations that under the worst credible environmental/circumstantial conditions for which the operation is designed and approved there is more than the 'see and avoid' barrier to recovery and for which there are existing, efficient and universally applied ICAO/EASA preventive provisions. In this case, the Safety Alert raises awareness of, and properly reminds the subscriber of, the existing provisions.

CRITERIA FOR ISSUING REQUEST FOR SUPPORT MESSAGE (RSM) Brown Alert

The EUROCONTROL Agency issues a Request for Support type of Safety Alert (RSM) when approached by a stakeholder that is looking for solutions (from the wider aviation community) to a particular safety problem faced by the organisation.

Information flows

The processes and steps used to generate EUROCONTROL Safety Alerts are described below.

- **Notification** - subjects for Safety Alerts are proposed by any relevant ATM/aviation stakeholder groups (e.g. Safety Improvement Sub Group (of the Safety Team); Airspace Procedures Design Sub Group (APDSG), other internal domains e.g CNS, airport division and external groups such as airlines, ANSPs, associations etc). EUROCONTROL draft the Safety Alert based on information provided by the originator and their own initial research.
- **Internal Coordination/consultation** - The Safety Alerts Coordinator ensures appropriate internal coordination and consultation with the appropriate Domain experts (or groups of experts). Subject matter experts within EUROCONTROL are consulted along with Safety specialists. The Safety Alert is confirmed with originator to make sure it fits their purpose and then consult in-house before going to external consultation with the associations etc.
- **External Coordination** - The Safety Alerts Coordinator ensures appropriate external coordination of Safety Alerts with bodies such as ICAO (Paris Office), EASA, IATA, IFALPA/ECA and IFATCA. In addition, depending on the topic, other aviation industry

stakeholders such as ATM or aircraft component manufacturers are consulted on occasions. The number of iterations a Safety Alert is subjected to is kept to a minimum, especially with Safety Warning Messages.

- **Distribution and Publication** – Safety Alerts are distributed to registered Safety Alert subscribers. Safety Alerts are also made available on the Safety Alerts section of SKYbrary. On occasions, distribution of Safety Alerts may be limited only to EUROCONTROL groups such as the Safety Team and its associated sub groups, e.g. SISG; these Alerts might not necessarily be uploaded onto SKYbrary.
- **Follow-Up Activities** - All Safety Alerts are featured in later editions of the ATC Controller-oriented safety magazine, "HindSight". In addition, as part of the overarching safety knowledge management function, some Alerts provide the base material for articles to be included on SKYbrary or in other publications as appropriate. Feedback collected in response to Request for Support Messages is consolidated and compiled into a report that is sent to the originator, posted on SKYbrary and shared with other stakeholder groups as appropriate.

Taxonomy / information (Generic Safety Alert template & guidance)

The following structure outlines the generic elements that are reflected in Safety Alerts:

- **Synopsis** – one or more of the following elements will be reflected:
  - Describing in summary the rational.
  - Providing the reported factual data.
  - Giving the generic description of the safety related situation or occurrence scenario.
- **Existing Provisions** – lists/describes the existing ICAO/EASA/EUROCONTROL etc provisions that are pertinent to the topic of the Safety Alert.
- **Analysis** – one or more of the following elements will be reflected:
  - The actual or potential operational and safety effects and consequences.
  - The contributory factors.
- **Suggested Solution**(s) – (used sparingly) one or more of the following elements will be reflected:
  - The existing preventive provisions.
  - Existing good practices.
  - Suggested solutions that will be listed in the following order and priority (adopted from ICAO Human Factors Digest No10, 1993):
    - The first level of action is to eliminate the hazard, thereby preventing a future accident. In the case of the runaway collision accident, for example, a decision could be made that in airports having parallel runways, one runways should be used for take-offs and the other for landings…These are the safest decisions but they may not be the most efficient.
    - The second level of action is to accept the hazard identified and adjust the system to tolerate human error and reduce the possibility of an occurrence.
    - The third level of action involves both accepting that the hazard can be neither eliminated (Level One) nor controlled (Level Two) and teaching operational personnel to live with it. Typical actions here include changes in personal selection, training, supervision, staffing and evaluation…

- **Feedback** - Feedback (all Safety Alert types) and support (for Request for Support Messages) requested and points of contact.
- **Further Reading** – SKYbrary articles and wider aviation reference materials.

Timescales / Priorities

There are no formal timescales for the issuance of a Safety Alert. Correspondence with EUROCONTROL confirmed that they expect to get a Safety Warning Message (Red alert) out within 5 days of receipt of information, likely sooner. The emphasis is on obtaining a balance between ensuring sufficient external consultation and speed.

Number of Safety Alerts

The earliest EUROCONTROL Safety Alert issued through the system was in December 2003. In the intervening years 78 Safety Alerts have been issued via Skybrary, the breakdown is as presented in Figure 22. This averages at approximately 6.5 alerts per year (assuming 12 years of operation to end 2015).

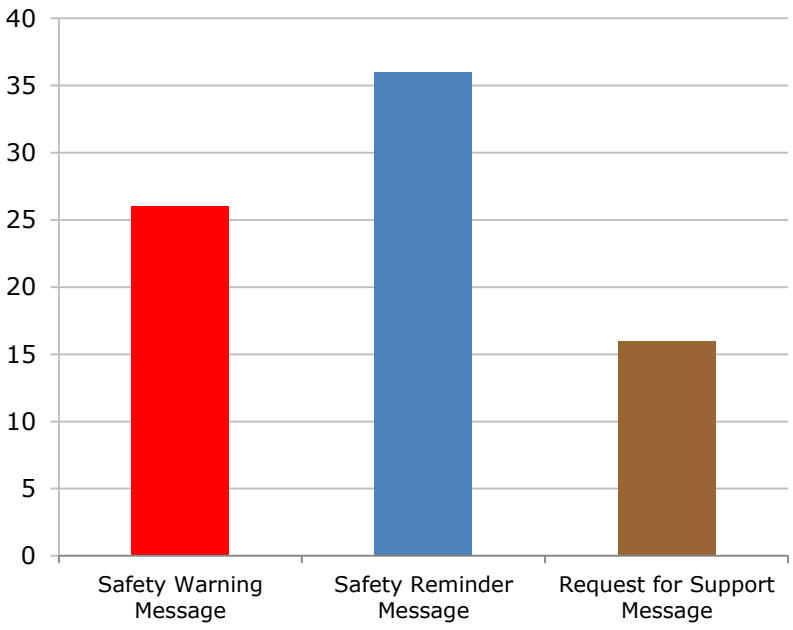


Figure 22 – Breakdown of EUROCONTROL Safety Alerts issued since December 2003

Target audience

The target audience (subscribers) of EUROCONTROL Safety Alerts are ANSPs (and FABs), Aircraft Operators, Aerodrome Operators, National Authorities, Manufacturers and 'Aviation Safety Professionals'. Currently (2015), there are 6,000 Safety Alert subscribers from many aviation industry sectors from across Europe and Worldwide.

Language

All Safety Alerts are prepared and only issued in English.

Access / Confidentiality

One of the principles for Safety Alerts is "Confidentiality" - A single point of focus (through the appointed NM/SAF Safety Alerts Coordinator) is maintained to ensure confidentiality and de-

identification of data and information as may be appropriate to each message. As a consequence identifiable information is removed from Safety Alerts and there is a very limited circulation of those involved/implicated within EUROCONTROL.
Liabilities
There is an approved disclaimer on the published versions. EUROCONTROL aim not to be prescriptive in what the Safety Alert states. The focus is on establishing the facts and aim to point out what the rules or regulations (e.g. ICAO, EASA) stipulate or what other organisations remark about a particular issue in a neutral way. The intention is to avoid the sentiment of "EUROCONTROL says…" to avoid going above/beyond its remit.

APPENDIX C
TEMPLATE FOR STEP CHANGE IN SAFETY'S 'SAFETY ALERT' SYSTEM

Step Change in Safety: Safety Alerts	
Key Facts	
System name	Safety Alerts
System owner	Step Change in Safety
Contact / information references	https://www.stepchangeinsafety.net/safer-conversations/safety-alerts Conference call with Jamison Amott and Gillian Simpson, 10th November 2015.
Description	Web and email subscription based safety alert system to share information about safety incidents.
System characteristics	
Detailed description	
The purpose of the Incident Alerts Database is to facilitate the sharing of safety information and improve the lateral learning across the industry. The database is NOT intended to be a comprehensive database of incidents that have occurred in the industry and is not aimed at providing statistical information. The system evolved from a previous incarnation called SADIE (Safety Alert Database and Information Exchange) that produced Safety Alerts, however evidence indicated that these were having limited impact as the content was not sufficiently informative and companies were drafting alerts as they felt they had to.	
Scope	
UK focused and generally offshore North Sea.	
Notification criteria	
The decision on whether to issue a safety alert resides with the company that manages the risk (Duty Holder), supplier or regulator.	
Taxonomy / information	
The following sets out the information fields as a safety alert template	

Step Change Safety Alert Template

STEP CHANGE IN SAFETY

Alert Title

Minor hydrocarbon release during calibration of pressure transmitter

What leaked and where from? E.g.: "Lube oil leak from compressor system open vent"

Incident Date

August 2011

The date on which the incident occurred, not when this form was completed

Location Type

Fixed production installation

E.g. Floating/Fixed Production, Drill Rig, Vessel, etc.

Specific Equipment Involved

Topsides hydrocarbon piping and instrumentation

Give as much detail as possible about the equipment involved

Description of What Happened

During a task to calibrate a pressure transmitter, the instrument technician identified the isolation vlave from the scaffold and incorrectly assumed that it was in the isolated state. He opened up a bleed to drain liquids and initially drained approximately 5 litres of fluid from the line to the bucket. The flow stopped and then after approximately 20 seconds, hydrocarbons (mostly gas) at 60bar were released from the half inch line for a maximum of 20 seconds. The technician closed the valve and made the area safe. Two gas detectors in the area came into low alarm (11% and 15%). The total quantity of hydrocarbon released has been estimated at 0.833kg.

Be as detailed as possible. Give equipment history and approximate time(s) of actions/occurrences related to the incident

Cause of Incident

Incorrect isolation of pressure transmitter

Build from OIR/12 checklist

Incident Consequences

Hydrocarbon release

Include the release itself and any subsequent emergency actions/dangerous occurrences

Lessons Learned

- The need to verify adequate isolations are in place before breaking containment on a system.

Include a few bullet points clarifying what was learned from the incident

Recommendations/Actions

- All routines with personal mechanical isolations to be updated to include the requirement for the Area Operator to verify the location of the personal mechanical isolation and isolation tag at site check.
- Review the current personal isolation training programme to ensure that all elements of personal mechanical isolations are adequately understood and covered.
- Time out for safety to be held with all instrument technicians across all shifts to roll out personal isolation standards, correct use of earth straps, placement of isolation tags and limitations of personal isolations.

Include a few bullet points stating any recommendations/actions that will be made/taken as a result of the lessons learned

Contact Details (Optional)

If you would like your submission to be anonymous, leave this section blank

Number of reports

The system was launched in 2011 and updated the Safety Alert Database and Information Exchange system. There are 485 safety alerts in the system, although this extends to include dates before 2011, i.e. safety alerts produced before the new system were added on 12 May 2011 (hence why there is a spike for 2011). There are around 25 – 100 safety alerts raised annually; see **Figure 23**.

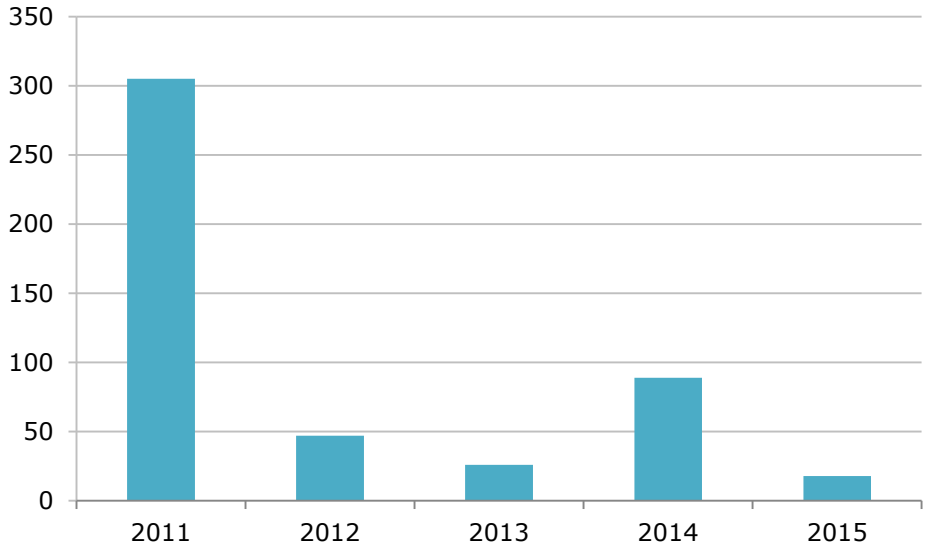


Figure 23 Step Change in Safety's Safety Alerts

Timescales / Priorities
There are no timescale / priority parameters for the safety alert system
Measures
The safety alert form contains a Recommendations/Actions section which is published on the web and to all subscribers.
Responsibilities
Companies are responsible for ensuring the accuracy and validity of the information that they choose to communicate through the system.
Language
All safety alerts are in English.
Access / Confidentiality
Companies raising a safety notice can choose to keep their identities from publication. Contact details are not published.
Liabilities
The emphasis for Safety Alerts is to focus on the 'who and why' rather than the 'who and what'. Typically the initiating company remains anonymous. Alerts created by the regulator (HSE in UK) can be reproduced on the Step Change website; these alerts can name companies and suppliers involved.

APPENDIX D
IOGP SAFETY ALERTS

IOGP Safety Alerts	
Key Facts	
System name	IOGP Safety Alerts
System owner	International Association of Oil & Gas Producers
Contact / information references	http://safetyzone.iogp.org/SafetyAlerts/alerts/main.asp
Description	Web and email alert based system for raising safety alerts. Exploration and Production organisations, regulators and suppliers are invited to submit safety alerts for publication.
System characteristics	
Detailed description	
The aim of the system is to provide a mechanism to allow organisations to share information on incidents they have experienced which either led to, or had a significant potential to lead to, major injury or fatality. As a minimum, a description of the incident is enough to allow an organisation to establish whether their own HSE-MS is sufficiently robust to prevent a similar type of incident occurring.	
Scope	
Safety alerts relating to offshore (upstream production), terminals (mid-stream) and downstream (e.g. refining, transmission and distribution) are raised in the system. The system has been developed to be flexible in terms of the kinds of safety alerts that can be raised, leaving it to the author to define the contents. IOGP undertake various checks on information entered into the safety alert. All safety alerts are publically available via http://safetyzone.iogp.org/SafetyAlerts/alerts/main.asp To subscribe and receive safety alerts requires very basic validation (to check that the subscribed is not spam), from which point new notices can be received.	
Taxonomy / information	
There are web and word versions of the Safety Alert form (which form the taxonomy). Information submitted via these forms contributes directly to the safety alert (with the exception of 1 – contact details). Word version is reproduced below: DATE FORM SUBMITTED: _____ **1. CONTACT:** **The contact details you give us will remain strictly confidential. If you wish to provide contact details on the published report use item 1.A. below.** YOUR NAME: _____ COMPANY: _____ POSITION IN COMPANY: _____	

PHONE:

EMAIL:

1.A. CONTACT DETAILS - ***OPTIONAL*:**
(to appear on published report)

2. THE INCIDENT

DESCRIPTIVE TITLE:

DATE AND TIME:
(when the incident occurred)

COUNTRY AND REGION:
(where the incident actually occurred)

INCIDENT DESCRIPTION:

WHAT WENT WRONG? *(main root causes)*

CORRECTIVE ACTIONS AND RECOMMENDATIONS: *(actions being taken to prevent recurrence and lessons learned)*

FUNCTION – tick ONE ONLY:

☐ Exploration ☐ Drilling
☐ Production ☐ Other

ACTIVITY– tick ONE ONLY:

☐ Construction, Commissioning, Decommissioning
☐ Diving, Subsea, ROV
☐ Lifting, Crane, Rigging, Deck operations
☐ Maintenance, Inspection, Testing
☐ Office, Warehouse, Accommodation, Catering
☐ Seismic / Survey operations
☐ Transport - Air
☐ Transport - Land
☐ Transport - Sea, incl. Marine activity
☐ Unspecified - other

CAUSE – tick ONE ONLY:

- ☐ Assault or Violent act
- ☐ Caught In, Under or Between
- ☐ Confined Space
- ☐ Cut, Puncture, Scrape
- ☐ Explosion / Burn
- ☐ Exposure Electrical
- ☐ Exposure Noise, Chemical, Biological, Vibration
- ☐ Falls from Height
- ☐ Other
- ☐ Overexertion, Strain
- ☐ Pressure release
- ☐ Slips and Trips (at same height)
- ☐ Struck by
- ☐ Water related, Drowning

LOCATION (On/offshore):

- ☐ Onshore
- ☐ Offshore

LOCATION – tick ONE ONLY:

- ☐ Camp ie survey, seismic geophical operations
- ☐ Construction/rig repair yard
- ☐ Fixed Installation
- ☐ Floating Production Storage Unit
- ☐ Floating Production Storage & Offloading Unit
- ☐ Floating Storage Unit
- ☐ Mobile Drilling Unit
- ☐ Office, support base, heliport
- ☐ Shuttle Tanker
- ☐ Specialist vessel e.g. diving, construction, survey
- ☐ Supply base, warehouse, workshop, dock
- ☐ Terminal
- ☐ Fixed Installation

OTHER CATEGORIES – tick as many as apply

- ☐ Human Error
- ☐ Failure of Permit to Work System
- ☐ Weather Related
- ☐ System/Equipment Failure
- ☐ Structural Failure

IOGP REPORTING CATEGORIES – tick as many as apply
(used for email registration/distribution system)

- ☐ Air transport
- ☐ Electrical
- ☐ Fall
- ☐ Structural Failure (Onshore)
- ☐ Vehicle incident
- ☐ Caught between
- ☐ Explosion/burn
- ☐ Struck by
- ☐ Structural Failure (Offshore)

PICTURES:
Pictures should be provided electronically, preferably as either .gif or .jpg files, and named 'img1', 'img2', etc. Please contact Wendy Poore at IOGP in advance if sending in pictures by email.
(number pictures or diagrams then enter the number below and any related text to the right)

pic. number	*text*

3. IOGP USE ONLY:

AUTHORISED BY: _____

DATE: _____

Number of reports

There are 236 separate Safety Alerts that have been published on the IOGP website, the earliest dating back to 1976. The number of Safety Alerts issued over the years is as set out below. This data is based on the safety alerts available on their IOGP website.

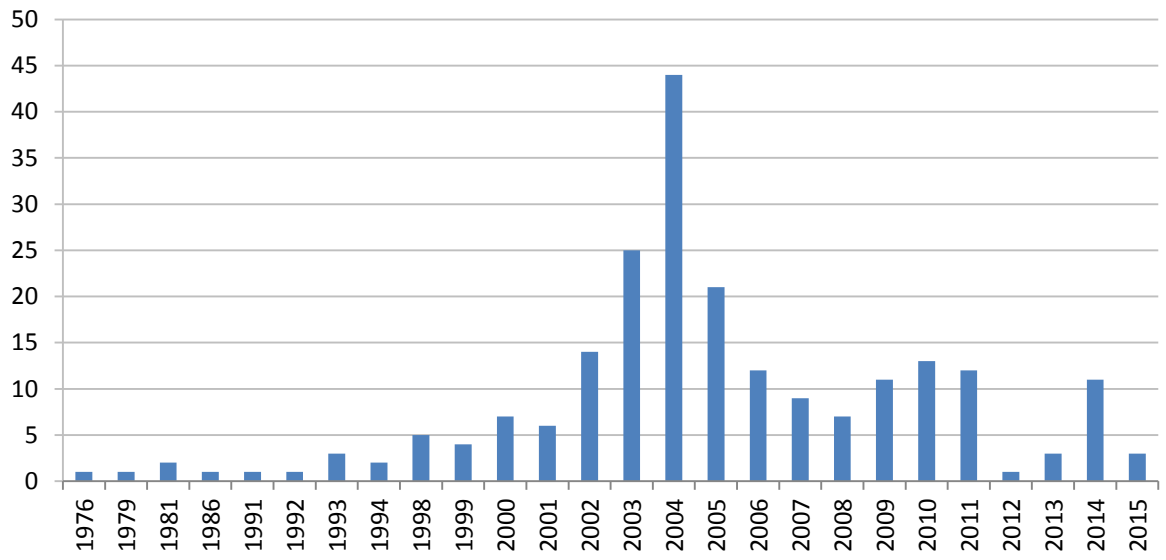


Figure 24 - Number of IOGP Safety Alerts issued (continuous data from 1998 onwards)

Timescales / Priorities

There are no timescale / priority parameters for the safety alert system

Measures

The safety alert form contains a Corrective Actions and Recommendations section which is published on the web and to all subscribers.

Responsibilities

Companies are responsible for ensuring the accuracy and validity of the information that they choose to communicate through the system.

Language

All safety alerts are in English.

Access / Confidentiality

Companies raising a safety notice can choose to keep their identities from publication. Contact details are not published.
Liabilities
Each safety alert is accompanied with the following disclaimer which effectively serves to reduce IOGPs liability for publication of information in a safety alert that is incorrect. *Whilst every effort has been made to ensure the accuracy of the information contained in this publication, neither the IOGP nor any of its members past present or future warrants its accuracy or will, regardless of its or their negligence, assume liability for any foreseeable or unforeseeable use made thereof, which liability is hereby excluded. Consequently, such use is at the recipient's own risk on the basis that any use by the recipient constitutes agreement to the terms of this disclaimer. The recipient is obliged to inform any subsequent recipient of such terms.* *This document may provide guidance supplemental to the requirements of local legislation. Nothing herein, however, is intended to replace, amend, supersede or otherwise depart from such requirements. In the event of any conflict or contradiction between the provisions of this document and local legislation, applicable laws shall prevail.*

APPENDIX E
GB NATIONAL INCIDENT REPORTING

NIR / Rail Notices	
Key Facts	
System name	National Incident Reporting (NIR)
System owner	RSSB / Network Rail
Contact / information references	https://www.nir-online.net/ Reporting High Risk Defects (GE/RT8250) http://www.rssb.co.uk/rgs/standards/GERT8250%20Iss%202.pdf
Description	NIR-Online is an application that used by the railway community to raise, distribute and manage NIRs relating to GB Railway Group Standard GE/RT8250.

System characteristics

Detailed description

Reporting High Risk Defects (GE/RT8250) mandates the arrangements for reporting urgent high risk defects for the GB industry covering rail vehicles to a centralised database, so that the information is available to other users of similar rail vehicles and vehicles fitted with similar components, systems or subsystems. The database, known as NIR-Online, is available for use by all rail industry stakeholders.

With NIR-online users can:

- Raise and update an NIR (with reports containing 'Complete', 'Initial', 'Interim' and 'Concluding' statuses)
- Comment on NIRs (e.g. whether notice is applicable to your operation, actions taken)
- Subscription to be notified of NIR
- Search 4,500 NIRs from 1990 to 2015 using various parameters
- System permits uploading of photographs and supporting documentation
- Save searches (so as to repeat key searches)
- See actions that relate to their companies under 'My Actions'.

Scope

The NIR system is principally interested in communicating urgent high risk rolling stock defects, covering:

a) Items of mechanical and electrical equipment, including portable/transportable infrastructure plant and work equipment.

b) Plant and work equipment used for, or in association with, the construction, alteration, renovation, repair, maintenance or inspection of railway infrastructure.

c) Equipment used on stations to move people or materials.

d) Items of equipment associated with the maintenance of rail vehicles and plant & machinery.

e) Other rail vehicles operating on infrastructure outside the scope of Railway Group

Standards (for example, in depots).

f) Possession-only rail vehicles.

Track, electrification and signal & telecommunications equipment are specifically excluded.

Notification criteria

There are no explicit 'notification criteria' or equivalent in the relevant Group Standard, however the following text from the Group Standard is relevant:

'Railway undertakings shall share details of high risk defects with other railway undertakings operating similar rail vehicles and vehicles fitted with similar components, systems or subsystems (for example, through user working groups or technical committees). This is especially important where common systems such as AWS and TPWS are involved. […] Where a safety-related defect has the potential to pose an urgent high risk to other operators of similar rail vehicles and vehicles fitted with similar components, systems or subsystems, the railway undertaking shall use NIR-Online'

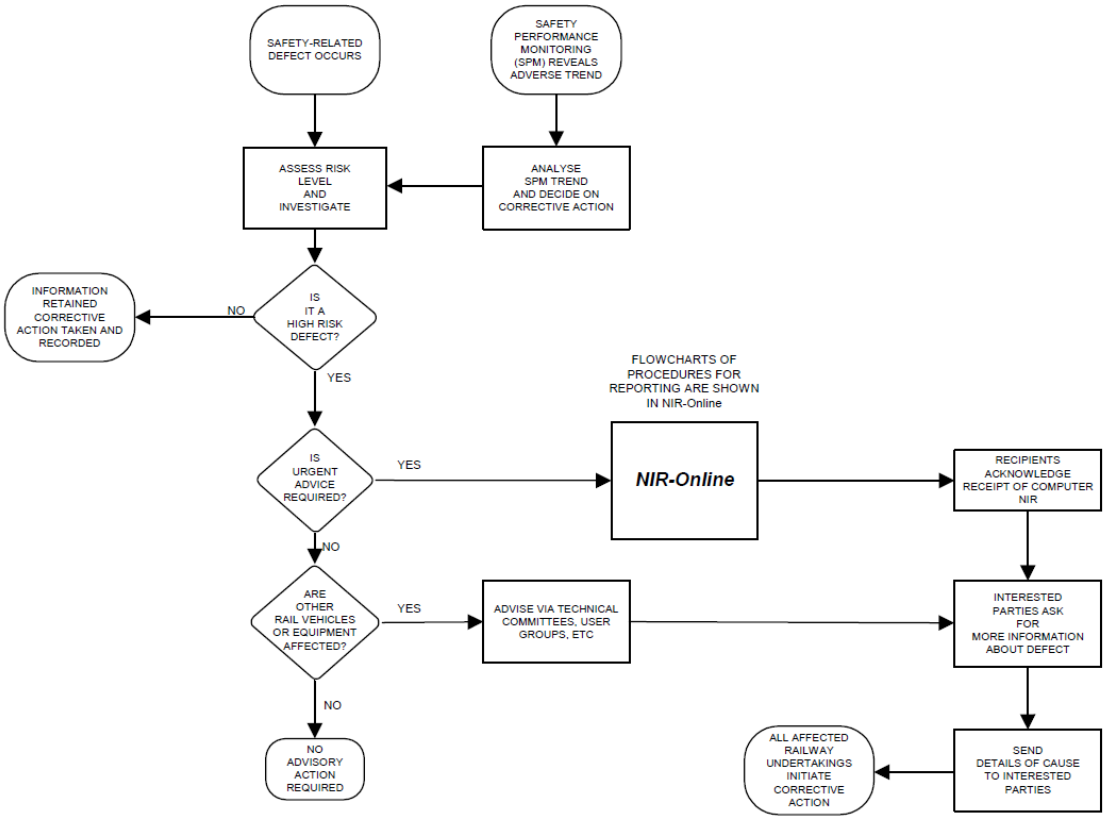
Taxonomy / information

NIR online is a relatively sophisticated website with various data fields. To raise an NIR, the following fields need to be completed (contents in brackets are a DNV GL description of what data is in the field):

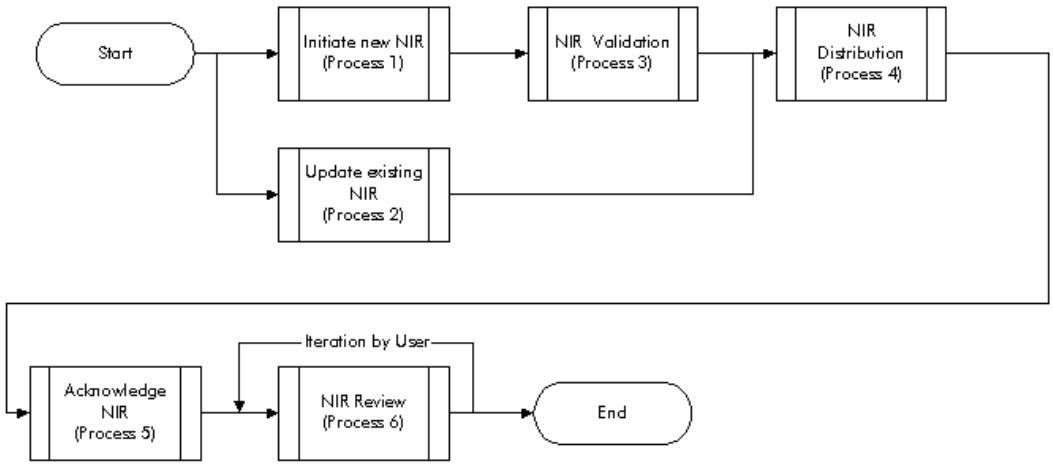
- Title: (e.g. Class 43 engine fire)
- Raised by: (full name and contact email and employing co)
- Defect date:
- Vehicle type:
- Vehicle number:
- Vehicle class:
- Vehicle hirer: (Railway Undertaking)
- Vehicle sub-hirer: (Railway Undertaking)
- Vehicle owner:
- Use being made of vehicle: (e.g. empty stock movement)
- Operating restrictions applied (following incident):
- Systems giving rise to defect:
- Other affected vehicles:
- Defect description: (typically a long narrative)
- Geographical location:
- Root cause description:
- Action taken: (e.g. new or special checks implemented)
- Justification for advice: (explains why a report has been prepared)
- For Information:
- Notified: (date)
- Acknowledged: (whether recipient has acknowledged the report)
- Last Review:
- Status:

Information flows

The following process sets out the overall information flow according to the Railway Group Standard 'Reporting High Risk Defects (GE/RT8250)'



The NIR website also includes an NIR process overview flow-chart (along with supporting processes):



Largely the supporting processes set out the different fields that have to be completed to raise an NIR and so are fairly simple, therefore these have not been reproduced here.

Number of reports

Analysis of the data in NIR-Online identified that since 1995 there have been 4,536 separate events, the annual distribution of which is shown in Figure 25 and which indicates in recent years around 150-200 events are recorded p/a.

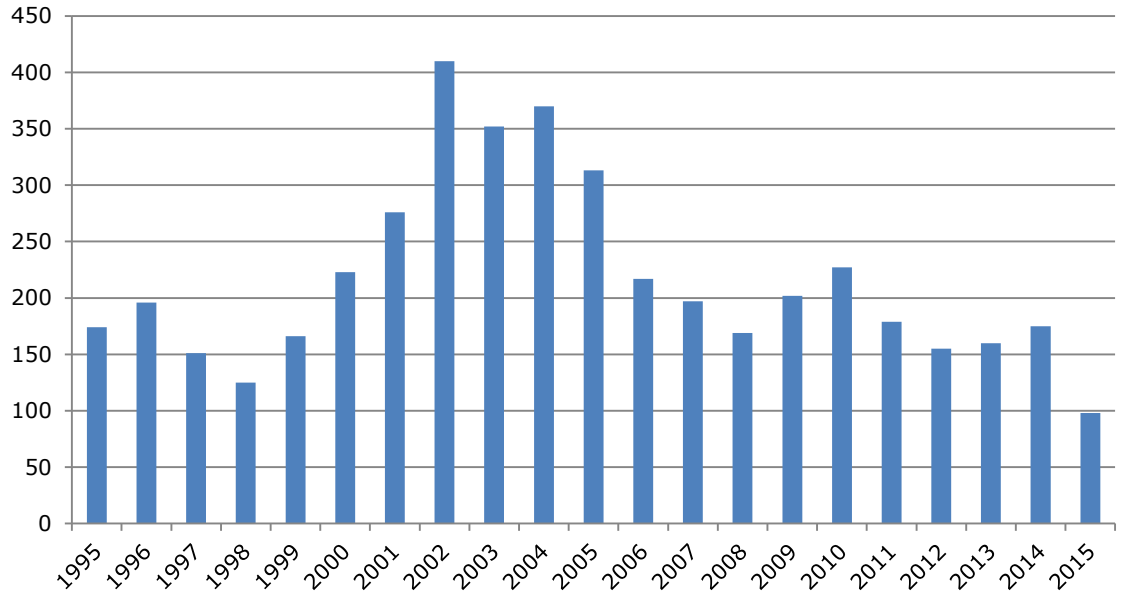


Figure 25 - Number of NIR Online for reports by year (note 2015 is to October only)

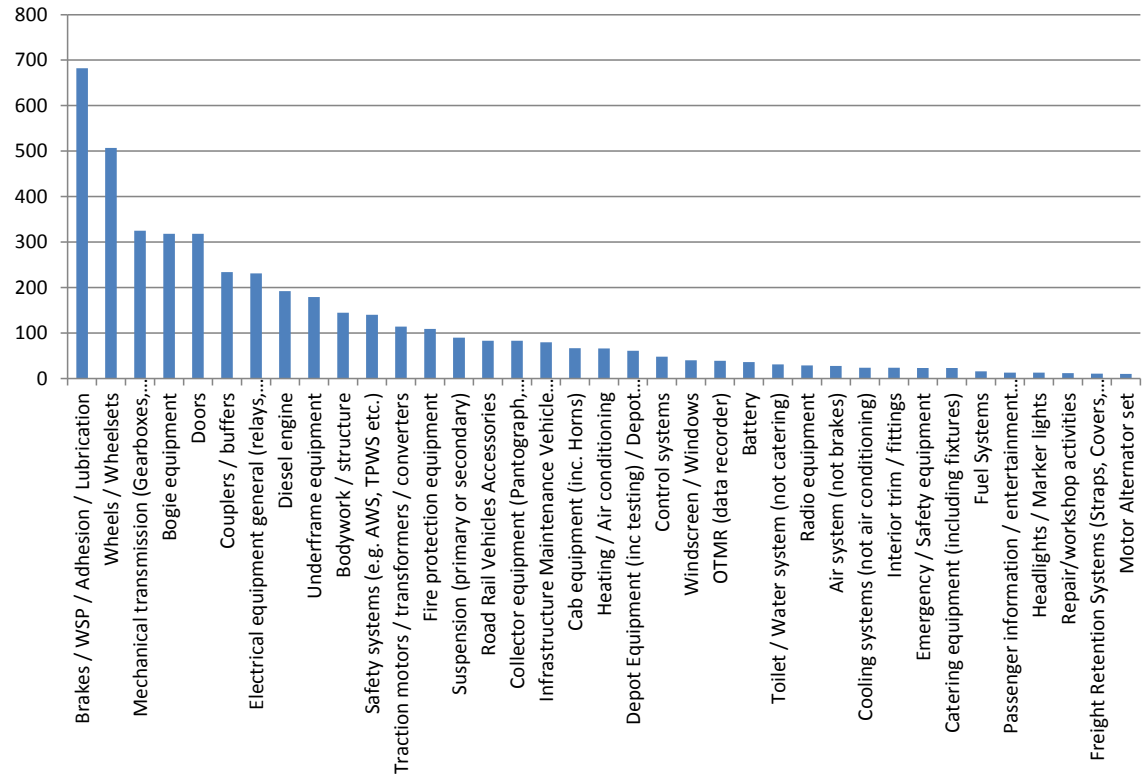


Figure 26 – NIR Online 'system name' occurrence frequencies (data from 1995-2015)

Timescales / Priorities
Railway Undertakings are to acknowledge an NIR within 24 hours of it being completed and Network Rail are to monitor acknowledgement receipts and follow up where necessary.
Measures
For each NIR a full narrative text is prepared that sets out the action taken by the authoring company. This serves to provide sufficient information to enable other companies repeat the necessary actions.
Responsibilities
The Railway Group Standard Reporting High Risk Defects (GE/RT8250) states: *Network Rail shall:* *a) Validate initial or complete NIRs to either:* *i) Accept the report.* *ii) Reject the report if it is considered to duplicate an existing NIR.* *iii) Reject the report if it is considered that incorrect information has been submitted.* *iv) Reject the report if it is considered malicious or vexatious.* *b) Monitor receipt of NIR acknowledgements.* *c) Follow up, after 24 hours, when acknowledgement of receipt of the NIR has not been received from a railway undertaking.* *"Following receipt of a NIR, railway undertakings shall input to NIR-Online the relevance (or not) of the NIR to their organisation (for example, if they operate similar railway vehicles or vehicles fitted with similar components, systems or subsystems in similar circumstances). If the NIR is relevant to their organisation, the railway undertaking shall record any actions to be taken by themselves or their supplier as a result of receiving the NIR.* *Railway undertakings shall close out NIRs they have input as relevant to their organisation, and record the close-out action taken in a timely manner."*
Access / Confidentiality
The Railway Group Standard Reporting High Risk Defects (GE/RT8250) states: *Access to NIR-Online shall be available to railway undertakings, infrastructure managers and their relevant suppliers. NIR-Online shall also be available to Vehicle Acceptance Bodies, Notified Bodies, rolling stock leasing companies, train manufacturers, the Association of Train Operating Companies and the Rail Safety and Standards Board.*

APPENDIX F
SURVEY QUESTIONS

Your Organisation

1. Are you an (please tick as many as applies):

- [ ] OEM/Supplier
- [ ] IM
- [ ] RU
- [ ] ECM
- [ ] Vehicle Keeper
- [ ] Other (please state)

2. Name of Organisation

3. Contact details for person completing the survey

Name	
Company	
Address	
Address 2	
City/Town	
State/Province	
ZIP/Postal Code	
Country	
Email Address	
Phone Number	

Part A: Existing Systems for Information Sharing

Managing Emerging Risks

4. How does your company manage / respond to the discovery of unknown or unexpected hazards that need to be dealt with urgently?

About Your Participation in Information Sharing Systems

5. Does your organisation share (send or receive) safety alerts with railway sector actors outside of your own organisation? (If you answer "No" to this question you will be directed to Part B.)

- ◯ Yes
- ◯ No

Part A: Existing Systems for Information Sharing

About Your Participation in Information Sharing Systems

6. Is the information shared:

	Yes	No
With actors established in your own Member State only?	○	○
With actors established in other Member States?	○	○

7. Is the requirement for information sharing mandatory or voluntary?:

○ Mandatory

○ Voluntary

Can you provide details or a web-link to any associated documentation?

Types of Information Shared and Importance Levels

8. How many information systems do you use to send or receive alerts from:

Send alerts

Receive alerts

Part A: Existing Systems for Information Sharing

Please answer the following questions relating to the system your organisation uses most often to raise alerts.

9. How do you decide what information is shared through this alert system? Please be as specific as you can be, preferably using examples (if there is a formal definition please can you provide it or a web-link to it):

10. Is the information shared through this alert system allocated different levels of importance? If so what criteria are used to define the level of importance (high, medium, low etc.)? ? Please be as specific as you can be:

11. How are different levels of importance used? For example perhaps information that is of "high importance" must be added to the system/ or action taken within 24 hours etc. Please can you describe this process?

12. Is the data you add to, or receive from, this alert system structured in a specific way or does it have a specific taxonomy? For example time and date; location; type of hazard it relates to; event description etc.? Please describe this structure / add a list of data fields:

13. Approximately how many safety alerts do you *receive annually* from this system?

14. What are the top 5 most common languages that you receive alerts in?

Language A

Language B

Language C

Language D

Language E

15. How does your organisation translate alerts that it receives in other languages?

16. Approximately how many safety alerts do you *add annually* to this system?

17. What languages are used to add alerts your organisation produces?

- ◯ National language only
- ◯ National language and other languages

Please specify which other languages

Part A: Existing Systems for Information Sharing

Data Access

18. Within the system you use is it possible to make some information anonymous?

- ◯ Yes
- ◯ No
- ◯ Don't Know

Please specify which details may be made anonymous

19. Within the system you use is it possible to make some information confidential?

- ◯ Yes
- ◯ No
- ◯ Don't Know

Please specify which details may be confidential

Part A: Existing Systems for Information Sharing

Information Flow

20. Is it possible to specify that alerts are only sent to selected people/ organisations?

- ◯ Yes
- ◯ No
- ◯ Don't Know

21. If the answer to the previous question was "Yes":

	Yes	No	I don't know
Is this a decision made by the person adding the data to the system (i.e. manually)?	◯	◯	◯
Are there some predefined criteria used?	◯	◯	◯

Please add any comments

Part A: Existing Systems for Information Sharing

About the Alert System

22. Was the safety alert system you described above developed by your company, or was an 'off-the-shelf' system purchased from an external provider?

- ◯ Developed internally
- ◯ Bought-in (off-the-shelf)
- ◯ Don't Know

23. Is the system used to share safety alerts separate to other safety information systems you use?

- ◯ Separate
- ◯ Combined with other safety information system

Part A: Existing Systems for Information Sharing

Additional Information

24. We would welcome any further information you can provide about your safety alert systems. Please add any additional information/ links/ guidance below:

Part B: Future System for Safety Alerts

These questions are interested in your organisation's view on what a future EU-wide safety alert system should contain

25. Level of Detail and Classification

What types of safety events do you think should be included as a safety alert?

1. Accidents involving the movement of trains (e.g. those defined in the Railway Safety Directive).
2. Any accident involving a passenger (which would include those defined at point "1" above, AND additional accidents such as those that may occur at the train/ platform interface, etc.)
3. Any accident on railway premises (which would include those defined at point "1" and "2" above, AND additional accidents possibly including maintenance accidents, etc.)
4. Any accident with the potential for loss of life however caused.

Please comment on these criteria, or add a different set, that may better reflect your own requirements:

26. Do you think safety alerts should be given a level of importance? For example:

- "High" perhaps for a safety event that is an immediate hazard to other actors using the same product (for example identification of a new failure mode in safety critical equipment.)
- "Medium" perhaps for a safety event that may require action within a time period (for example equipment that is supposed to last 50,000km but is showing significant signs of wear after 20,000km)
- "Low" perhaps to reflect a safety event that does not pose an immediate hazard but may require attention at the next inspection

Please comment on these criteria, or add a different set, that may better reflect your own requirements. If you do not think levels of importance are required, please can you explain why?

27. How quickly do you think safety alert information should be published?

	Yes	No
Within 24 hours	○	○
Within one week	○	○
Within one month	○	○

Other/ Depends on the type of event or level of importance, please describe

28. What information do you think a safety alert should contain? For example details of defect or failure, time and date, location, etc.?

Roles and Responsibilities

29. Considering responsibilities for raising and publishing safety alerts, please select one of the following options:

- ○ Any organisation can publish a safety alert without external consultation or external verification (e.g. an RU could publish a safety alert for a product, without consulting the product supplier/ manufacturer/ designer).
- ○ Any organisation can publish a safety alert without external consultation or external verification so long as the product supplier/ manufacturer/ designer is informed first.
- ○ Any organisation can raise a safety alert but only the product supplier/ manufacturer/ designer can publish it.

Do you have additional comments on roles and responsibilities?

Part B: Future System for Safety Alerts

Notification Process and Methods

30. Who should safety alerts be sent to?

- ◯ Everyone from the railway sector registered to use the system
- ◯ Organisations within the same group (ECMs to ECMs etc.)
- ◯ Those that the organisation raising the safety alert chooses
- ◯ Safety alerts should not be sent to anyone. Instead they should be published on a safety alert "bulletin board"
- ◯ Other (please specify)

31. How should safety alerts be notified to interested parties:

- ◯ By SMS / text message
- ◯ By push notification from a smartphone application
- ◯ By e-mail
- ◯ Notifications should not be sent to anyone. Instead individual actors should collect safety alerts from a "bulletin board"
- ◯ Other (please specify)

32. In what language should safety alerts be raised?

	Yes	No
Originator's national language only	◯	◯
Fixed text fields supported by a more detailed description in the originators national language	◯	◯

Other, please describe

33. What thoughts do you have on the balance between fixed text fields and free text? (For example accident type and cause as fixed text and description as free text, etc)

34. What options for translation should be offered:

- ◯ None; on-line translation tools are adequate
- ◯ A glossary of common terms and their translations should be developed and included
- ◯ Other (please specify)

Part B: Future System for Safety Alerts

Confidentiality, anonymity, discoverability and legal issues

35. Does your organisation believe that it might be exposed to a significant legal risk if:

	Yes	No	Don't Know
It has not acted on alerts originating from the system (e.g. prosecution for an accident that resulted from failing to properly act on information in a safety alert)	○	○	○
It fails to raise a safety alert that would have prevented an accident?	○	○	○

Please add any comments on legal aspects

36. If you think you may be exposed to legal risk from a safety alert system, please can you identify your specific concerns:

37. Should a future system offer anonymity for an organisation raising a safety alert? (i.e. an organisation can raise an alert without being named on the alert itself)

- ○ Yes
- ○ No

38. Should a railway actor be able to raise a safety alert that identifies possible failings of another company? (e.g. an RU naming a company that supplied it with a bearing that has failed catastrophically)

- ○ Yes
- ○ No
- ○ Under certain conditions

39. If your answer to the previous question was 'under certain conditions' please identify which conditions:

- ○ Only factual information can be included on an alert (e.g. company name, part numbers etc. to help locate other similar equipment)
- ○ Agreement is obtained from the organisation implicated that it can be identified on the alert.
- ○ Other (please specify)

Final Comments

40. Do you have any other comments you would like to raise regarding safety alerts?

About DNV GL

Driven by our purpose of safeguarding life, property and the environment, DNV GL enables organizations to advance the safety and sustainability of their business. We provide classification and technical assurance along with software and independent expert advisory services to the maritime, oil and gas, and energy industries. We also provide certification services to customers across a wide range of industries. Operating in more than 100 countries, our 16,000 professionals are dedicated to helping our customers make the world safer, smarter and greener.