

# ***SAFETY4RAILS***

## **CITIZEN ENGAGEMENT CONCEPT**

**Deliverable 10.7**

**Lead Authors: INNO**

**Contributors: CEIS, LDO, UMH, ICOM, EOS, FGC, LAU, ETRA, MDM, EGO, TRV, PRO, RFI, RMIT, UNEW, ERARGE, MTRS, ICOM, ELBIT**

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<b>Main author(s)</b>	Lesley Badii Marco Tiemann	INNO
<b>Contributor(s)</b>	Marine Adamson Claudio Porretti Devika Perez Medina Artur Krukowski Juliette Vieilleveigne Alvaro Garcia Torres Eveliina Hytönen	CEIS LDO UMH ICOM EOS FGC LAU
<b>Internal reviewer(s)</b>	Eduardo Villamor Atta Badii Stephen Crabbe Malte von Ramin Andreas Georgakopoulos	ETRA UREAD Fraunhofer Fraunhofer (security assessment) WINGS
<b>External reviewer(s)</b>	Laura Petersen	UIC

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# ABOUT SAFETY4RAILS

SAFETY4RAILS is the acronym for the innovation project: **Data-based analysis for SAFETY and security protection FOR detection, prevention, mitigation and response in trans-modal metro and RAILway networkS**. Railways and Metros are safe, efficient, reliable and environmentally friendly mass carriers, and they are becoming even more important means of transportation given the need to address climate change. However, being such critical infrastructures turns metro and railway operators as well as related intermodal transport operators into attractive targets for cyber and/or physical attacks. **The SAFETY4RAILS project delivers methods and systems to increase the safety and recovery of track-based inter-city railway and intra-city metro transportation.** It addresses both cyber-only attacks (such as impact from WannaCry infections), physical-only attacks (such as the Madrid commuter trains bombing in 2004) and combined cyber-physical attacks, which are important emerging scenarios given increasing IoT infrastructure integration.

**SAFETY4RAILS concentrates on rush hour rail transport scenarios** where many passengers are using metros and railways to commute to work or attend mass events (e.g. large multi-venue sporting events such as the Olympics). When an incident occurs during heavy usage, metro and railway operators have to consider many aspects to ensure passenger safety and security, e.g. carry out a threat analysis, maintain situation awareness, establish crisis communication and response, and they have to ensure that mitigation steps are taken and communicated to travellers and other users. **SAFETY4RAILS will improve the handling of such events through a holistic approach.** It will analyse the cyber-physical resilience of metro and railway systems and deliver mitigation strategies for an efficient response, and, in order to remain secure given everchanging novel emerging risks, it will facilitate continuous adaptation of the SAFETY4RAILS solution; this will be validated by two rail transport operators and the results will support the re-design of the final prototype.

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## Executive summary

SAFETY4RAILS seeks to improve the security and resilience of railway operations both on a technical level and on a non-technical level and by addressing both cyber and physical risks and threats.

This deliverable, D10.7, considers the need to communicate and engage citizens before, and during and after crisis events that may impact them directly or indirectly. It presents a Citizen Engagement Concept (CEC) that provides a framework and engagement objective-specific proposals for how to engage citizens in the context of urban transport crisis situations. This concept is one of the exploitable results of the project and one of the non-technical tools that are offered to practitioners to improve communication with and engagement of citizens.

The document introduces the concept of citizen engagement and defines the scope of the Citizen Engagement Concept for SAFETY4RAILS using the applicable project requirements in Section 2 of this document.

The engagement concept is developed based on a review of current best practices, goals, needs, barriers and enablers concerning key engagement objectives, which are presented in Section 3 of this document.

Section 4 presents the concept across three phases of engagement for SAFETY4RAILS. It addresses engagement of citizens at specific iterative process stages relative to a crisis event in order to define engagement concepts for preparedness, response and recovery of crisis situations.

Section 5 provides information on implementation, testing and validation of the concept and reviews the degree to which the identified requirements have been addressed through the deliverable.

Section 6 concludes the document and provides an outlook towards future work beyond the SAFETY4RAILS project.



# 1. Introduction

This section gives an overview of the contribution of this deliverable and details the structure of the document.

## 1.1 Overview

One of the main goals in the prevention, mitigation and remediation phases of crisis events in metro and railway networks is to ensure the safety and minimise disruptions affecting citizens as travellers or otherwise affected persons when a crisis situation occurs. This deliverable, D10.7 “Citizen Engagement Concept”, describes a Citizen Engagement Concept (CEC) that is intended to primarily assist transport operators and also other stakeholders involved in crisis preparation, response and remedy activities in improving their engagement with citizens relating to crisis situations associated with metro and railway networks.

The deliverable aggregates best practices and provides guidance on:

- How to engage citizens for the purpose of preventing crisis situations and to prepare for reacting in crisis situations (preparedness stage);
- How to engage with citizens during crisis situations that may directly or indirectly affect them (response stage);
- How to engage with citizens after crisis situations, for instance as part of after-event care activities, to evaluate and improve future crisis responses and to engage citizens in order to mitigate the impact of crisis events on operator reputation and attitudes towards continued infrastructure usage by the public (recovery stage).

This deliverable presents a broad consideration of citizen engagement that also encompasses aspects of crisis communication activities and other related fields. The document introduces best practices for a set of citizen engagement objectives and considers those citizen engagement objectives specifically for each of the phases addressing preparedness, response and recovery related to mass transit-related crisis situations.

This document has been created with input from SAFETY4RAILS Task 9.2 “Crisis Communication”, which contributes the deliverable D9.3 “Guidelines for Ethically Sustainable Crisis Communications and Information Sharing” to the project. The present deliverable uses a subset of the crisis communication objectives identified and documented in D9.3 (with some modifications) as the organising structure for analysing best practices, goals, needs, barriers and enablers and considering objectives across different phases related to crisis situations. It is recommended to first study D9.3 if the organisation underlying the identified topics is of interest to the reader.

## 1.2 Structure of the deliverable

This deliverable is structured as follows:

- Section 1: Introduction. This section provides an overview of the purpose and contents of this deliverable, including its goals, scope and structure.
- Section 2: Citizen engagement in SAFETY4RAILS. This section introduces the concept of citizen engagement and reviews the project requirements assigned to the Citizen Engagement Concept as part of the project.
- Section 3: Best practices, goals & needs, barriers & enablers. This section describes the current best practices, goals, needs, barriers and enablers concerning general aspects of citizen engagement in the domain and concerning individual citizen engagement objectives.
- Section 4: Citizen engagement across phases. This section provides specific guidance for preparedness prior to crisis events, the response during a crisis event and recovery following the conclusion of a crisis event. The descriptions reference, revisit and extend the descriptions of best practices from the previous section, specifying citizen engagement objectives each of these three phases.
- Section 5: Operationalising and validating citizen engagement concepts. This section discusses approaches for implementing, evaluating and improving citizen engagement concepts and examines to

what extent the SAFETY4RAILS CEC addresses the project requirements set out in deliverables D2.5 and D1.4.

- Section 6: Conclusion. This section summarises the deliverable and provides a outlook towards future work that may be undertaken after the conclusion of this deliverable and the SAFETY4RAILS project.

### 1.3 Relationships with other work packages

Citizen engagement and communication with citizens are topics addressed in a number of both technical and non-technical tasks within SAFETY4RAILS. T9.2 was already introduced as an important related activity with deliverable D9.3 being an important companion and input document to this deliverable. In addition, the following tasks are highly relevant to the work described in this deliverable:

- T3.5 “Recommendations for crisis management and coordination of response teams”
- T5.5 “Implementation of simulation S4RIS tools as decision support system”

Work undertaken in Work Package 1 and Work Package 2 of the project that is reported in the deliverables D1.4 “Specification of the overall technical architecture” and D2.5 “Specific requirements for multimodal transport systems” have defined the scope and focus of the work presented in this deliverable.

## 2. Citizen engagement in SAFETY4RAILS

This section introduces citizen engagement as a concept and describes the focus of the work of citizen engagement presented in this deliverable. The project requirements identified in SAFETY4RAILS that relate to citizen engagement are presented in order to describe end user expectations regarding citizen engagement. Citizen engagement objectives initially specified as communication objectives and sub-objectives in D9.3 are introduced in order to structure the examination and specification of the Citizen Engagement Concept.

### 2.1 Introducing citizen engagement

This subsection introduces citizen engagement and its role in SAFETY4RAILS.

#### 2.1.1 Definition

Citizen engagement describes organisation-driven “top-down” activities that aim to involve and integrate citizens into processes and activities that interact with their daily lives, such as public policy issues or service delivery (1). The term “engagement” specifies the bi-directional nature of this relationship despite the top-down organisation-driven nature of the overall approach, and one of the main aims of citizen engagement typically is to empower citizens to participate in activities relative to a status quo situation in which they are less or not at all empowered to participate in.

Citizen engagement aims to engage citizens in a way that reduces hierarchical barriers and rebalances the role of citizens towards becoming active in the creation of solutions as opposed to being passive recipients of them. Topics for citizen engagement can be very broad or focused on specific topics depending on the goals of a citizen engagement initiative, which can range from the general such as “improve citizen happiness” to very targeted such as “actively involve citizens in local authority tree planting initiatives”.

Citizen engagement is expected to entail communication flows from the organisation to the citizen as well as from the citizen to the organisation. It is often envisaged to be carried out via co-creation methods such as consultation processes and co-creation workshops, but citizen engagement can be implemented in many different ways.

Citizen engagement concepts can also integrate “bottom-up” processes through which citizens themselves can formulate the citizen engagement processes they want to participate in. Such processes may also be called “citizen participation” when they are initiated by citizens.

#### 2.1.2 Types of stakeholders

Generally speaking, citizen engagement is typically carried out by government and/or administrative entities, often in local or regional but also in larger-scale engagement activities. The stakeholders are:

1. One or more **organisations and specialists engaged by organisations** which interact with citizens and have an interest in engaging with these citizens to achieve a goal or set of goals;
2. **Citizens** who may but do not have to be organised into groups such as interest groups (common in citizen participation scenarios);
3. **Mediators and facilitators** who interact with organisations and citizens in order facilitate communication and achieve the goals identified for citizen engagement processes.

#### 2.1.3 Engaging citizens for crisis management in public transport settings

For the purpose of SAFETY4RAILS, the scope and functions of citizen engagement must be clearly defined in order to be able to create a useful and sufficiently focused citizen engagement concept. This subsection defines the why, when and who of engaging citizens related to crisis events and describes the phases during which this engagement takes place.

## Purpose

The aim of the Citizen Engagement Concept for SAFETY4RAILS is to engage the subset of citizens that is (or may be in future) affected by a crisis situation in the context of metro and railway networks in order to achieve a number of specific objectives that include importantly:

- **Preparing citizens** for how to act in crisis situations;
- **Protecting citizens** from harm, danger and situations that negatively impact mental health;
- **Mitigating disruptions** affecting citizens;
- **Gathering information and feedback** from citizens before, during and after crisis responses;
- **Safeguarding the reputation** and attractiveness of public transport services;
- **Involving citizens** in the redesign of crisis mitigation measures to improve future crisis responses.

## Types of crisis situations

What are the kinds of crisis situations that are relevant for engaging citizens in public transport settings? SAFETY4RAILS deliverable D3.5 identifies types of crisis situations (or “circumstances”) that may lead to the creation of a crisis management group in the context of metro and railway operations. These types of crisis events may be considered as suitable illustrative examples for relevant types of events:

- **Operational failure** of metro or railway systems, concerning events that significantly negatively affect normal operations (e.g., technical failures, sabotage or strike actions);
- **Natural disasters** that impact the ability of transport operators to continue operations (e.g., flooding, storms, extreme temperature conditions or earthquakes);
- **Terrorist attacks** that directly or indirectly impact metro or railway operations (e.g., bomb threats, armed attacks at train stations, sabotage of infrastructure);
- **Cyber-attacks** that result in critical systems becoming disabled (e.g., ransomware attacks, targeted hacking of infrastructure components, effects of hacking attacks on third parties providing core services to metro or railway operators);
- **External incidents** that affect the ability of metro or railway operators to provide services (e.g., large-scale power failures).

## Stakeholders

Citizen engagement involves exchange between organisations and their relevant personnel, citizens who are engaging with a specific topic and mediators and facilitators who support citizen engagement. Which stakeholders specifically are relevant for citizen engagement in the SAFETY4RAILS context? Table 1 identifies typical participants from organisations, citizen and facilitators

TABLE 1: TYPICAL PARTICIPANTS IN SAFETY4RAILS CITIZEN ENGAGEMENT

Group	Description
<b>Organisations</b>	Metro/railway operators, crisis management groups, first responders, healthcare service providers, media organisations, etc.
<b>Citizens</b>	Passengers, travellers, citizens indirectly affected by transport disruptions, friends and family of either of the aforementioned groups, citizen organised in advocacy groups, etc.
<b>Facilitators</b>	Workshop organisers, brainstorming facilitators, survey designers, group discussion moderators, etc.

Citizen engagement is always concerned with interactions and engagement that occurs involving both organisations and their staff and citizens. Interactions that occur exclusively between organisations and/or their members (e.g., railway operators and fire services) are not of direct interest from the perspective of citizen engagement.

The roles of facilitators are not covered in detail in this deliverable as they are typically quite specific to the particular method for citizen engagement that is implemented for a particular purpose, which is at a more granular level of detail than the topics discussed in this deliverable. For the purpose of this deliverable it is assumed that they are used when feasible and beneficial in order to improve outcomes of interactions.

### Citizen engagement phases related to crisis situations

Systems and functionalities developed in the SAFETY4RAILS project are typically designed to address one or more of the five phases of identification, protection, detection, response and recovery (see e.g., requirements defined in deliverable D1.4 and project presentations). Focusing on citizen involvement in this process, citizen engagement in SAFETY4RAILS is structured into three phases (as also suggested for example by Havarneanu & Petersen (2) and used by Coombs to model crisis communications (3)):

- **Preparedness:** this phase covers the time periods during which no crisis situation is occurring and no recovery from a crisis situation is ongoing. The aim of activities during this phase is to prepare citizens for potential future crisis situations and to enable them to prevent causing crisis situations. This phase addresses the identification and protection phases of the SAFETY4RAILS model.
- **Response:** this phase addresses the time period during which a crisis is occurring. The aim of citizen engagement activities during this phase is first and foremost to protect and safeguard citizens and to minimise disruptions to their daily lives. Additional aims in this phase include gathering information or other help towards resolving the crisis situation from those citizens who are able to do so. This phase addresses the detection and response phases of the SAFETY4RAILS model.
- **Recovery:** this phase, identical in scope to the recovery phase in the SAFETY4RAILS model, follows the response phase once the direct crisis situation has been resolved. The aim of citizen engagement during this phase is to minimise any remaining disruptions following a crisis and to involve citizens in post-event information gathering and recovery activities.

These three phases should interact with each other as a loop, where activities undertaken in one phase improve and inform the actions taken in the following phase: preparedness should limit the effect of a crisis that is handled during a response phase, a successful response phase should reduce the recovery efforts needed and should provide guidance on how best to implement recovery and prevention measures, and measures implemented as well as lessons learnt should improve engagement towards preparedness for future crisis events. Figure 1 represents this graphically.

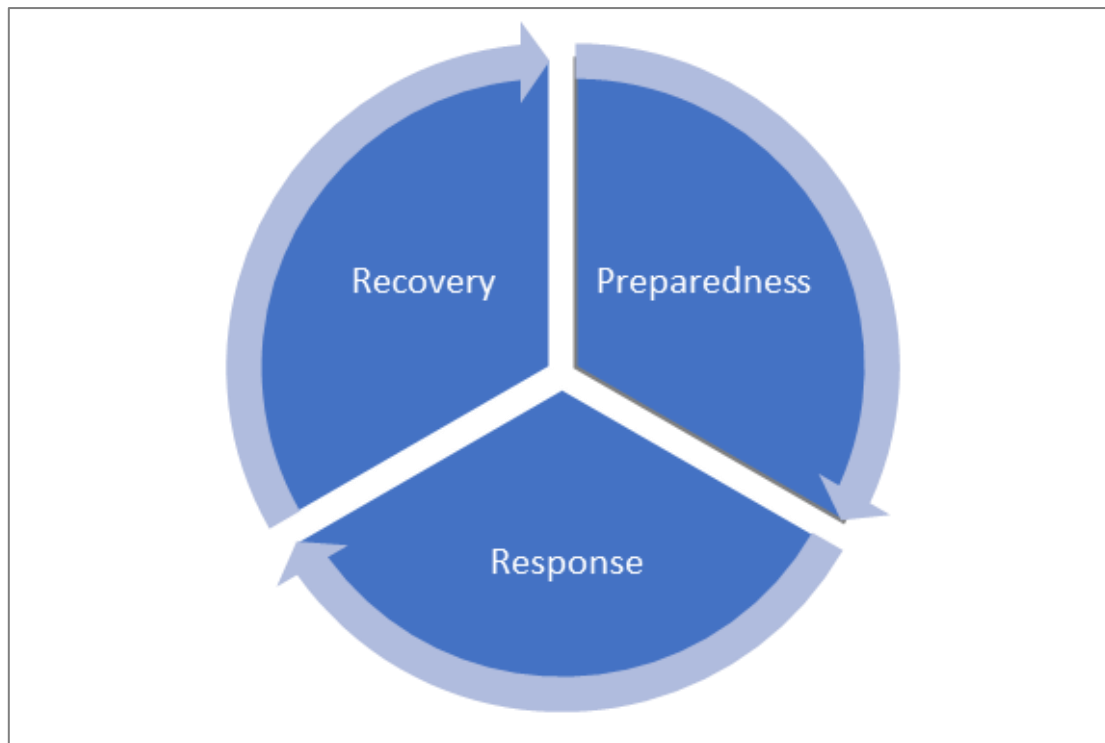


FIGURE 1: PREPAREDNESS - RESPONSE - RECOVERY

This perspective on crisis management phases resembles the holistic relational model of crisis management presented by Jaques (4). Unlike the citizen engagement model applied in this deliverable, Jaques proposes an all-encompassing crisis management model. To achieve this, Jaques divides crisis management activities first into two main stages, “pre-crisis management” and “crisis management”. He then divides pre-crisis management into “preparedness” and “prevention” phases and crisis-management into “crisis incident management” and “post-crisis management” phases. Each of these phases is finally further broken down into smaller management elements such as “crisis recognition”, “system activation” and “crisis management” for the crisis incident management phase.

While the task description for Task 10.3 focuses mainly on the response phase, the citizen engagement concept presented here encompasses all three phases introduced above in order to provide an integrated holistic concept for citizen engagement in the given context. This also reflects the expectations from the project user partners expressed in the requirements specified for the citizen engagement concept (see Section 2.2).

#### Related concepts

Several other concepts are closely related to citizen engagement for crisis situations and should be positioned relative to it for clarity.

**Crisis management** is the overall process of managing a disruptive unexpected event (5). It is an overarching process into which all activities related to dealing with a crisis are integrated, which also includes citizen engagement concerning crisis events.

**Crisis communication** is part of crisis management activities and involves different stakeholders and target audiences. Definitions of crisis communication can include communications with citizens directly, with multiplier organisations such as online and social media that can reach citizens as well as response organisations that are part of crisis management activities directly or indirectly (see D9.3, Section 2.2.1). The targets of crisis communication overlap significantly with those of citizen engagement in all areas where crisis communication is concerned with addressing citizens either directly or indirectly. The Crisis Communication Framework (CCF) detailed in deliverable D9.3 has been used as input for parts of this deliverable where appropriate.

**Citizen engagement** as a general concept considered outside of the specific context of public transport crisis management, and instead deployed for example as part of government planning processes, typically does not have a strongly time-critical component that is present in citizen engagement related to public transport in crisis situations. The citizen engagement framework created for SAFETY4RAILS combines typical citizen engagement activities with aspects of crisis communication into a task-specific citizen engagement framework.

## 2.2 Requirements

As all work undertaken in the SAFETY4RAILS project, the work in T10.3 was developed according to requirements identified and specified during the initial phase of the SAFETY4RAILS project. The requirements identified for the Citizen Engagement Project were initially described for deliverable D2.5, and they were then refined for inclusion into deliverable D1.4, Section 2.2.10. Table 2 reproduces summary descriptions from there with requirement ID, short name, description and specification of the applicable requirements here for reference.

TABLE 2: SAFETY4RAILS REQUIREMENTS FOR THE CEC

Req. ID	Short Name	Description & Specification
UR-CC-R01	<b>Coordinate with relevant stakeholders, e.g., media organisation</b>	<b>Description:</b> Establish contact and build partnerships with broadcast media agencies, including those linked to specific cultural groups or other recognised online communities, who may provide support for emergency communication, in case of necessity.
		<b>Specification:</b> The citizen engagement concept shall provide guidelines for establishing stakeholder links in preparation for emergency communications. Conditional: Guide of best practices for managing and communicating the information, including with media organisations, will be provided within S4R.
UR-CC-R02	<b>Create a crisis communication plan</b>	<b>Description:</b> The crisis communication plan adheres to regulatory frameworks, e.g. the General Data Protection Regulation requires that personal data breaches are notified to the competent national supervisory authority and, in certain cases to communicate the breach to the individuals whose persona data have been affected by the breach; identifies communication channels used by passengers & station visitors and public risk awareness levels.
		<b>Specification:</b> A citizen engagement concept shall be developed and provided to railway operator users. It will specify engagement and communication channels for different risk situations and target audiences. Adherence to regulatory frameworks shall be taken into consideration and the framework will be reviewed by the project ethics partner. A set of guidelines for ethically sustainable crisis communications will be developed within S4R.
UR-CC-R03	<b>Communicate about preparedness actions to</b>	<b>Description:</b> Inform on behaviours to be taken in case of emergency; raise safety awareness: knowledge. Underline on a regular basis the importance of knowledge about safety instructions, providing a hub's safety instruction leaflet,



	<b>take when facing potential risks</b>	printed and available online, addressed to all cultural groups and translated by mother-tongue professionals in as many as possible languages; be sure the instructions are to be found where related groups may easily find it.
		<b>Specification:</b> The citizen engagement concept should review the expected utility of different preparedness communication strategies and provide recommendations for their application based on evidence on their uptake and utility.
UR-CC-R04	<b>Provide timely information</b>	<b>Description:</b> What: brief description of the event occurring, likely impact on the public, behaviours to adopt and actions to take; when service will be restored/that service is restored; additional sources of information. How: inclusive (including for Passengers with Reduced Mobility (PRM)), use text and audio (public audio announcements or pre-recorded videos) in different languages provide graphic displays, use pictograms, write in easy-to-read formats, repetitive, consistent, all & multi-channel (traditional & social media), empathy not reputation, engaging with the public.
		<b>Specification:</b> The citizen engagement concept shall specify messaging, citizen directions and guidance and the means of communication used in citizen – response team communications. A set of guidelines for ethically sustainable crisis communications will be developed with S4R.
UR-CC-R05	<b>Provide upstream communication in transportation hub</b>	<b>Description:</b> Help the passengers to find alternative ways to reach their final destination and avoid that the passenger has to be present in the station to get the right information. The most adapted communication vector available should be used to ensure that the information provided is an official source of communication.
		<b>Specification:</b> The citizen engagement plan should include communication with citizens to suggest rerouting their journeys by alternative means. The set of guidelines for ethically sustainable crisis communications will be developed in S4R considering all stages of an incident/event.
UR-CC-R06	<b>Continue to update about the situation</b>	<b>Description:</b> Locate unreached victims. Help families and groups reunited: put in place a strategy to identify and bring together people belonging to the same groups or facilitate the recognisability of different post-event logistic areas, providing provisional signs and directions addressing all involved audiences. Inform victims about the existence of (free) post event support.
		<b>Specification:</b> The citizen engagement concept will elaborate concepts for post-event support and engagement of citizens and summarise best practices for addressing traveller needs such as communication strategies for reuniting split-up groups. Best practices for routing



		communications of citizens in distress will be summarised. The set of guidelines for ethically sustainable crisis communications will be developed in S4R considering all stages of an incident/event.
UR-CC-R07	<b>Specific communication to regain passengers' confidence for the multi-modal approach</b>	<b>Description:</b> Communicate about the measures put in place to return to normal
		<b>Specification:</b> The citizen engagement concept shall provide guidance and examples for post-event communication with and engagement of travellers and citizens. The set of guidelines for ethically sustainable crisis communications will be developed in S4R considering all stages of an incident/event.
UR-CC-R08	<b>Apply lessons learned</b>	<b>Description:</b> Collect all available information about the event which occurred and reflect on what worked and what could use improvement. Update the crisis communication plan to reflect this. Inform the public of any new security measures put in place.
		<b>Specification:</b> The citizen engagement concept shall provide suitable means for gathering data from travellers and citizens affected by unusual events for different types of events. The concept shall provide means for evaluating the engagement of travellers and citizens during events with the aim to identify points for improvement. A set of guidelines for ethically sustainable crisis communications will be developed within S4R. An input to effective incident/crisis response plans will be provided.

The identified requirements deal with both structural and process requirements for the overall engagement concept (UR-CC-R01, UR-CC-R02), specifically on preparedness (UR-CC-R03), response to ongoing events (UR-CC-R04, UR-CC-R05, UR-CC-R06) and recovery (UR-CC-R07, UR-CC-R08). The requirements address primarily the Crisis Communication Framework (CCF) described in deliverable D9.7 and the Citizen Engagement Concept (CEC) described in this deliverable; some specific parts of the requirements address work carried out in Task 3.5.

In this document, requirements are revisited in Section 3, Section 4 and Section 5.3, where the full set of requirements is revisited and reviewed in terms of how the requirements have been addressed by the Citizen Engagement Concept.

## 2.3 Communication objectives and engagement objectives

Communication objectives were introduced in deliverable D9.3 in order to specify the functions that the SAFETY4RAILS crisis communication framework has to fulfil. These objectives identify both general and specific objectives and are useful in order to investigate activities, their intended purposes and to which extent activities fulfil the targeted objectives in concrete ways relative to reviewing abstract high-level concepts only.

Within the scope of SAFETY4RAILS, the CCF and the Citizen Engagement Concept are expected to address the UR-CC user requirements defined as part of the project (presented in Section 2.2), and – as will be shown throughout this document – CCF and CEC overlap significantly where CCF activities involve citizens. Hence,

the communication objectives identified in D9.3 are also used in this deliverable so that common objectives and the measures to address them are easy to identify and in order to enable practitioners to employ recommendations made both in this deliverable and in D9.3 in concert.

D9.3 addresses all crisis communications during a crisis, whereas this deliverable focuses on engaging citizens. Hence, not all of the communication objectives of D9.3 are relevant for the purposes of this deliverable. Table 3 identifies the subset of communication objectives from D9.3 that are relevant for citizen engagement as discussed in this deliverable. This set will be referenced as the “citizen engagement objectives” in this document.

Crisis communication objective IDs in the table reference the objective IDs used in D9.3<sup>1</sup>. Crisis communication objectives are grouped into objectives and sub-objectives in D9.3, where the top-level objectives are used to group the more specific sub-objectives, which are the elements in the hierarchy used for operationalisation in D9.3. The identifiers “EP” and “PEP” identify “event phase” and “post-event phase” crisis communication objectives, identifying the two phases used in the Crisis Communication Framework and assigning objectives to one of these two phases.

Citizen engagement objectives are identified with their own IDs in order to differentiate them from Crisis communication objective IDs (presented in the second column of the table). ID numbering for citizen engagement objectives remains in sync with crisis communication objectives to aid in cross-referencing. Objectives for citizen engagement are not specifically assigned to a single phase for citizen engagement. Instead, they are considered throughout the three-phase model of citizen engagement introduced in Section 2.1.

Two additional citizen engagement objectives have been added in T10.3: 6.1 “Evacuate persons from rolling stock and/or premises” as a generalisation of subtopics from T9.2 and “Gather feedback and suggestions from citizens” together with an additional objective “Evaluate performance and improve future responses”. These changes reflect specific additional citizen engagement tasks that were suggested by practitioners within the task working group.

**TABLE 3: D9.3 CITIZEN ENGAGEMENT OBJECTIVES**

Crisis communication objective ID	Citizen engagement objective ID	Description
<i>Saving Lives and Minimising Injuries</i>		
EP1.2	CE1.2	Influencing the public risk perception and behaviour to allow a timely and effective response
<i>Situation and evolution updating / Inform stakeholders about the status of business disruptions</i>		
EP2.3	CE2.3a	Keep clients informed about the expected duration and affected/closed lines, as well as access restrictions

<sup>1</sup> Please note that in D9.3, the objectives presented in italics on a grey background in the table are called “objectives” and the objectives grouped below them are called sub-objectives. This document refers to D9.3 objectives as grouping objectives to clarify how they are used and refers to D9.3 “sub-objectives” as objectives as a simplified expression.

<i>Provide alternative means of transport</i>		
PEP2.3	CE2.3b	Inform clients about alternative transport means
<i>Preparing the people and optimising evacuation time</i>		
EP3.1 <sup>2</sup>	CE3.1	Evacuate persons from rolling stock and/or premises
<i>Enhance public awareness of the incident</i>		
PEP4.1	CE4.1	Facilitate two-way communication with the clients
PEP4.2	CE4.2	Information about the general aspects of the incidents
PEP4.3	CE4.3	Inform about the general security measures applied
PEP4.4	CE4.4	Enhance public reputation
<i>Support victim recovery</i>		
PEP5.1	CE5.1	Help victims find loved ones
PEP5.2	CE5.2	Mental health aspects from victims, helping through recovery processes
<i>Evaluate performance and improve future responses</i>		
PEP6.2 <sup>3</sup>	CE6.2	Gather feedback and suggestions from citizens

Additional citizen engagement objectives can of course be identified. The selected objectives serve as a useful and operationalizable cross-section of possible objectives and can give insights into a broad range of topics to consider in the SAFETY4RAILS Citizen Engagement Concept.

In this deliverable, the selected objectives are used to investigate best practices, goals, needs and barriers for the individual objectives, and to assist in the differentiation of elements of the SAFETY4RAILS CEC.

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<sup>2</sup> Generalised from T9.2 into a broader subtopic for Task 10.3.

<sup>3</sup> Added as an additional topic for Task 10.3.

## 3. Best practices, goals & needs, barriers & enablers

This section discusses best practices, goals, needs and barriers & enablers related to the Citizen Engagement Concept at two levels: generally related to the overall CEC as cross-cutting concerns and then brief discussions of each of the objectives given in Table 3. First, a brief introduction explains the topics covered.

The described best practices and enablers are the basis of the SAFETY4RAILS CEC. They are referenced in later chapters and augmented with additional elements that extend the CEC beyond existing best practices.

### 3.1 Introduction

The following topics are of interest both for cross-cutting concerns affecting multi objectives relevant for the CEC:

- Best practices: a description of the current best practices being employed by rail and metro operators considered to be the favoured method for handling or addressing objectives
- Goals & needs: the goals that are pursued by an objective and/or the needs addressed by the objective
- Barriers & enablers: any significant issues that commonly get in the way of achieving an objective and enabling conditions, methods or techniques that may be prerequisites or beneficial for achieving an objective

The discussion of the issues above is organised into a) cross-cutting and general topics for the overall CEC and b) for the objectives identified earlier. Where beneficial for conciseness, sub-topics have been grouped together when they strongly overlap in their discussions of the topics listed above.

Many of the topics discussed in this section directly impact on the Citizen Engagement Concept formulated in Section 3 and Section 4.2 of this document.

### 3.2 Overall and cross-cutting concerns

Overall and cross-cutting concerns regarding the Citizen Engagement Concepts of metro and railway operators related to crisis events relate to where citizen engagement during crisis situations is embedded into operator practices, how it is organised and which common best practices on citizen engagement are relevant across a large number of objectives.

#### 3.2.1 Best practices, goals & needs

Best practices on overall and cross-cutting concerns on citizen engagement primarily relate to the formulation and implementation of overall strategies for citizen engagement as part of crisis prevention and preparedness, response and recovery activities:

##### Prevention & preparedness phases

Current best practices for citizen preparedness encompasses the planning, execution and maintenance of guidance (e.g., signage, audio messaging) provided to citizens relating to general preparedness for, for example, reporting unusual events and preventing unsafe actions by citizens. In addition to legal requirements for visual guidance, best practices for preparedness messaging include ensuring clear and understandable messaging, embedding of messages through multimodal redundancy and repetition and ensuring that messaging is accessible to citizens with varying types of abilities and is multilingual so that it covers a large proportion of the travelling public. These general messaging best practices also apply across all other best practices that utilize messaging to communicate to travellers.

## Response phase

Best practices in response planning involve in particular the creation, training and execution of successful crisis response plans. In terms of citizen engagement, this is typically achieved through a crisis response plan that includes a Crisis Communication Framework (CCF) for interactions with citizens and other stakeholders. Best practices here relate to identifying and bolstering existing uni- and bi-directional communication channels between operators and citizens, including crisis-related messaging on rolling stock and operator premises such as stations, existing customer communication infrastructure of the operators (information websites, call centres, social media support channels) to directly communicate operations-related information to citizens, and cooperation with public authorities and appropriate broadcast media platforms in order to disseminate information to as wide an audience as possible.

In this context, coordination between all stakeholders involved in crisis responses is part of best practices that also affect citizen engagement during emergencies; here, the immediate establishing of physical or virtual crisis task forces is a best practice in order to establish coherent and timely communication with citizens.

Privacy and ethical considerations need to be embedded effectively into such communications in order to ensure legal and ethical compliance; this is discussed in detail in D9.3 and the reader is encouraged to consult that deliverable for further details on compliance and ethical requirements. For best practices, it is essential to integrate GDPR and ethical considerations into response plans so that these considerations can be addressed quickly and safely without leading to unclear situations that can slow down critical communications.

## Recovery phase

Best practices in the recovery phase begin with the clear communication to citizens of crisis situation wind-down and follow-up activities in order to signal a change to a new phase following on from crisis reaction and in order to engage with citizens over their behaviour in this new phase.

Clear follow-up communication of measures taken to resolve crisis situations and any changes made in order to improve the security of operations in future and communication of ways for citizens to engage in post-event consultations are the next steps in best practice citizen engagement to recover from crisis events, typically with the aims to safeguard operator reputation trust in the safety of operations.

Best practices for engaging citizens in identifying and potentially co-creating improved resilience and response measures for potential future crisis situations are not common among current metro and railway operators. Here, evaluations of crisis responses and work on improvements is typically restricted to professional staff for example from operators, technical partners and authorities such as railway regulators.

## Planning of communications

Chandler (6) proposes five key recommendations when planning communications and communicating in a crisis:

- 1) Plan for success. Have preinstalled notification protocols and communication plans in place. This affects the appropriateness and overall success of the response.
- 2) Prepare messages in advance. Create messages for different scenarios, which can be used promptly and effectively. Communication should be consistent with the commitment to take appropriate actions.
- 3) Monitor the chatter. Crisis communication relies on listening as much as talking. Focus on tools and processes that increase the preparedness and that can mitigate crisis.
- 4) Keep messages simple. Consider the readability of messages and the amount of time required for processing and understanding them.
- 5) Words matter. Choose your words carefully. The wording in crisis communication will either motivate the target audience to act appropriately or frighten and create undue stress, confusion and dysfunction.

Best practices for giving information about the general aspects of incidents are essential to improving a crisis situation. Three different main stakeholders need to be identified to whom information on the general aspects of the accident should be conveyed: citizens, the media and the response teams (7). In order to convey

information to these groups, there are skills that all studies highlight as the most relevant ones, which are presented below.

Common characteristics (2) (8) (9):

- Establish a crisis management team and emergency crisis communication plan to address emergencies;
- Short and concise messages to transmit the information;
- Communication plan prepared in advance;
- Take data privacy laws into account;
- Identify the types of information and when communication should take place.

Citizens/passengers:

- Identify their needs for information by listening carefully to the ways in which various groups in society perceive the crisis;
- Providing you with information of interest to emergency services (10);
- Be empathetic towards citizens.

Media and communications:

- Identify the preferred or appropriate media to disseminate the incident;
- It has to be controlled information;
- Ensure confidentiality of incident details.

Communication from responders and responsible agencies:

- Public statements must be coordinated and agreed between the different levels involved to ensure factual accuracy;
- Who is authorised to release security information to the media. When security incidents occur this may be controlled by a government security agency or the police (10).

### Targeting of communications

The passenger experience is of primary importance for customer satisfaction and loyalty to a transport operator and communication plays an important role in the overall experience. In terms of the targeting of transport information, alerts destined to clients can be classified into 3 categories (11):

- General information for all users (e.g., informing citizens about an emergency situation);
- Location-specific information sent to specific user groups (e.g., notifying travellers waiting to enter a metro station about station closure);
- Targeted alerts sent to travellers who requested specific information or were identified as the users of an affected service.

Where possible, targeted alerts are typically assumed to be the gold standard means for informing current and incoming travellers of disruptions, with location-specific and general information being useful in order to reach persons not reachable by those means.

### Staff training

As the staff who will be interacting with the public, the transport operators must also be trained in crisis management communication. They must be taught to remain calm, empathetic and provide understandable (short, simple, and inclusive) messages to maintain the public calm and ensure that they follow instructions correctly. Through both theoretical and practical experience, they will learn how best to behave in a crisis, hence maximising the effectiveness and impact of their communication. A lack of adequate education and

training will result in poor management of the crisis by the operators and hence in more distress and frustration from the public. Such training will also enable staff to deal with barriers around the public’s emotional status, as clients during a crisis may fail to comprehend the alternative transport options offered and ask staff about them multiple times.

3.2.2 Barriers & enablers

General and cross-cutting barriers to successfully creating and deploying Citizen Engagement Concepts as described can be the following:

- Unclear roles and responsibilities for and lack of coordination of messaging when engaging the public between operators and other entities such as emergency services and public authorities or competing messaging between them;
- Delays in communicating up-to-date crisis information internally with an operator organisation and between operators and other stakeholders, potentially resulting in misleading messaging during crisis situations;
- Resourcing issues in executing best practices for communicating with citizens (e.g., technical delays in pushing crisis information internally);
- Crisis Communication Plans that do not provide communication plans for a specific crisis situation or are unclear in terms of the processes to follow.

Important underlying enablers for successful citizen engagement related to crisis events are

- The availability of a suitably staffed and trained citizen and traveller engagement infrastructure which can be used by citizens to engage with operators during crisis situations;
- Clear chains of communication established with external stakeholders and established plans for how to coordinate operations during emergency situations;
- Technical infrastructure for communicating with citizens and travellers that can be centrally updated and can also be controlled locally in case of a failure of technical infrastructure which would stop the flow of messages from centralised operations centres.

Adhering to best practices including the ones presented in this section of course also enables more successful citizen engagement around crisis situations.

Concerning barriers and enablers for communicating with citizens, a number of shared ones apply across a vast range of the objectives of concern. The tables below outline the key barriers and key enablers of note in this respect:

TABLE 4: KEY BARRIERS IN COMMUNICATING WITH CITIZENS DURING CRISIS SITUATIONS

Barrier	Description
Transport operators do not speak multiple languages.	If the public is unable to understand the information being provided, it could lead to uncertainty and induce anxiety.
Lack of cooperation between different actors.	If the different actors do not cooperate and share information among themselves, information will not be timely and accurately disseminated towards the public, which will create chaos. Discrepancies across different communication platforms will create even more frustration and feelings of anxiety.



Confidentiality of information <sup>4</sup> .	Transport operators need sufficient information from crisis management actors (LEA, crisis respondents etc) to be able to engage with citizens. While some information around the crisis should remain confidential, relevant actors should keep in mind the needs for of transport operators to communicate and determine which information can be shared with them and with the public.
Transport operators have not been trained in crisis management communication.	If transport operators have not received adequate training on how to act in a crisis, there is a risk they will not respect the following principles which are key when providing instructions regarding alternative modes of transport: pace (active and early), truthfulness (factual, transparent and true), understandability (short, simple and inclusive), empathy (with compassion), consistency (uniform, coordinated and continuous).
Lack of/inadequate audio and visual solutions.	A lack of visual solutions and inadequate audio solutions (sound not performing well) can hinder the delivery of the messages to the public. This is especially the case for vulnerable people. It will create anxiety.
Inadequate communication channels and coordination thereof.	A lack of official platforms (social media, website, traditional media) through which transport authorities could inform citizens of the crisis and the alternative transport means in advance could create confusion, anxiety and congestion as citizens might try to use stations or lines that are not accessible. Signs and alerts in the relevant stations should not be the only communication means available to a transport operator during a crisis. Separately, if the teams responsible for communicating through social media do not coordinate their message with those communicating with traditional media and those who communicate at the station, they risk causing further confusion among citizens (12).
Unpredictability of crisis duration and development.	Transport operators may not be able to predict in advance the extent and the duration of the impact of the crisis on their network. This can create uncertainty when communicating alternative transport options as there is a possibility that multiple stations and lines may close for the duration of the crisis, perhaps even pre-emptively.
Citizens' emotional and psychological status.	Anxiety, fear or anger spreading among the public during a crisis can create misunderstandings among the public, failure to comprehend the alternative transport options, as well as mistrust in the transport operators when a high level of corporate responsibility for the event exists (13).
Manipulation of information by malevolent actors.	Malevolent third parties could disseminate fake information to cause further congestion and confusion to the public <sup>5</sup> .

<sup>4</sup> Based on the results of online polling during the SAFETY4RAILS Crisis Communication Workshop, held on 4 April 2022, as reported in D9.3 GUIDELINES FOR ETHICALLY SUSTAINABLE CRISIS COMMUNICATIONS AND INFORMATION SHARING Section 2.4; and based on the risks identified in the SAFETY4RAILS Metro de Madrid and Ankara Simulation Exercises as described in D9.3, Section 5.

<sup>5</sup> Risks identified in the SAFETY4RAILS Metro de Madrid and Ankara Simulation Exercises as described in D9.3 GUIDELINES FOR ETHICALLY SUSTAINABLE CRISIS COMMUNICATIONS AND INFORMATION SHARING, Section 5.



TABLE 5: KEY ENABLERS IN COMMUNICATING WITH CITIZENS DURING CRISIS SITUATIONS

Enabler	Description
Transport operators speak multiple languages.	Information should be provided to the public in multiple languages to ensure reaching the majority of the people and redirecting them to alternative modes of transport.
Cooperation between different actors.	It is necessary for the different actors to share timely and accurate information in order to communicate efficiently towards the public and redirect people towards the best alternative transport means. This includes transport operators, media, etc. Information can then be coherent across different communication platforms (social media, websites, traditional media).
Transport operators have been trained in crisis management communication.	Transport operators must be trained to remain calm, empathetic and provide understandable (short, simple, and inclusive) messages to maintain the public calm and ensure that they follow instructions.
Pre-existing crisis management plan.	Crisis management planning and training is necessary to guide transport operators during a crisis, and crisis communication and engagement planning is essential in order to ensure they are able to effectively engage with the public without disclosing any confidential information that could threaten the crisis response operation (14).
Enough and adequate audio and visual solutions.	Having numerous visual solutions (including signs with arrows pointing to the right directions to take) and well-performing audio solutions (clear, succinct, loud) is key to reaching the public (including vulnerable people) and succeeding to redirect them to alternative modes of transport. Visual communication (e.g., through infographics, maps etc) is preferable in a crisis situation to ensure citizens' understanding of the accessible infrastructure and lines of the transport network (15). Audio-visual solutions should be adapted and/or augmented for situations where they may be impaired by situational factors such as smoke reducing the utility of visual guidance).
Adequate communication channels.	Social media and a website with a pre-existing followers base, as well as pre-existing communication channels with traditional media can greatly assist transport operators to reach citizens during a crisis before they access the transport network, as in a crisis, people will tend to look for information in the same means of communication that they use in their everyday life (15). Thus, the more channels an operator has the easier communication will be.
Immediately and continuously engage with the different audience groups affected during crisis events	Immediate engagement with citizens when a crisis situation arises enables stakeholders to pre-empt rumours and misinformation;

	continuous engagement reinforces messages and promotes broad dissemination <sup>6</sup>
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### 3.3 Objective-specific concerns

Objective-specific concerns relate to the citizen engagement objectives set out in Table 3. Objective titles have been shortened for use in headings; the order of objectives remains the same as in the table.

#### 3.3.1 Influence risk perception and behaviour

This objective is concerned with ensuring consistent and timely messaging of information primarily to citizens on operator premises with the aims to alert them to a crisis situation and to direct their actions to respond timely and effectively to that crisis situation. D9.3, Section 5.3 provides two examples of how such responses may play out in the SAFETY4RAILS demonstration scenarios.

##### Best practices, goals & needs

Two examples of best practices are given as of key importance for this objective: first, complete mobilisation of all means for communicating with and messaging to citizens in the area of concern. Crisis communication should override all other standard communication modes, be redundant and encompass all modalities including Passenger Address Systems (PAS) and Passenger Information Systems (PIS). Second, staff should be activated and informed so that they can actively engage with citizens to address their needs and respond to their concerns in an individualised manner if the situation permits it. The goals pursued with these actions are to alert citizens quickly to the crisis situation and to communicate to them which actions to take as quickly and clearly as possible.

##### Barriers & enablers

Barriers and enablers to this objective include importantly the availability and coverage of the messaging infrastructure available to operators, the ability to quickly update messages to communicate (e.g. with pre-defined messages to react to potential specific crisis situations), whether communications adhere to general best practices on communication so that the reach extends to those with different functional needs and addresses potential language barriers where relevant and the ability to quickly update and task staff appropriately so that they can contribute to citizen engagement measures. Damage caused to technical infrastructure that relates to these is an important potential barrier that should be addressed when planning actions for this objective.

#### 3.3.2 Inform about effects

In mass public transport, it is of very high importance to keep users of the transport infrastructure informed about the effects that disruptions from crisis situations may have on their current or upcoming travel plans. Keeping citizens informed about the status of the transport network including closures and delays is an important part of communications during normal operations of metro and railway systems that becomes more important during crisis situations. This can also empower them to make alternative arrangements and to avoid affected areas, reducing any risks they might become exposed to if they were not aware of effects. This reduces the load on staff dealing with a crisis situation. Such communications are essential both during the crisis response and the recovery.

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<sup>6</sup> See also D9.3, Section 2.3.2.

## Best practices, goals & needs

Best practices for informing citizens about the scope of issues and disruption include the full use of the available communication channels including mass media in order to communicate disruptions to citizens who actively seek out information. Processes for keeping clients informed about the expected duration of an incident and affected/closed lines, as well as access restrictions are key to improve the efficiency of crisis response by service operators (16).

According to the Transport Focus National Railway report of 2020 (17), the main reason for dissatisfaction among passengers is trains delays and especially how transport companies deal with them. Reporting data from the UK, almost 50% of respondents to the survey agreed that the way train companies deal with delays can be upsetting and, at the same time, punctuality have a big impact on overall satisfaction (37%).

Three main best practices to consider in order to improve communication when dealing with delays are the following (17):

1. Have a structured way of sharing information: The more details you share, the more understanding your passengers will be, as well as feeling safer and taken care of. Structure your message clearly and be ready to proactively provide them with alternatives. An example of how a message can be structured is the following:
  - State the problem and try to go as detailed as possible, always in respect to company policies. Is the delay due to an incident or a technical issue?
  - Describe the impact on the journey – and contingency plans.
  - Suggest alternative (alternative route or a different mean of transportation).
2. Be consistent with your communication channels: In these moments passengers can get very confused and the situation can be upsetting. Make sure to make information accessible and easy to understand, for example through a well-structured integrated communication platform.
3. Be clear about delay policies: Having to go through complicated texts or pages of policies will only add an unpleasant feeling to your passengers, creating therefore even more discomfort. Simplify delay policies and inform passengers in advance, what is there for them in the case of a prolonged delay.

The main types of information about effects to be communicated are the following (18):

- Advance information, so that (potential) travellers are aware of the planned response to emergencies/incidents and know where to look for information.
- Alerts and travel advice for specific incidents, both in advance (when foreseen) and in reactive mode (when unforeseen)
- Dissemination of alerts and travel advice to (potential) travellers
- Dissemination of relevant information to other stakeholders, utilities and media

Estimations of the duration of disruptions should be updated regularly and consistently across all communication platforms. A best practice among operators that use mobile apps or online ticketing systems is to inform ticket holders of specific services of disruptions for their service.

## Barriers & enablers

The key barrier to overcome for this objective is being unable or unprepared to reach citizens who would benefit from receiving updates on service disruptions and changes to service availability or are unable to access the information provided because it is not made available to them in an accessible way. Customer user accounts or mobile apps for users may enable operators to actively notify transport users affected by disruptions (if accessing relevant information is permissible within the scope of GDPR and has been opted in to by users).

It can also be challenging to communicate the effects of crisis situations between stakeholders internally, meaning that the information about crisis effects then cannot be communicated to citizens. Stakeholder

communication tools such as fixed communications systems need to be in place to enable communication between stakeholders (19).

Keeping customers informed about the expected duration of an incident and affected/closed lines, as well as access restrictions can contribute to resolving a crisis more efficiently and to limiting unwelcomed effects. The latter may include station overcrowding, high compensation costs, revenue loss due to loss of customers, and overarching reputational impact. During a crisis, clients expect service operators to communicate about repercussions. As explained in the document “From Crisis Management to Community Resilience A railway perspective”, the focus on people is a key component of the crisis management cycle, making informing client about crises an essential element in resolving said crises (2).

### 3.3.3 Evacuate travellers

Evacuating travellers from rolling stock or from premises is a dangerous activity that must be carried out carefully and under supervision from the operator staff wherever possible. Evacuation procedures are typically highly structured and primarily governed by safety concerns and regulations. Engaging with citizens about evacuations is critically important in order to avoid harm caused by improper or unnecessary evacuations. Citizen engagement is particularly important in order to engage persons located in metro or railway carriages so that these travellers can provide information on issues affecting them and are given unambiguous information concerning evacuations.

#### Best practices, goals & needs

Best practices for evacuating travellers from buildings or structures such as train and metro stations encompass both safety-relevant properties of the building infrastructure and of objects such as turnstiles in place and appropriate trained staff and messaging for evacuations, specifically (20):

- Careful preparation, planning and testing of evacuation path
- Appropriate sizing, passing capacity, emergency functionalities and walking distance of emergency exits and turnstiles
- Identification of bottlenecks
- Identification of barriers for able-bodied and disabled travellers, implementation of suitable mitigation measures for disabled travellers
- Appropriately trained staff capable to organise calm evacuation of crowded areas
- Appropriate messaging to encourage orderly building evacuation

End-user project partners have contributed practical suggestions for handling evacuations, which include preparing an evacuation plan and extensively training and testing its execution. Some partners operate disused stations as training environments for regular evacuation exercises in collaboration with other stakeholders that would be involved in such real-world incidents (e.g., police, firefighters and civil protection forces).

The evacuation of persons on operator rolling stock is a crucial activity in crisis management, with customer safety being the highest priority in railway operations. These incidents occur infrequently, but it is important to keep the procedures in mind for when they occur to minimise the negative effects. All train operators have crisis management procedures, which cover the different incidents that can occur and the elements that can cause negative effects, which must be minimised as much as possible. The European Union Agency for Railways (ERA) indicates several means of compliance on safety of passengers concerning the evacuation of passengers (21):

- In the event of danger, passengers should be able to alert staff who are in charge of the train. These staff should be able, if necessary, to bring the train to stop, and provide and/or arrange passenger assistance and undertake necessary evacuation measures if this is needed.
- Each railway operator should include in their operational procedures the opening of external doors in an emergency to enable passengers to evacuate.

- If evacuation is needed, provide passengers with key safety information on how to leave the train safely, the timing of when this will take place and keep them updated on the latest information.

Other best practices carried out related to evacuate persons on operator rolling stock are the training of intervention teams with the objective of preparing the teams for real scenarios. The assistants shall take such actions on installation as is necessary to mitigate the consequences of the casualty, to facilitate evacuation or the intervention of external help.

Furthermore, best practices for evacuating travellers from rolling stock must be separated into supervised and unsupervised evacuations, where the first best practice is to have sufficiently trained staff available across a transport network so that unsupervised evacuations only become necessary in extreme circumstances. Personally supervised evacuations rely on appropriately trained staff, and practical training for engaging with travellers to facilitate timely, safe and calm evacuations are critical in this context. When no staff are available to supervise traveller evacuations, onboard PAS and PIS systems are best practice solutions to alerting citizens to whether or not they must evacuate a carriage and if so, using which method. Instructional signage for advising travellers on how to evacuate a carriage remain the currently deployed best practice across metro and railway operators.

### Barriers & enablers

Since evacuating travellers is a safety-critical operation, barriers to evacuation are typically dictated by the specific situation. The evacuation of persons can occur in different multifactorial situations, and it is essential to have present the key barriers and enablers that affect this activity. The most significant barriers to the evacuation of persons are shown in Table 6.

TABLE 6: KEY BARRIERS FOR EVACUATION OF PERSONS

<i>Barrier</i>	<i>Description</i>
Infrastructure	The evacuation of passengers strongly depends on the state of the infrastructure and the location of the incident. Stations, for example, are more prepared for the evacuation of passengers, while if the incident happens between stations, the infrastructure can be crucial to the manageability of the evacuation (e.g., tunnels or bridges are more complex)
Clarity of the message	When having to evacuate a train, it is important to provide clear and concise messages, always ensuring that the operator is fully working on the problem. It is essential not to create panic when evacuating a train, since it can lead to human stampedes and hence injuries.
Fire or other aggravating factors	For obvious reasons, when fires or flooding happen during a train incident, the evacuation plans face considerable difficulties. In these cases, there must be evacuation plans prepared in coordination with other public entities such as firefighters or civil protection authorities.

The identification of key barriers is crucial for an adequate crisis management and citizens engagement. Additionally, there are key enablers that make the evacuation processes more agile and cooperative, as shown in Table 7.

TABLE 7: KEY ENABLERS FOR THE EVACUATION OF PERSONS

Enabler	Description
Evacuation drills	Organising evacuation drills for the Railway Operator workers is an enabler to improve the key activities involved in evacuations and enhance citizens' engagement.
Library of PA messages	In the crisis management procedures, it is helpful to include a library of messages that can be provided by the PA in the train and over PAS in stations. This message can be thought by professionals that better understand human behaviour and can be planned in advance instead of being written during a crisis, when the thinking process is different. This way, the railway operator workers that are involved in the incident can choose the most suitable messages for each situation.
Comfortable PT services	When dealing with evacuations, it is always better if the transport services are designed in a manner that the clients are comfortable with and could react clearly to contingencies.
Clear guidance to travellers	Appropriate use of all available communication modalities to inform travellers of when an evacuation is required (and when not) is the most critical enabler of resolving a potential evacuation event without requiring travellers to make judgments they are typically ill-equipped to make.

### 3.3.4 Inform about travel alternatives

Informing citizens about travel alternatives is very important in order to reduce negative impacts of disruptions caused by crisis situations. It is important both for travellers impacted during their journeys and for citizens planning to travel that will be impacted by travel disruptions.

#### Best practices, goals & needs

When train services are affected by disruptions, it is important for railway operators to have the rail passenger rights present when informing passengers and making decisions of alternative transport options. Additionally, it is important to remark that the requirements of unplanned disruption management vary depending on the context of each incident (location and severity, time of the day, number of passengers affected etc.). Following EU rules on rail passenger rights when travelling by rail within the EU, it is important to note the clear information that is required to be provided to the passenger by the railway company:

- General conditions applicable to the passenger's journey
- Time schedules and conditions for the lowest fares and the fastest trip
- Accessibility, access conditions and availability on board of facilities for people with disabilities or reduced mobility
- Services available on board
- Procedures for reclaiming lost luggage
- Complaint procedures

As a general idea and with customer rights in mind, it is important to note that railways should focus their efforts on restoring the service as quickly as possible and minimising customer impact by focusing on the movement of customers, not trains (22).



Current best practices implemented by most metro and railway operators include PIA announcements of alternative travel options in stations where possible, advice from operator staff deployed in stations and typical customer support structures such as hotlines and social media help lines. They also include the proactive use of online travel booking systems and mobile apps to find alternative means of travel (typically by the same operator and modality only). Informing clients about alternative means of transport during a crisis implies providing them with information regarding other modes of transport available and with instructions as to how to access those to ensure that they reach their final destination as initially planned. The public must therefore be provided with accurate and timely information, which should be continuously updated throughout the duration of the crisis.

It is recommended that the information communicated includes at least the pick-up and drop off locations for each substitutive line; the frequency of substitutive lines and the conditions (if any) that are to be fulfilled for its use (e.g., using the same tickets, free service etc)<sup>7</sup>. This information should be disseminated across various communication channels, including social media, websites and traditional media as the public check different types of or multiple sources before taking action (23). This entails that there should be coherence across platforms and hence cooperation among the different actors responsible for sharing information. This will reduce distress, anxiety and panic (24). The information should at best be communicated prior to the public reaching the site of the crisis, to avoid mass gathering and chaos and instead redirect the people ahead of time. Being proactive in sharing this information also has an additional benefit: it enables clients to receive official and accurate information early enough and in a way that would minimise the spread of misinformation and manipulations from fake sources<sup>8</sup>.

In addition to providing information that is factual, transparent and timely, it is important to ensure that said information is well-received by the public. This entails presenting messages that are short, simple and understandable in multiple languages and in effective and engaging ways. Likewise, sufficient and adequate audio and visual solutions should be put in place to implement information and signage. This is key to reaching the maximum number of people, including those vulnerable such as blind people, children, foreigners, etc (25). Visual communication in particular (infographics, videos and pictograms) is a key tool to prevent language or other barriers. For instance, having signs to redirect people to other modes of transport and hence visually showing them the way to go is very useful. Here again, transport operators should make sure to constantly monitor and provide continuous up-to-date information to increase efficiency and avoid both chaos or creating anxiety amongst travellers.

Key to ensure that such communication takes place in a timely, coordinated and accurate moment is the best practice of having a crisis communication plan in place that enables adequate interorganisational coordination and communication (26). Given the multiple actors involved in a crisis (Law Enforcement Agencies (LEAs), crisis respondents, multiple independent transport operators, government officials, media etc), communication at several levels is necessary to enable transport operators to first identify and second give adequate and timely information about alternative means of transport to clients. While respecting confidentiality, crisis respondents should therefore share information about the current and predicted extent and duration of the crisis with transport operators for them to identify and share the alternative means of transport.

Overall, to guarantee the implementation of best practices in this domain over time, creating a dialogue with the public and self-evaluating the effectiveness of the communication efforts is crucial.

### Barriers & enablers

When communicating to the public in a crisis regarding alternative means of transport available, there are a number of key barriers and enablers which have a decisive impact on effective citizens engagement strategies.

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<sup>7</sup> Based on the best practices identified in the SAFETY4RAILS Metro de Madrid and Ankara simulation exercises as described in D9.3, Section 5.

<sup>8</sup> Based on the best practices identified in the SAFETY4RAILS Metro de Madrid and Ankara simulation exercises as described in D9.3, Section 5.

The public must be provided in particular with timely and specific information on topics such as timings and locations to reduce distress, frustration and anxiety, and ensure that they take appropriate actions as instructed (i.e., be redirected towards the most appropriate modes of alternative transport). This implies that cooperation and appropriate communication channels between the different actors in charge of sharing information with the public (transport operators, media, etc.) must be in place and that these actors therefore have the same information at their disposal, which they all actively and coherently disseminate across different communication platforms (social media, websites and traditional media). This can be particularly important when the public checks multiple sources and hence compares information available across these various platforms before taking action. If there is discrepancy in the information being provided by different sources and across different communication channels, the public may react negatively by becoming frustrated and impatient, ultimately resulting in panic and chaos. The appropriate channels to communicate with the public in advance of them coming to an affected station (e.g., social media, official website, communication with traditional media) must also be in place to avoid congestion, confusion and panic.

Operators must also have a crisis communication plan in place which can be adapted to the situation at hand (14) to enable them to select the appropriate alternative transport options while addressing certain communication barriers. This plan and relevant training will also enable operators to choose the optimal alternative means of transport, while taking into consideration uncertainties around the extent of an event (how many stations and lines are affected or may be affected as the crisis develops) and its duration.

Adequate planning will enable operators to deal with misinformation around the event, as there is a risk that malevolent third parties will take advantage of the crisis to further spread panic through fake information about the alternative transport options, thus creating an additional burden for operators. If, however, a plan is in place, operators will be able to inform the public as early as possible through their official channels, thus minimising the impact of such misinformation.

Typical barriers for information on travel alternatives are capacity limits both of personnel and of the deployed capacity of online travel booking systems, which may not be scalable to deal effectively with sudden increases in demand. Consequently, planning ways to mobilise surge capacity to provide travel advice in crisis situations is a key enabler for managing citizen needs concerning minimising travel disruptions effectively.

Communicating about the near-time provision of alternative services such as replacement bus services is particularly difficult given typically limited information as these replacement services are typically not operated in house, which creates barriers to information flow about arrival times and capacities of services. Furthermore, ad-hoc replacement services are typically managed by local staff only and information is not provided via online resources or PIS, but through in-person and PIA announcement at the affected locations.

Typically, mobile apps and travel information services by a particular service operator do not integrate other multimodal transport options into their travel guidance so that travellers have to identify alternative means of travel themselves using other services such as map and travel services offered by Apple and Google or by using the proprietary apps of other transport operators.

### 3.3.5 Facilitate two-way communication

Typically, a large proportion of operator communication with citizens during crisis situations is uni-directional, with operators and authorities providing information to citizens for various purposes. Two-way communication with citizens involves communication initiated by citizens instead of operators, typically to request information related to crisis situations and their effect on services.

#### Best practices, goals & needs

Typical best practices for facilitating two-way communication are providing direct communication channels via staff on vehicles and at premises and using call centres, social media and online chats with human operators as communication channels that enable citizens to contact the operator, typically primarily with questions to which they may seek answers. These questions may relate, for example, to travel disruptions, but also to requesting information e.g., on missing persons during crisis situations. Provisioning of such communication channels is typically defined in a relevant Crisis Communication Framework. Other means of customer



engagement are generally considered outside of citizen engagement in crisis situations as corporate customer research and engagement.

### Barriers & enablers

As described earlier, barriers to two-way communication can be caused by capacity limitations. Another potential barrier to two-way communication in crisis situations is the flow of information to the citizen-facing service operators both on location and remotely. Providing all contact points for citizens with up-to-date information is hence a critical enabler for successful two-way communication with citizens.

### 3.3.6 Inform about crisis events

In a crisis there is an increased need to reach citizens to disclose information, demonstrate the company commitment, and increase the citizens' level of preparedness and awareness of resources. The communication of relevant information about crisis events (as opposed to other factors such as their effect on the transport network) to the public is important for a number of reasons, including to give citizens information on crisis situations that may affect them directly or indirectly in a number of different ways depending on the type of crisis.

### Best practices, goals & needs

The main goal of the selected objective is the communication of information to reduce uncertainty, negative consequences, help public perception etc. (27). In this sense, general information about the accident must be adapted to the context of the crisis in order to reach as many stakeholders as possible (14). This information is also intended to provide stakeholders with context about what happened and the status of the victims. It also enables the responsible parties to have the necessary information to act as soon as possible according to established protocols. Provide the necessary information within limits so as not to cause alarm and to ensure adequate crisis resolution.

Some of the best practices for informing citizens about the nature of a crisis event are identical to informing them about the effects of the crisis event (see Section 3.3.2). General information about the cause of a disruption should be communicated as part of best practices for communication effects of the event of concern.

Based on the systematic literature review about crisis communication in the field of transportation, it can be stated that this has mostly been studied from the point of view of the overall communication when responding to a critical event. Regarding the best practices for sharing information about general aspects of the incidents, the following can be implied from the findings of the systematic literature review.

Certain kind of content, message type and communication medium might cause negative emotions in passengers, which, in turn, might provoke negative associations. Public emotions emerging from the critical event and from the crisis communications might also affect passengers' purchasing decisions.

A study on the effect of the railway delay announcements about collisions involving a person, emergency services, and a control announcement (collision with an animal) on associations with suicide and on the emotions of the passengers showed that after the collision with a person announcement, participants were more likely to think that suicide was the most probable cause of the delay than after the emergency services announcement. The result of the study, alongside results from other studies, "may encourage railway companies to communicate post-suicide delays to the public by broadcasting announcements that do not imply suicide by colliding with trains. Since these delay announcements are communicated through multiple channels besides railway companies, such as local news websites and radio broadcasts, they may stimulate responsible reporting about suicide on a larger scale too."

The content of an announcement can also evoke feelings, such as anger, in passengers. Although the emotional effect of collision with a person and emergency services announcements was low, the participants reported more anger toward the victim after collision with a person than after emergency services announcement (28).

Additionally, public emotions emerging from the event and from the communication strategy adopted by the, might influence the decision making of passengers and potential passengers. In a paper examining cruise travel, Penco et al. (13) state that a high level of anger, that usually is related to a high corporate responsibility for the event, seems to increase the likelihood of the critical event influencing future decisions of potential customers in such contexts. Based on the findings in the study, it is stated that it is important that the cruise line managers pay attention to the negative emotions of public emerging from the different types of media. Cruise companies should monitor public conversations about their brand during the crisis, searching for anger feelings, since social media spread the news fast, often deforming and expanding the facts out of control.

When sharing information about the general aspects of incidents, and when planning information sharing, it is important to pay attention to the wording of the communicated information. Thus, it is also essential to anticipate the emotions of the public emerging from the communications.

Arokiasamy, Kwaider & Balaraman (29) developed best practices for the aviation industry in a case study. The first best practice considers information sharing: Disseminate information quickly and transparently. Information about the critical event must be disseminated as fast and whenever as possible despite the lack of it. Social media should be utilized to its full potential for quick information sharing. The company and officials should coordinate the information sharing amongst them at all times and agree on and verify the information before sharing it.

When communicating information about crisis events, it is part of current best practices to use specific formulations and language to communicate sensitive types of crisis events, for instance ones that relate to suicides. Best practices also limit the dissemination of sensitive information in crisis situations that may be caused for example by terrorist acts.

### Barriers & enablers

Best practices relating to limiting information sharing may also delay or unnecessarily limit information provisioning if guidelines for what information may and may not be shared is unclear. The requirement to ensure that the correct factual information is shared is also very important but may lead to delays or omissions in communicating crisis event information, especially when information is difficult to validate. The table below outlines key barriers concerning communicating successfully about crisis events:

**TABLE 8: KEY BARRIERS IN COMMUNICATING CRISIS EVENT INFORMATION**

Barrier	Description
The language of written messages and the language used in oral communication (30)	Travellers may come from diverse backgrounds and cultures. It is therefore necessary to ensure that messages reach all audiences. A lack of variety in the language in which information is conveyed can lead to mismanagement.
Inaccessible and non-inclusive communication (30)	When the communication employed does not take into account best practice for accessible and inclusive communication, not all travellers will be able to understand it.
The information obtained has been manipulated by a perpetrator.	If the information transmitted has been previously manipulated by a perpetrator, it can seriously affect the resolution of the incident.
Irresponsible use of social networks	Uncontrolled use of social media by unauthorised personnel outside the communication plan can create unnecessary social alarm.

Key enablers for successfully communicating crisis event information are the availability of a pre-communication plan, training with that plan and focused and concise provisioning of information.

### 3.3.7 Inform about security measures

Informing citizens about security measures taken during the response and especially the recovery phase of a crisis event is very important in order to reassure citizens that a crisis situation has been brought under control and that measures have been taken to prevent similar crisis situations from reoccurring. It is a key factor in the rapid resolution of a situation. Three areas of communication will be taken into account: The corporation and the media, the bodies in charge (LEAs and governmental authorities) and the passengers.

#### Best practices, goals & needs

The main goals of good information on implemented security measures are to show transparency, to keep users calm and make them feel safe in their use of transport<sup>9</sup>, as information calms anxiety and leads to desirable behaviour, which facilitates the resolution of the emergency (2), to have a safety plan in advance so that they know how to act (9) and to maintain confidence and popularity in the use of transport and good transport management (31).

As for most other objectives, the best practice for communicating in this context involves multi-channel messaging to reinforce the message to be conveyed, including signage and messaging in stations or at other appropriate locations.

A policy for communicating with passengers on security matters needs to identify who will be involved in its development and how and by what means information is disseminated. Best practices for conveying this information are (31) (32):

- Opting for modern and traditional media to be accessible to the general public;
- Providing essential details to ensure awareness of security measures without compromising the mechanism;
- In cases where an area has been subject to a crisis, it is important to report on the new security measures that have been taken.

Best practices on informing on recovery actions taken after a crisis event involve a long-term strategy for mitigating the effects on the perception of safety caused by significant crisis events in order to reassure transport users.

#### Barriers & enablers

Barriers include costs of such trust restoration campaigns may be deemed to high when crisis recovery also requires significant financial expenditure. It may not be possible to communicate security measures that must remain confidential, and only communicating a subset of measures taken may not reassure citizens sufficiently.

The ability to reach those citizens whose perception has been negatively affected by a crisis event and its consequences is the most critical enabling factor relevant to this objective. The table below identifies main prerequisites for communicating security measures:

TABLE 9: ENABLING FACTORS FOR COMMUNICATING SECURITY MEASURES

Prerequisite	Description
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<sup>9</sup> See SAFETY4RAILS deliverable D9.3.

A good communication plan of security measures	Good pre-planning is essential to properly communicate security measures. This will be important not only to calm users, but also to proceed appropriately.
The choice of the media chosen to transmit this information (32)	Appropriate choices must be made as to which medium conveys such sensitive information that is important for the trust of users.
The cultural predominance of the people who use this means of transport for linguistic reasons (30)	In order for transport users to be aware of security measures, messages must be understandable to them. It is therefore necessary to assess which are the predominant languages according to the origin of the majority of travellers and ensure all communications are available in an accessible and inclusive manner.
Selection of an appropriate level and detail of information presented	Finding the middle ground between providing information to ensure safety without going overboard so as not to cause the opposite effect.

### 3.3.8 Enhance public reputation

This objective is very similar to Section 3.3.7 but broader in scope. Best practices for enhancing public reputation encompass communicating the measures that have been taken to mitigate a crisis situation and make it less likely to occur in future and may also involve long-term communication of the service record of an organisation as a more general positive message.

#### Best practices, goals & needs

Generally, enhancing the public reputation of a public transport operator following a crisis incident involves the implementation and public communication of remedial and future preventative steps taken to address future similar situations. As such, the totality of the actions taken by a transport operator contributes to the public reputation of the operator assuming that it is publicised and communicated to citizens accordingly.

Reviewing the impact of a recent crisis event in a different travel domain, Penco et al. (13) state that “[c]ritical events may variously influence customers’ intention to take a cruise in the future with the cruise company held responsible for the event depending on different factors. In particular, public emotions emerging from the event and from the communication strategy followed by the firm, seem to influence future cruising decision of potential customers.”

The results of their study imply that the previously good reputation of a cruise line may influence future decisions by potential customers after a critical event. The company’s previous good reputation reduces the likelihood of the critical event impacting the intention to take future cruises with the same company. It is, therefore, essential to build good relationships with customers over the years. They recommend cruise companies monitor public conversations about their brand during a crisis since social media spread the news fast, often deforming and expanding the facts out of control. This can then, in turn, evoke negative feelings, which could affect the customer behaviour. The crisis response strategy used in a specific crisis might affect stakeholders’ perceptions of the crisis, and of the company. It could be suggested that with an appropriate crisis response strategy, a company can attempt to maintain a good image and convince the key stakeholders and especially the shareholders of the safety of the investments. Airlines have also attempted to build an image of a strong brand capable of surviving the crisis (33).

Hence, best practices include general reputation management activities over time as well as public communication of steps taken in response to a crisis situation.

## Barriers & enablers

The barriers noted in Section 3.3.7 also apply here. In addition it may be more difficult to enhance public reputation if more abstract messages such as safety record statistics or similar are used.

### 3.3.9 Help victims find loved ones

Crisis situations may result in groups of travellers getting split up or persons caught up emergency situations which may result in the need for, for example, medical treatment. Supporting persons looking for loved ones is one of the main duties of care of mass transport operators in crisis situations that involve individuals. It is particularly important when injuries and casualties occur during a crisis situation.

## Best practices, goals & enablers

A best practice for large-scale crises is to establish a dedicated team with separate communication channels purely for addressing requests about missing persons as the result of a crisis situation. Such communication channels may be shared with relevant organisations such as hospitals, the police or authorities tasked with supporting citizens who are missing loved ones. It is also best practice to offer psychological support to persons affected by loss as a result of crisis situations.

## Barriers & enablers

One key barrier to address when helping victims find loved ones is to respect the privacy of those involved. Personal data may only be used in accordance with data protection laws (32).

The infrastructure described under best practices needs to be available on standby for crisis situations and have established lines of communication with relevant sources of information in order to be effective. Smaller-scale events may not receive such support and may be served in a more ad-hoc fashion, which may not be suitable depending on the crisis situation outcomes. Depending on the structures for addressing crisis situations, an entity other than the operator may be responsible for operating communication lines for loved ones.

The key enablers for this objective are having access to the relevant resources in terms of trained specialist staff (30), dedicated communication channels and the means to widely disseminate information on these channels through a wide range of media channels.

### 3.3.10 Help with mental health

Helping citizens with mental health issues related to crisis situations is a second category in addition to Section 3.3.10 that requires specialist assistance and support by professional staff. Mental health issues caused by crisis events can occur both during the response to a crisis and afterwards in the recovery phase if citizens have for instance witnessed traumatising situations, which may include a range of situations. In this document, considering support with mental health issues focuses on the recovery phase.

## Best practices, goals & needs

Best practices for this objective are to cooperate with specialist mental health support teams connected to healthcare organisations, which can provide initial support to victims and identify needs for further specialised treatment for example for victims with PTSD symptoms. As a best practice, operator support staff will contact victims of crisis situations directly with advice for how to request support for mental health issues as part of post-event recovery activities. An additional best practice for large-scale crisis events is to publicise guidance for potential victims with mental health issues as part of general follow-up activities to crisis events with the public.

In terms of engaging travellers directly affected by an emergency situation, best practices to consider by staff responding to emergency situations include (7) (34) (35):

- Employing measurable, realistic, straightforward and simple goals and messages;
- Showing empathy with the situation they are going through;

- Meeting the needs of those impacted as fully as possible during an emergency situation;
- Presenting appropriate body language;
- Having trained and where appropriate multilingual staff available;
- Using information collected in advance to identify passengers with special needs;
- Applying a communication style that takes into account the symptoms experienced by victims.

The communication of potentially traumatic events should also be considered carefully. Van Leeuwen, Bommele and Hoogcarspel (28) suggest in the case of suicide that cause transport delays that it may be preferable to withhold or codify communications in order to avoid potentially traumatising experiences for travellers<sup>10</sup>.

#### Barriers & enablers

One important barrier to addressing mental health issues is a lack of ability to accurately identify persons who need help with mental health issues when they present themselves to general support staff physically or virtually. An additional barrier can be a lack of capacity by mental health care providers to address large local surges in the need for mental health support. Commitment from mental health care providers as part of crisis response and after care teams is the key enabler for this objective.

### 3.3.11 Elicit information, feedback and suggestions

This objective is concerned with means for eliciting information, feedback and suggestions for improvements from citizens using both open and structured techniques for engagement. The components of this objective concerned with feedback and suggestions is typically not used during the response phase of a crisis event, but as part of preparedness and/or recovery activities. Eliciting information from citizens can also be useful during the response phase when citizens can provide timely information on crisis situations.

#### Best practices, goals & needs

Current best practices for receiving timely information in the response phase are via emergency phone hotlines including the main emergency services emergency call centres, which are then communicated to crisis command centre operations. Best practices for eliciting feedback and suggestions from citizens in preparedness and recovery operations involve using customer experience surveys and focus group sessions with current and potential service users as a top-down initiative and bottom-up engagement with public transport activist groups which engage with service operators to improve service operations.

#### Barriers & enablers

Several barriers can often be found to hinder direct involvement of citizens through feedback and suggestions: public transport improvement projects often involve very long planning and development periods and involve a very large number of stakeholders including government, regulators and numerous technical groups, so that it can be challenging to involve citizens and transport users directly in such long-term and involved processes. This acts as a barrier to engaging citizens in post-incident recovery activities where their input based on their experiences from emergency situations may be overlooked. As a result, public transport infrastructure is typically developed for, instead of with, citizens and transport users. In terms of using information provided by citizens in a timely manner during crisis situations, the main limiting or enabling factor is the efficiency of the flow of information from the source at which citizen information is recorded to the point where it is provided to the relevant decision making location.

## 3.4 Summary

This section has provided a concise overview over current practices in citizen engagement both generally and focusing on a number of key objectives that were identified and operationalised for crisis communication in

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<sup>10</sup> See also D9.3, Section 2.1.4 for a review of the article.



SAFETY4RAILS deliverable D9.3. The overview identifies a number of important properties to consider in the context of citizen engagement in public transport related to crisis information:

1. Public transport operators are embedded in the process and interact with many other actors for both preparedness, response & recovery regarding crisis situations. This complex structure creates challenges for crisis communication (see D9.3) and similarly also for citizen engagement where it can lead to fragmentation of engagement, delay or loss of communication between citizens and the actors they ultimately should be connected with.
2. Public transport operators generally have strong competency and widely similar established best practices in core domains relating to passenger management and typical core tasks for ensuring traveller preparedness and safety (e.g., best practices on carriage evacuation, signage and evacuation procedures).
3. Direct engagement of citizens related to crisis situations at the time of writing still relies on long established means of interacting and communicating (telephone call centres, in-person interaction, basic PIA/PIS systems). More modern means for interacting are not typically considered as part of crisis response initiatives due to concerns about passenger participation, legal frameworks and technical/budget considerations.
4. The complex technical and organisational embedding of public transport operations and the related requirements to engage with multiple stakeholders throughout all operator activities currently does not leave much room for significant involvement of citizens for providing input.

The next section builds on the basis described in this section for the SAFETY4RAILS Citizen Engagement Concept. The CEC builds on existing best practices which are considered to be part of the CEC unless they are extended or otherwise changed by the CEC description.



## 4. Citizen engagement concept across phases

The SAFETY4RAILS Citizen Engagement Concept is a proposed concept template for public transport operators with suggestions for how to organise and implement citizen engagement activities related to crisis events as part of their overall citizen engagement strategy, their crisis communication activities and their crisis management activities.

### 4.1 Introduction

This concept builds on the best practices available in the public transport industry and offers suggestions for extensions, improvements, reorganisations and additions in order to improve citizen engagement. The characterisations provided in Section 3 present citizen engagement activities from the perspective of public transport and particularly metro and railway operators. This section continues to focus on this perspective and extends it by including other stakeholders concerned with managing emergency preparedness, response and recovery. It also more explicitly considers the potential contributions by citizens to crisis preparedness, response and recovery processes. This includes citizen information needs from their perspective and specifically also means how citizens can be actively engaged related to crisis events.

Not all of the objectives defined in Section 3 are relevant throughout the entire the cycle of preparedness, response and recovery introduced in Section 2. Table 10 indicates which objectives are relevant in which phase(s).

TABLE 10: OBJECTIVES AND CITIZEN CRISIS ENGAGEMENT PHASES

	Preparedness	Response	Recovery
Influence risk perception and behaviour	x	x	x
Inform about effects		x	x
Evacuate travellers		x	
Inform about travel alternatives		x	x
Facilitate two-way communications	x	x	x
Inform about event		x	x
Inform about security measures			x
Enhance public reputation	x		x
Help victims find loved ones		x	x

Help with mental health		x	x
Elicit information, feedback and suggestions	x		x

This section is organised as follows: first, as in Section 3 overall and cross-cutting concerns are considered. This subsection focuses on key conceptual cross-cutting concerns relative to those described in Section 3.2. Then, topics that relate to three phases introduced in Section 2 are discussed in the subsections 4.3, 4.4 and 4.5, followed by a section summary.

## 4.2 Overall and cross-cutting concerns

Only a few overall and cross-cutting concerns are discussed here because this section addresses most objectives and other factors specifically for the different phases in which they are relevant.

### 4.2.1 Organising collaboration and responsibilities

Across all phases of crisis-related activities, multiple organisations are typically involved in dealing with different parts of overall crisis-related activities. For citizen engagement, it is important to organise and coordinate these stakeholders across all phases in order to achieve a number of key objectives:

- Achieve clarity of responsibilities both within the stakeholder organisations and towards the citizens;
- Identify and document the goals and objectives of the group of stakeholder organisations concerning citizen engagement in the context of public transport crisis situations;
- Clearly define the roles and responsibilities within and between the stakeholder organisations that are required in order to achieve these goals and objectives given the agreed responsibilities towards citizens, including internal support structures across organisations to enable those responsible with carrying out their tasks.
- Ensure that established roles and responsibilities facilitate timely communications for situations in which they are required; if necessary, specify overriding responsibilities for situations requiring time-critical communications.

SAFETY4RAILS deliverable D9.3 describes a typical organisation of stakeholders as part of the Crisis Communication Framework.

### 4.2.2 Facilitating internal information flow and coherent messaging

Closely related to establishing roles and responsibilities across organisations is facilitating internal flow of information within and across organisational boundaries. This is of particular importance when responding to crisis situations but remains relevant also for the other phases considered in the CEC. Accuracy, breadth and speed of disseminating information internally are important across all phases of addressing crisis situations.

Effective dissemination of accurate information is also essential in order to ensure coherent messaging by stakeholders and staff that interact with citizens. Currently available technological solutions facilitate such quick dissemination of information and are the first choice for disseminating information to relevant employees. Fallback methods for disseminating information must be available as fallback for situations where infrastructure such as wireless networks or mobile phone networks become unavailable in crisis response situations.

## 4.3 Preparedness phase

The preparedness phase revolves about preparing citizens for crisis situations that may occur and also includes preventative measures to reduce the likelihood of crisis situations that may be caused by citizens.

### 4.3.1 Across objectives

Objectives of the preparedness phase share the means of communication that are used in order to engage with citizens.

#### Recommendation: Employ best practices for communication

Important recommendations concerning communicating preparedness measures build on the current best practices on this topic, which involve:

- Use of clear language and signals when communicating preparedness measures;
- Continuous repetition of preparedness messages in particular in areas that may particularly benefit from them;
- Extensive use of PIA/PIS and other available means of communication in stations and carriages;
- Communication of preparedness measures online on websites and social media.

#### Recommendation: Establish communication channels and coordinate with media stakeholders

It is of key importance to establish appropriate communication channels and connections with relevant external stakeholders controlling appropriate communication channels so that they can provide support for communications while responding to a crisis situation. As part of preparedness activities, transport operators and key stakeholders engaged in crisis response and crisis communications should identify the relevant communication channels that they will need to use in different types of emergency situations, and they should establish contact structures with these stakeholders so that they can activate contacts when necessary. The table below provides guidance on which types of communication channels should be considered when establishing a communication network that is both wide and does not have any avoidable “blind spots”.

TABLE 11: ESTABLISHING COMMUNICATION CHANNELS

Channel	Characteristics	Contact – preparation – crisis use
Mainstream broadcast media (radio, television)	<ul style="list-style-type: none"><li>• Broadcast in one of the first languages prevalent in the catchment area</li><li>• Operate dedicated news desk with dedicated contacts for news updates</li><li>• Typically operate multimodal including online and social media channels</li><li>• Professionally trained staff experienced in presenting news content including special events</li></ul>	<ul style="list-style-type: none"><li>• Establish as emergency contact through communications department</li><li>• No specific development activities needed</li></ul>
Operator and stakeholder online resources (web sites, social media channels)	<ul style="list-style-type: none"><li>• Typically operated by operator communications department or outsourced</li><li>• May operate help desk social media channels</li></ul>	<ul style="list-style-type: none"><li>• Take over operations of social media channels or activate emergency communications department staff to operate social media messaging as part of emergency response</li><li>• Include social media help desk staff in distribution of event-</li></ul>

		<p>related news to enable them to respond to requests with authoritative information</p> <ul style="list-style-type: none"> <li>• Synchronise messaging across online presences e.g. using message syndication mechanisms that publish information across multiple websites</li> </ul>
Media channel services focusing on specific cultural groups (e.g., ethnic groups)	<ul style="list-style-type: none"> <li>• Publish or broadcast in languages relevant to the cultural groups of concern</li> <li>• Not typically operating 24h</li> <li>• Typically operate multimodal including online and social media channels</li> <li>• Dedicated contact roles available depending on size of organisation</li> </ul>	<ul style="list-style-type: none"> <li>• Establish partnerships with major local services addressing local cultural groups</li> <li>• Establish all major local operators as language partners for crisis events</li> <li>• Task local operators with translating and communicating crisis event information</li> <li>• Promote connected local services as sanctioned information sources for news translated into languages of specific cultural groups</li> </ul>
Organisations representing persons with sensory impairments (e.g., deaf, visually impaired persons)	<ul style="list-style-type: none"> <li>• Can assist in communications with sensorily impaired persons</li> <li>• Typically organised as advocacy groups</li> </ul>	<ul style="list-style-type: none"> <li>• Establish contact with advocacy groups for requesting help in promoting messages and for activating volunteers for assisting on location</li> <li>• Activate volunteers to assist in broadcast media messaging (in case local broadcasters do not have resources to communicate to persons with sensory impairments)</li> <li>• Activate volunteers to assist at locations affected by crisis situations in person (to assist persons with sensory impairments)</li> </ul>
Neighbourhood groups (typically organised online or using community apps)	<ul style="list-style-type: none"> <li>• Can propagate locally relevant information through established channels</li> </ul>	<ul style="list-style-type: none"> <li>• Contact can either be established with neighbourhood group organisers or with the operators of neighbourhood group coordination websites or community apps</li> <li>• Can be activated in crisis situations in order to propagate general crisis information or to promote specific locally relevant information for an area (e.g., local travel restrictions, locally relevant actions to take such as closing windows during a fire with potentially hazardous emissions)</li> </ul>

In addition, service operators may use additional means of communication to broaden the reach of their messaging beyond those addressable in station, via media organisations and online communications by for example distributing leaflets or brochures in relevant local areas.

#### Recommendation: Ensure inclusiveness of communications

As during all phases, it is important to consider how preparedness messages can best be communicated to persons with auditory or visual and other sensory impairments. Furthermore, organisations should try to make materials and messages available in major languages of concern for travellers on their network in order to achieve a high coverage rate of the message. This is relevant in particular for safety announcements in areas where large numbers of tourists who may not be familiar with the specifics of a local transport operation are.

### 4.3.2 Objective-specific concerns

Four objectives are important for the preparedness phase: influencing the risk perception and behaviour of citizens to enable them to minimise risks and identify unusual situations, facilitating two-way communication and eliciting information, feedback and suggestions in order to engage citizens who may provide information, feedback and suggestions related to crisis preparedness and enhancing the public reputation of the operator.

#### Influence risk perception and behaviour

The purpose of influencing risk perception and behaviour is to prepare citizens and prevent them from causing dangerous situations for themselves or others. Methods for communicating guidance on risks and steps citizens should take when in risk situations are an established part of citizen engagement for metro and railway operators. Measures that should be carried out are:

- Provide clear and repeated messaging concerning safety rules using multiple modalities and types of indicators;
- Provide clear guidance for how to behave in specific crisis situations at locations where such situations may occur (e.g., provide evacuation guidance where evacuations may occur).

Communications should also enable citizens to actively contribute to identifying risky situations by establishing an understanding of typical vs. atypical situations when using public transport.

#### Facilitate two-way communication and elicit information, feedback and suggestions

Here, two objectives have been grouped together as they address overlapping issues during the preparedness stage. The objectives describe two topics to be addressed:

- Informing citizens how to report issues and seek help when they witness or experience potentially abnormal situations while using public transport, and
- Empowering citizens to suggest improvements that are intended to improve transport safety and transport user satisfaction.

Current practices for reporting potential issues are typically via hotlines and via similar means (e.g. phone text messages). Methods to enable citizens to engage with transport operators to reduce risks and improve services, which are currently typically not very well established, may be useful in order to identify risk situations typically observed by citizens when they use public transport. A more detailed description of options as part of a Citizen Engagement Concept is provided in Section 4.5.

In this phase in particular, passengers can help act as the ‘eyes and ears’ of a secure system, and awareness messages are useful in promoting vigilance and providing reassurance.

## Enhance public reputation

Engaging with citizens about risk preparedness and informing them about prevention, preparedness and how to report potential issues also serves the function as to indicate to citizens that a transport operator is taking their safety seriously and is visibly making efforts to ensure their safety.

### 4.4 Response phase

The response phase is of particular importance to crisis communication, as it has to deal with the actual crisis situation and may involve various types of risks, uncertainty, time pressure, communication issues and the need to prioritise activities due to the real-time nature of a crisis response.

As for the preparedness phase, this subsection is also further divided into general and objective-specific concerns.

#### 4.4.1 Across objectives

Cross-cutting concerns across objectives here are in particular the need to activate surge capacities, the prioritisation of actions involving citizens based on prioritisations of objectives and the development of a strategy for how to engage with citizens in terms of media channels and in terms of which content should be shared and which should be withheld.

##### Concern: Activating surge capacity

The need to activate surge capacities for engaging citizens in sufficiently large crisis situations is self-evident (see also (2)). Section 3 documented best practices in this respect for service operators. More generally, plans to activate surge capacity must be in place across all participating crisis response actors and should include:

- Capacity for first responders including emergency call operators and specialist response units where necessary (e.g., specialist firefighters)
- Capacity for crowd management at directly and indirectly affected locations
- Capacity for customer service staff on location and at centralised customer service centres
- Capacity for online services that provide crisis-related travel information and guidance
- Capacity for specialist psychological victim support if appropriate

##### Concern: Prioritising objectives

Citizen engagement during a crisis response must, in line with other crisis response activities, perform a risk analysis in order to prioritise actions appropriately. The UIC Recommendations for Crisis Management (36) identify typical crisis management priorities in the response phase at a general level, which can be summarised as follows (in order as presented by UIC):

1. Prevent loss of life and serious injuries
2. Minimise damage to operator assets and environment
3. Protect the operator reputation
4. Ensure business continuity or rapid recovery

The World Bank Toolkit on Intelligent Transport Systems for Urban Transport (37) describe the objectives of citizen engagement during crisis situations as follows (again paraphrased from the source). These objectives can be ranked as follows based on the risk ranking provided by UIC:

- Engage travellers to reduce risks of harm and injury
- Alert and divert travellers from areas of danger
- Update travellers with information before and/or during transit
- Inform citizens not directly affected by a crisis situation

The SAFETY4RAILS objectives that are relevant to the response phase can similarly be ranked. The table below shows a suggested ranking; some objectives are shown within the same rank, which indicates that they are of equal rank.

**TABLE 12: RANKING OF RESPONSE OBJECTIVES**

Rank	Objective(s)
1	Evacuate travellers
2	Influence risk perception and behaviour
3	Help finding loved ones
	Help with mental health
4	Facilitate two-way communication
	Elicit information, feedback and suggestion
5	Inform about travel alternatives
6	Inform about effects
7	Inform about crisis events

Prioritisations may differ depending on the severity and type of incident of concern, e.g., when some of the objectives from Table 12 are not applicable in the case of an event that does not cause travel disruption that needs to be mitigated.

#### Concern: Choosing communication channels

Effectively engaging citizens during a crisis can significantly mitigate the impact of a crisis on them and prevent citizens from becoming endangered or disrupted due to a crisis situation. Outreach to citizens for safeguarding them and informing them is hence a very important part of any metro or railway crisis communication plan.

According to (2), citizens expect to be informed of significant crisis events through mass media where possible and also expect service providers to communicate crisis situations to them on their premises and using online communication means (70% of participants in a survey conducted in 2017 expected this, and it is reasonable to assume that five years later this percentage would be even higher).

A study by Austin (38), published in 2012 identified different functions of social media (used for “insider information” and for checking in on friends) and traditional media (used as authoritative source of information). Austin stressed that both traditional and social media channels should be used in crisis response. The general recommendation for communication channels hence remains tripartite including communication channels on location, traditional media and social media channels. This view is also held by the practitioners involved in the project (see also D9.3, Section 2.3.2).



### Concern: Choosing information to release & restrict

As identified in Section 3, lack of clarity over which information should be communicated and which information should be withheld may result in delayed releases of information or may result in other adverse consequences such as reputational damage and legal liabilities for a service operator.

In order to avoid such situations, it is imperative to establish clear and unambiguous guidelines concerning which information should be communicated and which information should be withheld in a crisis situation. This should be combined with assigning the organisation and staff role(s) in that organisation tasked with handling information to be evaluated for communication and to be communicated. This must also include approval processes that may be required in different forms depending on the type of incident (see (2)).

#### 4.4.2 Objective-specific concerns

The objective-specific concerns during the response phase are presented ordered by their importance as suggested above in Section 4.4.1.

##### Evacuate travellers

Evacuating travellers from locations and rolling stock that may be at-risk locations during a crisis situation is of primary importance during a crisis situation. Clear signalling and signage should be in place to facilitate safe and speedy evacuations, and staff on location should be trained in managing evacuations and should regularly participate in training exercises to rehearse.

##### Influence risk perception and behaviour

Similar as for evacuating travellers, measures to influence risk perception and behaviour of travellers rely on clear signalling, signage and situation-aware staff at service operator locations. In addition, broad dissemination of information on behavioural guidance should be disseminated widely including through online channels and broadcast media services – in particular when longer-term behaviour change of citizens becomes necessary due to the nature of an event.

##### Help finding loved ones

During emergencies, service operators should designate locations and personnel at their premises who take up the task of gathering and reuniting persons who have lost friends or relatives during, for example, an evacuation activity. Staff should be selected so that they can support travellers in the languages most commonly used by travellers (30), should be capable of liaising with persons that have gotten separated from loved ones in an emergency situation and should direct these persons to pre-designated reunification meeting points (34).

##### Help with mental health

During crisis situations, help with mental health should focus on bringing persons suffering from acute mental health issues during the crisis situation to safety and on handing them over to emergency services for further treatment. Preparedness of staff to address mental health issues during crisis events is critical in order to mitigate effects during crises. Staff should identify whether a victim may be suffering from urgent mental health issues in order to ensure they are directed to first responder staff as quickly as possible during the immediate crisis response.

##### Facilitate two-way communication and Elicit information, feedback and suggestions

Two-way communication in the response phase serves two main purposes (see (2)): a) to enable citizens to provide information to response coordinators and b) to be able to respond to individual questions and requests from citizens.

Typical best practices concerning this topic revolve around emergency operator hotline use to communicate emergency information. In addition to this, citizens have increasingly been using social media in order to communicate relevant information both directly to crisis response stakeholders and indirectly via general social media activity.

For the former, social media customer support staff must develop specific mechanisms in order to provide information to them in a timely manner. For receiving information via social media, dedicated social media monitoring staff and/or automatic social media monitoring services such as that created in WP4 should be deployed in order to gather and analyse the provided information both in order to identify relevant information to pass on and in order to identify misinformation that may be circulating and may need to be countered or otherwise analysed by specialists (e.g., in the case of deliberate misinformation activities during a terrorist incident).

Engagement via social media during the response phase can be challenging for customer support staff given possible spikes in the number of interactions and potential for uncertainty in the information available to all parties engaging in communications. Assuming that a spike in interactions occurs, operators should prioritise among the types of interactions they engage with among responding to address incorrect information to reduce the spread of fake news, providing practical guidance on actions to take, directing citizens to specific other sources of information regarding their request or providing general information updates in response to questions.

#### Inform about effects & travel alternatives

Best practices for informing citizens about effects of crisis situations are provided in Section 3.3.2. Expanding on these best practices, operators should integrate advanced information services about crisis effects into mobile app offerings that they operate or participate in, including to use their mobile app to warn citizens based on their location if they opt in to such a service. When doing so, the app should also suggest to travellers to select alternative multimodal travel options when this is appropriate given the transport disruption at hand.

The operator should be capable of providing proactive suggestions for alternative travel through their mobile app in addition to informing travellers about disruptions to services they are booked on or which they regularly use if they opt into a function to track such services. Where possible, alternative travel recommendations through mobile apps should either directly include functionalities for rerouting travellers via alternative multimodal travel options or should direct travellers to suitable online services that can carry out the task of offering multimodal alternative travel guidance. Typical information needs for metro or railway travellers are shown in the table below (see also (2)):

**TABLE 13: EFFECTS & TRAVEL ALTERNATIVES INFORMATION NEEDS**

<b>Information Need</b>	<b>Description</b>
Which lines are affected	Clients should be kept informed about which rail/metro lines are affected
Which alternatives paths exist and how to reach them	Clients should be informed about possible alternative routes bypassing affected lines with unaffected lines segments and on the way to reach alternative paths
Which are the existing alternative transport means	Clients should be kept informed about which alternative transport means they can use to go to their destinations
Which are alternative emergency transport means	Clients should be informed about emergency transport services deployed by the railway operator
Measures taken by the service operator	Clients should be kept informed on the current measures taken by the service operator to resolve the crisis. Including which measures are put in place to mitigate repercussions on clients.

Impact on security/safety	Clients should be aware of elements that could affect the safety of the service and especially their personal safety.
When/if normal service will resume	Clients should be kept informed of the duration of a crisis and when they can expect normal service to resume.
Impact and consequences on passengers	Clients should be kept informed of the impact the incident will have on them (such as change of route, delays, cancellations) and of alternatives offered to them.
Passenger rights in case of incident	If the incident has a deep impact on passengers may be necessary to inform passengers about their rights in case of important changes in the offered transport service or in case of changes and restrictions consequent to the incident cause problems for passengers
Character of the incident	In certain cases, clients should be informed of what happened, who was responsible and/or affected, when and where the incident took place, and how it happened?

All functionalities that utilise personal information including, for example, location services must be offered as opt-in services to ensure ethical and legal compliance.

#### Inform about crisis events

Best practices for informing citizens about events are provided in Section 3.3.6. Relative to current best practices, it is recommended that service providers and the group of stakeholders make extensive use of social media channels using a coordinated approach, in which stakeholders exchange information and reinforce the messages of each other – also in order to combat the spread of misinformation over social media during a crisis situation. The table below provides typical information needs concerning crisis events:

TABLE 14: EVENT INFORMATION NEEDS

Information Need	Description
When has it happened?	This information is important for a correct development of the subsequent movements to resolve the emergency situation.
How has it happened?	This information is important for a correct development of the subsequent movements to resolve the emergency situation.
Who or what caused the incident, and what is their status?	This information is important for a correct development of the subsequent movements to resolve the emergency situation. It is sensitive information that cannot be given to all interested groups in order to avoid social alarm or use by perpetrators.

Status of victims (2)	This information is not only essential for the internal functioning of the services but also to reassure citizens and remove uncertainty from the situation.
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## 4.5 Recovery phase

Citizen engagement in the recovery phase is typically not considered at length as part of crisis communication efforts, but it should play a significant role in terms of citizen engagement both in order to remedy damage caused by a crisis situation and in order to involve citizens as stakeholders into recovery and improvement processes that follow a crisis event.

### 4.5.1 Across objectives

As in the response phase, objectives in the recovery phase share a need to engage citizens using a wide range of communication channels. During the recovery phase, communications are not as time-critical and do not require as strict a coordination between stakeholders involved in crisis response and crisis recovery, and stronger involvement of communications departments is possible given typically less pressing time constraints compared to the immediate crisis response.

In terms of communication media, dedicated messaging both on location, online and in cooperation with broadcast and similarly largely consumed media services should be carried out in order to broadly disseminate the different types of recovery actions that are being undertaken.

### 4.5.2 Objective-specific concerns

As for the previous stages, objectives for the recovery phase have been grouped where they overlap significantly in this phase.

#### Inform about effects and travel alternatives

During the recovery phase, engagement related to disruptions in the aftermath of a crisis situations should be continued with in the same way as during the crisis situation itself (see Section 4.4.2) as long as a disruption continues. Citizens should be given the option to determine the frequency with which they wish to be updated in the aftermath of a crisis situation in order to avoid information overload.

Information about the successful completion of remedial activities should be disseminated widely in order to ensure that citizens are aware that normal operations have been restored and citizens should be invited to follow-up engagement activities to provide feedback on remedial activities, which can be used to further improve future preparedness.

#### Inform about security measures and enhance public reputation

The best practices in Section 3.3.7 present a suitable way to achieve the objective of informing citizens about the security measures put in place after a crisis situation has been resolved. Similarly, communicating about the steps taken to remedy crisis effects and prevent them from occurring again should be carried out as described in the best practices in Section 3.3.8.

When considering which security measures to implement and to communicate, it is important to take into account the general perception of which situations make the public feel concerned about their personal security. Survey data provided by Transport Focus (cited via (39)) provides survey responses on their main personal security concerns. Using figures from Autumn 2014, responses indicate that anti-social behaviour is the most-frequently given response by passengers when asked about their main security concerns, followed by lack of on-train staff, lack of police officers, lack of other passengers, lack of information, witnessing of vandalism or violence on a train and fear of terrorism.

Ensuring that security responses are both relevant and visible in order to improve the security posture after an incident and hence are communicated to citizens improves the likelihood that the perceived security of travellers improves, and these perceptions should be taken into account when considering the topics to engage citizens about as well as the means by which to do so.

Vigilant passengers have a crucial role as the 'eyes and ears' of a secure system but someone must be there to listen to them (also enabling two-way communications, see Section 3.3.5). Passengers emphasise the importance of a visible staff presence on the railway and the concern it causes when it is not there. Besides providing tickets and information, and protecting revenues, visible staff presence offers a reassuring human presence, helping enhance passengers' cooperation and perception of personal security; it also acts as a deterrent to crime and disorder. To do this, staff must be both visible and approachable. They need to engage with passengers and inform them on the security measures.

### Help with mental health

Mental health support should typically be transitioned to appropriate organisations and staff if it has not been already during the response phase, because transport operators and many of the other stakeholders involved in crisis management and response are not typically well-suited to support persons with mental health issues. An exception should be made when exceptionally large crisis events have occurred. Then, transport operators should fund mental health support activities such as dedicated support groups in order to deal with widespread mental health trauma responsibly.

### Elicit information, feedback and suggestions

Citizen engagement and citizen participation can play a large and potentially useful role in remedying problems identified in crisis situations, and they can also contribute towards enhancing the public reputation of a transport operator in the aftermath of a crisis situation.

As described in Section 3.3.11, current best practices on citizen engagement and participation are typically fairly basic and involve for instance small groups of citizens selected for focus groups, or, on the other end of the spectrum, self-organising groups of transport users who do not typically interact with transport operators in a structured manner.

A World Bank framework for citizen engagement (1) gives an overview of approaches and mechanisms for citizen engagement, from which the following may be useful in different crisis recovery processes:

- Citizen consultation, e.g., through public hearings, focus group discussions, membership in advisory bodies
- Collecting, recording, and reporting on inputs from citizens, e.g., through public hearings, focus groups, local working groups, citizen co-creation workshops, surveys, citizen scorecard, citizen report cards
- Collaborating in decision-making, e.g., via citizen membership in decision-making bodies, participatory planning
- Citizen-led monitoring and evaluation, e.g. via citizen satisfaction surveys, citizen scorecard
- Empowering citizens with resources and authority over their use, e.g., via community management, community contracting, participatory monitoring

Different types of such approaches and mechanisms may be useful for citizen engagement in the recovery phase. As a minimum, it is recommended to engage citizens who were impacted by a crisis event in order to record their experiences and to collect their suggestions for improvement. This can be achieved via individual interviews, group discussions and activities such as ideation sessions, in which citizens identify problems they experienced and brainstorm solution approaches they would suggest for implementation.

Such activities should be undertaken separately for different groups of impacted citizens if the impact of a crisis event differs significantly, for example when some citizens were impacted by an evacuation event and other citizens were rerouted from their usual travel route due to the impact of an event.

## 4.6 Summary

This section used a model of three different phases related to a crisis event, situated the relevant objectives identified in D9.3 and described with best practices in Section 2 and extended where going beyond the current best practices may improve citizen engagement or outcomes such as the quality of improvements to services as a result of engaging with citizens.

Because the presented concept is generic and not applied to a specific case, it should be understood and used as a set of building blocks to assemble into operator- and situation-specific processes and guidelines. The implementation of a CEC is one of the topics of the following section.

## 5. Operationalising and reviewing the Citizen Engagement Concept

This section reviews the requirements and derived specifications presented in Section 2.2 of this deliverable and discusses methods for implementing, validating and improving citizen engagement concepts and frameworks.

### 5.1 Introduction

This section reviews the requirements presented in Section 2.2 of this deliverable and evaluates whether and how the requirement has been addressed by the Citizen Engagement Concept presented in this deliverable. After that, methods for implementing, evaluating and improving the performance of citizen engagement concepts and of the concept presented in this deliverable are discussed.

### 5.2 Operationalising citizen engagement concepts

This subsection is concerned with operationalising the Citizen Engagement Concept. This entails the implementation of a subset of the CEC measures to address objectives during the different phases of engaging with crisis situations, testing and evaluating the performance of citizen engagement activities and implementing methods to continuously improve a CEC implementation.

#### 5.2.1 Implementing

As is evident from the description of aspects of the SAFETY4RAILS Citizen Engagement Concept, a general CEC description such as the one provided in this deliverable will provide a large number of options to practitioners who will then have to choose which ones to use and customise for a particular environment. In the case of citizen engagement related to crisis situations, the nature of the actual crisis situation encountered will further influence which citizen engagement methods are best suited to tackling to a specific crisis situation.

##### Embedding

It is important to consider a citizen engagement concept as an integrated composition of methods and approaches for engaging with citizens throughout the different phases identified for the SAFETY4RAILS CEC. Furthermore, the CEC related to crisis situations should be integrated with overall crisis response plans, the Crisis Communication Framework in place and the operator citizen engagement framework in place for general (“non-crisis” related) citizen engagement in order to form part of an integrated framework.

Since crisis communication and citizen engagement frameworks share many common tasks that will be present in both types of frameworks, it may be beneficial to integrate both into a single communication and engagement framework. It should be noted that crisis communication frameworks do not necessarily follow a holistic lifecycle model such as the one suggested for use with the SAFETY4RAILS CEC; it is however recommended to retain this lifecycle model where possible in order to establish an integrated view of crisis preparedness, response and recovery and in order to facilitate continuous improvement of the citizen engagement framework.

##### Selecting

With this background in mind, the objectives to be addressed when implementing the CEC for a specific operator or topic needs to be selected. The framework outlined in this deliverable aims to give a quite comprehensive framework for citizen engagement related to crisis situations, but it is not necessary to adopt a “complete” citizen engagement framework wholesale. When selecting objectives to address through citizen engagement methods, it may be easiest to start with methods that are covered by, for example, a Crisis Communication Framework and to extend them with additional methods suggested for citizen engagement.

##### Implementing measures

When the objectives and methods to apply have been selected, the related measures need to be implemented (e.g., by defining a workshop concept for gathering feedback from persons involved in a train station evacuation



when the workshop method has been selected). This implementation will in most cases be organisation-, location- and often also situation-specific and will thus need to be implemented specifically for the purpose for which it is intended.

It is very important to formalise citizen engagement activities in the same way as crisis communication and general crisis prevention, management and remedial activities. This includes:

- Identifying clear roles and responsibilities for each activity;
- Defining means for internal information dissemination and verification between stakeholder organisations primarily during a crisis response;
- Establishing communication channels for each activity where necessary;
- Establishing priority rankings for different measures during the different phases of citizen engagement;
- Defining clearly delineated guidelines for to ensure compliance with privacy and ethics rules;
- Defining clearly delineated guidelines for permissible vs. non-permissible communication content including responsibilities for authorising release of specific information of concern;
- Establish procedures for ensuring accessibility and inclusivity of messaging.

The Citizen Engagement Concept should be formalised analogous to other components of crisis-related planning and should become part of testing and evaluation activities concerned with crisis prevention, management and mitigation.

## 5.2.2 Testing and evaluating

Processes such as the CEC and the Crisis Communication Framework must be practised and tested in order to identify issues to be resolved, and they should be evaluated in order to determine to what extent they achieve the goals they have set out to achieve.

### Testing

Typical testing of a communication plan can be carried out as part of crisis management exercises at multiple scales, as follows:

- Via desk “playthrough” exercises carried out by specialists;
- Via control room exercises involving core staff;
- Via larger exercises involving operator staff;
- Via integrated exercises involving all stakeholders.

In order to test a Citizen Engagement Concept implementation, citizens and other relevant stakeholders such as the media must either be simulated in some way, or citizens and/or external stakeholders must participate in the testing. Some components that relate to citizen engagement can be simulated either using data from previous real-world events or using simulation software that models citizen behaviour, typically given external factors that influence their behaviour (e.g., layout of a train station, visibility of signage represented in a computer model etc.).

### Evaluating

If it is assumed that citizen engagement related to crisis situations is sufficiently important to invest time and effort into devising a CEC and implementing it, it is then also necessary to determine ways to measure the performance of the devised CEC and to determine which parts of a CEC may benefit from changes or improvements.

Citizen engagement frameworks are generally complex and time-consuming to evaluate, since they often target “soft” interactions between organisations and citizens. In the case of citizen engagement related to crisis situations, parts of the citizen engagement are likely to occur during an emergency situation, which is not conducive towards carrying out evaluations. Furthermore, the evaluation of a citizen engagement framework

that itself encompasses the provision of feedback and evaluation information on a crisis situation as part of the framework to be evaluated creates an additional layer of complications.

Wagner (40) discusses the general task of measuring the performance of public engagement in transportation planning (as a somewhat related topic area). He suggests an evaluation framework that uses a set of guidelines and principles commonly associated with citizen engagement processes, which can be operationalised for validation. Warren also establishes three main criteria for evaluating citizen engagement: accessibility, engagingness of interactions and outcome-process performance. He introduces a performance scorecard survey instrument in order to capture citizen responses concerning survey questions aiming to capture the three aforementioned concepts. Such an approach aims to provide a holistic view of the achievements of a citizen engagement process through surveys, which is a reasonable starting place for evaluating the SAFETY4RAILS Citizen Engagement Concept holistically.

In addition to holistic evaluation measures, individual objectives may be suitable for more directly measurable evaluation metrics which can facilitate the definition and evaluation against, for example, Key Performance Indicators (KPIs). Such measures are for instance comparative measures from evacuation exercises in which citizen engagement techniques have been varied for validation purposes, or surveys to determine the reach of communication activities concerning a crisis event.

A combination of both a holistic measure of the performance of a citizen engagement and more targeted evaluations of specific objectives against KPIs can be helpful in assessing the overall performance of a CEC and in identifying points for improvement.

5.2.3 Improving

An implemented SAFETY4RAILS CEC should be continuously reviewed and improved as required responsive to new insights gained, and new technologies become available and external circumstances change.

In SAFETY4RAILS deliverable D1.4, an iterative cyclical process has been suggested as useful for improving the citizen engagement concept for crisis management. The Plan-Do-Check-Act (PDCA) method (or Deming circle) is an iterative design and improvement approach for continuous process and product improvement consisting of four phases (41) as shown in Figure 2.

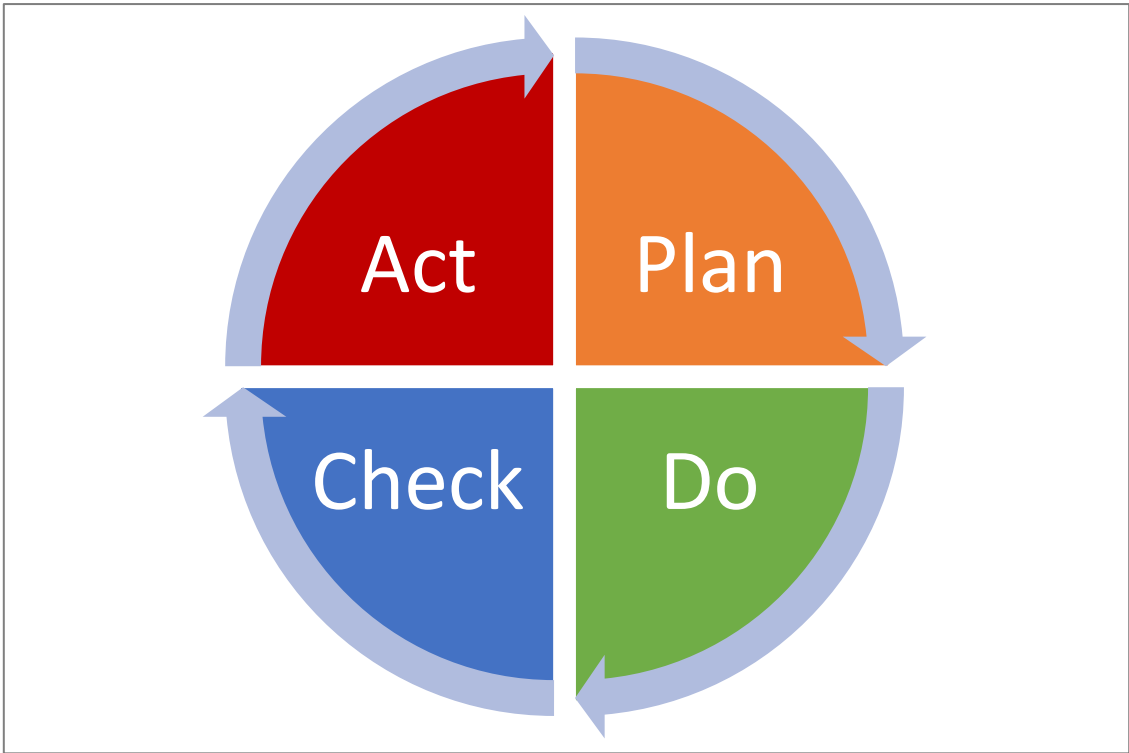


FIGURE 2: PDCA METHOD ILLUSTRATION

This is an easy to understand approach to continuous service improvement that can be applied to the SAFETY4RAILS CEC:

- **Plan:** During the Plan phase of the process, the organisation of stakeholders and their communication lines, the processes in place to engage citizens and the means of communication to engage with them should be continuously reviewed.
- **Do:** During the Do phase of the process, elements that have been identified for improvement should be changed and plans and any technical or organisational means for implementation should be revised.
- **Check:** The Check phase should be implemented in the form of regular tests and exercises relating to crisis situations – it should be carried out when the updates of the Do phase are at the level where they can be executed.
- **Act:** If successfully tested, the updated and checked measures and solutions from the previous steps of the cycle are introduced into the latest version of the CEC implementation.

PDCA activities should generally be carried out cyclically in order enable for continuous improvement of processes. After a crisis event, an additional PDCA cycle should be carried out after the crisis recovery phase described in Section 2.1. This ensures that issues identified as part of the activities in the crisis recovery phase are picked up by using a known structured improvement process in a timely fashion.

### 5.3 Review of requirements

Table 13 presents the requirements in deliverable D1.4 and examines whether and how the requirements specified that relate to the Citizen Engagement Concept are addressed by it.

TABLE 15: SAFETY4RAILS REQUIREMENT REVIEW

Req. ID	Short Name	Description	Addressed
UR-CC-R01	Coordinate with relevant stakeholders, e.g., media organisation	Establish contact and build partnerships with broadcast media agencies, including those linked to specific cultural groups or other recognised online communities, who may provide support for emergency communication, in case of necessity.	<p>Establishing contact with stakeholders that operate communication channels relevant to crisis communications is covered in Section 4.3.1 as part of cross-objective preparedness activities.</p> <p>Please note that the conditional requirement of providing a guide to best practices for managing and communicating information including with media organisations was not addressed as it was considered out of scope given the focus of the task.</p>
UR-CC-R02	Create a crisis communication plan	The crisis communication plan adheres to regulatory frameworks, for example, the General Data Protection Regulation requires that personal data breaches are notified to the competent national supervisory authority and, in certain cases to communicate the breach to the individuals whose persona data have been affected by the breach; identifies communication channels used by passengers and station visitors and public risk awareness levels and assesses the public risk awareness levels.	<p>This requirement has been addressed by the creation of the Crisis Communication Framework documented in D9.3.</p> <p>Discussions of integration points with the CCF and the application of crisis communication techniques for citizen engagement, including discussion of legal and ethical considerations regarding communications have been integrated into this deliverable throughout.</p>
UR-CC-R03	Communicate about preparedness actions to take when facing potential risks	Publicise actions to be taken in case of emergency; raise safety awareness: knowledge. Underline on a regular basis the importance of knowledge about safety instructions, providing a hub's safety instruction leaflet, printed and available online, addressed to all cultural groups and translated by mother-tongue professionals in as many as possible languages; ensure the instructions are to be found by relevant.	<p>Preparedness communication addressed in Section 3.3 and Section 4.3.</p> <p>Please note that recommendations do not extensively use paper leaflets as suggested in the requirement. Paper leaflets are referenced in Section 4.3.1 as additional means of preparedness communication.</p>

UR-CC-R04	Provide timely information	What: brief description of the event occurring, likely impact on the public, behaviours to adopt and actions to take; when service will be restored/that service is restored; additional sources of information. How: inclusive (including for Passengers with Reduced Mobility (PRM)), use text and audio (public audio announcements or pre-recorded videos) in different languages provide graphic displays, use pictograms, write in easy-to-read formats, repetitive, consistent, all & multi-channel (traditional & social media), empathy not reputation, engaging with the public.	The requirements specified in this item have been taken up and integrated into the deliverable as requirements for implementing timely, accessible and appropriate communications throughout 3 and Section 4.
UR-CC-R05	Provide upstream communication in transportation hub	Help the passengers to find alternative ways to reach their final destination. The passenger should not need to be present in the station to get the right information. The most adapted communication vector available should be used to ensure that the information provided is an official source of communication.	Best practices on providing alternative travel guidance are described in Section 3.3.4. Suggestions for enhancing transport operator mobile apps in order to actively encourage travellers to use alternative multimodal transport options and for integrating or promoting services that provide the necessary travel information are described in Section 4.4.2.
UR-CC-R06	Continue to update about the situation	Locate unreached victims. Help families and groups reunite: put in place a strategy to identify and bring together people belonging to the same groups or facilitate the recognisability of different post-event logistic areas, providing provisional signs and directions addressing all involved audiences. Inform victims about the existence of (free) post event support.	Partially covered as discussed in D1.4, discussed in Section 3.3.9 and Section 4.5.2.
UR-CC-R07	Specific communication to regain passengers' confidence for the multi-modal approach	Communicate about the measures put in place to return to normal	Addressed in the discussion of objective-specific concerns in Section 3.3 and the considerations for the recovery phase in Section 4.5.

UR-CC-R08	Apply lessons learned	Collect all available information about the event which occurred and reflect on what worked and what could use improvement. Update the crisis communication plan to reflect this. Inform the public of any new security measures put in place.	Addressed primarily in Section 4.5, particularly via the discussion of citizen engagement techniques that may be used in order to gather feedback and suggestions for improvement from citizens. A cyclical process for continuous preparation and improvement related to crisis situations is introduced in Section 5.2.3.
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All of the requirements identified for the Citizen Engagement Concept have been addressed largely or fully as specified in SAFETY4RAILS deliverable D1.4. Requirements that were addressed to a large extent contained requirement elements that were classified as feature creep by the T10.3 task participants, since they do not directly relate to citizen engagement.

## 5.4 Summary

This section has presented issues to be considered when implementing a version of the SAFETY4RAILS CEC; it has suggested means for testing and validating the implemented plan and presented a method for continuous improvement of the plan.



## 6. Conclusion

This brief section concludes the main part of the deliverable D10.7 “Citizen Engagement Concept”. It recaps the contributions of the deliverable and notes some topics for future work beyond the activities in the related task T10.3.

### 6.1 Summary

This deliverable introduced the SAFETY4RAILS Citizen Engagement Concept regarding crisis situations, which has been developed in order to address the requirements identified and specifications defined for it set out in SAFETY4RAILS deliverable D1.4 and also presented in this deliverable in Section 2.2.

The document provided an overview of current best practices, goals, needs, barriers and enablers for citizen engagement overall and a number of specific objectives identified in deliverable D9.3 that are relevant for citizen engagement. Given this information on citizen engagement, citizen engagement was then re-examined separated into three main phases of preparedness for, response to and recover from crisis situations. The document then provided information on how to implement a practical CEC given the available options, discussed difficulties of and opportunities for evaluation and presented a method for continuous improvement of the CEC. A review of the SAFETY4RAILS requirements covered by this deliverable concluded the main sections of the document.

### 6.2 Future Work

While this document completes the work of T10.3, the participants hope to be able to carry out further work on the topic of citizen engagement related to crisis events in future. The following topics in particular are considered to be interesting and useful for practical future applications of citizen engagement frameworks in the domain:

First, further in-depth research on both specific measures and integrated concepts for citizen engagement related to crisis situations in public transport requires further in-depth practical comparative evaluations in order to provide a better-founded empirical understanding on specific benefits of communication and engagement measures in the target domain. This applies both to specific measures that may be fairly easy to evaluate in experimental settings and to the investigation of overall concepts through studies that extend over a longer period of time in order to e.g. better understand the effect of different measures on citizen preparedness. This will allow more concrete recommendations regarding processes and tools that have been shown to be useful for citizen engagement in addition to the established best practice methods presented in this deliverable. In particular the usage of new technologies beyond those established in metro and railway environments including mobile device apps and social media should be investigated further (as was also suggested by practitioners in D9.3, Section 2.3.2).

Second, the evaluation of citizen engagement frameworks, which themselves are typically complex, should be investigated further in order to be able to provide comparable measures of citizen engagement performance between different implementations of a citizen engagement framework and, where possible also between different citizen engagement frameworks in the same domain.

Finally, studies of the effect of citizen engagement in real-world crisis situations would give valuable practical insights.

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# ANNEXES

The only annex of this deliverable, Annex I, presents a glossary and list of acronyms.

## ANNEX I. GLOSSARY AND ACRONYMS

This annex presents a glossary and list of acronyms used in this deliverable.

TABLE 16 GLOSSARY AND ACRONYMS

Term	Definition/description
<b>AVM</b>	Automatic Vehicle Monitoring
<b>CAD</b>	Computer-Aided Dispatch
<b>CCF</b>	Crisis Communication Framework
<b>CEC</b>	Citizen Engagement Concept
<b>EPF</b>	European Passengers' Federation
<b>ERA</b>	European Union Agency for Railways
<b>KPI</b>	Key Performance Indicator
<b>LEA</b>	Law Enforcement Agency
<b>PAS</b>	Passenger Address System
<b>PDCA</b>	Plan-Do-Check-Act
<b>PIS</b>	Passenger Information System
<b>PTSD</b>	Post-Traumatic Stress Disorder

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