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Real-time Platforms for Nuclear and Radiological Emergency Preparedness and Response Within Countries

National Guidance to Enhance Cross-Border Information Exchange and Co-ordination of Protective Actions

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NUCLEAR ENERGY AGENCY
COMMITTEE ON RADIOLOGICAL PROTECTION AND PUBLIC HEALTH

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The mission of the NEA is:

– to assist its member countries in maintaining and further developing, through international co-operation, the scientific, technological and legal bases required for a safe, environmentally friendly and economical use of nuclear energy for peaceful purposes;

– to provide authoritative assessments and to forge common understandings on key issues, as input to government decisions on nuclear energy policy and to broader OECD policy analyses in areas such as energy and sustainable development.

Specific areas of competence of the NEA include the safety and regulation of nuclear activities, radioactive waste management and decommissioning, radiological protection, nuclear science, economic and technical analyses of the nuclear fuel cycle, nuclear law and liability, and public information. The NEA Data Bank provides nuclear data and computer program services for participating countries.

Acknowledgements

This report was prepared by the Nuclear Energy Agency (NEA) Expert Group on the use of Real-Time Platforms (EGRT) and endorsed by the Committee on Radiological Protection and Public Health (CRPPH) as part of the activities of its Working Party on Nuclear Emergency Matters (WPNEM). It was approved by the CRPPH by the written procedure on 12 January 2024.

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In addition to these individuals, many thanks are due to the representatives from the countries who completed the EGRT questionnaire.

Foreword

The Nuclear Energy Agency (NEA) Committee on Radiological Protection and Public Health (CRPPH) assists NEA member countries in identifying critical and emerging issues in radiological protection, analysing their possible implications for policy, regulation and practices, and contributing to the development of approaches for their resolution. The Working Party on Nuclear Emergency Matters (WPNEM), working under the auspices of the CRPPH, established the Expert Group on the use of Real-Time Platforms (EGRT) for member countries to collaboratively address improving cross-border co-ordination by sharing experience in the use of real-time information platforms in nuclear and radiological Emergencies Preparedness and Response (EPR). The establishment of the Expert Group and the development of this report are a direct output of the lessons learnt from the Fifth International Nuclear Emergency Exercise (INEX-5) in 2015-2016, which focused on nuclear emergency notification and communication aspects, including transboundary aspects, interfaces and how to identify and obtain resources.

A real-time platform (RTP) is the generic term for a platform used for managing data and information in radiological and nuclear emergencies. For example, this may include platforms used for collating radiological monitoring data and/or situational awareness. The focus of this report is to explore the use of existing RTPs in NEA member countries. The findings presented illustrate tips to design an RTP and areas of improvement related to the development and operation of RTPs within countries, with a particular focus on the use of RTPs to enhance cross-border and regional information exchange and the co-ordination of protective actions. One of the key recommendations that emerged from this analysis is the need for greater international collaboration between RTPs (through the development of interfaces for instance), along with the need to maintain and expand the inventory of RTPs used within NEA member countries as initiated through the work of this EGRT. A comprehensive inventory will ultimately serve as a global reference tool.

The analysis is based on data and information collected in the form of a survey sent to national governments and regulators responsible for nuclear and radiological emergency preparedness and response. The survey gathered information on the development and maintenance of RTPs, the content available and the cross-border arrangements with other countries and international organisations. Nineteen NEA member countries responded to the survey, as well as the European Union through the European Commission, providing a sound base to draw the conclusions and recommendations presented in this report.

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List of abbreviations and acronyms

AIIMS	Australasian Inter-Service Incident Management System
APA	Agência Portuguesa do Ambiente (Portuguese Environment Agency)
API	Application programme interface
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
BEIS	Department for Business, Energy, and Industrial Strategy (United Kingdom)
BFS	Bundesamt für Strahlenschutz (Federal Office for Radiation Protection, Germany)
CRPPH	Committee on Radiological Protection and Public Health (NEA)
DSA	Direktoratet for strålevern og atomsikkerhet (Norwegian Radiation Protection Authority)
EC	European Commission
ECURIE	European Community Urgent Radiological Information Exchange
ELAN	Electronic Situation Display for the Emergency Management (Germany)
EGRT	Expert Group on the use of Real-Time Platforms (NEA)
EGDP	Expert Group on comparison and understanding of Dose Prognosis (NEA)
EPA	Environmental Protection Agency (United States)
EPR	Emergency preparedness and response
EU	European Union
EURATOM	European Atomic Energy Community
EURDEP	EUropean Radiological Data Exchange Platform
FTP	File Transfer Protocol
GIS	Geographic information system
HAEA	Hungarian Atomic Energy Authority
HC	Health Canada
ICRP	International Commission on Radiological Protection
IAEA	International Atomic Energy Agency
INES	International Nuclear and Radiological Event Scale
INEX	International Nuclear Emergency Exercise
IRMIS	International Radiation Monitoring Information System

IRSN	L'Institut de radioprotection et de sûreté nucléaire (Institute for Radiation Protection and Nuclear Safety, France)
ISIN	Ispettorato nazionale per la sicurezza nucleare e la radioprotezione (National Inspectorate for Nuclear Safety and Radiation Protection, Italy)
MKSID	Medresorni Komunikacijski Sistem med Izrednim Dogodkom (Slovenia)
NEA	Nuclear Energy Agency
NEOC	National Emergency Operations Centre (Switzerland)
NRC	Nuclear Regulatory Commission (United States)
RIVM	National Institute for Public Health and the Environment (Netherlands)
RTP	Real-time platform
SNSA	Slovenian Nuclear Safety Administration
SONS	State Office for Nuclear Safety (Slovak Republic)
STUK	Säteilyturvakeskus (Radiation and Nuclear Safety Authority, Finland)
TSO	Technical Safety Organisation
UI	User interface
USIE	Unified System for Information Exchange in Incidents and Emergencies
WPNEM	Working Party on Nuclear Emergency Matters (NEA)

Executive summary

The collection and dissemination of data and information is an essential part of the response to nuclear and radiological emergencies. It underpins all parts of the response and recovery effort and is used to inform decisions, build situational awareness, and communicate with stakeholders. Many countries have developed their own platform(s) for managing and processing data and information in nuclear and radiological emergencies, and their use within the country is often well established. However, nuclear and radiological emergencies have the potential to affect more than one country, so the provision and exchange of data and information between countries is a key part of ensuring a common understanding of the situation and multi-national harmonisation of the protective actions.

The importance of information exchange in the event of a nuclear or radiological emergency was highlighted in the feedback from the Fifth International Nuclear Emergency Exercise (INEX-5, see www.oecd-nea.org/jcms/pl_15064) held in 2015-2016 (NEA, 2018a). Following the publication of the post-exercise report (NEA, 2018b), the Working Party on Nuclear Emergency Matters (WPNEM) decided at its 43rd meeting in 2018 to establish the Expert Group on the use of Real-Time Platforms (EGRT). The EGRT was subsequently tasked with exploring the findings from the INEX-5 exercise and reviewing the use of real-time platforms (RTPs) in NEA member countries. The focus was particularly on cross-border and regional information exchange and how this translates into the harmonisation of protective actions. Publication of this report, which summarises the findings of the analysis of the member countries' responses to the dedicated survey and provides recommendations on the use of RTPs to enhance cross-border and regional information exchange, is a key deliverable of the EGRT mandate.

As part of the analysis for this report, the EGRT conducted a survey to gather information from NEA member countries on the implementation of RTPs used to manage and process information in the event of a nuclear or radiological emergency. A total of 22 organisations from 19 member countries (70% of the NEA WPNEM country membership) and the European Commission provided responses to the survey. From the responses received, there is clear evidence that RTPs are widely used in NEA member countries and are seen as a key tool in managing data and information. However, the results show that there is a lack of bilateral and multilateral agreements for the exchange of data and information in the event of a nuclear or radiological emergency, which should be seen as a key area for improvement. Bilateral and multilateral agreements developed in the preparedness phase will enhance the efficiency and effectiveness of the response and contribute to greater harmonisation in the implementation of protective actions. These arrangements are particularly important between neighbouring countries. The EGRT also identified a number of other recommendations, such as the need for RTPs to be available 24/7, to be kept up to date, and to be aligned with regional and international platforms, such as ECURIE and USIE respectively; the need for platform planners and administrators to consider the security aspects of handling and processing information while ensuring access for trusted partners; and the need to carefully consider financial and human resource issues before developing new platforms. To enhance cross-border information exchange and the harmonisation of protective actions moving forward, the EGRT recommends the development of a database of RTPs and future networking opportunities for subject matter experts.

1. Introduction

1.1. Background

All parts of the response to nuclear and radiological emergencies depend upon the collection and dissemination of data and information. This data is used to take decisions, build situational awareness, and communicate with stakeholders. While many countries have well-established platforms for managing and processing data and information in nuclear and radiological emergencies, such emergencies have the potential to affect more than one country, reflecting the IAEA position of "an accident anywhere is an accident everywhere" (IAEA, 2012). Providing and exchanging data and information between countries is therefore a key part of ensuring a common understanding of the situation and multi-national harmonisation of the protective actions.

Experience from the Fifth International Nuclear Emergency Exercise (INEX-5) was the primary driver for initiating this study on the use of real-time platforms (RTPs) in NEA member countries. Feedback from the exercise highlighted a need to improve cross-border information exchange and develop procedures that go beyond the informal arrangements that many countries rely on to share information in the event of nuclear and radiological emergencies. The INEX-5 report (NEA, 2018a) noted that all countries reported using the IAEA's Unified System for Information Exchange in Incidents and Emergencies (USIE) and almost all European countries reported using the European Community Urgent Radiological Information Exchange (ECURIE) platforms. These are seen as critical tools for sharing information and co-ordinating responses at the international level. It was also noted that such platforms and approaches are working effectively and that there is no desire to develop a new international approach. The focus of this study is therefore on cross-border information exchange at the country-to-country and/or multinational level. In the evaluation of INEX-5, 69% of responding countries reported the existence of informal arrangements for communicating with other countries to collect and exchange information about the event and the ongoing emergency response. Among the informal procedures identified, the importance and value of personal contacts between experts involved in EPR around the world was highlighted by most of respondents. As reported by the INEX-5 players, such personal contacts are established mainly through participation in a variety of international fora and events (IAEA, 2012).

For example, the exercise feedback and evaluation workshop held in Paris on 24-25 October 2017 revealed that where formal arrangements for information exchange existed between countries, such as the Germany-Netherlands (ELAN) and the Slovenia-Croatia (MKSID) agreements, the co-ordination of response and exchange of information was reported to be successful. This focused largely on the use of RTPs to exchange information, but countries also indicated that access to national protected websites would have been useful for cross-border co-ordination purposes. Additionally, it was noted that issues such as language, validation and verification vary from country to country and that this should be taken into account when organising agreements between countries and in the general development of RTPs. In summary, the key lessons learnt from INEX-5, which are addressed in this report, are as follows (NEA, 2018a):

- The WPNEM should prepare a report describing the concept and use of real-time information platforms in member countries. The report would outline the benefits of real-time information, including that it:
    a. builds and strengthens confidence in the accident country;

b. helps to inform the decision maker(s) in the affected country.

The report should also mention that this would not predetermine or prejudge any decision(s) and discuss the need for not sharing the information provided with the press or public. Other aspects to consider include the need to distinguish between: “accident country”, “affected countries”, “neighbouring countries” and “other countries”.

- The WPNEM should report on and assess how member countries interact with formal information exchange platforms (e.g. USIE/ECURIE): What opportunities (if any) exist for additional information to be shared via these platforms? Are there barriers to the use of existing tools be identified, where possible, in the context of national and international EPR strategies?

1.2. Convening the Expert Group on the use of Real-Time Platforms (EGRT)

Working under the auspices of the Committee on Radiological Protection and Public Health (CRPPH), the mission of the Working Party on Nuclear Emergency Matters (WPNEM) is “to improve nuclear emergency management platforms within NEA member countries, and to share its knowledge and experience widely”. Following the publication of the INEX-5 post-exercise report, the WPNEM decided at its 43rd meeting in 2018 to establish the Expert Group on the use of Real-Time Platforms (EGRT). The EGRT commenced its programme of work in May 2020 by exploring the findings from the INEX-5 exercise and reviewing the use of real-time platforms (RTPs) within NEA member countries. The study conducted by the EGRT focused on cross-border and regional information exchange and how this translates into the harmonisation of protective actions. Publication of this report, which summarises the findings of the study and provides recommendations on the use of RTPs to enhance cross-border and regional information exchange, was a key deliverable of the EGRT mandate.

1.3. Overview of the working methods of the EGRT

To assist the EGRT in fulfilling its mandate, a survey was developed to facilitate the gathering of information from NEA member countries on the real-time platforms (RTPs) used in emergency preparedness and response. The EGRT survey is provided in Annex B. The EGRT survey was disseminated to members of the WPNEM on 8 January 2022, and the deadline for responses was 1 April 2022. The survey was structured into four main parts with the aim of gathering complete information about the design, implementation and operation of the respective RTPs within the country and how it is used, or not, as a tool to exchange information with other countries. The four main parts covered:

- designation (country information on the use of the RTP);
- technical information (development and maintenance of the RTP);
- content (data and information available on the RTP); and
- international exchanges (cross-border arrangements with other countries and international organisations).

This EGRT report reflects the analysis of the survey responses. The raw data from the survey responses are not presented but have been compiled and assessed in order to provide corresponding recommendations and conclusions. The views of EGRT technical experts and the findings from a topical session held at the 47th meeting of the WPNEM in October

2022 are also reflected in this report to help identify best practices at the time the survey was launched and areas for improvement.

1.4. Report outline

This report is organised as follows. Chapter 2 compiles the information retrieved from the survey on existing RTPs. Chapter 3 gives the basics for designing an RTP, assuming this section is addressed to a country with no existing RTP or partial RTPs (with limited functionalities) that would like to develop one. Chapter 4 of this report explores the ways to enhance international exchanges through the use, integration and harmonisation of RTPs.

Finally, the conclusion draws recommendations for improving exchanges on RTPs at an international level and actions for the future of the group.

Annex A presents a full identity card for each RTP covered in the respondes to the survey.

2. Existing RTPs

2.1. Overview

A total of 22 organisations from 19 countries (70% of the NEA WPNEM country membership) and the European Union's European Commission provided responses to the EGRT survey. Annex A provides a list of the respondents together with an overview of the RTPs covered in the responses.

Table 2.1. List of the countries that responded to the survey

NEA member countries (Including European Union)	Countries that responded
Argentina	
Australia	✓
Austria	✓
Belgium	
Bulgaria	
Canada	✓
Czechia	✓
Denmark	
Finland	✓
France	✓
Germany	✓
Greece	
Hungary	✓
Iceland	
Ireland	✓
Italy	✓
Japan	
Korea	
Luxembourg	
Mexico	
Norway	✓
Poland	
Portugal	✓
Romania	
Russian Federation	
Slovak Republic	✓
Slovenia	✓
Spain	✓
Sweden	
Switzerland	✓
The Netherlands	✓
Türkiye	
United Kingdom	✓
United States	✓
(European Union)	✓

Note: The absence of a response from a country does not mean that the country does not own or operate an RTP.

Table 2.1 shows a list of the countries that responded to the survey. The absence of a response from a country does not mean that the country does not own or operate an RTP.

Three countries provided information on two of their different RTPs. Two countries provided a partial response to the survey, with one of them, a non-nuclear country, stating that it does not have an explicit RTP for nuclear and radiological emergencies but has arrangements in place to use the platform of a partner neighbouring country. The survey concentrates on countries that have RTPs in place and therefore no metrics are available to explore further in this report the findings from countries without RTPs.

Only 40% of the respondents indicated having bilateral agreements to exchange information via RTPs. Almost all of those that reported they had bilateral agreements in place noted that permanent, 24/7 access is given to the respective partner country, and approximately one-third of the responses noted that the RTP has functionality to directly exchange information with the IAEA and the EU via USIE and ECURIE, respectively.

Table 2.2 provides an overview of all RTPs operating in NEA member countries that participated in the survey, and the name of the respective institution responsible for overseeing the platform. The table includes general information about the RTPs and key features.

For more detailed description of each RTPs see Annex A.

Table 2.2. General overview of the real-time platforms – RTPs operating in the NEA member countries and the EC that participated in the survey

GENERAL INFORMATION							INFORMATION AVAILABLE ON THE RTP			
Country	Name of RTP	Institution	Public Access	Level of Use	Subject/Usage	Bilateral Agreements for Use of RTP	Protective Actions	Monito-ring Data	Source Term	Dispersion Modelling Data
Australia	Noggin	ARPANSA - Australian Radiation Protection and Nuclear Safety Agency	No	National	Knowledge management Emergency management	No	Yes	Yes	Yes	Yes
Austria	Situation Reporting System for Radiological Emergencies	Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology	No	National International	Knowledge management Information platform Emergency management	Yes	Yes	Yes	Yes	Yes
Canada	OCIP - Operations Centre Interconnectivity Portal) and DO - Duty Officer Notification System	Nuclear Emergency Preparedness and Response Division, Radiation Protection Bureau, Health Canada	No	Local National	Knowledge management Information platform Emergency management	No	Yes	Yes	Yes	Yes
Canada	Fixed Point System	Health Canada - Radiation Protection Bureau	Yes	Local National International	Information platform Emergency management	Yes	No	Yes	No	No
European Union	WebECURIE	European Commission	No	Regional (Europe)	Information platform Emergency management	N/A	Yes	Yes	Yes	Yes
Finland	TIUKU	STUK - Radiation and Nuclear Safety Authority	No	National	Knowledge management Information platform Emergency management Geoinformation services	No	Yes	Yes	Yes	Yes
France	C3X-Web	IRSN - Institut de Radioprotection et de Sûreté Nucléaire	No	Local National	Emergency management	No	Yes	No	No	Yes
France	CRITER	IRSN - Institut de Radioprotection et de Sûreté Nucléaire	No	Local National International	Emergency management Geoinformation services	No	No	Yes	No	No
Germany	ELAN - Electronic Situation Display for the Emergency Management	Federal Office for Radiation Protection	No	Local National International	Information platform Emergency management	Yes	Yes	Yes	Yes	Yes
Hungary	National Radiation Monitoring, Early Warning and Surveillance System	HAEA - Hungarian Atomic Energy Authority	Yes	National	Information platform Emergency management	No	Yes	Yes	No	No

GENERAL INFORMATION							INFORMATION AVAILABLE ON THE RTP			
Country	Name of RTP	Institution	Public Access	Level of Use	Subject/Usage	Bilateral Agreements for Use of RTP	Protective Actions	Monito-ring Data	Source Term	Dispersion Modelling Data
Italy	SINRAD - National Information System for Radioactivity	ISIN - National Inspectorate for Nuclear Safety and Radiological Protection	No	Local National	Environmental monitoring (RADON and RESORAD)	No	No	Yes	No	No
Norway	Radnett	DSA - Norwegian Radiation and Nuclear Safety Authority	Yes	Local National	Geoinformation services	No	No	Yes	No	No
Portugal	RADNET - Rede de alerta de radioatividade no ambiente	Agência Portuguesa do Ambiente	Yes	National International	Knowledge management Information platform Emergency management Geoinformation services	Yes	No	Yes	No	No
Slovak Republic	Multiple software tools	Nuclear Regulatory Authority of the Slovak Republic	No	National	Information platform Emergency management Geoinformation services	No	Yes	Yes	Yes	Yes
Slovenia	KID – Emergency Communication System	SNSA - Slovenian Nuclear Safety Administration	No	Local National	Information platform Emergency management Geoinformation services	Yes	Yes	Yes	Yes	Yes
Spain	CSN Webpage – Consejo de Seguridad Nuclear	CSN - Consejo de Seguridad Nuclear	Yes	Local National International	Information platform	Yes	No	Yes	Yes	Yes
Switzerland	ESD - Electronic Situation Display	NEOC - National Emergency Operations Centre	No	Local National International	Knowledge management Information platform Emergency management	Yes	Yes	Yes	Yes	Yes
The Netherlands	CalWeb	RIVM - National Institute for Public Health and the Environment	No	Local National International	Knowledge management Information platform Emergency management	Yes	No	Yes	Yes	Yes
United Kingdom	RIMNET - Radioactive Incident Monitoring Network	Department for Business, Energy and Industrial Strategy	No	National	Information platform Emergency management Geoinformation services	No	No	Yes	No	Yes
USA	RadResponder Network	US Environmental Protection Agency	Yes	Local National	Emergency management Geoinformation services	No	No	Yes	No	Yes
USA	ERDS - Emergency Response Data System	US NRC - Nuclear Regulatory Commission	No	National	Emergency management	No	No	No	No	No

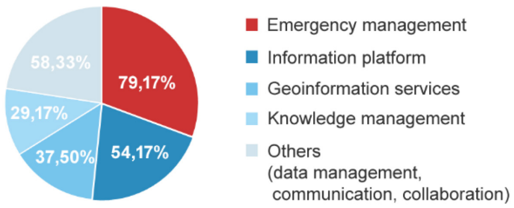
2.2. Functionality of RTPs

Table 2.3 illustrates with a dashboard the responses from the survey concerning the functionalities of the existing RTPs. The paragraphs below develop an interpretation.

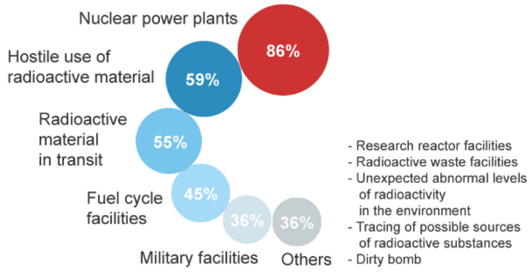
Table 2.3. Dashboard illustrating survey responses to questions on the functionality of RTPs

Basics and designation of RTPs

Subject / usage of the RTPs (% of systems) - Results from Q3 (multiple answers possible)

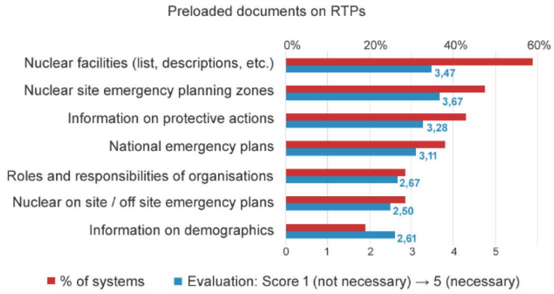


Types of radiological or nuclear emergencies managed by the RTPs (% of systems) - Results from Q7



Content of RTPs

Content of RTPs in the preparedness phase of an emergency - Results from Q28 and Q29



RTPs providing official situation reports dealing with… - Results from Q30

Subject	% of systems
Description of the current situation	57,0%
Recommendation of protective actions	50,0%
Implemented protective actions	50,0%
Media releases	40,0%
Predicted future development of the situation	40,0%
Best and worse case scenarios	25,0%

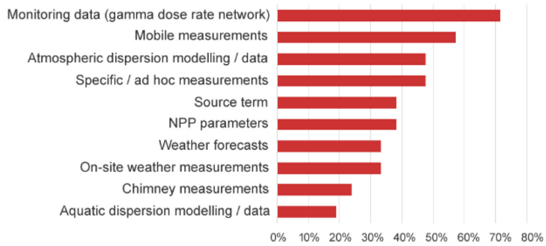
RTPs giving access to past events - Results from Q24

76,2 %
of the systems

RTPs presenting a chronological view of the event (logbook, journal) - Results from Q33

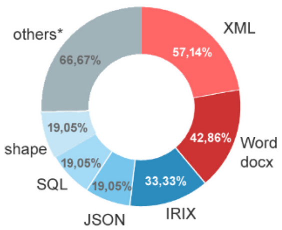
66,7 %
of the systems

Type of data provided by the RTPs (% of systems) - Results from Q33



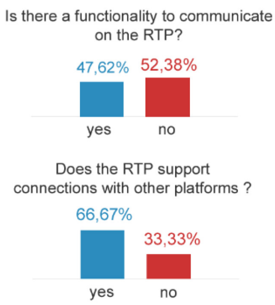
Technical implementation of RTPs

Supported file formats in RTPs (% of systems) - Results from Q19

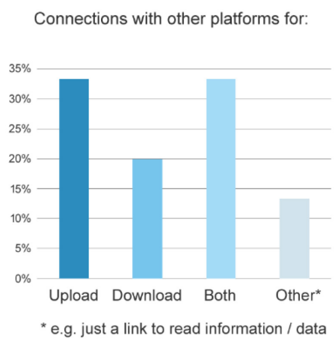


* csv, html, pdf, graphic formats

Communication and workflows on RTPs (% of systems) - Results from Q16 and Q20



Implementations of connections with other platforms (% of systems) - Results from Q22



* e.g. just a link to read information / data

2.2.1. Basics and designation

From the responses to the survey, the EGRT establishes that RTPs can be grouped into two kinds: RTPs for emergency management and RTPs for data management.

RTPs for emergency management

The majority of RTPs are used for emergency management (~80%). These platforms compile the data and information necessary to manage a radiological or nuclear emergency, i.e. they provide an overview of the situation, existing measurements as well as predicted results from dose prognosis tools (e.g. ambient dose rates, contaminated areas). RTPs also deliver information on protective actions. Some ongoing developments also intend to extend the use of RTPs, e.g. for the management of radiological risk to human health and the environment, or for safety management.

Nearly all the RTPs designed for emergency management are also used as information platforms, for knowledge management, and/or geoinformation service (GIS) to a limited extent (e.g. sometimes with no interactivity in maps). GIS is particularly important when dealing with and assessing impacts on territories. Specialised GIS services are often provided via separate applications with visualisation and analysis tools. Consequently, the RTP is only used to publish the results (e.g. plume prediction models, geographical results on protective actions) and not as an interactive application to generate them.

Forty-five per cent of the national platforms are also set up to receive and cascade, disseminate and distribute incident notifications, noting that the information provided does not replace official notification channels.

Most of the RTPs can manage an emergency at a nuclear power plant, which is the main concern in terms of major nuclear accidents. Some of the platforms can also handle transportation accidents, satellite re-entries or dirty-bomb scenarios. Almost 40% of the platforms can manage several events simultaneously, sometimes (but rarely) also with emergencies in other fields than nuclear (chemical, biological, security, natural hazards, etc.).

A minority (less than one-third) gives access to the public, and if so, only to a dedicated part of it.

Among respondents, a large majority of the RTPs are managed by a national institution, but more than 40% have also been designed for use at a higher level (regional, international). In addition to these national existing RTPs, two official platforms addressing international or regional levels are to be mentioned:

- The WebECURIE platform, which is overseen and managed by the European Commission and responds to the implementation of 87/600/EURATOM, which obliges EU member states to inform the European Commission of a radiological and nuclear emergency, with protection actions to be taken (European Commission, n.d.).
- The USIE (Unified System for Information Exchange in Incidents and Emergencies) platform - a secure IAEA website for contact points of states parties to the Early Notification and Assistance Conventions, for IAEA member states to exchange urgent information during nuclear or radiological incidents and emergencies irrespective of their cause (safety or security related), and for officially nominated INES National Officers to post information on events rated using the International Nuclear and Radiological Event Scale (INES). This constitutes the official channel to notify any event/incident (IAEA, n.d.).

RTPs for data management

RTPs for data management are often used in combination with other platforms (e.g. emergency management platforms) that provide the necessary information for emergency preparedness and response. However, they are also used in routine contexts or for specific investigations. RTPs can deal with either emergency management or data management, or both. Those that are dedicated to data management are designed for the collection and recording of radiological monitoring data such as atmospheric dose rates, radionuclide concentrations in environmental media, radon concentration in air, or foodstuff radioactive contamination levels. The platforms provide functions for aggregation, visualisation and reporting of data from national radioactivity monitoring networks and ideally, tools for real-time uploading from monitoring networks of radiological data and for the control of data flows.

2.2.2. Content

This section sets out the content that is made available on RTPs before, during or after a nuclear or radiological emergency. This is largely dependent on the intended use of the RTP, e.g. for storing and processing radiological monitoring data, collating situational awareness or managing protective actions, and the type of incidents the RTP covers. Although the content available on the various RTPs will be different, according to a country's needs and intended scope and purpose, some areas have been identified that should be common to all platforms.

Content to be developed before an emergency (Preparedness Phase)

An RTP should be populated during the preparedness phase of nuclear and radiological emergencies with the necessary information, documents and data required to assess a radiological situation and to take decisions on protective actions and emergency response, e.g. lists of nuclear facilities, site emergency plans, national emergency plans, planning zones, descriptions of organisations (roles and responsibilities), demographic information, basics for protective actions (levels). Such information is not considered "real-time information"; however, it will be essential information to underpin rapid decision-making and an overall efficient response.

The survey responses indicate that more than half of the RTPs have pre-loaded information about nuclear sites and facilities. However, other important information, such as emergency plans, protective action guidance and demographic data, is missing. Countries should be encouraged to increase and maintain the pre-loaded information available on RTPs in all areas, particularly in the objective of sharing this information with neighbouring countries. Indeed, practices may differ from country to country and gaps in the responses could also cause damages in the public opinion if differences are not explained. This is therefore essential for a better international harmonisation of the response and could save time during an event.

It was noted from some responses that a few RTPs are not pre-loaded with any background information because the platforms are not used as an information platform but are rather intended to be used to manage information flows and record the decisions of the incident management team. Sometimes these platforms are only available during an event and the documents can be found elsewhere. An often cited limit that emerges from putting pre-loaded documents is the difficulty of maintaining the documents up to date; in this case the information could be added live.

According to the results of the survey, where respondents were asked to give their opinion on the most important information to be uploaded during the preparedness phase, details of the nuclear site emergency planning zones were considered to be the most necessary, whereas information on nuclear site emergency plans was considered the least necessary.

Information to be updated/collected during an emergency

For the adequate handling of a nuclear or radiological emergency and informed decision-making, up-to-date information on the current situation as well as real-time measurement results and reliable predictions of evolution in time and space of the situation are essential.

Around a half of RTPs currently provide a description of the current situation, share news releases and list recommendations on protective actions as well as information on already implemented protective actions. A majority of the RTP information is often included in situation reports and some results are delivered by other platforms.

More than 60% of the RTPs present a chronological view (logbook, journal) of the event so that the user can easily find the latest updates. This is a pretty basic expectation, so this could be an area of improvement for platforms which do not have it.

Concerning measurement data and projection results contained in the RTPs, nearly three-quarters of the platforms provide up-to-date monitoring data, mainly from the national gamma dose rate networks. In two-third of these RTPs, the data is uploaded automatically in real time. More than half of the RTPs also provide data acquired from mobile equipment and other specific measurements. This information is useful to characterise the situation outside the facility.

In half of the RTPs, weather measurements and forecasts (one-fourth of them uploaded automatically) as well as atmospheric dispersion data are provided. Some 60% of the models used for forecasting are calculated at local, regional and long-distance scale, with 10% at an international scale only.

Upstream data giving or enabling the calculation of the possible release are more rarely provided (only 40% of RTPs providing a source term and nuclear power plant parameters, and less than 30% for chimney measurements). For those that provide nuclear power plant parameters, a good point is that the majority (almost 70%) are integrated in real time and automatically.

Some of the RTPs provide measures on foodstuff contamination and projected dose assessments. A few countries reported that additional data or documents could be requested from the responsible information providers and that further measurements were already planned for automatic integration into the RTP.

One RTP report in the survey manages non-nuclear events like floods, earthquakes and so on. This feature depends on the missions of the organism responsible for the RTP, i.e. if the organism is dedicated only to the nuclear sector and not to government more generally, the RTP will not be developed for non-nuclear emergencies by default, though this could be considered, especially for the implementation of an all-hazards approach.

Most of the RTPs are capable of sharing any kind of information and special content can be displayed or exchanged as needed. Partly, the master copies for the documents are maintained on other platforms and can be copied to the RTP during an event. The flexibility of an RTP is regarded as a positive feature to ensure that it can adapt to the needs of the emergency.

RTPs for data management do not usually provide emergency information such as situation reports and recommendations for protective actions or background information on nuclear facilities, emergency plans or demographics; however some RTPs can be used for the management of equipment and personnel or for the location tracking of field crews.

<u>Predictions of evolution in time and space of the situation</u>

More than one-third of the RTPs also provide predictions on the development of a situation. Some countries perform calculations with the most probable source terms or make their own assessment of the future situation on the output from the RTP.

Less than a quarter of the RTPs take into account best- and worst-case scenarios, which also contain crucial information for other countries following the situation.

2.2.3. Technical implementation

Almost all of the RTPs for which a response to the survey has been given have web access, 24/7 availability and a backup for servers and network. A large part of them also uses a secure network and encrypted communications, which is important for security issues and confidentiality. For the latter, the location and associated services for the servers are important. More than 60% of RTPs use internal servers with in-house support, among which about 40% are physically located in a secure building. Only 30% of RTPs are using a third-party data centre, and less than 20% the commercial cloud. About 40% are developed internally, compared with 45% developed externally by subcontracting to IT companies, which can cause some security issues.

The data suppliers are varied: national and local authorities, TSOs, meteorological institutions, operators, measurement monitoring platforms and laboratories, international organisations or even press agencies. Consequently, the number of users can vary from less than ten to several thousand per RTP.

The main users of the RTPs are experts and scientific advisors as well as authorities and decision makers. The exchanges between these two categories of users are crucial to the consequence management of an accident.

Different roles are generally given to users with different rights: administrator, editor, publisher and reader. Half of the RTPs allow the users to communicate through the RTP via messages, which is an interesting feature to archive all the exchanges. A few also allow task management or have an alert system.

Nearly all the platforms can handle any kind of data. For the exchanges between users and the RTP, a lot of file formats can be used, depending on the type of information to be shared (messages, geographical layers, data, etc.). The flexibility induced by the number of file formats is an advantage for users but also makes RTPs more complex. No universal file format emerged from the survey responses. Reference formats (xml, word, IRIX, JSON, SQL, shape, CSV, PDF) seem to be well-used by the majority of the RTPs, but these references can change with time. It should be noted that the standard IAEA IRIX file format is used by less than 40% of the RTPs.

A majority of RTPs (more than 60%) support connections with other platforms, often other national platforms (weather, monitoring, governmental GIS) but IRMIS, USIE and EURDEP are also cited. API and FTP protocols are used equally for these connections. Import and export procedures are sometimes given. Besides an automatic upload of data, some RTPs provide a functionality to manually create intelligent reports from the single pieces of information on the RTP itself.

A large majority of RTPs (more than 70%) gives access to past events, almost always with a complete history, dealing with archives and data storage. Sometimes these past events are only available on demand.

2.3. Summary

The responses of the survey show that at least 70% of the NEA WPNEM member countries have developed RTPs. These are largely developed independently from one country to another according to the country's own specific needs. As shown in this chapter, they each have essential and interesting features and qualities, meaning that these existing national and regional RTPs "do the job". The RTPs have a number of common points that support the primary aim, which is to ensure the early and rapid sharing of information. These common points underpin the core functionality of an RTP.

3. Basics for the design of an RTP

This chapter is intended as a guide for institutions planning to develop or upgrade an RTP. It is primarily based on the views of the EGRT's experts, confirmed by or in addition to input from the survey. The first part describes the challenges the institution will face in developing an RTP (questions 27, 37 and 46 where free textboxes were offered to responders to express their view), and the second part sets out requirements and recommendations for the design of an RTP (questions 26 and 29 with choices from "necessary" to "not necessary").

3.1. Challenges

The variety of responses from the survey concerning the challenges is visualised in Table 3.1.

Table 3.1. List of the survey responses to questions dealing with challenges.

The survey responses (Key terms)
Implementation
Training
Budget
Funding
Time-consuming
Web technologies
Expensive
Maintenance
Security
High availability
Requirement analysis
Variety of Users
Partners
Regular Updates
Security needs
Upgrade
Use cases
24/7
Design
Third parties
Resources
Operational systems
Backup
Flexibility
Data loading

Table 3.1. List of the survey responses to questions dealing with challenges. (Continued)

The survey responses (Key terms)
Geographic Information Systems
Libraries
Workflow
Manual operations
Format
Privacy
Standards
Situation reports
Decisions
Protective Actions
Recognition
Overload
Communication
Completeness
Protocols
Language
Legal issues
Real time
Harmonisation
International relationships
Bilateral relationships
Exercices

If an RTP in the field of emergency management is to be developed, it is essential to assemble a team of specialists who have the professional skills and technical knowledge to lead the development of a professional concept and the implementation of the platform(s), which can take a year or longer. It can be difficult to communicate to programmers the views of professional staff on sensitive issues and the requirements of emergency preparedness and response, and to find suitable ways to reflect these in the coding.

Even with a competent team of specialists in place, project managers and persons in charge will experience a variety of difficulties in the process of conceiving, implementing and maintaining an RTP and concerning the exchange of information with other platforms. From the experts' point of view, the challenges can be summarised into five important areas or challenge fields, each consisting of specific issues to be overcome: usefulness, user acceptance/successful application, working with third parties, performance and availability, and technical implementation and maintenance. Budget and/or funding are in all cases a major aspect and a limiting factor.

3.1.1. Challenge field "usefulness"

According to the EGRT, the main objective is to achieve maximum usefulness with the RTP. In basic terms, the RTP should "serve its purpose" in the best possible way. This is particularly important when a system is used for managing data and information in radiological and nuclear emergencies to enable all the authorities involved to execute a quick assessment of the situation and to decide on protective actions. The participants of the survey shared this opinion since 34% of the mentioned challenges referred to usefulness.

A coherent professional concept, an appropriate structure and quantity of information, consistent data quality and the integration of workflows into the RTP for collaboration and approval make an important contribution to the desired usefulness. The usability of the RTP and its ability to meet the requirements of the target groups is a major challenge and was most frequently cited in the survey answers.

Usability and requirements of target groups: With a large variety of users and organisations involved, the overall challenge is to specify an appropriate requirement analysis for the RTP to be designed and to translate the different needs of the target groups into a consistent professional concept. To achieve usability for laypersons as well as policymakers or technical experts, the content of the RTP must be presented in a structured way tailored to specific needs, including different confidentiality levels, from public information to expert content. Conflicting requirements, wrong assumptions and unclear definitions make it difficult to achieve a coherent technical specification.

Structure and quantity: One important aspect that should be considered from the outset is the design of the RTP to be developed. Depending on the intended application and content to be managed, a decision between a common RTP as a central platform for emergency and/or data management and multiple platforms for special purposes must be taken. The selection and presentation of information on the system(s) must be optimised to assure that decisions and public information are based on appropriate and timely knowledge. Any overload of information (e.g. in long-lasting events) should be avoided to facilitate monitoring of the situation, the flow of information and communication.

Data quality: If data from knowledge bases and other external sources are collected, it is important to achieve and assure consistent data quality and completeness and to optimise storage and output of information. The necessary processing (adding of mandatory and recommended meta info, quality checks, etc.) should be performed last on the target RTP. After the implementation of the platform, the timeliness of information should be ensured by keeping the RTP up to date, including through changes in laws and information from third-party platforms on a regular basis, while it is best to avoid investing too much time and budget in adapting the platform(s) to new demands.

Collaboration and approval: The aim of an RTP is to improve communication and information sharing among institutions involved in emergency management in order to facilitate quick and correct decisions during emergencies. Key to this is the implementation of special content workflows for release procedures, contributions to situation reports, decision-making and co-ordination of protective actions. In this context, the challenge is to translate multiple practices and procedures into standard workflows.

3.1.2. Challenge field "user acceptance / successful application"

One of the main concerns in developing an RTP is to create an application that is easy to use and generally recognised, with the information that is judged useful and approved by different audiences. The EGRT considers this issue almost as important as that of usefulness; however, only 10% of the challenges reported in the survey addressed this point.

Contributing factors are training, user education and – from the EGRT's view the major challenge but not at all mentioned in the survey answers – the optimisation of the user interface (UI) to provide the necessary user experience (UX) to get the RTP accepted.

User experience (UX) and user interface (UI): As most of the persons and authorities involved will use the RTP only in case of an emergency, they are not always familiar with the content and menus. Thus, reservations about using the platform may arise. To prevent this, strategies to improve the user experience (UX), i.e. how easy it is to use, should be implemented. This could mean using only a targeted selection of content, using design elements that are similar to the most popular office or web applications, or other strategies. Because all players involved are under stress during an emergency, a simple and user-friendly interface can contribute to reducing tensions. The challenge is to map (potentially) complex processes into a simple one.

Training: A basic prerequisite for the successful application of an RTP is to have the users understand the platform and know how to apply it. Targeted training programmes are essential, and the real challenge is to identify suitable training for all user groups and organisations involved.

User education: Generally, additional measures to get the users adequately familiar with the use of the RTP and educate them to perform their intended tasks successfully must be taken. In this respect, it can be good to elaborate use cases to be practised independently by the users and to provide operational manuals. However, this can be time-consuming and should be carefully prepared.

3.1.3. Challenge field "working with third parties"

The survey results confirmed the assumption of the EGRT that there are some obstacles to overcome with regard to cross-border and regional information exchange. In all, 18% of the challenges reported addressed this challenge field.

In particular, the responses noted challenges concerning content to be exchanged, technical procedures and organisational aspects.

Content to be exchanged: Content to be exchanged must be suitable for bilateral or international exchange. This requires a special look at the topics to decide whether a piece of information can be exchanged as it is. Furthermore, the amount of information will differ from that being provided for national recipients. There will be a large demand for background information from other countries, either to assist in their decisions and actions, or to provide context for the decisions and actions taken by the accident country. Also, the demand of information as seen from a possibly affected neighbouring country is different from the demand for information in country further afield, where only very minor consequences are expected. The challenge is to determine the suitable scope of information for the corresponding partners.

Technical procedures: The exchange of information should be performed by using official standards and communication protocols but often the complexity of communication technologies hinders efficient use, or communication procedures are not clear to all partners involved. It is recommended to aim for a high level of automated information exchange and to optimise download procedures from partner platforms using standard interfaces. It is important in this context to keep protocols and means of exchange information up to date.

Organisational aspects: Establishing organisational regulations and strategies regarding cross-border harmonisation in emergency management and response can be challenging. Uncertainties about persons involved and their roles, the accuracy, relevance and importance of information, and security and privacy requirements should be clarified. In some cases, even content that is still in discussion or not yet validated needs to be exchanged to allow rapid and direct reaction also on the side of bilateral partners. A solution to exchange that kind of "incomplete information" should be found. The challenges are to establish consistent, formalised criteria and procedures for the release of information, to overcome language barriers and legal issues, and to synchronise content contribution of all partners in a timely manner.

3.1.4. Challenge field "performance and availability"

When an RTP is intended for use in radiological or nuclear emergencies, the technical requirements regarding performance and availability are demanding, as the number of users and access numbers will increase rapidly, depending on the phase of a scenario. From the EGRT's view, this is a crucial point, as problems of access to the platform, delays in information exchange or – in the worst case – a complete breakdown of the platform will make it impossible to effectively manage an emergency. As an emergency can occur at any time, it is indisputable that an emergency platform must be available 24/7. Only 5% of the survey answers referred to this challenge field, which participants should become aware of.

Performance: (Website) speed is crucial for operating an RTP according to the established requirements during an emergency, to meet a large number of simultaneous user requests, including collaboration tasks and automated processes. If the platform is slow, information cannot be provided in time and mistakes in applying the platform or technical errors in transfer procedures can arise. However, it will be challenging to ensure the necessary performance, as various factors in platform configuration and network components can have an impact on the response behaviour of the application.

Hosting: Another crucial point is to find the best hosting solution with regard to availability, security and performance, provided that sufficient financial resources are available. This will be affected by whether a single RTP solution is implemented or a combination of multiple platforms (see "usefulness/structure and quantity") is used. Besides, it is important to implement the necessary hosting security practices to keep the underlying technology of the server free of vulnerabilities. This part should be delegated to the hosting provider.

Platform design: Depending on the number of users, access rates, external applications to be connected to the RTP and (database) sources from which data are uploaded into the RTP, scalable platforms should be designed. There are challenges in finding the right solution with regard to load balancing, redundancy (servers and geo-localisation), possible failure of components, etc. Besides, measures should be taken to avoid database malfunctioning, to assure the safety of user data and prevent unauthorised access to restricted parts of the website.

3.1.5. Challenge field "technical implementation and maintenance"

The EGRT does not consider this challenge field to be of major importance with regard to the development of RTPs as the specific challenges apply to any other kind of website. Nevertheless, these issues are important to be solved in the process – as confirmed by the survey answers, with 34% of them mentioning this challenge.

Technical functionality: Functionality and technical updates of an RTP need attention on a regular basis. The underlying challenge is to have the RTP be flexible enough to execute the needed upgrades in a timely manner. Beyond that, the platform itself must be compatible with correlated, regularly upgraded tools like web browsers and office applications. If third-party products are used, renewal of support should be kept in mind.

Interfaces and data workflows: An important issue is to set up and fulfil appropriate technical specifications for the target platform of the RTP in order to connect to other platforms involved. To implement functional workflows from data collection to the display of results, the RTP should be able to cope with often limited application programming interfaces (APIs) on other platforms.

Technology changes: The focus will be on transposing key changes in technology and updating the code, including for new libraries and products. The challenge is to ensure that experts are kept familiar with the technical implementation.

Backup and support: Depending on the platform design and sources involved, the development and implementation of an optimal backup strategy can be complex and expensive.

3.2. Recommendations for designing an RTP

The challenges set out in section 3.1 will need to be addressed to ensure that an RTP operates effectively and meets the needs of the stakeholders involved. How this is achieved will largely require bespoke solutions to meet the detailed needs of each country's RTP; however, there are some common tips and recommendations that apply when designing or updating the RTP in various technical areas. Table 3.2 lists the recommendations in various topics for the development of an RTP, ranked by priority. These recommendations are basic and focus on national objectives, while recommendations for international exchanges are highlighted in section 4.2.

Table 3.2. Recommendations for various topics for the development of an RTP, ranked by priority

Topic	Recommendation	Priority	Comment
Type of RTP	Consider the purpose of the RTP; an RTP for emergency management, data management, or a combination of both. Developing a detailed concept of the RTP, including the information to be managed, the users and the functions and tasks of the RTP, can support this decision.	*****	The type of RTP (emergency management / data management) will have an impact on the kind and amount of information that is handled, on the organisations and users who are participating as well as on the features and functionality of the platform.
High availability	The essential primary feature of an RTP should be its high availability (24/7) for all users. This is a fundamental requirement of any platform.	*****	A consolidated picture of the situation serves as the basis for successful incident management. The availability of the RTP should therefore be ensured at all times so that all partners have the same level of information in an emergency.
Web access	Web access is the most adapted technology for an RTP.	*****	With a web-based application that does not require the installation of any additional hardware or software components, additional users or organisations can be quickly integrated into the emergency organisation if required.
Usability and requirements of target groups	Meet the different requirements of your target groups but try to identify use cases which are generally applicable. This will make the platform less complicated in implementation and application.	****	The function and background of the designated users or groups will have an impact on the content, structure and design of the platform.
Backup	The organisation responsible for operating the RTP should have and implement a backup strategy to ensure the availability of all relevant data in the RTP at any time.	****	
Geographical redundancy	If possible, the RTP and its subsystems (applications, databases, etc.) should be made available at more than one location to achieve georedundancy.	****	A geo-redundant design of the platform increases the availability of the platform if, for example, the primary location is no longer available. In a worst-case scenario, which does not consider geographical redundancy, this has a high probability of happening

Topic	Recommendation	Priority	Comment
			because of technical network problems, natural (seism, flood) or man-made (fire) disasters, etc.
Encrypted communications	Given the confidentiality that may be required for nuclear matters, to ensure the integrity of the information a web-based application accessible via Internet should use the latest HTTPS standards and, if possible, 2-factor authentication.	****	
User acceptance /successful application	Make the RTP applicable on smartphones, tablets and via the web, allowing it to be easily employed on all levels and at all places involved.	****	For a successful application of the RTP, the platform should be clear, intuitive, user-friendly and easy to handle. It also meets requirements regarding content workflow or collaboration issues.
	To optimise the graphical front-end of the platform for all possible use cases and workflows, consult an expert in user interface and user experience (UI/UX) design.		
	Simplify manual operations and apply formatting (styles, labels, comments) on input screens.		
	Incorporate the RTP into everyday practice; don't use it only for the exceptional incident.		
Workflows	Consult key stakeholders and subject matter experts to get a full picture of requirements.	****	According to the use cases defined and tasks to be performed, technical and collaboration workflows should be implemented on the RTP.
	Drawing process maps and visualising workflows are effective techniques.		
Structure and amount of information	Allow the management of more events simultaneously and offer filter functionality to view the information on a specific event only. *(Possible already in 40% of the platforms described in the survey).*	****	To manage an overload of information (especially during long lasting events) and to enable users to follow the development of the emergency, the content available on an RTP should be presented in a structured way.
	Provide a summary or chronological view (logbook, journal) of the event. *(Implemented already in 64% of the platforms described in the survey).*		
	Make historical records and archives separately accessible (if possible within the same application or on the same server) *(Already true for 73% of the platforms described in the survey).*		

Topic	Recommendation	Priority	Comment
Architecture	If a large amount of different data is to be handled and a lot of functionality is required, consider the use of multiple separate real-time platforms, each with its role, rather than a universal single RTP. Make sure that the implementation of each platform is developed and maintained carefully in order to ensure future compatibility, resource availability, etc.	***	
	If applications for data management, visualisation, dispersion modelling, management of staff, etc. already exist, keep them and establish interfaces and workflows into the RTP for emergency management. A crash of one application will not block the emergency management.		
	If it is decided to implement a single platform, set up and operate a redundant (or even geo-redundant) mirror server.		
	Keep the platform design open for future enhancements.		The platform itself can provide functions for the management of information, knowledge, staff and/or resources, visualisation capabilities/connection to GIS services, monitoring functionalities or alerting methods.
Structure and amount of information	Place predefined background or peacetime information on a separate platform and publish it on the RTP only in case of emergency. This saves the effort of keeping all copies up to date.	***	
Architecture	If the public is one of the target groups, consider mirroring the necessary information to a second, read-only server. This will reduce the number of visits to the platform, improve the performance and reduce the probability of a breakdown of the expert platform by a large access number.	***	
Security of the network	A dedicated network can increase independence from public networks and strengthen the resilience of the RTP.	***	

Topic	Recommendation	Priority	Comment
Open-source code	Open-source code can reduce dependency on a specific software vendor and increase the maintainability of the application. The availability of source code enables users of open-source software to check security standards when needed.	**	
Content Framework	For RTPs used for emergency management, the framework of information and data to be shared in case of a radiological emergency should be pre-loaded onto the platform or easily accessible at the time of an emergency.	**	
	Identify key emergency data to ensure that decisions and public information are based on appropriate and timely knowledge.		
Functionality	Implement workflows for validation of data, approval of content or release of internal information according to user roles and responsibilities.	**	The RTP should provide core functionalities for the retrieval, uploading and downloading of data and information.
	Organise the users in groups, each having their own rights to edit and publish different kind of information.		
	If possible, integrate data and information from other platforms automatically and – in an emergency – in real time.		
	Provide download options of core information for authorised users.		

4. Designing an RTP for international exchanges

International RTPs are designed for the general collection and collation of information provided by different countries. In parallel, neighbouring countries need as many inputs as possible to evaluate the impact of an accident on their territories. This advanced requirement can be formalised in bilateral agreements. This underlines that a national crisis platform, if it exists, should assemble and share detailed information during emergencies. The link to international RTPs should be seen as a fundamental requirement if the platform Owner is the same as the national organisation responsible for reporting and sharing information internationally.

4.1. Bilateral agreements

Table 4.1 lists the EGRT recommendations concerning bilateral agreements.

Table 4.1. EGRT recommendations concerning bilateral agreements

Topic	Recommendation	priority
Access to RTP	Access to RTPs should be explicitly mentioned in bilateral and multilateral agreements. Access should be given to the partner country in peacetime to increase awareness and familiarity with another country's platform and with how to find information. Permanent access is an advantage.	*****
Procedures for exchanges	If access to the RTP and editing rights are given to partner countries, clear, well-documented and simple exchange procedures should be done. Also, an important point is that training and exercises provide a good environment for achieving this goal.	****
Editing rights	Giving editing rights to partner countries is possible, but there should be an objective to it in the exchange of information, like comparing modelling results.	**

In some countries, bilateral agreements ensure efficient communication between countries in case of a nuclear or radiological emergency, according to the terms set out in peace time in such agreements. Sometimes it is planned to provide information on a shared platform to the neighbouring country. This is particularly used between European countries.

For example, Switzerland has signed bilateral agreements with all neighbouring countries. These agreements stipulate that the contracting parties must inform each other about radiological or nuclear emergencies on their territory that could affect the neighbouring country. To this end, each party must maintain a suitable information platform (RTP) and a central office that receives reports on a 24-hour basis and forwards them to the competent authorities. The agreement also regulates the minimum scope of emergency reports (for example, type and time of the event, measures taken). In supplementary messages, changes in the situation and the termination of the emergency situation should be communicated. The agreement also regulates the exchange of liaison officers.

According to the survey, a minority of countries indicated that the use of an RTP is written down in bilateral agreements and is in use according to such a legal framework. Countries such as Austria, Germany, Portugal, Slovenia and Switzerland have a shared platform for information mentioned in the bilateral agreements.

Most countries share the content of the RTP permanently with their partners abroad. Only one country out of ten does not share the access permanently with its partners.

More than 70% of respondents do not provide their bilateral partners with editing rights. This means that the RTP is providing information, but no dynamic interaction is possible through the platform.

Eight countries out of ten state that in order to provide access to an RTP, this needs to be based on a written agreement or bilateral statement. Most RTPs that have a cross-border option only engage with neighbouring countries and not with the wider EPR global community. One country provides access to the platform only during exercises but not on a permanent basis.

4.2. Connections with international RTPs

Table 4.2 lists the recommendations for a national RTP concerning connections to international RTPs.

Table 4.2. EGRT recommendations for a national RTP concerning connections to international RTPs

Topic	Recommendation	priority
Data	Sending monitoring data directly to IRMIS and EURDEP should be a core feature of national RTPs. Countries should also explore solutions to exchange information, e.g. incident notifications, automatically between the national RTP and platforms operated by international organisations, such as USIE and ECURIE.	*****
Language	Developing the RTP in English (in addition to the native language) is seen as good practice for enhancing international information exchange.	***

Most countries do not exchange information directly with other RTPs, for example with platforms operated by international organisations (e.g. USIE/ECURIE). It is apparent that automatic data transfer is possible; however, there are limited direct interfaces at present, and where direct interfaces are used, it is primarily only data that is transferred automatically to the IAEA’s IRMIS and EC’s EURDEP platforms. None of the countries responding to the survey indicated that their RTP has a direct interface to exchange information, such as emergency notifications. One country indicated that a connection with USIE is planned but not implemented at present, and therefore most interfaces with USIE and ECURIE are done manually. In some cases, the IAEA and EC have access to a country’s RTP platforms, which enables them to receive the same information as national counterparts.

Information is provided on RTPs in the native language of the respective country. Two-thirds of responding countries also indicated that information is provided in English or there is the option to do so. In some cases, between two and four languages can be used simultaneously.

4.3. Important information to be shared

Table 4.3 below lists the recommendations concerning information to be shared.

Table 4.3. EGRT recommendations concerning information to be shared.

Topic	Recommendation	priority
Alerting	The national RTP should have functionality to disseminate incident alerts at an international level (other countries and international platforms).	*****
Information	Countries should be prepared to share information on protective actions and environmental measurements via RTPs. Access to GIS layers that includes such information is a crucial point for international co-operation.	*****
Information	Giving information on the plant status, source terms and best- and worst-case scenarios is important for allowing all countries (accident and non-accident countries) to make their own assessments and advice.	****
Information	Pay attention to the completeness of the information, as well of its usefulness (sort by relevance) and the fact that it should be up to date.	****

When a radiological or nuclear emergency occurs, many countries will be keen to receive information from the accident country. This will be particularly relevant for neighbouring countries that may be directly affected. Notification and alerts of a radiological or nuclear emergency are a key requirement in the immediate aftermath and it is therefore interesting to note that RTPs have the potential to share such information internationally. However, such functionality is not used at present. The survey results also indicate that countries would like to receive information related to the environmental and health impacts of an emergency, protective actions taken, the radiological situation through measurements, and advice to population. Information exchange between countries is essential to underpin harmonisation of protective actions and advice to the public. Non-accident countries will likely conduct their own modelling, assessments and calculations to reinforce those provided by the accident country. With this in mind, exchanging additional "upstream parameters", like plant status, source term and best- and worst-case scenarios will help non-accident countries to conduct their own assessments. In that perspective, having GIS layers for the concerned zones is crucial, notably for comparisons. The zones computed by different organisations could then be superimposed, statistics on impacted surfaces could be obtained, and model ensembles could be eventually created. This last point could be investigated more deeply through participation in the work of the EGDP (NEA, 2024).

5. Conclusion and recommendations

It is commonly accepted that real-time platforms (RTPs) are a powerful tool for the management of nuclear and radiological emergencies. In this sense, “real-time” means that the information needs to be available at a timescale compatible with the crisis. Many stakeholders will be involved in the management of and response to a nuclear and radiological emergency. Information therefore needs to be made available, at the right levels, to ensure stakeholders, including responding agencies, government departments, international counterparts and where appropriate the general public, make informed decisions. For some countries, the use of such a platform is mandatory within the legal and regulatory frameworks.

International RTPs exist (ECURIE, USIE), in addition to regional RTPs, and these are essential for the co-ordination of the global response. Where feasible, there should be interaction between international and national RTPs to ensure information is transparently shared in a timely fashion. Countries, especially non-nuclear countries, often do not intend to develop an RTP or are not keen to do so; however, it is recommended that there be a clear plan for how to manage and share information that may utilise the all-hazards approach or platforms operated by a partner country.

This report, written by the EGRT, gathers the results of the survey issued during the group’s mandate and adds the views of the EGRT. Firstly, a picture of existing RTPs (those that responded at the time of the survey) is provided by listing the RTPs, their operators and their features so countries can refer to this list to reach an RTP if needed (the RTP of an accidented country for example). The report also sets out a series of recommendations for countries that are looking to develop a new RTP or update their existing platform. A key finding that emerged from the study is that countries need to do more in the preparedness phase to exchange information with other countries and national organisations through RTPs. This is particularly relevant for nuclear and radiological emergencies, where the impacts can affect more than one country and the response needs to be harmonised. Other key findings highlighted in this report, include:

1. Two kinds of RTPs exist: for (i) emergency management and (ii) data management.
2. RTP should be available 24/7, up to date, useful and adapted to country specific needs:
    a. Web access is the most adapted technology.
    b. This could comprise of one complete RTP or several with clear references and interactions to each other.
    c. The cost (in terms of financial or human resources) should be considered when developing or updating RTPs.
3. Information security should be a core consideration throughout the conception, design, implementation and operation of an RTP. In case of a crisis, countries have to strike the balance between information security and the benefits of sharing information. Up-to-date code and protocols are part of security since web technologies are mainly used.
4. Improving bilateral and multilateral agreements is crucial for international exchanges. Such agreements should clearly cite the use of RTPs and the level of access provided. To implement these agreements and improve general

preparedness, exercising is important as it increases familiarity and awareness of the platform, which can save valuable time during an emergency response.

5. The use and the connection to international RTPs, such as ECURIE and USIE, should be encouraged:
   a. For alerting;
   b. To share important information relevant for other countries, in the first-place protective actions (GIS layers would be of great help) and environmental measurements.

The report presents a current and certainly incomplete inventory of existing RTPs among NEA member countries. It also deals only with the emergency phase. For the future, the EGRT proposes the following actions:

- To develop and maintain the list of RTPs.
- To set up a network for RTP owners to interact. This group could have a meeting on a regular basis (e.g. once a year) to present new features and developments, exchange views on practices, and explore opportunities to establish the recommended bilateral and multilateral agreements.
- To develop the same study about the relevance of using RTPs for the recovery phase, for both national and international purposes.

References

European Commission (n.d.), *European Community Urgent Radiological Information Exchange (ECURIE)*, http://ecurie.jrc.ec.europa.eu/, accessed on 27 May 2024.

IAEA (2012), *Operations Manual for Incident and Emergency Communication, Emergency Preparedness and Response*, International Atomic Energy Agency, http://iaea.org/publications/12359/operations-manual-for-incident-and-emergency-communication, accessed on 27 May 2024.

IAEA (n.d.), *The IAEA Unified System for Information Exchange in Incidents and Emergencies (USIE)*, http://iec.iaea.org/usie/actual/LandingPage.aspx, accessed on 27 May 2024.

NEA (2024), "Understanding Dose Prognosis in Nuclear and Radiological Emergencies: Comparison of National Assessment Chains and Practical Guidance for Better Information Exchange and Co-ordination of Protective Actions", OECD Publishing, Paris, www.oecd-nea.org/jcms/pl_97013.

NEA (2018a), *Experience from the Fifth International Nuclear Emergency Exercise (INEX-5): Notification, Communication and Interfaces Related to Catastrophic Events Involving Ionising Radiation and/or Radioactive Materials*, OECD Publishing, Paris, www.oecd-nea.org/jcms/pl_15064.

NEA (2018b), Proceedings *of the Fifth International Nuclear Emergency Exercise (INEX-5) Workshop*, OECD Publishing, Paris, www.oecd-nea.org/jcms/pl_15110.

Annex A. RTPs in NEA member countries

The NEA member countries and organisations that completed the survey are as follows:

- ARPANSA, Australia
- BMK, Austria
- HC, Canada
- European Commission, European Union
- STUK, Finland
- IRSN, France
- BFS, Germany
- HAEA, Hungary
- ISIN, Italy
- DSA, Norway
- APA, Portugal
- SONS, Slovak Republic
- SNSA, Slovenia
- NEOC, Switzerland
- RIVM, The Netherlands
- BEIS, United Kingdom
- NRC, United States
- EPA, United States

Three countries, Canada, France and the United States, provided information on two different RTPs.

In the following pages, relevant information on the RTP for each country is presented at the time of the survey. The EGRT survey was disseminated to members of the WPNEM on 8 January 2022, and the deadline for responses was 1 April 2022. Next to the general and technical information, the one-page sheet includes information about the content that is available on the RTPs and possible arrangements for bilateral or international exchanges in case of nuclear or radiological emergency.

ARPANSA, Australia

Noggin	
Web address	www.noggin.io/
Operator of the RTP	National institution - Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)
Level of use of RTP	National
Type of emergencies	Nuclear Power Plants, Fuel Cycle Facilities, Military Facilities, Radioactive Material in transit, Hostile use of radioactive material, The platform is used to manage the response to all-hazards under the Australasian Inter-Service Incident Management System (AIIMS). ARPANSA uses the ARGOS system to simulate atmospheric dispersion to assist decision-making in response to an environmental release from a facility.
Technical Information	Available 24/7 Web access Secure network Backup for servers and network Backup in another location encrypted communications Single sign-on through ARPANSAs secure network Archives
File Formats	Word docx, irix, xml
Data Suppliers	1, ARPANSA
Users	50, parallel
Types of Users	Experts – Scientific Advisors Authorities and Decision Makers
Connection to other platforms	Yes There are opportunities to connect to other platforms - these have not been applied now. Import/export procedures
Pre-loaded Information and Documents	The system is not specific to nuclear emergencies. It is intended to be used to manage data flows and record the decisions of the incident management team.
Situation Reports	Description of the current situation Predicted future development of the situation Best- and worst-case scenarios Recommendation of protective actions Implemented protective actions Media releases
Published Information	Source term Weather forecasts On-site weather measurements Monitoring data (gamma dose rate network) Mobile measurements (airborne/carborne) Atmospheric dispersion modelling/data Specific measurements (inc. ad hoc measurements) Nuclear power plant Parameters Intelligence reports can be produced within the system. All this information can be provided in such a report, however it is not automatically generated within this system.
Bilateral Agreements for use of RTP	No
Language	English
International Exchange	No

BMK, Austria

Situation Reporting System for Radiological Emergencies	
Web address	https://services2.lfrz.at/RL/login.jsp
Operator of the RTP	National institution - Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology
Level of use of RTP	National, International
Type of emergencies	Nuclear Power Plants Fuel Cycle Facilities Military Facilities Radioactive Material in transit Hostile use of radioactive material For any type of radiological or nuclear emergency
Technical Information	Available 24/7 Web access Backup for servers and network Encrypted communications 1-factor Authentication, password Archives
File Formats	Any file can be attached (preferable pdf and image formats) – no preview possible
Data Suppliers	~ 11 BMK, TSO, Separate area: Provinces (9)
Users	72
Types of Users	Experts – Scientific Advisors Authorities and Decision Makers
Connection to other platforms	No
Pre-loaded Information and Documents	Nuclear facilities (list, descriptions, etc.) Nuclear Site Emergency Plans National Emergency Plans Roles and Responsibilities of Organisations Information on Protective Actions
Situation Reports	Description of the current situation Recommendation of protective actions Implemented protective actions Media releases
Published Information	Whatever needs to be published (as files) depending on the event
Bilateral Agreements for use of RTP	Yes, permanently access, no editing rights, no communications with partner countries, basis is grant letter/bilateral agreements
Language	German and English user interface
International Exchange	No

HC, Canada

Fixed Point System	
Web address	N/A
Operator of the RTP	Local (e.g. operator, local government), National (e.g. national government) institution - Health Canada - Radiation Protection Bureau
Level of use of RTP	Local, National, International
Type of emergencies	Nuclear Power Plants Hostile use of radioactive material
Technical Information	Available 24/7 Web access Secure network Backup for servers and network Backup in another location Encrypted communications 1-factor Authentication, password
File Formats	irix, xml, SQL
Data Suppliers	1 Health Canada
Users	30, parallel connections are supported
Types of Users	Experts – Scientific Advisors Authorities and Decision Makers
Connection to other platforms	Yes Download FTP protocol for exchanging information
Pre-loaded Information and Documents	Data only. Data shared as needed for informed decision-making.
Situation Reports	Data only. Data shared as needed for informed decision-making.
Published Information	Monitoring data (gamma dose rate network)
Bilateral Agreements for use of RTP	Yes, permanently
Language	Mostly numerical data, but French and English were applicable
International Exchange	IAEA, EU Ftp exchange of data

HC, Canada

OCIP - Operations Centre Interconnectivity Portal and DO - Duty Officer National System	
Web address	https://ocip-pico.hre-ehr.gc.ca
Operator of the RTP	Local (e.g. operator, local government), National (e.g. national government) institution - Nuclear Emergency Preparedness and Response Division, Radiation Protection Bureau, Health Canada
Level of use of RTP	Local, National
Type of emergencies	Nuclear Power Plants
Technical Information	Available 24/7 Web access Secure network Open Source Backup for servers and network Backup in another location Password Archive
File Formats	All no JSON
Data Suppliers	OCIP – CMC, FPS HC, CNSC, DO system, HC, all federal departments under the FNEP
Users	OCIP – hundreds national
Types of Users	Experts – Scientific Advisors Authorities and Decision Makers
Connection to other platforms	No
Pre-loaded Information and Documents	The scenarios should be populated as needed
Situation Reports	Description of the current situation Predicted future development of the situation Best- and worst-case scenarios Recommendation of protective actions Implemented protective actions Media releases
Published Information	Reports on all above, but not on actually data
Bilateral Agreements for use of RTP	
Language	English and French
International Exchange	Via DO-IAEA USIE

European Commission, European Union

WebECURIE	
Web address	Restricted
Operator of the RTP	International institution - European Commission
Level of use of RTP	International
Type of emergencies	Nuclear Power Plants Fuel Cycle Facilities Military Facilities Radioactive Material in transit Hostile use of radioactive material Any radiological emergency where a MS would take protective actions to safeguard the population.
Technical Information	Available 24/7 Web access Secure network Backup for servers and network Backup in another location Encrypted communications 1-factor Authentication, UN/PW via central authentication system Archives
File Formats	Word docx, irix, xml, sql
Data Suppliers	+/- 40 National authorities
Users	Multiple users possible but limited accounts
Types of Users	Authorities and Decision Makers National emergency services where applicable
Connection to other platforms	Yes API IRIX file exchange
Pre-loaded Information and Documents	Roles and Responsibilities of Organisations It is a current information exchange system not an information database.
Situation Reports	Description of the current situation Predicted future development of the situation Implemented protective actions Media releases
Published Information	Any required info may be attached
Bilateral Agreements for use of RTP	No
Language	/
International Exchange	/

STUK, Finland

TIUKU	
Web address	Not available via Internet
Operator of the RTP	National institution - STUK - Radiation and Nuclear Safety Authority
Level of use of RTP	National
Type of emergencies	Nuclear Power Plant Fuel Cycle Facilities Military Facilities Radioactive Material in transit Hostile use of radioactive material
Technical Information	Available 24/7 Web access Hosted in a secure facility Backup for servers and network Secure Access Archives
File Formats	pdf, png, json, gis, irix, docx, etc.
Data Suppliers	3
Users	~ 50
Types of Users	Experts – Scientific Advisors Authorities and Decision Makers
Connection to other platforms	Supercomputers for running dispersion models, Radiation monitoring platform (USVA), RODOS DSS
Pre-loaded Information and Documents	Nuclear facilities (list, descriptions, etc.) National Emergency Plans Nuclear Site Emergency Planning Zones Information on Protective Actions
Situation Reports	Description of the current situation Predicted future development of the situation Best- and worst-case scenarios Recommendation of protective actions Implemented protective actions
Published Information	Source term Weather forecasts On-site weather measurements Monitoring data (gamma dose rate network) Mobile measurements (airborne/carborne) Atmospheric dispersion modelling/data Nuclear power plant Parameters Protective actions recommendations on the map
Bilateral Agreements for use of RTP	No
Language	Finnish, English, Swedish
International Exchange	No international data exchange via this RTP, national only. International communication is done via other systems.

IRSN, France

CRITER	
Web address	Specific URL for each event
Operator of the RTP	National institution – IRSN Institute of Radiation protection and Nuclear Safety
Level of use of RTP	Local, National, International
Type of emergencies	Nuclear Power Plant Fuel Cycle Facilities Military Facilities Radioactive Material in transit Hostile use of radioactive material
Technical Information	Available 24/7 Web access Backup for servers and network Encrypted Communication
File Formats	Xml
Data Suppliers	4
Users	< 100
Types of Users	Experts – Scientific Advisors Authorities and Decision Makers Operators of critical structures
Connection to other platforms	IRMIS Protocol used: FTP
Pre-loaded Information and Documents	Nuclear facilities (list, descriptions, etc.) RTP is a software for cartographic restitution of measurements
Situation Reports	Description of the current situation – field measurements
Published Information	Monitoring data (gamma dose rate network) Mobile measurements (airborne/carborne) Specific measurements (inc. ad hoc measurements)
Bilateral Agreements for use of RTP	No
Language	French
International Exchange	IAEA

IRSN, France

C3X-Web	
Web address	https://c3x-web.irsn.fr
Operator of the RTP	National institution – IRSN Institute of Radiation protection and Nuclear Safety
Level of use of RTP	Local, National
Type of emergencies	Nuclear Power Plants Fuel Cycle Facilities Military Facilities Radioactive Material in transit Hostile use of radioactive material
Technical Information	Available 24/7 Web access Encrypted communications C3X-Web is available through the public web https protocol. A backup and a geographical redundancy is in progress. No authentication, the users should know the exact URL of the webpages produced (coded). Archives
File Formats	JSON, shape
Data Suppliers	1, IRSN
Users	Undefined: no registration needed, only the web address (complex) is required.
Types of Users	Experts – Scientific Advisors Authorities and Decision Makers
Connection to other platforms	Yes, with French governmental GIS platform. For downloading. API protocol for exchanging information, manual download via the webpage is also possible.
Pre-loaded Information and Documents	Nuclear facilities (list, descriptions, etc.) Nuclear Site Emergency Planning Zones Only geographical data are pre-loaded, there is no document related to general EP&R organisation.
Situation Reports	Recommendation of protective actions The recommendations of protective actions are given for the current and predicted situations (assessment and prognosis). Full description is made available in a complete IRSN message.
Published Information	Atmospheric dispersion modelling/data Projected dose assessment Foodstuff contamination
Bilateral Agreements for use of RTP	No
Language	French
International Exchange	No

BFS, Germany

ELAN – Electronic Situation Display for the Emergency Management	
Web address	https://www.imis.bfs.de/dokpool/bund/
Operator of the RTP	National institution – Federal Office for Radiation Protection
Level of use of RTP	Local, National, International
Type of emergencies	Nuclear Power Plants Radioactive Material in transit Dirty bomb, radioactive traces, unknown event
Technical Information	Available 24/7 Web access Secure network Open source Backup for servers and network Backup in another location Encrypted communications Backup for servers and network in preparation, Georedundancy in preparation 1-factor Authentication, password Archives
File Formats	Word docx, irix, xml, json, html, pdf
Data Suppliers	~ 20 Weather service, federal and state authorities, emergency and monitoring systems, commissions
Users	~ 1 500 Unlimited, but only a few ids in restricted use
Types of Users	Experts – Scientific Advisors Authorities and Decision Makers Operators of critical structures Civil Protection
Connection to other platforms	Yes. Electronic Situation Displays of the States, tools for creation of situation reports, GIS / Geoinformation / integration of maps and laboratory reports RODOS system, nuclear power plant monitoring systems. API, FTP PROTOCOLS, import/export procedures, web services (SOAP), IRIX standard
Pre-loaded Information and Documents	Nuclear facilities (list, descriptions, etc.) National Emergency Plans Nuclear Site Emergency Planning Zones Information on Protective Actions No nuclear emergency plans: no federal responsibilities no roles and responsibilities: Overview of roles and responsibilities is being planned no information on demographics: is being planned
Situation Reports	Description of the current situation Predicted future development of the situation Recommendation of protective actions Implemented protective actions Media releases Integration of best and worst scenarios is planned, calculations with most probable source term are provided
Published Information	Source term Weather forecasts On-site weather measurements Monitoring data (gamma dose rate network) Mobile measurements (airborne/carborne) Atmospheric dispersion modelling/data Specific measurements (inc. ad hoc measurements) Aquatic dispersion modelling / data Nuclear power plant parameters Chimney measurements (activity / spectrometry) Aquatic data is already scheduled, aquatic dispersion modelling can be provided by the responsible authorities
Bilateral Agreements for use of RTP	Yes, permanently access, no editing rights, no communications with partner countries, basis is bilateral agreements on read-only-access with Denmark, The Netherlands, France, Switzerland, Austria Editing rights: use of comment facility
Language	German, English version is planned
International Exchange	No direct exchange with IAEA, EU but provision of notifications within the RTP. IRIX exchange in preparation.

HAEA, Hungary

National Radiation Monitoring, Early Warning and Surveillance System	
Web address	www.katasztrofavedelem.hu/modules/hattersugarzas/terkep www.katasztrofavedelem.hu/modules/hattersugarzas/aktualis_adatsor
Operator of the RTP	National institution – Hungarian Atomic Energy Authority
Level of use of RTP	National
Type of emergencies	Nuclear Power Plants
Technical Information	Available 24/7 Web access Backup for servers and network Authentication with password
File Formats	XML
Data Suppliers	6 Sectors: Meteorological Service, National Directorate General for Disaster Management, Hungarian Armed Forces, Paks Nuclear Power Plant, Training Reaktor (Budapest), Budapest Research Reactor
Users	No information
Types of Users	Public
Connection to other platforms	
Pre-loaded Information and Documents	Nuclear Site Emergency Planning Zones Information on Protective Actions
Situation Reports	Description of the current situation Recommendation of protective actions Implemented protective actions
Published Information	Monitoring data (gamma dose rate network) Mobile measurements (airborne/carborne)
Bilateral Agreements for use of RTP	No Permanently access Editing rights
Language	Hungarian
International Exchange	IAEA, EU Provide the same data for RTP and the EURDEP (ECURIE) / IRMIS (USIE) system.

ISIN, Italy

SINRAD – National Information System for Radioactivity	
Web address	https://sinrad.isinucleare.it/
Operator of the RTP	National institution – National Inspectorate for Nuclear Safety and Radiation Protection (ISIN)
Level of use of RTP	Local, National
Type of emergencies	SINRAD is a platform designated for routine purposes. It is used also in emergency to collect and share monitoring data in case of all types of nuclear or radiological emergencies.
Technical Information	Available 24/7 Web access Secure network Backup for servers and network Daily backups Secure Access 1-factor Authentication Archives
File Formats	irix, xml, csv
Data Suppliers	25
Users	75
Types of Users	Experts – Scientific Advisors Authorities and Decision Makers
Connection to other platforms	
Pre-loaded Information and Documents	SINRAD is built for routine situation and used also in emergency. Anyway it is possible to upload document on the platform.
Situation Reports	These kinds of reports are out of the scope of SINRAD.SINRAD should be complemented with another RTP with all these reporting capabilities.
Published Information	Monitoring data (gamma dose rate network) Mobile measurements (airborne / carborne) Specific measurements (inc. ad hoc measurements) Monitoring data on environmental media and foodstuff
Bilateral Agreements for use of RTP	
Language	Italian
International Exchange	No data exchange at moment. All

DSA, Norway

Radnett	
Web address	radnett.dsa.no
Operator of the RTP	National institution (e.g. national government) – DSA
Level of use of RTP	Local, National
Type of emergencies	The monitoring network does not manage events, it's done in the emergency management system (F24 CIM)
Technical Information	Available 24/7 Web access Backup for servers and network
File Formats	The data is uploaded automatically from monitoring stations but can be accessed via SQL.
Data Suppliers	0
Users	100
Types of Users	The system is only for measurements. Submitted by us or partners.
Connection to other platforms	Yes, EURDEP, for upload, FTP protocol
Pre-loaded Information and Documents	The system described here is only for measurements, all points above are available on different other systems.
Situation Reports	All points are covered by another system, F24 CIM.
Published Information	Monitoring data (gamma dose rate network) Other systems for Atmospheric dispersion modelling and mobile measurements.
Bilateral Agreements for use of RTP	No
Language	/
International Exchange	IAEA, EU, EURDEP

APA, Portugal

RADNET – Rede de alerta de radioatividade no ambiente	
Web address	https://sniamb.apambiente.pt/content/rede-de-alerta-de-radioactividade-no-ambiente https://radnet.apambiente.pt/
Operator of the RTP	National institution – Agência Portuguesa do Ambiente
Level of use of RTP	National, International
Type of emergencies	Hostile use of radioactive material Unexpected abnormal levels of radioactivity in the environment.
Technical Information	Available 24/7 Web access Secure network Open source Backup for servers and network Encrypted communications 1-factor Authentication, passwords for Administrators. Public information does not require authentication Archives
File Formats	Xml
Data Suppliers	1 APA, fixed measuring stations and portable measuring stations
Users	7 2 parallel
Types of Users	Authorities and Decision Makers Public
Connection to other platforms	Yes European Radiological Data Exchange Platform (EURDEP); International Radiation Monitoring Information System (IRMIS) of the IAEA. For upload. Import/export procedures.
Pre-loaded Information and Documents	
Situation Reports	
Published Information	Monitoring data (gamma dose rate network) Mobile measurements (airborne/carborne) Specific measurements (inc. ad hoc measurements)
Bilateral Agreements for use of RTP	Yes, permanently access, no editing rights, no communications with partner countries, basis is the “Protocolo Técnico de Cooperação Bilateral (Technical Protocol for Bilateral Co-operation) with Spain”(involving the APA, the National Emergency and Civil Protection Authority on the part of Portugal and the Consejo de Seguridad Nuclear of Spain) has defined objectives for routine and emergency situations and also contemplates information sharing, team creation, joint exercises, training and the development and implementation of procedures, among others.
Language	English
International Exchange	IAEA, EU RADNET uploads values to the European Radiological Data Exchange Platform (EURDEP) and this platform will upload values to the International Radiation Monitoring Information System (IRMIS) is the IAEA. RADNET does not exchange information with EURDEP or USIE directly.

SONS, Slovak Republic

Multiple software tools are used to promote decision-making and emergency management	
Web address	/
Operator of the RTP	National institution – State Office for Nuclear Safety
Level of use of RTP	National
Type of emergencies	Nuclear Power Plants Radwaste processing facilities on the territory of the Slovak Republic
Technical Information	Available 24/7 Our systems are only available to the Nuclear Regulatory Authority of SR with the output/products being sent toother governmental institutions (mostly via email communication). 1-factor Authentication, password Archives
File Formats	Question is unclear as to what “support” means in this context. You can upload and share any kind of file through the information exchange system, but it will not open nor process it (read from it and fill some tables, etc.). It does have some functions to export certain specific documents though.
Data Suppliers	Licence holders, Slovak Hydrometeorological Institute
Users	As stated before, we are not talking about a single system. Although there are plans to change this, for now there are no external users for any of our systems. For our information exchange system there is no hard limit.
Types of Users	Authorities and Decision Makers
Connection to other platforms	Not implemented yet, there are plans to add such functionality.
Pre-loaded Information and Documents	Nuclear facilities (list, descriptions, etc.) Nuclear Site Emergency Plans National Emergency Plans Nuclear Site Emergency Planning Zones Roles and Responsibilities of Organisations Information on Demographic Information on Protective Actions
Situation Reports	Description of the current situation Predicted future development of the situation Recommendation of protective actions Implemented protective actions Media releases
Published Information	Source term Weather forecasts On-site weather measurements Monitoring data (gamma dose rate network) Atmospheric dispersion modelling/data Nuclear power plant parameters Chimney measurements (activity / spectrometry)
Bilateral Agreements for use of RTP	No
Language	/
International Exchange	No

SNSA, Slovenia

KID – Komunikacija med Izrednim Dogodkom	
Web address	https://mksid.ursjv.gov.si/
Operator of the RTP	National institution – Slovenian Nuclear Safety Administration
Level of use of RTP	Local, National
Type of emergencies	Nuclear Power Plant Radioactive Material in transit Hostile use of radioactive material Radwaste Storage Facility Research Reactor Facility
Technical Information	Available 24/7 Web access Secure network Open source Hosted in a secure facility Backup for servers and network Secure Access 2-factor Authentication Archives
File Formats	Word docx, irix, xml, pdf, doc(x), xls(x), ppt(x), txt, html, jpg, gif, png, tif, bmp, wmf, eps, jp2, dxf, cdr
Data Suppliers	3
Users	46
Types of Users	Experts – Scientific Advisors Authorities and Decision Makers Operators of critical structures
Connection to other platforms	Weather in Slovenia Early Warning System for Radioactivity in the Environment Protocol used: FTP
Pre-loaded Information and Documents	Nuclear facilities (list, descriptions, etc.) Nuclear Site Emergency Planning Zones Information on Protective Actions
Situation Reports	Description of the current situation Predicted future development of the situation Best- and worst-case scenarios Recommendation of protective actions Implemented protective actions Media releases
Published Information	Source term Weather forecasts On-site weather measurements Monitoring data (gamma dose rate network) Mobile measurements (airborne/carborne) Atmospheric dispersion modelling/data Specific measurements (inc. ad hoc measurements) Nuclear power plant parameters Chimney measurements (activity / spectrometry)
Bilateral Agreements for use of RTP	Yes, permanently access, editing rights, communications with partner countries, basis is Draft Arrangements for nuclear or radiological emergency preparedness and response, between Slovenia and Croatia
Language	Slovenian, English
International Exchange	Forms from international systems are uploaded to KID

CSN, Spain

CSN Webpage – Consejo de Seguridad Nuclear	
Web address	www.csn.es
Operator of the RTP	National institution – Consejo de Seguridad Nuclear
Level of use of RTP	Local, National, International
Type of emergencies	Nuclear Power Plant Fuel Cycle Facilities Radioactive Material in transit Hostile use of radioactive material
Technical Information	Available 24/7 Web access Secure network Hosted in internal servers with in-house support and in a third-party data centre Backup for servers and network Backup in another location Encrypted communications Secure Access 2 or 3-factor Authentication
File Formats	Word docx, irix, xml, json, sql, xlsx, ppt
Data Suppliers	>6
Users	Unknown
Types of Users	Experts – Scientific Advisors Authorities and Decision Makers Public Operators of critical structures
Connection to other platforms	No
Pre-loaded Information and Documents	Nuclear facilities (list, descriptions, etc.) Nuclear Site Emergency Plans Nuclear Site Emergency Planning Zones National Emergency Plans Roles and Responsibilities of Organisations Information on Demographics Information on Protective Actions
Situation Reports	Media releases
Published Information	Source term Weather forecasts On-site weather measurements Monitoring data (gamma dose rate network) Mobile measurements (airborne/carborne) Atmospheric dispersion modelling/data Specific measurements (inc. ad hoc measurements) Nuclear power plant parameters Chimney measurements (activity / spectrometry)
Bilateral Agreements for use of RTP	Yes, permanently access, Bilateral arrangements provide resources for exchange of information. RTP allows for exchange of information regarding planning arrangements as well as real time environmental monitoring data
Language	Spanish, English
International Exchange	IAEA, EU. RTP systems does not exchange information with international organisations. Such exchange is performed manually via USIE and ECURIE tools

NEOC, Switzerland

ESD – Electronic Situation Display	
Web address	No public web address
Operator of the RTP	National institution (e.g. national government) – NEOC
Level of use of RTP	Local, National, international
Type of emergencies	Nuclear Power Plants Fuel Cycle Facilities Radioactive Material in transit Hostile use of radioactive material All radiological, biological and chemical emergencies as well as security emergency situations
Technical Information	Available 24/7 Web access Secure network Open source Backup for servers and network Encrypted communications 2-factor Authentication, password, hardware token, government identity provider, on time token (sms) Archives
File Formats	Word docx, xml, json, cap (common alerting protocol)
Data Suppliers	300 organisational units (Federal Offices and cantonal authorities including police, government agencies in neighburing countries, international organisations, operators of critical infrastructure)
Users	7 000 700 (parallel connections)
Types of Users	Experts – Scientific Advisors Authorities and Decision Makers Operators of critical structures
Connection to other platforms	Yes Meteo alerts and radar images, internal messenger application, internal message processing system, other internal web applications. For upload. Import / export procedures.
Pre-loaded Information and Documents	Pre-defined information is available on another internal system and is published on the ESD only in case of emergency.
Situation Reports	Description of the current situation Predicted future development of the situation Best- and worst-case scenarios Recommendation of protective actions Implemented protective actions Media releases
Published Information	Source term Weather forecasts On-site weather measurements Monitoring data (gamma dose rate network) Mobile measurements (airborne/carborne) Atmospheric dispersion modelling/data Specific measurements (inc. ad hoc measurements) Aquatic dispersion modelling/data Nuclear power plant parameters Chimney measurements (activity / spectrometry) In case of non-nuclear events many different information is published.
Bilateral Agreements for use of RTP	Yes, permanently, editing rights, basis is bilateral agreements and convention on early notification (IAEA)
Language	German, French, if necessary, Italian, English if possible
International Exchange	IAEA, reading rights for IEC/IAEA

RIVM, The Netherlands

CalWeb	
Web address	calwen.cal-net.nl
Operator of the RTP	National institution – RIVM – National Institute for Public Health and the Environment
Level of use of RTP	Local, National, International
Type of emergencies	Nuclear Power Plants Fuel Cycle Facilities Military Facilities Radioactive Material in transit Hostile use of radioactive material The RTP does not dictate anything. It is meant to support information exchange for whatever means. CalWeb processes only radiological measurements, but all kinds of information/reports can be exchanged.
Technical Information	Available 24/7 Web access Secure network Backup for servers and network Backup in another location Encrypted communications CalWeb is not accessible to the public. 1-factor Authentication, password Archives
File Formats	Word docx, xml For measurements: spreadsheets with specific formatting For reports: any format. Functionality is distributed over several applications. EURDEP e.g. is processed by a different application than CalWeb.
Data Suppliers	20
Users	200
Types of Users	Experts – Scientific Advisors Operators of critical structures All institutes and organisations that have the capability to perform radiological measurements
Connection to other platforms	EURDEP, for download API, FTP, import/export procedures
Pre-loaded Information and Documents	Nuclear facilities (list, descriptions, etc.) Nuclear Site Emergency Plans National Emergency Plans Nuclear Site Emergency Planning Zones Roles and Responsibilities of Organisations Information on Demographics Information on Protective Actions
Situation Reports	The description of the current situation, the predicted future developments of the situation, possible scenario's, exceedance of intervention levels for protective actions are included in situation reports, published on the RTP.
Published Information	Source term Weather forecasts On-site weather measurements Monitoring data (gamma dose rate network) Mobile measurements (airborne/carborne) Atmospheric dispersion modelling/data Specific measurements (inc. ad hoc measurements) Aquatic dispersion modelling/data Nuclear power plant parameters Chimney measurements (activity / spectrometry)
Bilateral Agreements for use of RTP	Yes, permanently access, editing rights, communications with partner countries, basis is bilateral agreement on the exchange of technical and radiological information during emergrncies.
Language	Whatever you prefer. Reports are mostly published in Dutch.
International Exchange	Exchange with USIE and ECURIE is not the responsibility of RIVM

BEIS, United Kingdom

RIMNET – Radioactive Incident Monitoring Network	
Web address	/
Operator of the RTP	National institution (e.g. national government) – Department for Business, Energy and Industrial Strategy
Level of use of RTP	National
Type of emergencies	Nuclear power plants Fuel Cycle Facilities Military Facilities Radioactive Material in transit Hostile use of radioactive material The RTP can be utilised to assist in the management of any radiological event. How and to what degree it is utilised may depend on the event scenario.
Technical Information	Available 24/7 Web access Secure network Backup for servers and network Backup in another location It is not open code. It is a purpose-built bespoke development. Not all communications are encrypted. 1-factor Authentication, password Archives
File Formats	Word docx, shape, SQL, MS Office is utilised
Data Suppliers	This is changeable and depends on the context of the question. The data suppliers are international organisations, public bodies and subject matter expert groups, private sector contractors.
Users	Usage is based on organisations rather than individuals (~ 20 organisations). 75 parallel connections.
Types of Users	Experts – Scientific Advisors Authorities and Decision Makers Operators of critical structures
Connection to other platforms	No
Pre-loaded Information and Documents	Nuclear facilities (list, descriptions, etc.) Nuclear Site Emergency Plans National Emergency Plans Nuclear Site Emergency Planning Zones Information on Demographic Much information is uploaded during an event or held elsewhere. Roles and responsibilities for example can be held in the RTP but this adds an additional task to ensure all copies are updated.
Situation Reports	The RTP can share all the above, for example within a document management system and such information may be copied to the RTP during an event. However master copies are maintained elsewhere.
Published Information	Monitoring data (gamma dose rate network) Mobile measurements (airborne/carborne) Atmospheric dispersion modelling/data Specific measurements (inc. ad hoc measurements) The RTP can publish all the above but is not the primary system for doing so in all cases.
Bilateral Agreements for use of RTP	None. Information from the RTP will be shared with bi-laterals and in the case of radiological data exchange we can set up FTP arrangements, but other States do not have direct access to the RTP.
Language	English
International Exchange	We exchange information with IAEA, but this is not directly via the RTP. We exchange data automatically with EURDEP, France and domestic partners. There is no direct or automatic exchange other than radiological monitoring data exchange with EURDEP. The response Teams who manage the RTP are also responsible for exchanging information with international organisations.

NRC, United States

ERDS – Emergency Response Data System	
Web address	/
Operator of the RTP	National institution (e.g. national government) – US Nuclear Regulatory Commission
Level of use of RTP	National
Type of emergencies	Nuclear Power Plants
Technical Information	Available 24/7 Web access Secure network Backup for servers and network Backup in another location Encrypted communications ERDS is based on OSIsoft PI System, which is proprietary. 2-factor Authentication, username/password, certificate
File Formats	Encrypted text file.
Data Suppliers	93 All operating nuclear power plants in the US.
Users	250
Types of Users	Experts – Scientific Advisors
Connection to other platforms	No
Pre-loaded Information and Documents	Nuclear facilities (list, descriptions, etc.) ERDS is designed only to receive near real-time plant data from nuclear power plants. It is only one of the systems used in the NRC operations centre. The NRC operations centre has other systems in place serving as document repository.
Situation Reports	ERDS is used to receive and display only raw data. It is not used to publish recommendations.
Published Information	On-site weather measurements Nuclear power plant parameters
Bilateral Agreements for use of RTP	No
Language	English
International Exchange	Not applicable

EPA, United States

RadResponder Network	
Web address	www.radresponder.net
Operator of the RTP	Local (e.g. operator, local government), National institution (e.g. national government) – US Environmental Protection Agency
Level of use of RTP	Local, National
Type of emergencies	Nuclear Power Plant Includes RDD. Includes any radiological or nuclear incident, both large scale and small scale, including indoor surveys.
Technical Information	Available 24/7 Web access Secure network Backup for servers and network It is a Federally funded programme; it is not open source. We don't understand the question on "backup in other location" but assume it means a 3rd location, which does not exist. We are uncertain about whether communications are encrypted, so assuming no. 1-factor Authentication, password. There is a new option that will allow for 2-factor authentication, but it is not required. Archives
File Formats	Shape. Download data into an Excel file.
Data Suppliers	Infinite Any US organisation that has response responsibility has the ability access the RadResponder Network.
Users	11 465 (as of 11 March 2022 – new users added regularly) A user can be logged in twice. We are not aware of any restrictions on the number of simultaneous connections, but we assume effectively infinite.
Types of Users	Experts – Scientific Advisors Authorities and Decision Makers Operators of critical structures
Connection to other platforms	Yes. RadNet (US national radiation monitoring system, managed by US EPA), International Monitoring System (IMS – US locations only). Upload data to RadResponder, but not back to the other platforms. API protocol for exchanging information
Pre-loaded Information and Documents	Nuclear facilities (list, descriptions, etc.) Nuclear Site Emergency Plans National Emergency Plans Nuclear Site Emergency Planning Zones Roles and Responsibilities of Organisations Information on Protective Actions
Situation Reports	RadResponder is a data repository. It allows for visualisation, but all of the reporting is managed outside of RadResponder.
Published Information	Monitoring data (gamma dose rate network) Mobile measurements (airborne/carborne) Atmospheric dispersion modelling/data Specific measurements (inc. ad hoc measurements) Aquatic dispersion modelling / data Data only – no modelling capabilities.
Bilateral Agreements for use of RTP	No
Language	English
International Exchange	Not applicable

Annex B. Survey on existing RTPs

1. Background

This survey forms part of the NEA Expert Group on Real-Time Platforms (RTP hereafter) programme of work. It has two main objectives:

1) To make an inventory of existing real-time platforms used by countries for the preparedness and response to radiological and nuclear emergencies;

2) To identify the requirements and barriers of RTPs to facilitate (1) cross- border and regional information exchange; and (2) harmonisation and co-ordination of decisions on protective actions or remedial actions.

For the purposes of this survey, a "real-time platform" is the collective term to define a platform used for managing data and information on radiological and nuclear emergencies. For example, this could include platforms used for collating radiological monitoring data and/or situational awareness. Countries that use more than one RTP should focus on the main one(s) used in the response to radiological and nuclear emergencies. There are opportunities throughout the survey to explain how your RTP interacts with other different platforms and users from other national and international organisations. This information is very important to help us learn what we can do better to facilitate cross-border and regional information exchange and co-ordination of protective actions or remedial actions.

This survey consists of 47 questions and takes about 30 minutes to complete, and it will provide us with very valuable information on the real-time platform used in your country. Questions with a * are mandatory. If you have more than one RTP, please fill in one survey for each of them.

Questions are divided into four sections covering:

- designation (country information on the use of the RTP);
- technical Information (development and maintenance of the RTP);
- content (data and information available on the RTP);
- international exchanges (cross-border arrangements with other countries and international organisations).

EGRT Survey of NEA member countries on their use of real-time platforms (RTPs)

2. Basic contact information

* 1. Contact Person.

Name:	
Institution:	
Country:	
Contact person and email address (RTP expert contact):	

* 2. Basic information on the real-time platforms (RTPs) in your country

Name of the system:	
Web address:	
Others (if any):	

* 3. Subject / usage of the RTPs (multiple selection)

□ Knowledge management
□ Information platform
□ Emergency management
□ Geoinformation services
□ Others (please specify):

3. Designation

(country information on the use of the RTP)

* 4. Who operates and maintains the RTP? (multiple selection)

□ Local institution (e.g. operator, local government)
□ National institution (e.g. national government)
□ International institution

* 5. Does the public have access to the RTP?

○ Yes (full access)
○ Yes (public part only)
○ No

* 6. Has the RTP been developed for use at: (multiple selection)

□ Local level
□ National level
□ International level

* 7. What type of radiological or nuclear emergency does the RTP manage? (multiple selection)
□ Nuclear power plants
□ Fuel cycle facilities
□ Military facilities
□ Radioactive material in transit
□ Hostile use of radioactive material
□ If there are other options, please give details:

* 8. Can the RTP manage more events simultaneously? (e.g. a nuclear emergency and natural disaster like earthquake that takes place at the same time)
○ Yes
○ No
○ Other, please give details:

4. Technical information

(Development and maintenance of the RTP)
* 9. Accessibility

	Yes	No
Is the RTP available 24/7?	○	○
Is there web access to the RTP?	○	○
Is the RTP available through a secure network?	○	○
Is the code of the RTP Open Source?	○	○
Is there a backup for servers and network?	○	○
Is there a backup in another location (geographical redundancy)?	○	○
Are RTP communications encrypted?	○	○

If no to any of the above, please give the reasons for this:

* 10. How was / is the RTP developed?
○ Internally
○ Externally – by subcontracting to IT companies
○ Other (please give details):

* 11. Where is the RTP hosted? (multiple selection)
□ Internal servers with in-house support
□ In a secure building
□ In a third-party data centre
□ In the commercial cloud
□ Other (please give details):

* 12. Data Suppliers
How many data suppliers are there for the RTP? A data supplier is an entity which provides inputs directly to the RTP.
(e.g. Meteorological Institute, Mobile Unit for measurements, authorities).

Who are the data suppliers?

* 13. RTP Users
How many users have access to the RTP? (either registered before or during an emergency)

How many parallel or simultaneous connections are supported? (i.e. users can be logged in twice)

* 14. What type of users have access to the RTP: (multiple selection)
□ Experts – Scientific Advisors
□ Authorities and Decision Makers
□ Public
□ Operators of critical structures
□ Others (please give details):

* 15. What different roles are assigned to users? (multiple selection)
□ Reader
□ Editor
□ Publisher
□ Administrator
□ Others (please give details):

* 16. Is there functionality to allow users to communicate with each other via the RTP:
○ Yes
○ No

17. If yes, what types of communications does it provide (ie. written messages, SMS, audio, video calls)?

* 18. Factors of Authentication

How many factors do you use for authentication? (password, SMS, etc.)	
What factors of authentication do you use ?	

* 19. What file format does your RTP support? (multiple selection)
□ Word docx
□ IRIX
□ XML
□ JSON
□ shape
□ SQL
□ Others (please give details):

* 20. Does the RTP support connections with other platforms?
○ Yes
○ No

21. If yes, with which platforms? If no, why?

22. Are the connections with other platforms for:
○ Upload
○ Download
○ Both
○ Other (e.g. just a link to read information/data)

23. What protocol is used for exchanging information with other platforms:
□ API
□ FTP
□ Import / export procedures
□ Others (please give details):

* 24. Does the RTP give access to past events?
○ Yes
○ No

25. Please give details of how the RTP deals with historical records and archives (e.g. saved on server, available ad vitam)

26. On a scale of 1 (not necessary) – 5 (necessary), do you think:

	Not Necessary 1	2	3	4	Necessary 5
RTP's should be available 24/7	○	○	○	○	○
RTP's should be available through web access	○	○	○	○	○
RTP's should use a secure governmental network	○	○	○	○	○
RTP codes should be open source	○	○	○	○	○
RTP's should be hosted in a secure facility	○	○	○	○	○
RTP's should have redundancy built in	○	○	○	○	○
RTP communications should be encrypted	○	○	○	○	○

27. Please give details of the main challenges or issues you have experienced with the development and ongoing technical maintenance of the RTP :

5. Content

(data and information available on the RTP)
* 28. Does the RTP have pre-loaded information and documents dealing with:

	Yes	No
Nuclear facilities (list, descriptions, etc.)	○	○
Nuclear [on and/or off] site emergency plans	○	○
National emergency plans	○	○
Nuclear site emergency planning zones	○	○
Roles and responsibilities of organisations	○	○
Information on demographics	○	○
Information on protective actions	○	○

If no to any of the above, please give the reasons for this:

29. On a scale of 1 (not necessary) – 5 (necessary), do you think the following information should be pre-loaded onto RTP's:

	Not Necessary 1	2	3	4	Necessary 5
Nuclear facilities (list, descriptions, etc.)	○	○	○	○	○
Nuclear [on and/or off] site emergency plans	○	○	○	○	○
National emergency plans	○	○	○	○	○
Nuclear site emergency planning zones	○	○	○	○	○
Roles and responsibilities of organisations	○	○	○	○	○
Information on demographics	○	○	○	○	○
Information on protective actions	○	○	○	○	○

* 30. Does the RTP provide official situation reports dealing with:

	Yes	No
Description of the current situation	○	○
Predicted future development of the situation	○	○
Best- and worst-case scenarios	○	○
Recommendation of protective actions	○	○
Implemented protective actions	○	○
Media releases	○	○

If no to any of the above, please give the reasons for this:

* 31. Is the RTP set up to receive and cascade/disseminate/distribute incident notefications?
○ Yes
○ No

* 32. Does the RTP present a chronological view (log book, journal) of the event and summary?
○ Yes
○ No

* 33. Does the RTP publish: (multiple selection)
□ Source term
□ Weather forecasts
□ On-site weather measurements
□ Monitoring data (gamma dose rate network)
□ Mobile measurements (airbourne / carbourne)
□ Atmospheric dispersion modelling / data
□ Aquatic dispersion modelling / data
□ Specific measurements (inc. ad hoc measurements)
□ Nuclear power plant parameters
□ Chimney measurements (activity / spectrometry)
□ Others (please give details):

34. In this information, is there some which are integrated in real-time, automatically (and not manually)?
○ Yes
○ No

35. If yes, please indicate what information(s) is (are) automatically uploaded in the RTP :

36. At what scale do you provide atmosphere dispersion modelling / data:

37. Please give details of the main challenges/issues/successes you have experienced with managing content on the RTP (before, during and after an incident):

6. International exchanges

(cross-border arrangements with other countries and international organisations)
* 38. Do you have bilateral agreements with other countries for use of the RTP?
○ Yes
○ No

39. Does the partner country have access:
○ Permanently
○ During exercises
○ During real emergencies

40. Bilateral Agreements:

	Yes	No
Do partner countries have editing rights?	○	○
Can you communicate with partner countries through the RTP?	○	○

41. Please give details of the operational arrangements for allowing other countries access to the RTP (for example, grant letter, bilateral agreemenI.):

* 42. Does the RTP have an international exchange with
□ IAEA
□ EU
□ OECD/NEA
□ Others (please give details):

43. Please give details of how the RTP exchanges information with international organisations (i.e. exchanges with USIE or ECURIE):

44. What language(s) is the information/outputs available in:

45. What key information, which has not been addressed previously in the survey, would you like to receive from other countries? For example, information on protective actIs...

46. Please give details of the main issues/challenges/successes you have experienced when working with third parties (e.g. other countries, international organisations, etc.):

47. Any additional comments:

* 48. Pay attention, clicking on "Done" will submit your answers.
You can verify them by navigating with the previous and next buttons. Do you complete and want to leave the survey?
○ Yes
○ No