

Operational procedures of analytical platform

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Abstract – The PREPARE analytical platform (AP) has been developed under the framework of the European project PREPARE (“Innovative integrated tools and platforms for radiological emergency preparedness and post-accident response in Europe”, EC FP7-EURATOM-FISSION GA 323287. <http://www.prepare-eu.org>) to be a focal point for collecting information, analysing any nuclear or radiological event and providing information about the consequences and its future evolution. How to organise the operation of the AP and how to store and manage the information are primordial aspects to take into account in its quality management system. In this paper, the technical basis to accomplish the development and implementation of the adequate operational procedures are presented.

Keywords: analytical platform / operational procedures / information management / nuclear emergencies

1 Introduction

The analytical platform (AP), developed under the PREPARE project, aims to be a focal point for collecting information, analysing any nuclear or radiological event and providing information about the consequences and its future evolution (Raskob *et al.*, 2016a). An important aspect of the quality system of the AP is to work according to clear-cut operating procedures (OPs). This paper presents the technical basis to accomplish the development and implementation of the adequate OP to suit each of the processes of information exchange that can be carried out with the AP.

The following three activities are vital for the development: (i) understanding the problem; (ii) designing and development of a process map or flow diagram; and (iii) analysis and feedback from testing and training. According to them, the study has identified and characterised the main processes in the operation of the AP; the potential users of the AP; its structure, interactions among users and information management; general response framework of the AP, with roles, skills, and workflow; and finally, functioning and governance of the AP. The summary of the findings and the main conclusions obtained are presented in the following sections.

2 Summary of the main findings

2.1 Identification of the main processes in the operation of the AP

The operational framework of the AP should be in accordance with the working process accomplished during the emergency management, targeted to provide/exchange information during both the pre-emergency preparedness as well as

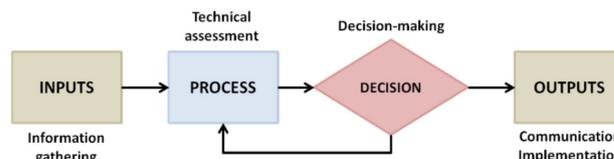


Figure 1. Scheme of the process following in each key decision-making point.

the response and the recovery phases (OECD/NEA, 2010), generically named as EP&R. Therefore, the roadmap to establish the possible information flow in the AP and to develop the related protocols or operational procedures to follow have been adapted to the needs for information in each key decision-making point along this emergency management timeline, as it is schematised in Figure 1.

These key decision making points include the ‘types’ and ‘timelines’ of likely decisions, the ‘inputs’ necessary for establishing an initial technical basis for recommendations, the ‘outputs’, and the ‘linkages’ to other response partners and stakeholders.

2.2 Identification and categorisation of stakeholders (users) of the platform

The stakeholders of the AP will have differences on the expected level of use, distinguishing among expert level or level of public community, affected or in general interested. The EP&R experts would be the main users, as providers and/or recipients of information, with a grade of implication depending on their involvement in analysis or decision-making of an actual situation.

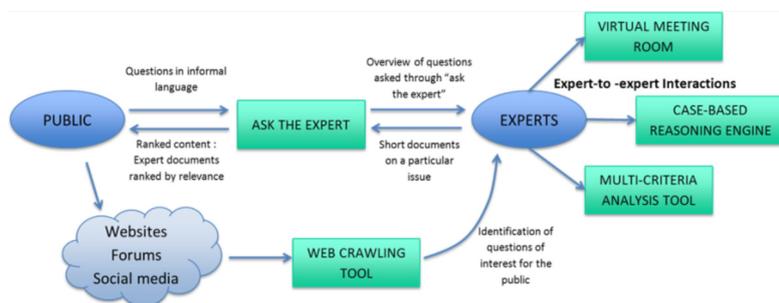


Figure 2. Interactions with the public and the experts through the AP tools.

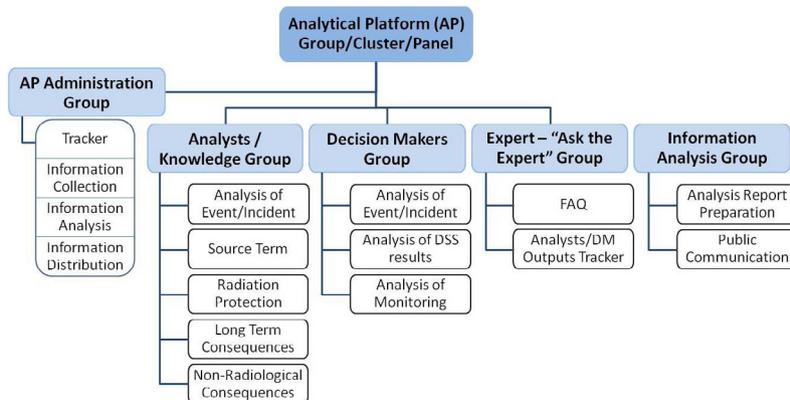


Figure 3. General structure of the AP response framework, shown the different groups involved.

A survey realised among the potential users (Montero *et al.*, 2016a) has revealed that experts consider the AP as a useful tool to collect and share information and exchange experiences. It will also enable the users to provide adequate feedback with their expertise (communication, risk modelling, measurement capability, recovery issues, and so on) and/or resources. The AP should be able, also, to respond to the questions from the public. Besides, the support of European institutions could guarantee the usefulness and trustworthiness of the platform.

2.3 Operating the analytical platform

2.3.1 Structure of the analytical platform and interactions among users

The AP has been realised as web portal providing access and means for users to interact with the different tools, in order to obtain and exchange information related to the crisis situation or any nuclear or radiological event. The generic process diagram describing the operation of the AP and the interactions of users with the available tools are shown in Figure 2.

According to the different roles of users, two types of tools are provided for the information exchange (Ikonomopoulos, 2016; Müller, 2016; Raskob *et al.*, 2016b):

- Tools for facilitating expert-to-expert interactions, including: (i) a case-based reasoning tool and a knowledge database; (ii) a multi-criteria analysis tool; and (iii) virtual meeting room to analyse and communicate an on-going event among experts.

- Tools for facilitating interactions with the public community, where different methods of crowd sourcing (web-crawling tool and “ask-the-expert” tool) are used to improve the relevance and quality of publicly available material disseminated via the AP.

2.3.2 Management of information

The information management system for the AP is prepared: (i) to collect and gather information from a range of sources (previous cases and vocabulary stored in a knowledge database or public social media sources, geo-information and modelling, weather forecasts, specialised or technical information ...), to process requests and manage records; (ii) to produce relevant products for supporting decisions; (iii) to store in an agile form and easily accessing, the information and outputs obtained in repositories or through library services; (iii) to serve as the single point of reference for event/incident information management. It is designed to be: (i) integral, eliminating the needs for different applications; (ii) inter-operational, being integrated with each user's interaction process into the AP; and (iii) smart, whenever possible, automated processes of collection, storage or exchange of information will be use.

2.4 General response framework of the AP

A general structure of the AP response framework (Figure 3), with the roles and responsibilities of each of the actors and the flow of information among providers of it and

their recipients, has been proposed (Montero *et al.*, 2016b) as follows:

- **Administration group:** Set up dedicated virtual meeting rooms; information management.
- **Analysts/knowledge group:** Performs analyses in particular meeting rooms based on information collected and received from the administrator group.
- **Decision makers group:** Provides professional advice based on outputs from the previous group and analysis from the decision support systems (DSSs) and monitoring results.
- **Expert – “Ask the expert” group:** Issue web crawling and prepare the answers to the questions from the public or other stakeholders.
- **Information analysis group:** Prepare and develop timely, accurate and clearly written situational analysis reports/documents and presentations as required.

2.5 Functioning and governance of the AP

The desirability of establishing clear rules for registration of experts and working procedures of expert groups has been identified (Montero *et al.*, 2016a). The potential users agree that NERIS would take the leadership of the AP and the maintenance being shared among developers and NERIS. The international exercises and training revealed as the best methods to check the operation of the AP and favour its trustworthiness for the users (Turcanu *et al.*, 2016).

3 Conclusions

In order to ensure that each of the processes of information exchange, that can be carried out with the AP, meets quality and compliance requirements, adequate OP must be developed and implemented. The objective is to target them to the users, to meet their expectations and

demands and to check the degree of their acceptability. The first step consisted in understanding what is expected from the operation of the AP, how the information should be management, and who would be the potential users. It was following by a design phase of the general response framework with the steps and the actors involved in the process. Finally, one has to state that the OP cannot be static documents and would be updated according to the outcomes of periodical tests and review of the operation.

Acknowledgement. The research leading to these results has received funding from the European Atomic Energy Community Seventh Framework Programme FP7/2012-2013 under grant agreement 323287.

References

- Ikonomopoulos A. (2016) Crowd sourcing tools within the PREPARE analytical platform, *Radioprotection* **51** (HS2), S187-S189.
- Montero M., Sala R., Trueba C., Baudé S. (2016a) Conditions and means for a useful and trustworthy engagement of experts in the PREPARE analytical platform – survey and interviews outcomes, *Radioprotection* **51** (HS2), S195-S197.
- Montero M., Trueba C., Duranova T., Bohunova J., Raskob W., Oliveira J., Nunes P. (2016b) Operational procedures in the PREPARE analytical platform. (CE-FP7-fission-2012, PREPARE GA No 323287) Technical Deliverable D2.6, PREPARE (WP2)-(16)-02, v1.0F.
- Müller T. (2016) Technical realization of AP, *Radioprotection* **51** (HS2), S181-S183.
- OECD/NEA (2010) Strategic Aspects of Nuclear and Radiological Emergency Management. Radiological Protection NEA No 6387. OECD Publications, France.
- Raskob W. *et al.* (2016a) Overview and applicability of the analytical platform, *Radioprotection* **51** (HS2), S179-S180.
- Raskob W., Möhrle S., Bai S. (2016b) Knowledge database and case-based reasoning, *Radioprotection* **51** (HS2), S185-S186.
- Turcanu C. *et al.* (2016) Training courses on emergency preparedness, response and recovery: theory, practice and application of newly developed tools, *Radioprotection* **51** (HS2), S171-S173.

Cite this article as: M. Montero, C. Trueba, T. Duranova, J. Bohunova, W. Raskob. Operational procedures of analytical platform. *Radioprotection* 51(HS2), S191-S193 (2016).