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# D 9.18 - Methodology design of the multi-method consultation process

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## **Abstract**

This document contains the deliverable D9.18 on “Methodology design of the multi-method consultation process” of the work package WP4 “Transition to long-term recovery, involving stakeholders in decision-making processes” of the CONFIDENCE Project (HORIZON 2020 EJP-CONCERT, EC GA 662287).

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Coping with uncertainty for improved modelling  
and decision making in nuclear emergencies

# Methodology design of the multi-method consultation process

## Final

### Version 1.0

**CONFIDENCE-WP4.** Transition to long-term recovery, involving stakeholders in decision-making processes

**Document Number: CONFIDENCE-WP4/D4.1**

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## Executive Summary

This document presents the methodological design to undertaken the work into the work package WP4 on “Transition to long-term recovery, involving stakeholders in decision-making processes of the CONFIDENCE Project (HORIZON 2020 EJP-CONCERT, EC GA 662287).

The methodology is established under a framework of structured collaboration involving the technicians experts (partners) and stakeholders in a sequential process. The focus is set up on the analysis of those aspects related to the management and coordination of the post-emergency recovery, to be addressed during the transition phase.

The work is structured in three steps regarding:

1. Establishment and optimisation of remediation strategies in generic scenarios. (Recovery scenarios planning)
2. Involvement of stakeholders in decisions to recover acceptable living conditions (Scenario-based stakeholder engagement).
3. Elaboration of guidelines and recommendations to address the planning and decision making during the transition phase. (Guidelines and recommendations).

Each step is described in separated points, including the range of tools and collaborative approaches proposed to accomplish the objectives of each one.



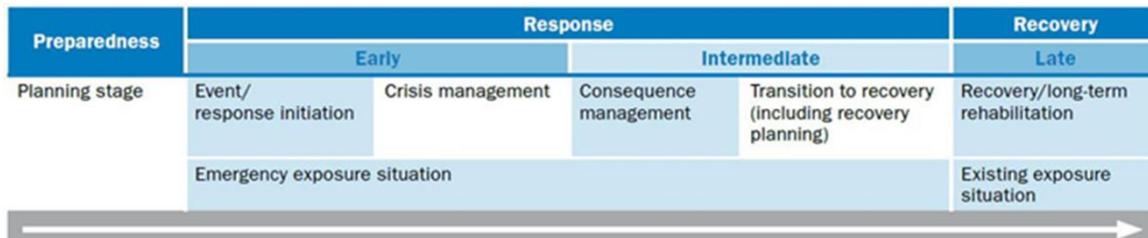
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# 1 Introduction

Following the course of a nuclear emergency, during the “transition to recovery” phase, efforts are made to cease the emergency response and establish specific plans to begin the late-phase “recovery /long term rehabilitation” of the affected areas, supporting the return to normal social and economic activity, as far as possible.



**Figure 1** View of the emergency management timeline and emergency phases (Source NEA/OCDE, [1]).

According to the new European Basic Safety Standards<sup>2</sup> (BSS), “the emergency response plans shall also include provision for the transition from an emergency exposure situation to an existing exposure situation (**Article 98**)”. The Member States “shall arrange for the establishment of strategies to ensure the appropriate management of existing exposure situations commensurate with the risks and with the effectiveness of protective measures (**Article 101**)” and “shall provide as appropriate for the involvement of stakeholders in decisions regarding the development and implementation of strategies for managing exposure situations (**Article 102**)”.

A proper address of the transition phase is essential to prepare the future management, from emergency to existing exposure situations. The current feedback from the management of the Fukushima accident clearly emphasizes the need for further investigation on the decision-making processes during the transition phase. For this purpose, plans need to be developed through a process of national dialogue with stakeholder involvement, taking into account the inherent uncertainties on the knowledge of the real consequences of an accident, the strategies to be implemented and the potential socioeconomic impact on the affected population. They represent a challenge and an opportunity to encourage at international level, specific guidelines and recommendations.

In the framework of the European project CONFIDENCE<sup>3</sup>, the work package WP4 (*Transition to long-term recovery, involving stakeholders in decision-making processes*) is devoted to improve the preparedness and response during the transition phase after a nuclear accident, identifying and trying to reduce the uncertainties in the subsequent management of the long-term exposure situation, reflecting the requirements of the new BSS.

To this end, different tools and participatory approaches will be used to facilitate the incorporation of the expertise and the points of view and interests of the stakeholders, as part in the preparedness process for the consequences management and post-accident recovery.

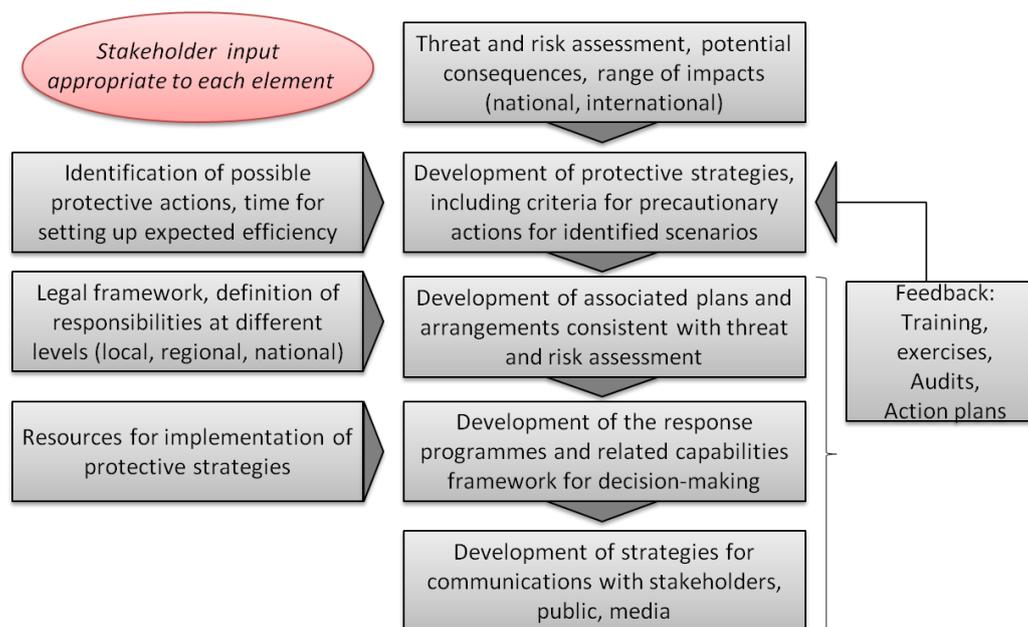
<sup>2</sup> Council Directive 2013/59/EURATOM, of 5 December, Laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation. <https://ec.europa.eu/energy/sites/ener/files/documents/CELEX-32013L0059-EN-TXT.pdf>

<sup>3</sup> CONFIDENCE: COping with uNcertainties For Improved modelling and DEcision making in Nuclear emergenCIes. HORIZON 2020 EJP-CONCERT, EC GA 662287. <https://portal.iiket.kit.edu/CONFIDENCE/index.php>

This document presents the methodological design to apply a range of consultation methods to achieve the objectives set in the CONFIDENCE-WP4.

## 2 Methodological Design of the work

In order to develop the methodology, a framework of structured collaboration involving the technicians experts (partners) and stakeholders in a sequential process has been established. The focus is set up on the analysis of those aspects related to the management and coordination of the post-emergency recovery, to be addressed during the transition phase. Figure 2 shows the schematic overview of the sequential general planning process.



**Figure 2.** Overview of the general planning process (Source NEA/OCDE, [1]).

Structured collaboration means that rules are set up to guide the discussions and outcomes. The aim of rules is usually, to get a focused solution to the challenges emerging. In this case, to identify and characterise the key decision-making points<sup>4</sup> to manage the recovery issues and actions which influence, and impact, in the course of recovery in a contaminated scenario.

Taking into account the aforementioned approaches, the following steps have been distinguished to accomplish the work of the WP4:

1. Establishment and optimisation of remediation strategies in generic scenarios. (Recovery scenarios planning)
2. Involvement of stakeholders in decisions to recover acceptable living conditions (Scenario-based stakeholder engagement).
3. Elaboration of guidelines and recommendations to address the planning and decision making during the transition phase. (Guidelines and recommendations)

A description of each step with the tools and approaches used are shown in the following.

<sup>4</sup> The **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 [1].

### 3 Recovery Scenario Planning

The establishment of generic contamination scenarios settled in the transition between the emergency and the recovery phases as well as the technical aspects of the implementation and optimization of countermeasures will be carried out during the first year. (Task 4.1 in the Work Plan of WP4). Inputs from WP1-3 are envisaged to support the development of the scenarios.

Modelling and literature review for urban/inhabited and agricultural areas will be carried out to **identify and assess the criteria and factors** (including the spatial-temporal influence in the establishment of the reference levels and the evaluation of the uncertainties in the optimisation process), **that improve/affect the selection, efficiency and ending of remediation strategies**. JRODOS [2], ARGOS [3] (or equivalent) modelling tools and the EURANOS handbooks [4] will be used in this step. A structured **brainstorming process**, concluding with a **dedicated workshop**, will be conducted **to agree on scenarios** and identify remediation strategies as well as the questions and issues to be addressed by stakeholder panels.

#### 3.1 Modelling and review of the implementation and optimization of countermeasures

The Subtask 4.1.1 on *“Addressing uncertainties in urban/inhabited scenarios”* will be focused on the uncertainties in the projection of the residual dose, to properly establish and optimize clean-up strategies. The uncertainties of various parameters of ERMIN model on urban countermeasures will also be analysed.

The Subtask 4.1.2 on *“Criteria and uncertainties in agricultural scenarios”* addresses on the need to identify criteria and uncertainties relevant for the implementation and optimization of action strategies in the agricultural / rural environments. Among them, the uncertainties concerning the zoning of affected area, establishing and implementing of the respective reference levels, time of application, spatial-temporal evolution of the contamination and the response of the countermeasures are to be highlighted. Other issues related to the understanding and application of the optimisation process along time and space should be considered.

Uncertainties regarding socio-economical aspects affecting practicability of the countermeasures, in addition to technical aspects, are to be considered too. In this sense a literature review from the learned lessons of Fukushima accident will be realised.

#### 3.2 Structured brainstorming to establishment of a generic scenario

A brainstorming process to define and establish a generic contaminated scenario and the questions and issues to be used as basis for panel discussions, is foreseen in the Subtask 4.1.3, *“Structured communication technique to the establishment of a generic scenario”*. The process will be iterative and continuous along this first year. All participants will contribute with their own concerns, ideas and questions which will be discussed among all, in order to specify, refine and delimit the scenario to apply in national discussion panels.

**Structured brainstorming** refers to the process of systematic and liberal generation of a large volume of ideas from a number of participants by encouraging each of them to volunteer their creative inputs one at a time in an atmosphere that is free of criticism and judgment from other participants [5]. Unlike unstructured brainstorming wherein the participants can give ideas as these come to mind, structured brainstorming provides certain rules that participants must follow in order to make the gathering of inputs more orderly and evenly distributed.

Structured brainstorming basically consists of the following steps:

- State the central brainstorming theme
- Let each team member have a turn to give his or her input as answer to the question
- Record each input exactly as it was presented, nobody is allowed to criticize an input,
- Repeat the brainstorming rounds until the ideas of the team have already been exhausted.
- Review each of the listed inputs for further improvement in the way it is written, discard duplicates and maximize its clarity.

Structured brainstorming is good, among other, for **collecting ideas** from all team members about a certain topic, issue, or problem in an organized manner and it is ideal for use by teams that are new to brainstorming sessions.

Two different tools will be used to allow the inputs from partners through web-based collaborative space, Discussion Forums [6] and Mind Mapping [7]. The firsts are useful to make the first rounds of inputs and the second could be used to fix and visualise all ideas gathered in order to review, realign and ranking them according the preferences of the partners.

The starting point for the scenario definition should come from previous experiences and knowledge, being refined by means of taking into account the inputs derived from WPs 1 and 3 and the uncertainties identified in the urban/inhabited and agricultural subtasks. The same generic contamination scenario, with the necessary adaptations according to the specificities of the country where the panel takes place, will be used. These may refer to the different concerns that affect nuclear and non-nuclear countries, or the endpoints to be considered in the panels. It is important to define the interests in order to engage the adequate stakeholders in the decision-making process.

## 4 Scenario-based stakeholder engagement

**Stakeholder panels** and **participatory workshops** will be set up in different European countries during the second year (Task 4.2 of the Work Plan of WP4). The inputs, concerns and viewpoints of the stakeholders will be discussed, with specific consideration of the uncertainties that stem from the different decision criteria and actions taken in the transition phase.

This will be combined with **transnational stakeholder (consultation) surveys** to integrate their needs and preferences in the implementation and optimisation of strategies into one comprehensive database. This information will be provided as inputs to WP5 and WP6.

The relationships with other tasks of the project are foreseen.

### 4.1 Stakeholders Panels

The discussion panels are introduced in this second phase of the work plan (Subtask 4.2.1) in order to establish and assay the process of national dialogue with stakeholders during the transition to recovery in the generic contamination scenarios defined in the Task 4.1.

The stakeholders can be classified in three broad categories: *i)* stakeholders directly involved in the post-emergency planning and management of the transition phase, *ii)* others affected but not involved in such management, and lastly *iii)* others unaffected but interested.

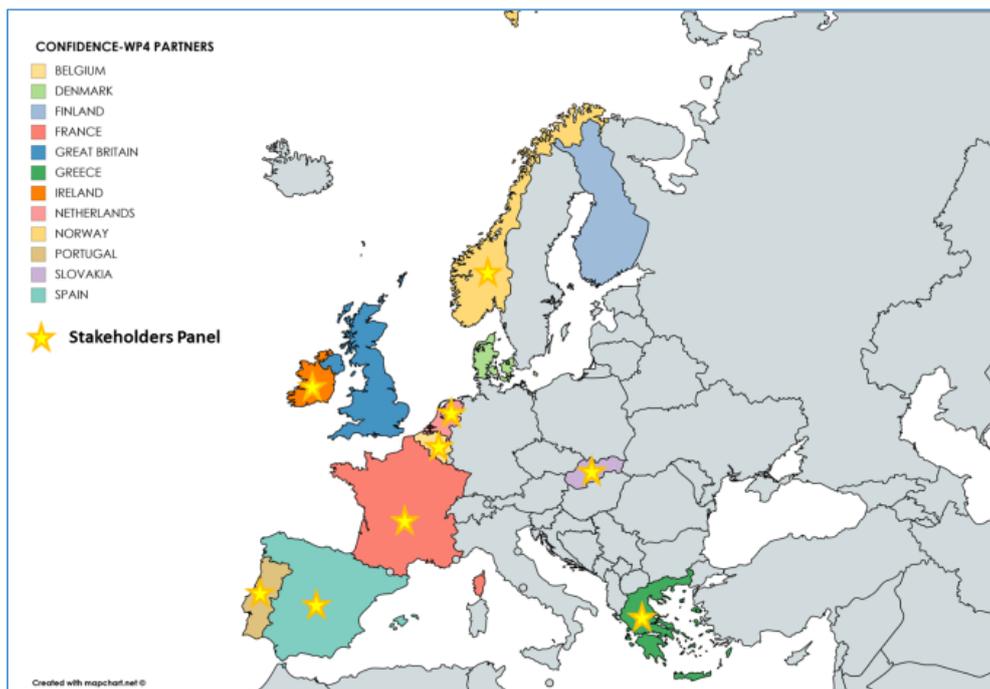
Therefore, the process of national dialogue is complicated for the fact that, not only it is not yet clear, the role and position of the stakeholders involved, but also, their interactions that often lack mutual understanding. Decision-makers are required to develop strategies to improve the stakeholders' connections and foster engagement and interactions, and one of them is by means of national panels.

Previous experiences pointed out the importance of preparedness and the need to involve all the relevant stakeholders [8]. In addition, using scenarios built on realistic assumptions in stakeholders forums are the key mechanism for successful interaction and feedback along all decision levels for better post-accident preparedness [9].

The main objective of the panels in this project is to incorporate the views of the stakeholders in the governance of the exposure situation, taking into account the inherent uncertainties on the knowledge of the real consequences of a contaminated scenario, the strategies to be implemented and the potential socioeconomic impact on the affected population. The panels should provide an opportunity to identify the way of establishing a comprehensive adapted system to deal with this type of exposure situations, providing guidance and tools.

The panels will be composed of experts and representatives of stakeholders groups, covering the three broad categories defined earlier:

- Representatives of Government institutions, agencies or companies directly involved in the management of the transition phase
- Representatives of the population, producers, industries, marketers, directly affected
- Experts with a high level of knowledge related to the subject or activity, but not directly affected by this type of situation



**Figure 3.** Countries where Stakeholders Panels will be established

Nine countries intend to organize national panels (see Figure 3): Spain, France, Greece, Norway, Netherlands, Belgium, Slovakia, Portugal and Ireland. It is foreseen that Spain and Portugal can coordinate their panels into a joined study.

Two sessions per panel are foreseen. For comparative purposes the different countries hosting the national panels, will use the generic contaminated scenario defined previously in the first task. The target of the discussions will deal on what to do and how to proceed in such contaminated scenario and evaluate the potential impacts of their decisions on the course of actions to recover acceptable living conditions.

The first meeting session (Month 14-18) could be a more open-ended one and could include a table-top exercise, in which different countries (nuclear and non-nuclear ones) and different stakeholders could discuss more in depth different points or topics according to their own interests. Anyway, a semi-structured guideline of topics will be developed previously, in addition to the scenario, as stimulus material. It should be possible to adapt the scenario to non-nuclear countries to foster discussion of their own concerns.

In the second meeting (months 21-25), the final objective is to get stakeholders' preferences that should be incorporated in the multi-criteria decision-making (MCDA) by WP6. The partners also involved in WP6 could take advantage to join a MCDA test as planned in that WP6.

It could be desirable that the different discussions with stakeholders foreseen in other WP's are coordinated with the national panels. Most of the partners will look for the scope and best coordination in their panels at their convenience.

## 4.2 Delphi Survey

An expert Delphi survey will be carried out among involved experts of each country in the Subtask 4.2.2, in view of preparing the panel meetings as well as obtaining a prioritization of stakeholders' preferences. The aim of this Delphi survey is to get a broad spectrum of different views and to identify some important issues to address the planning and decision-making during the transition phase. These will be used as a basis for the subsequent panel discussions but the final aim will be to achieve a consensus regarding the main criteria for the decision-making during the recovery phase.

Delphi is a method for structuring a group communication process so that it is effective in allowing a group of individuals, as a whole, to deal with a complex problem. A key advantage of the approach is that it avoids direct confrontation of the experts [10].

They are often used to elicit and combine expert judgments. In using the Delphi technique, one controls the exchange of information between anonymous panellists over a number of rounds (iterations), taking the average of the estimates on the final round as the group judgment [11].

Although a traditional survey could be conducted, Delphi method has been selected as a stronger methodology for a rigorous query of experts and stakeholders [12]. Delphi groups are also substantially more accurate than individual experts and traditional group's techniques [11].

Delphi will be carried out among all the participants of the panels, in three phases:

1. A first open round, previous to the establishment of the panels will help to identify relevant criteria in an exhaustive way (analysed by content analysis).
2. A second round will take place after the first panel session, with closed questions reflecting all the criteria and results achieved in the panel.
3. A third round will provide feedback about the results of the second panel session to the participants and will ask for a ranking of the most relevant preferences and criteria.

The final analysis and prioritization of preferences will be carried out at the end, in order to set the **criteria and preferences relevant** for the implementation and optimisation of remediation/rehabilitation strategies, **weighted by the views and concerns of the stakeholders**. They will be incorporated in a comprehensive database to be used in MCDA by WP6.

The benefits of using this Delphi method is that it enables members of different organizations to address wide problems. It also helps experts with diverse backgrounds who have no history of shared communication to have different perspectives, terminologies, and frames of reference, which might

easily hinder effective communication in a traditional group. Delphi might also be appropriate when disagreements between individuals are likely to be severe or politically unpalatable.

## 5 Elaboration of guidelines/recommendations for decision making during the transition phase

Based on the findings from the previous tasks, **guidelines and recommendations** will be prepared. The objective is to build best practices for planning the establishment of optimal remediation strategies for the transition phase, with stakeholder involvement in the decision-making process. Discussion forums and Mind Mapping will be used in the process of drafting.

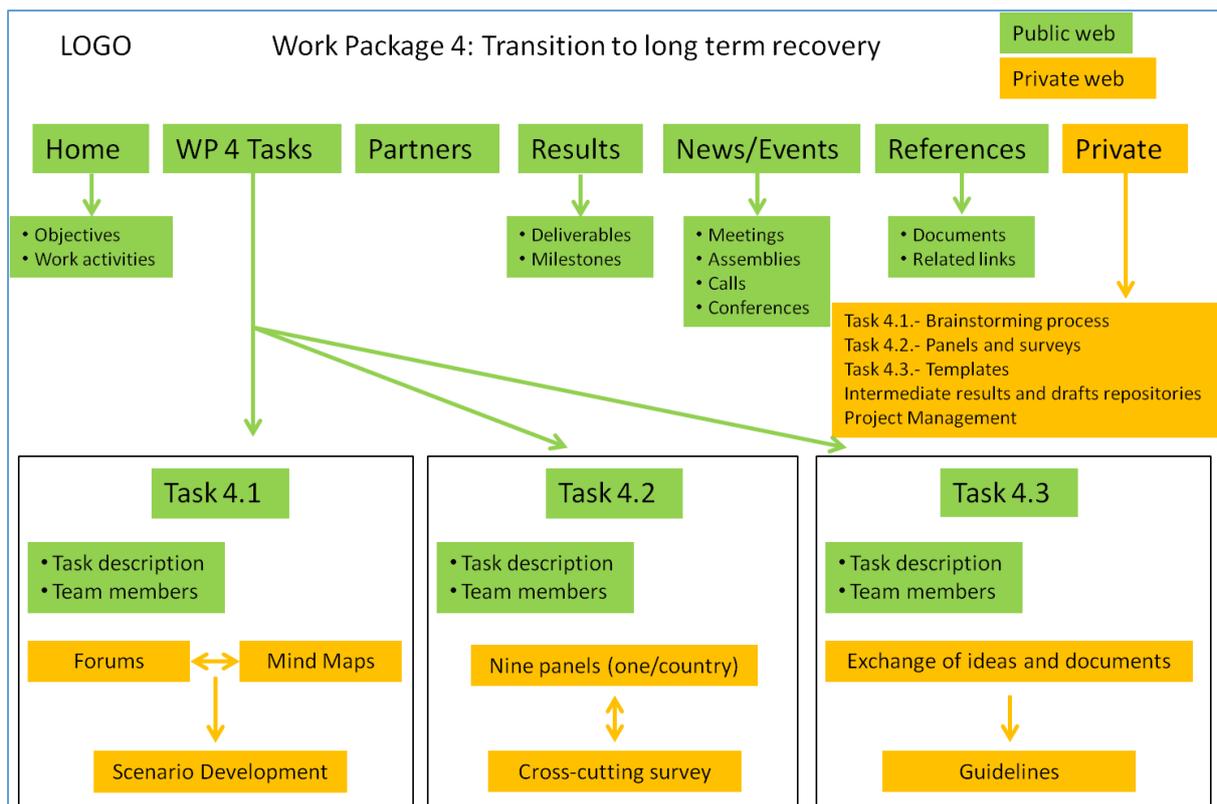
The guides and recommendations will be demonstrated or tested in WP7.

## 6 Collaborative web page

To help the brainstorming process, the management of panels and surveys and, the sharing of relevant information with the stakeholders, a collaborative web page is foreseen. The main objective is to have a common space and repository for all partners and panels to share and disseminate the scenarios, questionnaires, findings of the discussions and results. It will have a private area for members of WP4 and a public area to share information with other WPs and stakeholders.

The web page will be hosted by CIEMAT and it is been developed by the Unit of Development of Applications and Computer Systems (Technology Department / Division of Information and Communication Technologies) according to the scheme shown in the Figure 4 with the next requirements:

- Using the generic structure of the web pages for a project in the web domain of CIEMAT.
- Generation of public and private part with the consequent management of external and internal users.
- Including tools to design and conduct on-line surveys, multilingual. It would offer the possibility to publish the contents of the same that are already exported in the form of Excel type graphics.
- Collaborative document repository with permissions, access groups, versioning, visibility according to roles, ....
- Publication of documents in the public part according to the visibility in the private part.
- Agenda with publication of events, meetings, milestones, notices, mailings, and so on.
- Forums, to comment, to share, to propose, threads of discussion.
- Project manager tool, to track the tasks of the project, advances, provide links to documents, possibility to link with events, ....
- Brainstorming tool, collaborative, with the possibility of generating mental maps to share and contribute among all, would require individualized access.



**Figure 4.** Scheme of the collaborative web page of CONFIDENCE-WP4

The tools integrated will be selected, as far as possible, among those with free access. The web page will be used according to the terms of use licensed by CIEMAT.

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