

Snowball

Lower the impact of aggravating factors in crisis situations
thanks to adaptive foresight and decision-support tools

D4.7: Action planning manager

For the attention of the Research Executive Agency

Organization	INEO
Author	Louis JALLET
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Snowball aims at lowering the impact of aggravating factors in crisis situations thanks to adaptive foresight and decision-support tools.

The project runs from March 2014 to February 2017, it involves 11 partners and is coordinated by Gedicom.

More information on the project will soon be found at <http://www.snowball-project.eu>.

Abstract

Snowball aims to develop a software solution for crisis management. It consists in a set of operational tools in order to collect data and generate datasets about past crisis, a simulation tool in order to deal with cascading effects and a dashboard in order to improve crisis management in a preparedness phase. Among these tools, the action planning manager is a business rule engine to perform complex chain of tasks involving stakeholders' validation as well as information campaigns through the TeleAlert system.



Executive summary

The action planning manager is based on a Business Process Management (BPM) platform named Activiti.

As a discipline, Business Process Management consists in ensuring that an organization performs well in its core processes. This involves understanding interactions between stakeholders (crisis cell managers, authorities and representatives of first responders or grid operators) as well as the goals to be achieved (save life, mitigate crisis impacts, etc.). It means analysing, documenting and improving the way that people and systems work together. As part of this work, it is helpful to work with models and diagrams. BPMN diagrams express the execution flow of the steps to accomplish a certain goal.

Activiti BPM platform, as a software engine, allows strategic executive managers to draw BPMN diagrams through a graphical editor. Once correctly implemented and interfaced with external software components such as the TeleAlert system, processes can be performed and monitored.

Taking into account the project background and the will to improve crisis preparedness, three processes have been configured on the action planning manager: prevention, mission and evacuation. However, the system is able to take into account others use-cases. Moreover its compatibility with the BPMN 2.0 standard, supported by the Object Management Group (OMG), makes it reusable and scalable.



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ABBREVIATIONS

- BPM: Business Process Management
- GUI: Graphical User Interface

DEFINITIONS

- Action plan: Chain of preconfigured tasks converging toward a final objective
- Decision makers: Representative of a public or private organization that is directly or indirectly implicated in crisis management
- First Responder: Employee of an emergency service who is likely to be among the first people to arrive at and assist at the scene of an emergency, such as a natural disaster
- Grid Operator: Entity that oversees the delivery of a resource (energy, water, etc.)



INTRODUCTION

The action planning manager is based on a business process engine (BPM) in order to edit and manage chains of tasks. The business process engine is an open source solution named Activiti. Chains of tasks (or workflow of tasks) are configured taking into account manually outputs from simulation tools and the decision algorithm. Otherwise it is connected to the TeleAlert system and the Action Planning in order to send messages to end-users of the solution.

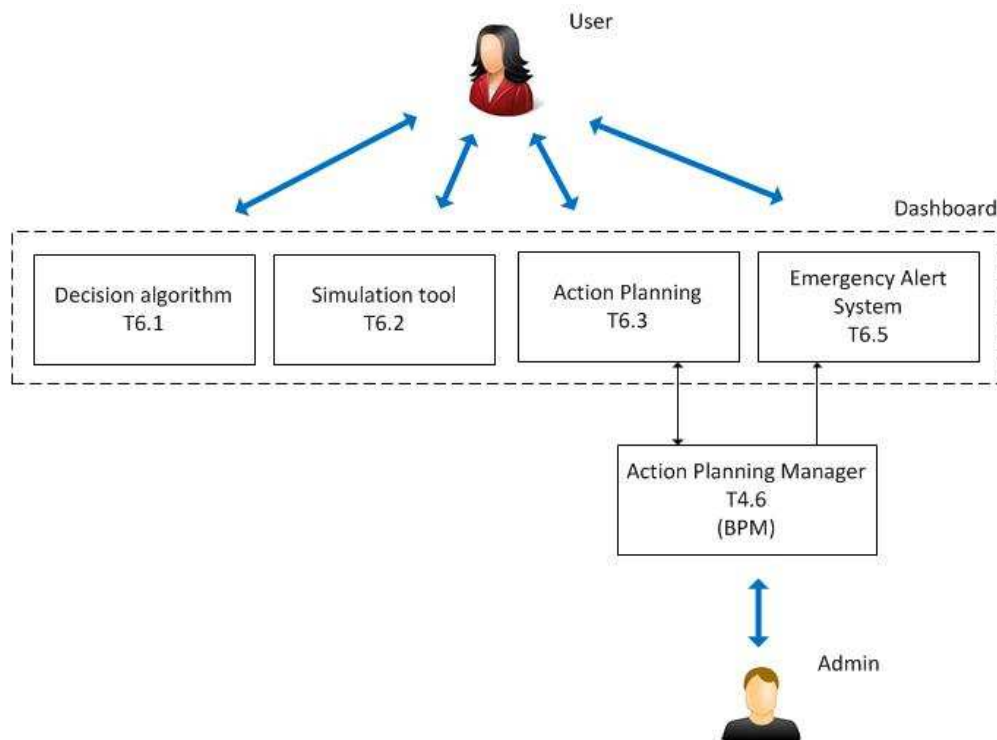


Figure 1: Action planning manager in Snowball environment



1 FUNCTIONAL ANALYSIS

1.1 Description

Listed below are the several steps to configure then exploit the action planning:

- At the lens of the mitigation measures, preventive action plans are preconfigured through a graphical editor, taking into account cascading effects.
- In case of an upcoming crisis, action plans can be quickly triggered. Specific messages and adequate stakeholders are configured in advance. Using automatic procedures in a stressful context should contribute to improve crisis preparedness by avoiding human failure.
- Messages are sent to the crisis stakeholders and to the population through the TeleAlert system.
- Tickets are assigned to the stakeholders on the action planning web portal with a validation workflow.
- Decision makers follow in real time the good execution of preventive actions.
- The system ensures users' actions traceability. Action plans are improved in an incremental way having a look back on past crises.

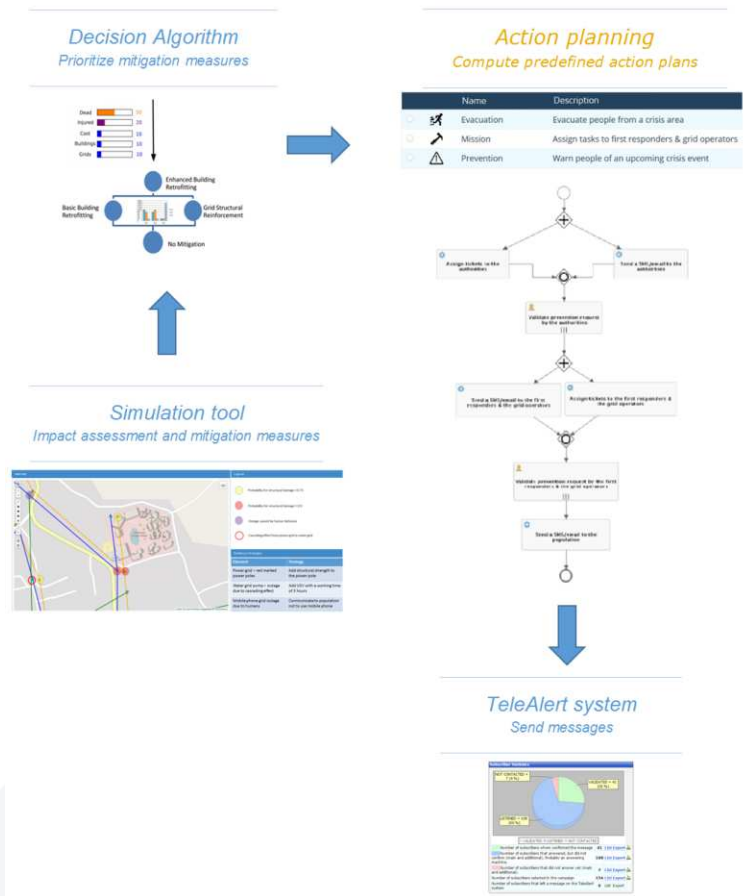


Figure 2: Interaction with others tools



1.2 Insights

1.2.1 From the simulation tools (WP5)

Simulation tools provide a set of preventive and corrective action plans in order to improve crisis preparedness. Available action plans are manually preconfigured using the graphical editor of Activiti BPM (ref §1.3.1).

The following workflows have been configured:

- Prevention: warn people of an upcoming crisis event,
- Mission: assign a task to first responders or grid operators,
- Evacuation: evacuate people from a crisis area.

1.2.2 From the decision algorithm (T6.1)

The decision algorithm ranks action plans among the ones proposed by simulation tools. This information can be taken into account manually by end-users by triggering an action plan (ref §1.3.2).