

Processes "Task Force Earthquake"

During this session, we will have a look at processes as they are run by the *GFZ German Research Centre for Geosciences*. In particular, we will focus on processes of the *Task Force Earthquakes*. The Task Force was founded in 1993, jointly by geoscientists, civil engineers, sociologists, search and rescue specialists, and experts from the insurance industry. The major purpose of the Task Force is to coordinate the allocation of an interdisciplinary scientific-technical expert team after catastrophic earthquakes worldwide.

The Task Force is activated immediately after a major earthquake has occurred, collects necessary information about the event and its location, decides about, and prepares for an in-field mission in the disaster area. In case of a mission, at most a week after the initial event, Task Force members begin collecting and analyzing data in the disaster area including seismic data of aftershocks¹, post-seismic deformation², hydro geological data³, and the damage distribution⁴ as well as structural conditions of buildings⁵. Their findings support local decisions and provide a scientific basis for an improved intermediate and long term mitigation of earthquake effects, and improve existing theories and their application.

The Task Force has developed effective processes for organizing their missions and achieving their goals in a disaster area. These processes specify the operations for a Task Force team of around 5-20 specialists, that is sent to the disaster area after the earthquake. In the following, we focus on the main purpose of a Task Force mission which is deploying a network of seismometers in the disaster area in order to measure seismic activities like aftershocks of the earthquake. Prior to this main goal, the Task Force members are also responsible for the logistics of their mission like transporting their scientific equipment from Germany to the disaster area. The information about these processes has been gathered in interviews with experienced Task Force members.

Modeling Hints

- For all process models, we focus on the activities that are done by task forces members as a *team*. Thus, we do not consider the members of the Task Force (and their roles) separately.

¹ Nachbeben

² Postseismische Verformungen

³ Hydrogeologische Daten

⁴ Schadensverteilung

⁵ Strukturelle Zustand von Gebäuden

Instructions

During the modeling session each of you will first work on one modeling task and then on one change task.

The modeling session will be structured in the following way:

- 1) Demographic Survey
- 2) Modeling Tool Tutorial
- 3) Modeling Task
- 4) Change Task
- 5) Cognitive Load Survey

Please be aware that we will confront you with difficult models in Parts 3 and 4 of the experiment, which require quite a mental effort to answer. Please do not feel discouraged by these models, but rather understand the modeling/change tasks as a challenge!

Please consider the following hints while answering the questions:

- You must answer all questions in order to proceed unless stated otherwise.
- In answering the questions within the questionnaire, please provide responses only based on your own perceptions or beliefs.
- Please remember that your answers are anonymous and answer each question honestly.

Confidentiality

All data, comments and responses from this survey will be treated and stored strictly confidential and anonymous. The names of individual persons are not required in any of the responses. You and your position will not be identified from any outcomes of this study. You will not be asked to disclose any confidential or sensitive information about you. All responses will be stored electronically without reference to names of individual persons.

1.) Modelling Task Description

Background Information. The Task Force needs scientific equipment in the disaster area to complete its mission. The “transport of equipment” process describes how the Task Force transports its equipment, which can sum up to about 3 tons, for a mission from Germany to the disaster area. The process begins right after the decision for an in-field mission has been made and must complete before the Task Force can begin its work in the disaster area.

Description of the process model. First and foremost, the transport of the equipment to the disaster area is organized by the Task Force. Once this has been done, the whole equipment is presented to German customs. Customs might require the demonstration of equipment devices after the equipment has been presented. In this case, the demonstration happens right away. Afterwards, the Task Force flies to the disaster area in the host country. Once arrived, the members of the Task Force present themselves at the immigration office in the host country. After passing immigrations, the Task Force members rent vehicles in the host country. In the meantime, they also get road maps for the disaster area and organize an accommodation, preferably with electricity. While this is taking place, the whole equipment is presented to customs of the host country in addition. Customs of the host country might also require the demonstration of equipment devices. If so, the demonstration happens right away. Further on, it might be the case that local car rental companies cannot provide sufficient transport capabilities. In this case, the Task Force members seek for vehicles of partner organisations. Once the equipment has been cleared and sufficient transport capabilities are available, the equipment is transported from customs to a storage location.

Create a BPMN process model using the BPMN Change Pattern Modeler.

2.) Change Task Description

Background Information. Due to the urgency of the Task Force mission, it happens frequently that the transport of the equipment is delayed at the customs of the host country because customs do not clear the equipment (usually because of missing freight documents)⁶. In this case, the process has to be adapted accordingly.

Description of the change to be conducted. Customs of the host country may deny clearance of the equipment after presenting equipment at customs in the host or after demonstration of devices. If the equipment is not cleared by customs of the host country, the Task Force members try to convince customs officials to clear the equipment with incomplete documents. In the meantime, the Task Force members contact their partners to trigger support from higher-ranked authorities of the host country. If the customs officials finally clear the whole equipment by negotiation and support, the equipment is transported to a storage location. In the other case, equipment is usually not cleared because of incomplete freight documents for some parts of the equipment. Thus, those parts that have been cleared are transported to the storage location, whereas the missing documents for the remaining parts are retrieved from the office in Germany. Once these documents are available, the remaining parts of the equipment are transported to the storage location as well.

Change the given process model in the BPMN Change Pattern Modeler, such that the case of incomplete freight documents is captured accordingly.

⁶ Zoll verweigert die Einfuhr aufgrund fehlender Frachtdokumente