

Use of activity chronicles to analyse crisis managers' behaviours during simulation exercises in industrial workplace

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Crisis are key moments in companies' lifetime, especially for high risks industrial systems. These exceptional situations involve a particular functioning subject to a paradox: while managers are not used to deal with complex and rare accidental events, they still have to react immediately in an efficient and inventive way (Lapierre & al. 2015). Moreover, the consequences of such events threaten human lives (both inside and outside the site), critical infrastructures and sometimes the very survival of the company. Thus, managers need to be trained to specific behaviours and skills related to crisis management. In the Expert'Crise project, managers are trained to crisis management through theoretical training and accident simulation exercises (mainly simulated in chemical companies) (Duhamel & al., 2017).

The trainees' performance during the exercise is a key factor in their learning process (Horcik, 2014), completed by debriefing (Pastré, 2005). However, a detailed analysis is needed to understand what precisely happened inside the crisis room between the agents of the crisis resolution during the exercise (i.e. decision, communication and relational processes), requiring taking a step back. We therefore developed a methodology based on observations in order to give feedback to managers and to suggest recommendations aiming improvements in emergency planning.

The purpose of this paper is to present this methodological approach, which is based on the construction of trainees' activity chronicles. During the exercise, the observational data's collection is carried out through observation grids and cameras' recordings. Cameras and observers are both located on strategic locations on the site (e.g. crisis room, control room, and disaster site). After the exercise, observers' notes and cameras' recordings are intersected and incorporated in a global database. Eventually, this database includes key information about trainees' actions and communications. Thereafter, a set of issues encountered by the crisis unit is identified from the database as well as the pedagogical targets determined during the exercise preparation. Several levels describing the completion of these issues are then defined (i.e. issue raised, being resolved, or resolved).

Once the database sorted according to these issues and their levels of completion, the trainees' activity chronicle is complete. Each issue is now ready to be analysed through some strategic crisis parameters. These parameters include : the communication, the leadership inside the crisis unit, the accordance with crisis roles set in the emergency instructions, the pedagogical targets' reach, and difficulties and deviations encountered during the completion of each issue.

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