

# The Resilient Cycle: a model for safe organizations

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## Introduction

According to literature, “a system is resilient if it can adjust its functioning prior to, during, or following events (changes, disturbances, and opportunities), and thereby sustain required operations under both expected and unexpected conditions.” (Hollnagel et al., 2011). The main safety methods to improve resilience are therefore based on the capacity to (a) anticipate, (b) monitor, (c) respond, (4) learn.

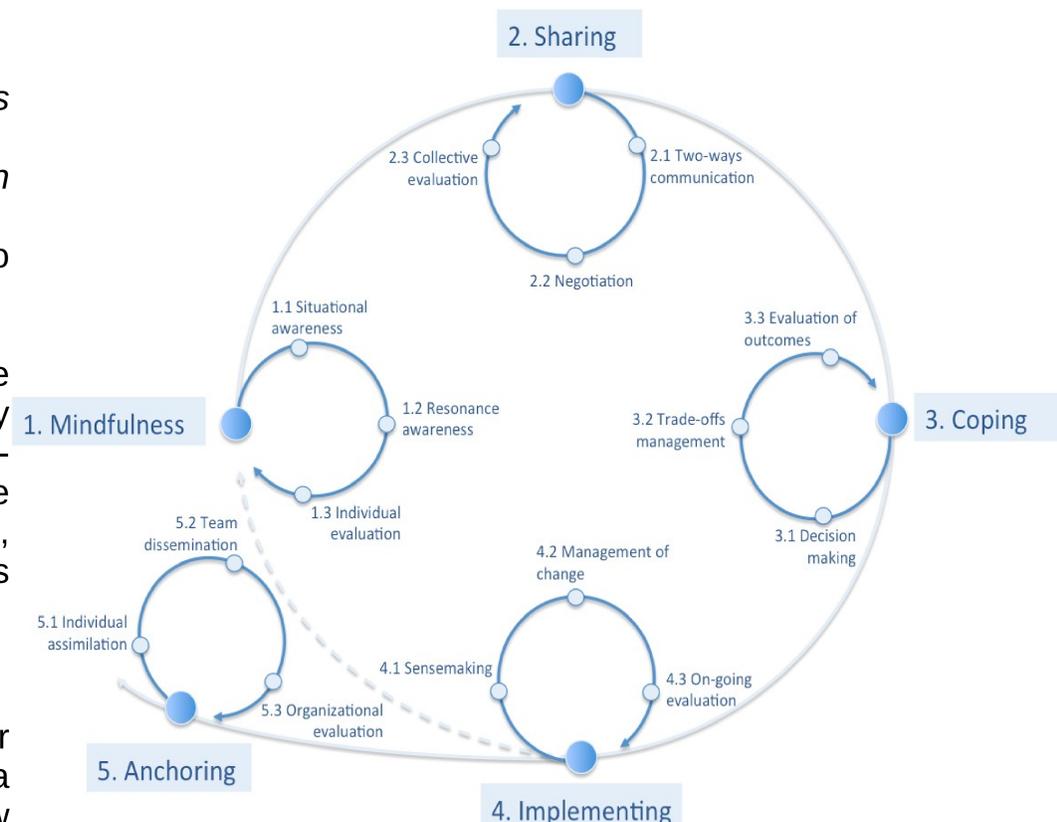
Our research focus was on the anticipatory capacity of the system and in particular on the knowledge and skills needed by middle-managers to promote and enhance this ability in co-workers and, therefore, in the whole system. We state that these capacity are mainly Non-Technical knowledge and Skills (NTKS), in other words social and cognitive abilities shared by workers from all kind of Amalberti's safety models (2013).

## Method

Starting from the analysis of literature and merging together theories from both Disfor and ICSI approaches we first defined a common model. Then we refined the model through the interview of some experts of different fields (health, emergency, fire-fighters, oil and gas industry, electric companies). Finally we carried on focus groups with front-line operators and middle-managers to validate our model and further refine it. We focused our research on the fire-fighters department and the first aid department of the major hospital of the town of Genova in the north-west of Italy. We lead four focus groups, two for each department. Participants from the medical emergency department were 12, working as physicians, nurses and telephone operators. Most of them worked both on the field and at the switchboard, while telephone operators only worked at the switchboard. All of them were experienced workers with more than 10 years of experience.

The participants of the fire-fighters' department were 10. They had different hierarchical positions (simple operator, team leader, manager of the local department), they were deployed on different stations (some in the main central station, while others were in peripheral stations) and they had different work experience (from few years to more than 25 years).

All operators agreed with the principles of the model we developed called the Resilience Cycle, even if they stated that their actual organizations do not operate always in that way. Nevertheless all participants agreed that the Resilience Cycle was the ideal functioning of their organization. They did not propose major changes to the model but they helped us to improve it with minor changes and provides real life examples to support the model.



## Results

The Resilient Cycle, as defined after the meeting and the focus groups with experts and operators, has five main features, describing the functioning of the system:

1. **mindfulness:** the capacity of front line operators to notice weak signals. Non-technical knowledge and Skills needed by managers and operators for this feature are Situational Awareness, Resonance Awareness and Individual Evaluation.

2. **sharing:** capacity to communicate the new pieces of information within groups and with the management. Individual NTKS related are Two-way communication, Negotiation and Collective Evaluation

3. **coping:** capacity to manage weak signals finding appropriate solution. Related NTKS are decision making, Trade-off management and Evaluation of Expected Results

4. **implementing:** capacity to transform decisions into actions, managing the change at all the system's levels. NTKS needed for this feature are Sensemaking, Management of change and On-going Evaluation

5. **anchoring:** capacity to fit and metabolize the change into the whole organization. It is composed by Individual Assimilation, Team Dissemination and Organizational Evaluation.

## Conclusion and future development

The research has reached a shared representation of the theoretical model. It has been validated on the field with qualitative research methods and represent a starting point for the future work. At the moment the research team is developing a training toolkit for middle-managers based on this model. In the last part of the project, this training will be tested both in Italian and French companies and institutions. The final outcome of the project will be an improved training toolkit.

## References

Amalberti, R. (2013). Navigating Safety: Necessary Compromises and Trade-offs--Theory and Practice. Heidelberg: Springer.  
Hollnagel, E., Paries, J., Woods, D. D. & Wreathall, J. (Eds.) (2011). Resilience engineering in practice: A guidebook. Farnham, UK: Ashgate.

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