



Improving Learning by Adding the Perspective of Success to Event Investigations

Elizabeth Solberg

Institute for Energy Technology | Halden, Norway

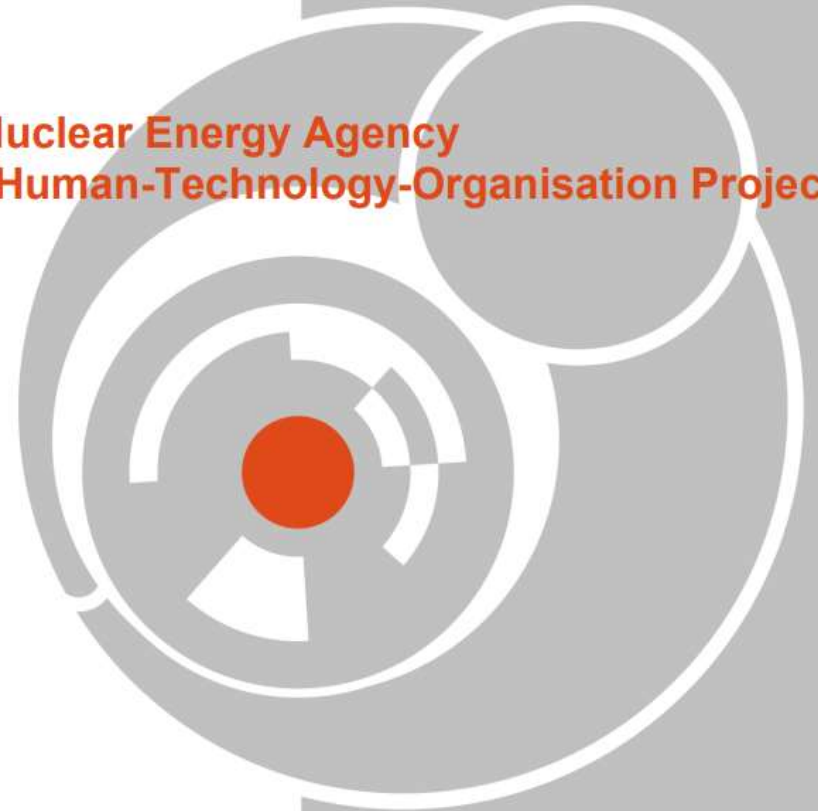
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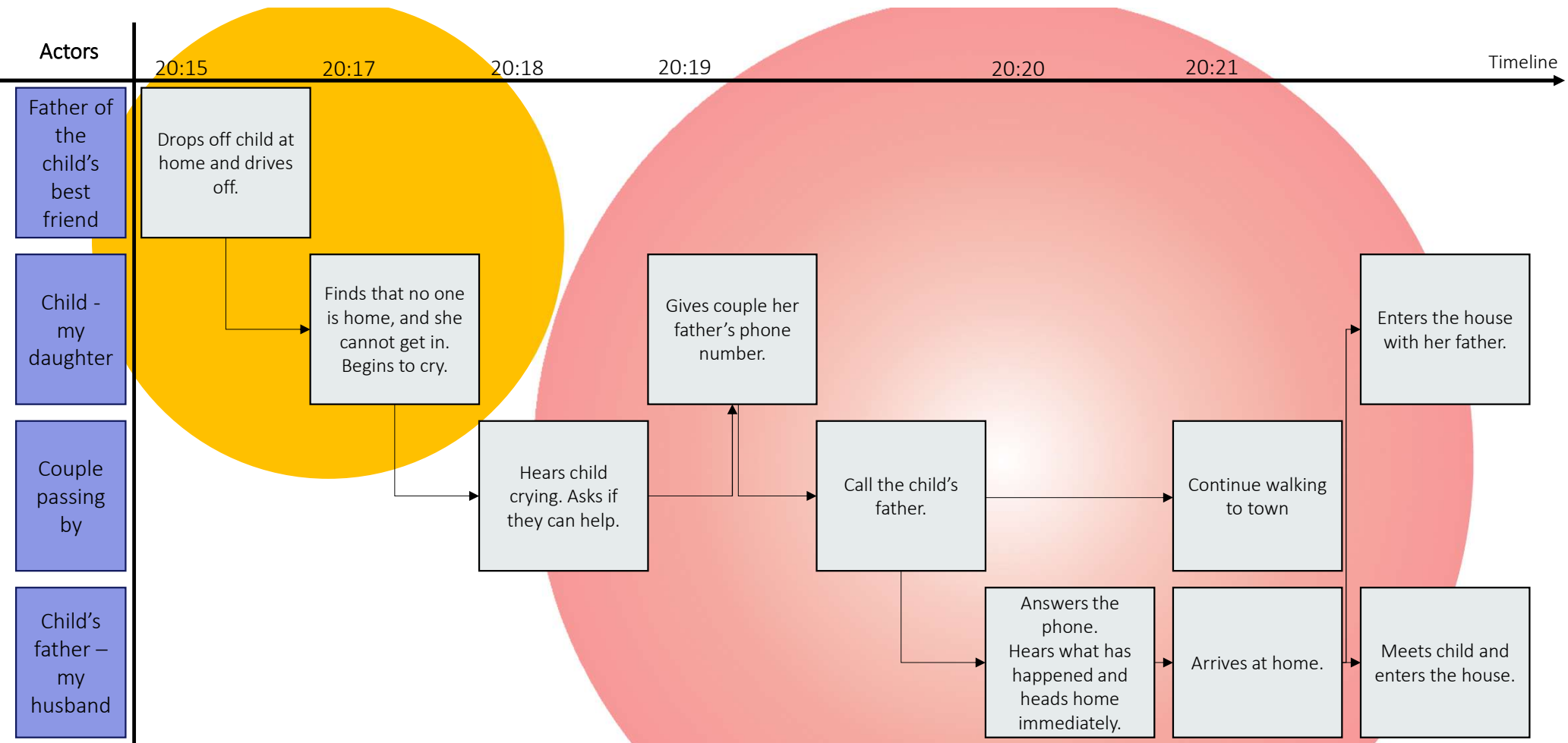
OECD Nuclear Energy Agency Halden Human-Technology-Organisation Project

Background

When an event occurs in a nuclear facility, focus is typically given to analysing and correcting the failures that caused the event. Little consideration is given to learning from the successful performance displayed during the progression of the event that may have limited damage or loss or facilitated recovery.

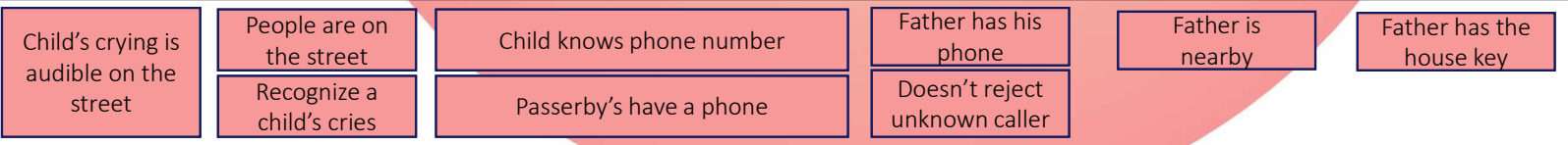
In this Halden HTO activity, we examine what hinders learning from the successful performance displayed during the progression of events and if considering successful performance, in addition to failures, improves conditions for organizational learning.

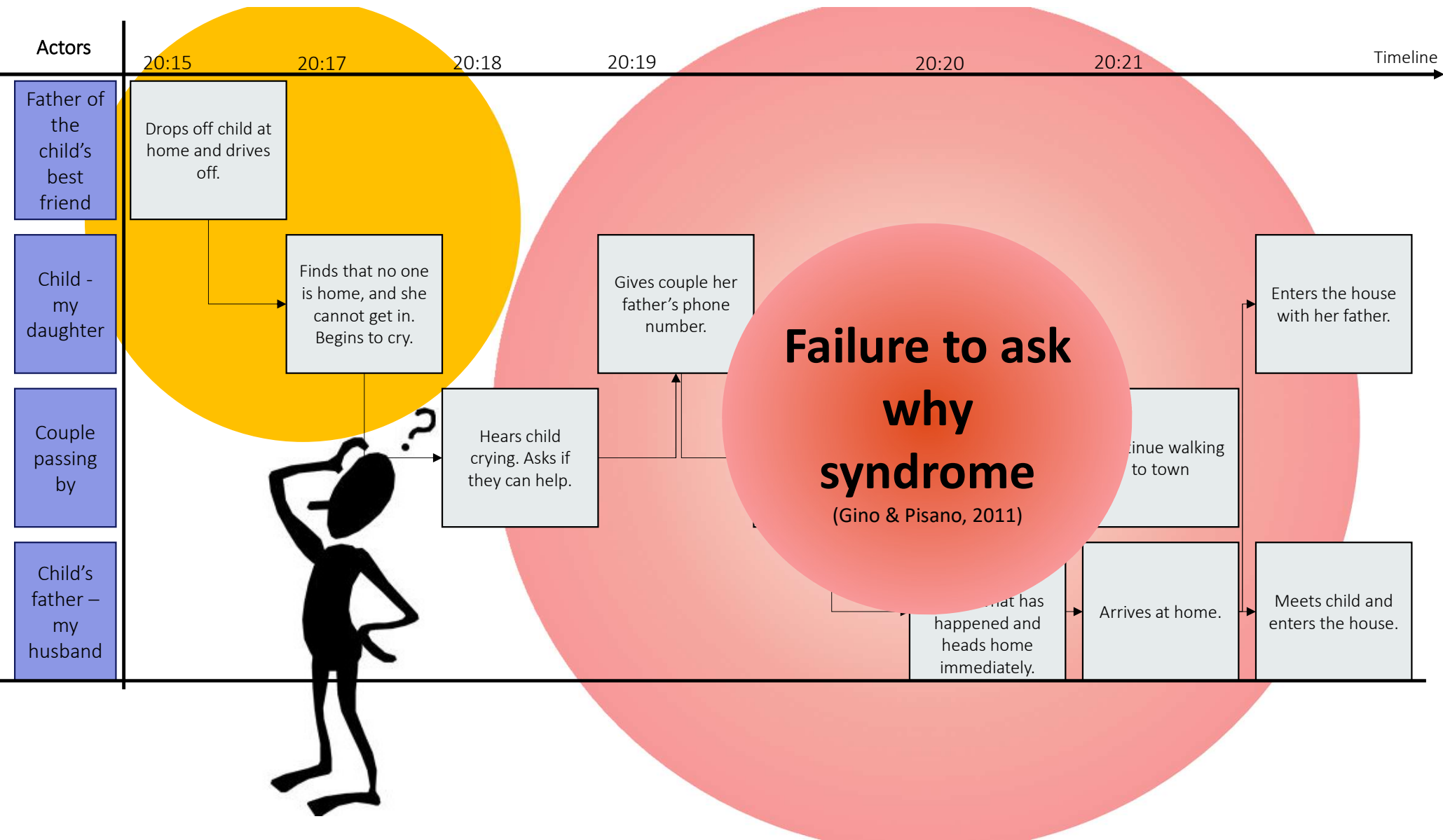




Preconditions for successful recovery:

(Rosness, Haavik, & Tinmannsvik, 2016)





Actors

Timeline

Father of the child's best friend

Child - my daughter

Couple passing by

Child's father - my husband

20:15

20:17

20:18

20:19

20:20

20:21

Drops off child at home and drives off.

Finds that no one is home, and she cannot get in. Begins to cry.

Hears child crying. Asks if they can help.

Gives couple her father's phone number.

Failure to ask why syndrome
(Gino & Pisano, 2011)

Continue walking to town

Enters the house with her father.

...that has happened and heads home immediately.

Arrives at home.

Meets child and enters the house.



The “gift” of failure

Research has long emphasized the benefits of occasional failures in organizational activities, based on the belief that failures generate richer insights for learning than successful performance

(e.g., Baum and Dahlin 2007; Carroll & Fahlbruch, 2011; Marcus and Nichols 1999; Sitkin 1992)

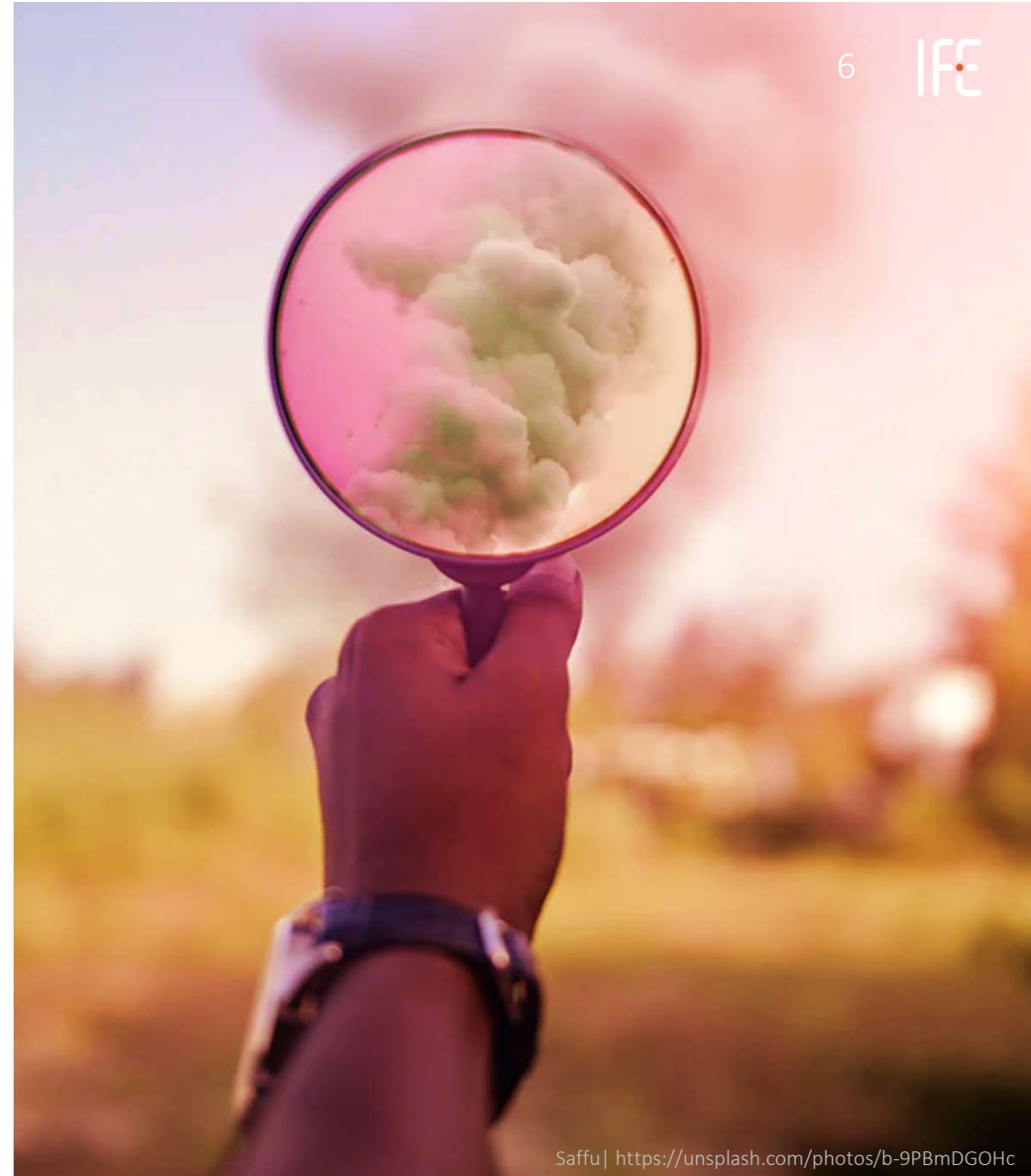


Behavioral theory of the firm

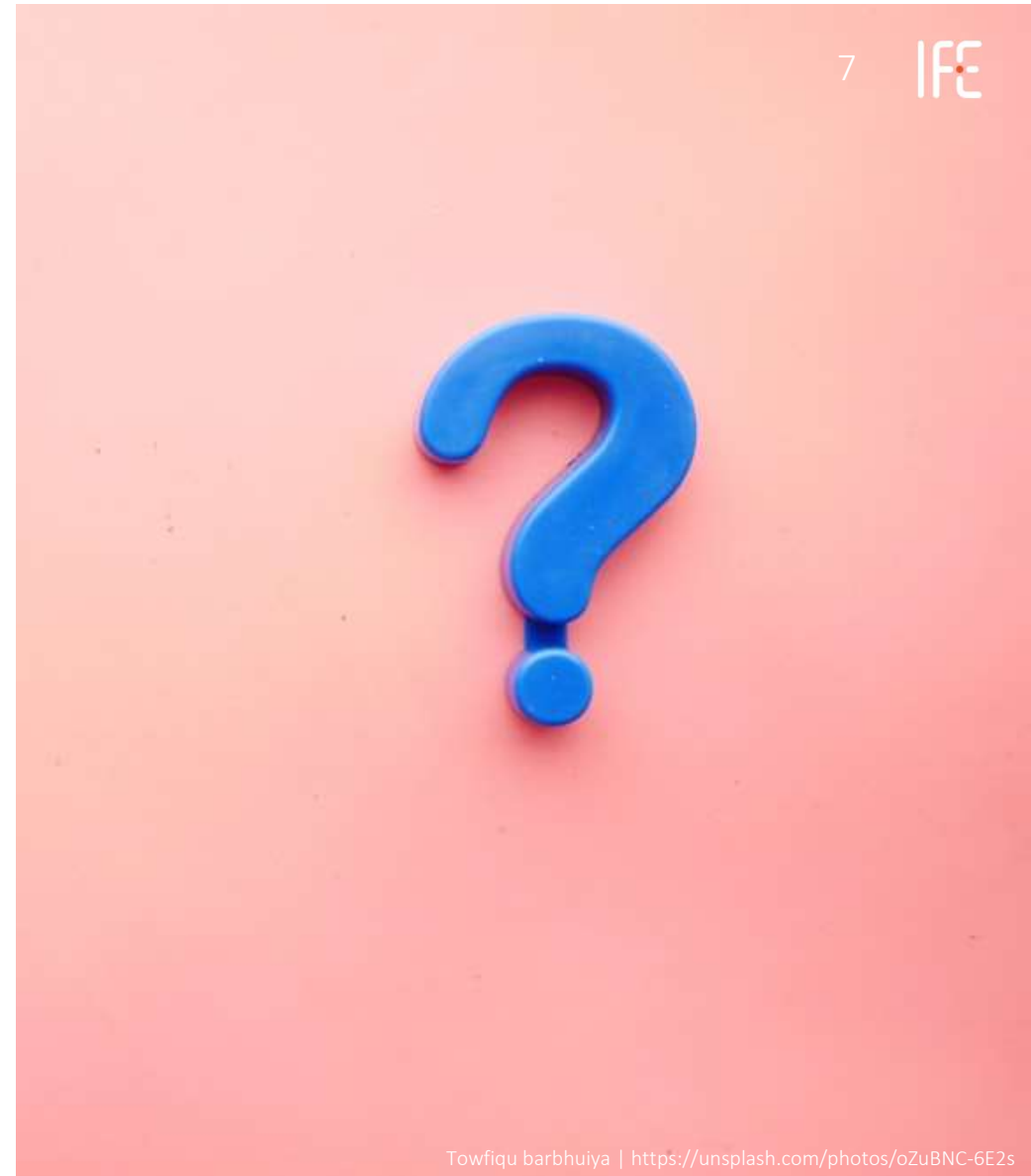
Failure triggers a “problemistic search” for explanations as to why the performance shortfall occurred and for corrective actions that will bring performance back on track.

Successful performance does not trigger problemistic search. Thus, it does not typically generate new knowledge that can be used to improve future performance.

(Cyert and March, 1963; see also Posen et al., 2018)

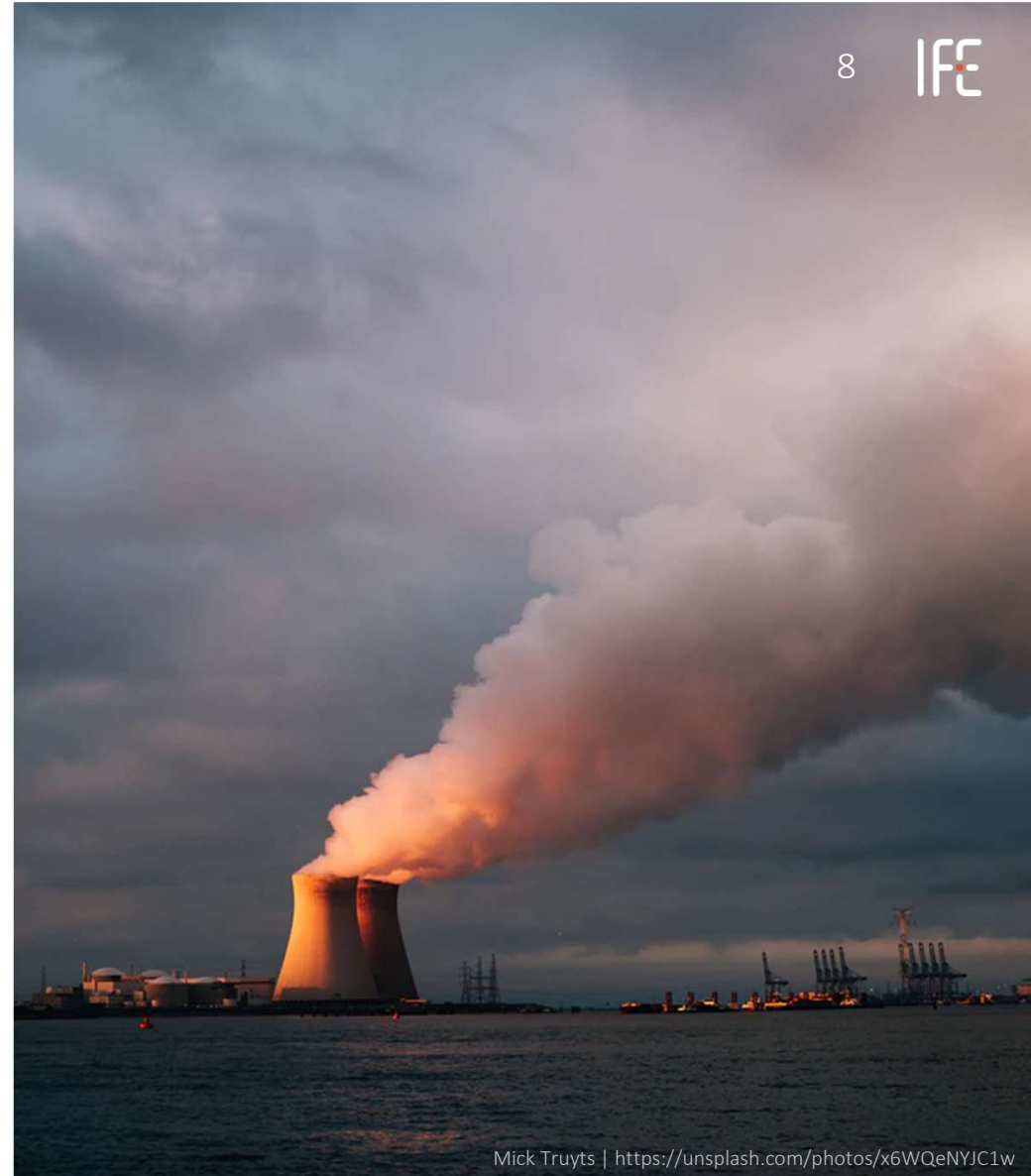


What taken-for-granted assumptions could be made about the successful performance displayed during an event in a nuclear facility?



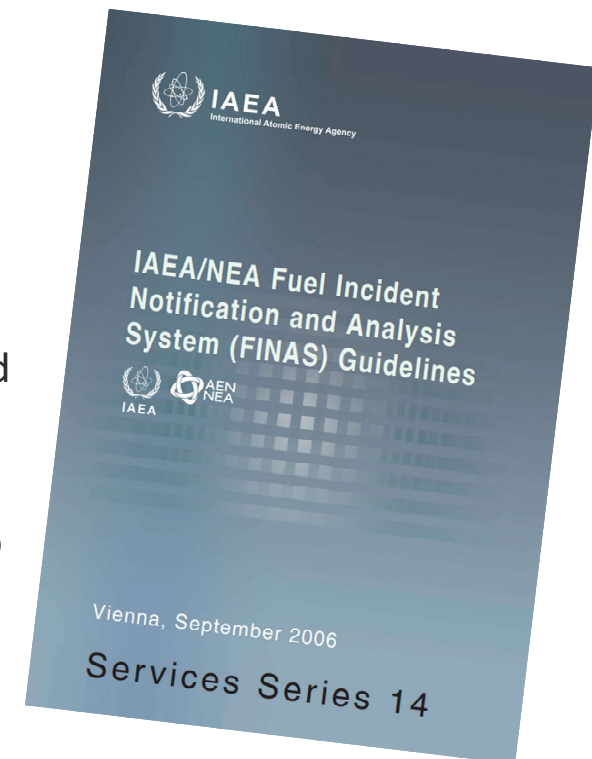
- Successful performance is safe
- Successful performance is reliable

(e.g., Hollnagel, 2008; Levenson, 2011; Rosness et al., 2016)



Empirical study (Solberg & Bisio, 2022)

- We analyzed event reports submitted in the IAEA/NEA Fuel Incident Notification and Analysis System (FINAS) between 2016-2020 (n = 29)
- Objective was to identify to what extent the successful performance displayed during the progression of an event was examined and/or used to derive follow-up actions or lessons learned.
- Why FINAS reports? FINAS guidelines specify that event reports should include information about the successful actions made in responding to and recovering from the event, because lessons can also be learned from these positive actions.



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Procedure

1. Did the event report include information about successful performance? If so, what was it and where during the progression of the incident did the successful performance occur?
2. Was the successful performance critically examined (was the safety or reliability of the performance questioned in the event analysis)?
3. Was consideration of successful performance taken into the formulation of lessons learned or corrective actions?

Findings

- 26 of the 29 reports analysed described some form of successful performance

3	indicated successful performance prior to the event	<ul style="list-style-type: none"> • Ensuring that preventative barriers were in place • Demonstrating an awareness of the safety elements and hazards in the situation
20	indicated successful performance leading to event detection	<ul style="list-style-type: none"> • Detecting issues of non-compliance • Detecting safety-relevant information in the situation that indicated an anomalous situation
18	indicated successful performance leading to event mitigation	<ul style="list-style-type: none"> • Actions aimed at minimizing the loss or constraining event development • Actions aimed at maintaining or protecting important functions that were affected by the event development
7	indicated successful performance leading to event recovery	<ul style="list-style-type: none"> • Actions that put an end to the event • Actions that enabled the recommencement of interrupted functions

*48 counts of successful performance, in total

(Solberg & Bisio, 2022)

Findings

- 26 of the 29 reports analysed described some form of successful performance
- None included a critical examination of the successful performance reported in the event analysis
- However, four reports derived follow-up actions from the successful performance displayed in the event

Findings



In two events, procedures were updated to ensure that successful performance that had occurred by chance would be replicable in the future



In two other events, training and communications were made to reinforce the reliability of the successful performance displayed during the event

Conclusions from the FINAS study

- Valuable learning can be gained by examining successful performance in event investigations, notably learning that could ensure greater reliability of the successful performance observed
- However, we found no clear evidence that event investigations systematically examine the successful performance displayed during the progression of the event, even when it is included in the overall event description

Follow up work in progress

- Continue to examine the value of examining the successful performance displayed during the progression of an event, in addition to failures, by analyzing publicly documented events in greater detail
- Planning a study aimed at testing if people working in event investigation teams identify successful performance as something important to examine in the event analysis, and if so, what factors influence the degree to which they do so
- Planning a study aimed at capturing insights on the learning experiences and perceived value of analyzing the successful performance displayed during events, in addition to failures.

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