



# MOOC

## Management and Leadership for Safety

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### INTRODUCTION



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This MOOC focuses on management and leadership for safety as a process unfolding within an industrial organisation where many hazards may be present. Herein, safety can be defined as a state in which the occurrence of an event leading to serious consequences and harmful effects for people and / or the environment is unlikely.

In complex and “high risk” industrial organisations such as nuclear power plants, or chemical plants, safety is mainly based on “safety barriers” and a set of safety features (e.g., redundancy of equipment, preventive maintenance, reporting systems) in such a way that, if operated within its design limits and in line with prescribed procedures, severe accidents would essentially be eliminated. However, this kind of safety, also called “regulated safety”, is somewhat idealistic, and insufficient, because of the difficulty to factor in all uncertainties.

Research on high reliability organisations and on resilience mechanisms has shown that the intensive development of regulated safety, designed to increase reliability, can blunt the capacity of both operators and managers to respond appropriately in the case of unknown situations (i.e., any situation unforeseen by the regulated safety system). It can therefore reduce resilience, another important safety performance component.

This significant gap in addressing safety issues has also been identified by the expert community driving the international nuclear safety standards system.

Indeed, it is now well recognized that managers are also expected to lead their team members in facing uncertain and unplanned situations, thus adding a dimension of “managed safety” to their role in implementing “regulated safety”.

This is what the expression “leadership for safety” refers to. However, while such a leadership role of managers is identified as important and salient, how managers can learn to practice it effectively remains a key challenge. The ELSE (European Leadership for Safety Education) Project seeks to address this challenge (<https://univ-cotedazur.eu/european-leadership-for-safety-education>).

The ELSE Project has defined “leadership for safety” as “a process of influencing behaviour so it meets the expectations of safety management”. The ELSE pedagogical approach to leadership for safety education aims to provide managers, either in industries or in regulatory organisations, with relevant knowledge enabling them to develop both their capabilities as safety managers and their legitimacy as safety leaders.

As the process of influence is embedded in an organisational context, the ability to exercise this process of leadership depends on the understanding of:

- The expectations of safety management
- The organisational dynamics
- The process of influence itself (e.g., the leadership process).

This MOOC is designed to help you better understand these three dimensions, which are essential to the development and implementation of effective leadership for safety

## MOOC Content

This MOOC consists of four units included in the module “Human & Organizational Factors”:

- Unit 1. Safety Management: Key Concepts
- Unit 2. Organisation and Leadership: Key Concepts
- Unit. Management and Leadership for Safety in Practice: Key Challenges – Part 1
- Unit. Management and Leadership for Safety in Practice: Key Challenges – Part 2

These units were developed by an international team of academics and nuclear industry experts within the framework of the EU-funded ELSE Project (European Leadership for Safety Education). The MOOC offers insights - based on the latest research in social and management science - into the core concepts and major challenges related to managing and leading for safety.

The four e-learning units are complementary:

- The first two units introduce the fundamental concepts,
- The last two units address real-world challenges encountered in practice.

Three main challenges are critical for managers to identify, understand and address to achieve a successful practice of leadership for safety in the workplace:

- The challenge of effectively dealing with uncertainty in a work environment characterised by high levels of reliability and resilience.
- The challenge of managing tensions and paradoxes stemming from competing legitimate goals (e.g., production versus safety), or from differences in the perception of risks.
- The challenge of managing safety requirements close to organizational limits.

## MOOC Content Table

<p><b>Safety Management</b></p>	<p><b>Key Concepts</b></p> <ul style="list-style-type: none"> <li>- Ensuring Safety: a Historical Approach</li> <li>- Risks and Safety: a Technical Approach</li> <li>- Risks and Safety: a Systemic Approach</li> <li>- Standards</li> <li>- Managing Safety: an Evolving Problematic</li> </ul>	<p><b>Key Challenges</b></p> <p><i>Dealing with Uncertainty</i></p> <ul style="list-style-type: none"> <li>- Building High Reliability Organisations: from Anticipation to Resilience</li> <li>- Dealing with Uncertainty in a Collective Manner: Collective Cognition</li> <li>- Individual Factors of Dealing with Uncertainty</li> </ul>
<p><b>Organisation and Leadership</b></p>	<p><b>Key Concepts</b></p> <ul style="list-style-type: none"> <li>- Organisational Structure &amp; Design</li> <li>- Safety Culture</li> <li>- Knowledge Management</li> <li>- Leadership</li> <li>- Leadership for Safety</li> </ul>	<p><b>Key Challenges</b></p> <p><i>Managing Tensions &amp; Organisational Limits</i></p> <ul style="list-style-type: none"> <li>- Management of Paradoxes</li> <li>- Uncertainty, Complexity, and Organisational Limits</li> <li>- Ethics and Risks Management</li> <li>- Leadership for Safety in day-to-day Practices</li> </ul>

## MOOC Architecture

Unit 1	Safety Management: Key Concepts
1	Ensuring Safety: a Historical Approach
2	Risks and Safety: a Technical Approach
3	Risks and Safety: a Systemic Approach
4	Standards
5	Managing Safety: an Evolving Problematic
Unit 2	Organisation and Leadership: Key Concepts
1	Organisational Structure and Design
2	Safety Culture
3	Knowledge Management
4	Leadership
5	Leadership for Safety
Unit	Management and Leadership for Safety: Key Challenges – Part 1
1	Management of Paradoxes
2	Ethics and Risks Management
3	Building High Reliability Organisations: from Anticipation to Resilience
Unit	Management and Leadership for Safety: Key Challenges – Part 2
1	Dealing with Uncertainty in a Collective Manner: Collective Cognition
2	Individual Factors of Dealing with Uncertainty
3	Uncertainty, Complexity, and Organizational Limits – Implications for Safety
4	Leadership for Safety in day-to-day Practices

Each unit represents approximately two screen-days of learning.

Please note:

The first two units are shared with the DMaLSE MOOC on navigating complexity in Nuclear Decommissioning Projects (NDPs). The two units on Key Challenges will be discontinued in May 2026 as they are scheduled for redesign. They will be replaced by Unit 6 “Safety Management: Key Challenges” and 7 “Organisation & Leadership: Key Challenges”.

## To Go Further



Explore additional resources and consider applying to the ELSE training programme.

These four units present the fundamental concepts and key challenges related to leadership for safety. To gain a deeper understanding of these topics and to develop practical skills, you are invited to apply for the ELSE training programme on “Leadership for Safety”, which complements this MOOC through a 10-day face-to-face session held at Université Côte d’Azur (Nice, France), followed by a 6-month individual tutored project.

Led by the same international pedagogical team that designed the MOOC, this training programme features case studies, group discussions, and hands-on workshops in small groups, encouraging active participation and in-depth exchange.

Upon successful completion of all training requirements, participants will be awarded the “Leadership for Safety” Master 2-level diploma (Master 2) from Université Côte d’Azur.

For more information:

 <https://univ-cotedazur.eu/european-leadership-for-safety-education>