ELSE
European Leadership for Safety Education

MOOC
Management and Leadership for Safety

Introduction

Co-funded by the European Union

UNIVERSITÉ CÔTE D'AZUR

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Introduction

This MOOC is an innovative online training programme developed as part of the *European Leadership for Safety Education* (ELSE) project, co-funded by the European Union. To learn more about the ELSE project, please visit: https://univ-cotedazur.eu/european-leadership-for-safety-education or https://senssett.eu/

The content of the MOOC is aligned with the perspectives of international organisations such as the International Atomic Energy Agency, the European Atomic Energy Community, and the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development (OECD), all of which emphasise the importance of strengthening leadership for safety capabilities at managerial and organisational levels, both within operating organisations and regulatory bodies.

However, the concepts related to leadership for safety are relevant far beyond the nuclear sector. They apply to all professional activities confronted with multiple hazards, high-risk consequences, and significant organisational and technological complexity, such as the chemical industry, oil and gas, aviation, and/or healthcare. In this context, safety can be defined as a state in which the occurrence of events leading to severe consequences for people and/or the environment is made unlikely through actions aimed at preventing, controlling, or mitigating hazards and risks.

Against this backdrop, safety in such complex and high-risk organisations has traditionally relied on "safety barriers" and a range of technical and organisational safety features, including equipment redundancy, preventive maintenance, strict operating procedures, and reporting systems. Under this approach—often referred to as *regulated safety*—severe accidents should, in principle, be prevented as long as operations remain within design limits and prescribed procedures are followed. However, experience has shown that severe accidents may still occur. Analyses of such events consistently highlight the difficulty of anticipating and controlling all forms of uncertainty, including not only technological and environmental uncertainties, but also organisational, human, and cultural dimensions.

In fact, research on High Reliability Organisations (HROs) and resilience mechanisms has shown that the intensive development of regulated safety, initially designed to increase reliability, may sometimes produce counterproductive effects. Paradoxically, excessive reliance on procedures, formal controls, and predefined scenarios can create blind spots in risk assessment practices and weaken the capacity of both operators and managers to respond effectively to situations that deviate from those anticipated by the regulated

safety system. In this way, it may reduce resilience, which is another essential dimension of safety performance.

This limitation in conventional safety management has also been recognised by the expert communities involved in developing international nuclear safety standards. It is now widely acknowledged that managers are not only expected to ensure compliance with regulated safety requirements, but also to support their teams in dealing with uncertainty, ambiguity, and unexpected situations. This adds a complementary dimension of *managed safety* to the implementation of *regulated safety*.

This is precisely what the expression *leadership for safety* refers to. However, although the importance of such leadership is now widely recognised, understanding how managers can effectively learn and practise it remains a major challenge. The ELSE project was developed to help address this challenge.

The ELSE Project defines “leadership for safety” as “a process of influencing behaviour so that it meets the expectations of safety management”. The ELSE pedagogical approach to leadership for safety education aims to provide managers, whether in industry 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 leadership depends on the understanding of:

- **The expectations of safety management;**
- **Organisational dynamics;**
- **The process of influence itself, that is, the leadership process.**

These three themes —safety management, organisational dynamics, and leadership—are intrinsically linked: together, they form the foundation for effective safety leadership. This MOOC will help you to better understand them and how they contribute to the development and implementation of effective safety leadership in practice.

MOOC Content

The content of this MOOC was developed by an international team of renowned academics and nuclear sector experts, drawing on the ELSE International Scientific Workshop held in Nice on 22–24 January 2020. The workshop report is available on the ELSE website. It made it possible to identify the key concepts and challenges associated with each theme: **Safety management**, **Organisation**, and **Leadership**.

The MOOC "Management and Leadership for Safety" is composed of four units. Units 1 and 2 introduce the key concepts for each theme, while Units 6 and 7 focus on the main safety, organisational and leadership challenges.

The following table details the key concepts studied in Units 1 and 2:

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 & Design
2	Safety Culture
3	Knowledge Management
4	Leadership
5	Leadership for Safety

The following table details the key challenges studied in Units 6 and 7:

Unit 6	Safety Management: Key Challenges
1	Understanding Complexity
2	Building High Reliability Organisations: From Anticipation to Resilience
3	Dealing with Uncertainty Collectively: Collective Cognition
4	Dealing with Uncertainty Individually: Cognitive Factors
5	Dealing with Uncertainty Individually: Personal Factors
Unit 7	**Organisation & Leadership: Key Challenges**
1	Paradox Management
2	Uncertainty, Complexity, and Organisational Limits – Implications for Safety
3	Knowledge and Learning
4	Leadership as Process for Safety
5	Complexity and Ethical Leadership

To Go Further

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Explore additional resources and consider applying to Leadership for Safety training programme.

To gain a deeper understanding of the direct and indirect implications of behaviours, organisational dynamics, and underlying beliefs and values related to nuclear safety performance, while developing reflexivity and strengthening your capacity to exercise leadership for safety in inherently complex and highly regulated nuclear and radiological environments — both in routine and emergency situations — you are invited to join the **ELSE training programme on *Leadership for Safety***.

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

The ELSE training cycle typically includes a two-week face-to-face session held in September at Université Côte d'Azur, prepared through participation in the ELSE MOOC and followed by a six-month tutored personal project related to leadership for safety. The ELSE Master's-level University Diploma is awarded after a final series of online sessions, including a concluding debriefing, presentations of the personal projects, and a final examination, generally held in June of the following year.

For more information, please visit: https://senssett.eu/

NB: Units 3, 4, and 5 are dedicated to the DMaLSE MOOC.
This MOOC is an innovative online training programme developed as part of the *Decommissioning Management and Leadership for Safety Education* (DMaLSE) project, co-funded by the European Union.
To find out more about the DMaLSE project, please visit: https://senssett.eu/
Based on the latest research in social and management sciences, the DMaLSE MOOC provides insights into the key concepts and major challenges involved in managing complex projects in high-risk environments.

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