ABSTRACT

“ENAV: Evolution and Integrated Socio-Technical Transformation of the Italian Air Traffic Management (ATM) System”

The evolution of the Italian Air Traffic Management (ATM) system cannot be achieved without an integrated perspective in which technology and the human factor evolve together.

In highly specialized, safety-critical environments such as air traffic control, every technological, procedural, or organizational change generates cascading effects on individuals, teams, organizational culture, and performance. Managing this complexity requires specific expertise: those of psychology.

This presentation focuses on the role of the psychologist as an enabler of sustainable socio-technical transitions. It will illustrate the three core pillars of Human Factors activities within ENAV:

1. Understanding before changing: analysing tasks, decision-making processes and team dynamics is essential to anticipate the unintended consequences of new solutions. In risk-managed environments, how people work is just as important as what technology does.

2. Designing with people, not only for people: involving operators and domain experts from the earliest stages makes it possible to develop technological and organizational solutions that are acceptable, usable, and resilient. Psychology provides methods for translating implicit needs into explicit requirements.

3. Supporting change: evolving a system also means managing learning, trust, cognitive workload, and safety culture. Psychologists contribute to designing transition pathways that preserve both high levels of reliability and organizational well-being.

The aim of this presentation is to demonstrate how an integrated socio-technical approach, guided by psychological expertise, enables innovation and safety to advance together. It is not a matter of adding the human factor to technology, but of redesigning the system from the outset by considering the interaction between people, procedures, organizations, and tools.

The presentation seeks to offer insights applicable to all high-reliability domains, where evolution cannot be solely technical but must also be profoundly human.