STEM Disciplines in Defence: Enabling Competencies to Manage Complexity

Address by the Italian Minister of Defence,

Hon. Crosetto

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https://youtu.be/6hQ9RnQmoOw?feature=shared

translation in English by Gustavo Scotti di Uccio

A warm welcome to everyone present, and I thank first and foremost Senator Isabella Lauti for the invitation to have organized this important event.

It is a significant occasion to reflect on the importance of STEM disciplines: science, technology, engineering, and mathematics.

The training of new generations in strengthening the capabilities of our Defence.

We live in an era of extraordinary transformation in which science and technology are redefining every aspect of our lives. STEM disciplines are not only tools of progress but are the true engine of innovation. From artificial intelligence to cybersecurity, from robotics to biotechnology, we are witnessing a revolution that opens up scenarios unthinkable until only a few years ago.

According to the World Bank, 80% of the wealth of advanced nations is based on knowledge: and this makes scientific and technological skills a strategic asset for every nation. In this context, STEM subjects are acquiring an increasingly central role, offering ample opportunities for growth and development.

However, in Italy, indicators describe a mismatch between supply and demand.

According to ISTAT (National Institute of Statistics), only a quarter of Italian graduates between 25 and 34 years old studied STEM disciplines, while companies declare enormous difficulty in finding qualified profiles in these sectors.

Technological evolution is not just about economic growth, it also represents a global challenge. The United States and China are investing enormous sums to dominate the race

for artificial intelligence and new technologies, while Europe is trying to establish itself as an ethical leader with innovative regulations such as AI-ACT.

This context puts us before a choice: endure change or be its protagonists. Regulate or Do.[1]

Meanwhile, as I speak, our country, our institutions, and our businesses are the daily target of cyber attacks. Critical infrastructure, communication networks, industrial systems, and essential services are prime targets of these attacks.

The Cyber domain has become a strategic battleground comparable to land, sea, and aerospace. NATO, for one, has recognized the need to defend it with the same determination with which we protect our physical borders. As mentioned, artificial intelligence is one of the main accelerating factors of all this technological progress.

And we are getting closer and closer to the so-called technological singularity. That moment when artificial intelligence could surpass human intelligence. And it is already revolutionizing the way we operate in the Defence, intelligence, and security sectors.

Investments in the sector are growing exponentially in the United States. Just think of the United States, which has announced Project Stargate, an initiative of over 500 billion dollars in five years, to consolidate their primacy in the field of artificial intelligence.

On the other hand, China is focusing on programs such as the Made in China 2025 plan, which aims to make the country a world leader in this technological revolution.

At the same time, quantum technology, one of the most disruptive innovations that will bring enormous benefits for the resurrection of complex problems, today not solvable with the principles of classical mechanics in a finite time, is exploding everywhere.

The arrival of quantum computers could compromise the current encryption system.

This is one of the issues that we must address, exposing, for example, our daily lives to enormous risks.

So, we are already facing several threats today, and an additional one is the interception of data that some nations store even if they cannot decipher them because they know that technological development sooner or later will allow them to use them.

This situation underscores the urgency of strengthening deterrence against cyber threats, both internal and external.

Having the strength, the capacity, the readiness when attacked, if others are, to be able to act quickly and effectively will become fundamental. Addressing these threats requires immediate action, a preparatory phase, a constant commitment to study, research, and development of new solutions.

[1] choice between focusing on regulation or taking concrete action and innovation

In the context of an unprecedented technological transformation, training becomes the fundamental pillar on which the future can be built.

STEM disciplines, fundamental for innovation, are a strategic investment for the country's competitiveness and for its very survival.

It's not just about creating new degree programs, but about making education more flexible, with programs updated in real-time to reflect the evolution of technologies and adopting a training model in which people are constantly updated and can constantly grow their skills.

Modern challenges can no longer be faced alone: indeed, they require close collaboration at least among our armed forces, but then we must broaden it to the academic world, industry, professional associations, cultural institutions, and the media with the aim of developing both innovative solutions and a culture that supports this growth.

And it is thanks to technological innovation and collaboration between the public and private sectors that the Italian Defence seeks to strengthen National Security and scientific excellence every day, and positions itself as a leader in global scenarios, or at least tries to position itself.

A virtuous example is the Cyber Academy, established by the Defence to train advanced digital skills and offer a cross-cutting training path open to the entire public administration and attendees from allied friendly countries.

In the digital battlefield where the scenario is fluid, where the threat is often invisible, hybrid and constantly evolving, the decisive factor is still human capital, namely the ability to interpret and make the best use of the tools available.

Teamwork, mutual respect, and leadership are fundamental elements for building resilient defences and pursuing common strategic objectives.

Just like a dwarf on the shoulders of giants, the new generations of specialists must exploit the legacy of knowledge to anticipate threats, adapt to technological changes, and build a resilient Defence.

In conclusion, STEM disciplines are not just a field of study, an academic specialization: at this moment they are the heart of the global transformation we are experiencing. The heart and the engine.

Every innovation, from artificial intelligence to cybersecurity, from quantum computers to robotics, is the result of the work of scientists, engineers, mathematicians, and technologists; in this perspective I renew my greetings to you attendees of our training institutes because your mission is essential: to combine the tradition of the Armed Forces of the Defence with innovation. Mastering new technologies and putting them at the service of Italy.

Your preparation will be decisive in allowing us to face the challenges of the future. The skills you acquire will be fundamental for Italy, for all of us, for the Defence.

With this awareness, I wish you all a good job and thank you again.