



What new technologies could really be game changers?

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Engagement opérationnel

A graduate of the Army Military Academy, Major General Antonio RUIZ BENITEZ is an officer from the light infantry units of the Spanish Legion in the Spanish territories of North Africa. In 2006, he commanded the Spanish Task Force deployed in Congo under the aegis of the European Union. Promoted to colonel in 2010, he took command of the light infantry regiment "alejandro farnesio" of the 4th brigade of the ^{Spanish} Legion. He is currently in charge of Spanish Army doctrine (Doctrina, Investigación, Orgánica y Materiales).

The future environment of warfare will be complex, unstable and uncertain, with high stakes associated with information literacy. In a global and interconnected environment, our decision-making processes will be made more complex. Our adversaries will evolve and adapt more rapidly, developing new capabilities through emerging technologies to circumvent the conventional forces of most of our militaries and exploit their vulnerabilities in an asymmetric context. In doing so, they will attempt to take advantage of our slow decision-making processes, the high costs and excessively long lead times required to incorporate new technologies into our armed forces, our lack of a culture of innovation, our resistance to change, our legal constraints, and the social challenges we face.

Our operational framework is also set to expand, to integrate the cybernetic, spatial and cognitive domains, which should require plural approaches and exponential development of the associated processes. New technologies are likely to accelerate the pace of transformation of our operational environment, which should call for adaptation and training efforts on our part.

Security and defence systems will increasingly rely on innovation and the exploitation of civilian research. In a context marked by a reduction in the production costs of new

technologies, leading to lower prices and democratisation of access to them, the challenge would be to be able to accelerate our understanding of technological advances, in order to transform them into military tools or to counter them (with a view to exercising a threat or neutralising our own technological advantage). Otherwise, the risk would be that our adversaries, relying on access to low-cost advanced technologies and faster integration processes, would constantly be able to surprise us.

Some of the technology areas that may affect our operating environment include robotics, artificial intelligence, Big Data, nanotechnology, energy, biotechnology and medicine. 3D printing is also expected to have an impact on the operating environment, as is the possible development of hypersonic or directed energy weapons.

It is difficult to predict how new technologies will affect military capabilities. However, it is likely that they will require significant changes in the readiness and culture of the armed forces. Armed forces will have an advantage over their adversaries if they are able to integrate technological advances quickly without losing their ability to operate in a degraded technological environment. In this context, the main principles of warfare, referring to fundamental concepts and the history of the armed forces, are bound to remain anchoring points. They are intended to enable doctrines to be developed, being both simple and applicable in all circumstances.

In Spain, three fundamental principles have thus been adopted: the will to win, freedom of movement and the ability to execute. Changes in the operational environment and technological advances are not such as to call these principles into question.

In addition, a series of operational principles have been adopted, making it possible to implement concrete solutions that can be adapted or supplemented over time. Among these principles are the objective (which could raise a problem of definition in the future environment), flexibility (which could prove to be a problem in the future environment) and the need to be flexible (even more important in the future environment), surprise (now it is a matter of getting the adversary to fight at a place and time unexpected to him), security (which could prove to be even more important in the future environment) and the need to be flexible (which could be heavily impacted by new technologies), unity of effort, initiative (relying more on mutual trust and understanding within the chain of command than on technological tools) and command capability (requiring efforts in training, time management, organisation, etc.).

In order to implement these principles, the Spanish forces are endeavouring to apply a principle of simplicity (in terms of developing planning, procedures and orders that are easy to execute), which could be challenged by the development of high-speed decision-support tools, without calling into question the importance of command exercise capabilities. The Spanish Army is also committed to the principles of legitimacy and cooperation within the environment.

In conclusion, interoperability (including reducing the technological gap between allies) and understanding of cultural issues are bound to become increasingly important in the future operational environment.

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