



## SECURITY PROSPECTS – A SOURCE FOR ROMANIAN MILITARY THINKING –

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*In this article, we address the need for anticipating the future as a way to understand the main changes that could influence national security. The main contribution of this paper is the identification of five tendencies of the future and the analysis of their impact over Romanian military thinking. The purpose of this paper was attained through the analysis of trends and factors – a highly appreciated method for implementing change and development in organisations. In this respect, the main conclusion of this article is that anticipation becomes a milestone for Romanian military thinking. This point makes possible the securitisation of Romania, enabling the Romanian Armed Forces to adapt and to change.*

*Keywords: strategic prospects, the UN, security foresight, Armed Forces future, cyber security.*

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## INTRODUCTION ON FUTURE APPROACHES

Knowing the future is an old legacy that Glenn<sup>1</sup> considers it under-researched. Unlike the present or the past (which is known through one's experience or memories), the future cannot appeal to certainties. In fact, checking the anticipated results can only be achieved by time passing. For this reason, the idea of anticipation was confined throughout the ages in the sphere of the mystical and the mythical, the scientific element generally missing from the equation.

One of the coherent approaches that emerged the scientific perspective of anticipation belongs to Bertrand De Jouvenel<sup>2</sup>. He introduced the concept of "possible futures" – essentially future states that start from a unique situation and prolong to a cone of possibilities. The anticipation methodologies developed later on the basis of this concept.

Today, there are two scientific approaches that sum up the efforts in the field. The first approach – namely prospective studies – summarises the efforts of Glenn<sup>3</sup> and Popper<sup>4</sup>. They consider that anticipation has the purpose of exploring possible futures in order to wisely adopt decisions. The value of this approach consists more in opening minds and less in describing the accuracy of the method.

The second approach – namely foresight – appears in the research of Steenbergen<sup>5</sup> and Gold and Hines<sup>6</sup>. They consider that anticipation

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2 B.d. Jouvenel, *L'art de la conjecture*, Ed. du Rocher, Monaco, 1964.

3 J.C. Glenn, *op. cit.*

4 R. Popper, *Foresight Methodology*, 2008, in L. Georghiou, J. Cassingena, M. Keenan, I. Miles and R. Popper (eds.), *The Handbook of Technology Foresight*, Edward Elgar, Cheltenham, 2008, pp. 44-88.

5 B. Steenbergen, *Scenarios As a Powerful Tool for Public Policy*, in *Proceedings of the Prague Workshop on Futures Studies Methodology*, 2005.

6 J. Gold, A. Hines, *An Organizational Futurist Role for Integrating Foresight into Corporations. Technological Forecasting and Social Change*, 2014, DOI: 10.1016/j.techfore.2014.04.003.



*This paper analyses some strategic prospective products in the field of security and defence (the first scientific approach) and how they can be used by Romanian military practitioners to create a solid strategic posture of Romania in 2050.*

needs to better concentrate on planning and on the accuracy of the measuring instruments.

The two approaches have conceived various research styles, mostly at the crossroad between prospective studies and foresight<sup>7</sup>. Studying the future of security and defence was not an important subject for the scientific community. That happened because the anticipation in security and defence was more like a practitioners' topic. This is also the situation for the Romanian military thinking, where the priorities concerned planning military actions in conjunction to the anticipation of the enemy courses of action.

## TENDENCIES OF 2050

This paper analyses some strategic prospective products in the field of security and defence (the first scientific approach) and how they can be used by Romanian military practitioners to create a solid strategic posture of Romania in 2050. In this article, we present the main factors that can influence the future of national security and defence<sup>8</sup>.

Scientific literature abounds in analyses of this type, like Sandschneider<sup>9</sup>, Al Gore<sup>10</sup>, National Intelligence Council<sup>11</sup>, UK Ministry of National Defence<sup>12</sup>. Having in mind those papers, we selected five key-factors that will determine the Romanian military thinking to react.

<sup>7</sup> We must mention here the efforts made by Godet, who applies strategic prospect in the field of planning: M. Godet, *The Art of Scenarios and Strategic Planning: Tools and Pitfalls*, in *Technological Forecasting and Social Change*, 65, 3-22, 2000) and those of Georghiou, who focuses on the social-economic dimension of foresight: L. Georghiou, *Third Generation Foresight: Integrating the Socio-economic Dimension*, in *Technology Foresight – The Approach to and Potential for New Technology Foresight, Conference proceedings, NISTEP Research Material 77*, 2001). Other efforts were made by E. Masini, who, in 1983, was thinking about the need to use the prospect also for the transfer of knowledge to planning (E. Masini, *Visions of Desirable Societies*, Oxford, Pergamon Press, 1983).

<sup>8</sup> In specialised literature, the analysis of determining factors comes under many forms, among which the analysis of trends, drivers, weak signals and *black swan*-type events. For more details, see European Foresight Platform, <http://www.foresight-platform.eu/community/forlearn/how-to-do-foresight/methods/analysis/megatrend-trend-driver-issue/>, retrieved on 12 February 2020.

<sup>9</sup> E. Sandschneider, *Drivers of Global Change What Happens When Digital Disruption Meets Geopolitics?*, in *Richard C. Holbrooke Forum*, June 2017.

<sup>10</sup> Al Gore, *The Future: Six Drivers of Global Change*, New York, Random House, ed. 2013.

<sup>11</sup> \*\*\*, National Intelligence Council, *Global Trends 2030: Alternative Worlds*, Washington D.C., 2012.

<sup>12</sup> \*\*\*, UK Ministry of Defence, *Global Strategic Trends: The Future Starts Today*, London 2018.

These factors are as follows: (1) *shaping a post-petroleum society*, (2) *tackling pollution and water stress areas*, (3) *identifying disruptive technologies and tackling cyber space*, (4) *reformation of UN Security Council*, and (5) *redefining the global system of alliances*.

*(1) Shaping a post-petroleum society*

The post-petroleum society solves two major problems of our world: (1) controlling energy consumption and (2) reducing pollution and global warming. These two elements are interdependent, and their boundaries often overlap, making their separate analysis difficult.

Many studies contradict themselves in numbers and create inconsistency among decision-makers when analysing energy consumption. For example, GST suggests the probable growth of Global Energy Consumption – up to 60% by 2050<sup>13</sup>. *International Futures* proposes a scenario – orientated perspective<sup>14</sup>. Thus, the overall energy consumption of 2050 may decrease by up to 30%, but may also increase by up to 60%, as shown in *figure 1*. Those differences are not at all encouraging. This is a consequence of two factors with adverse effects: (1) development of service-based economy to the detriment of industries and (2) implementation of the *Internet of Things (IOT)* concept. The first factor decreases energy consumption, shifting its pressure to China, and the second increases consumption, based on the availability of certain devices in the cloud.

However, some certainties do appear. Firstly, the reduction of energy consumption can only be achieved from an *environmental perspective*. Secondly, consumption will certainly be influenced by resource scarcity. Therefore, the vector of controlling energy consumption is determined by the protection of the environment and renewable energy. This type of society is called the post-petroleum company. It becomes a mobile of the world economic activity. We believe that the emergence of the post-petroleum society is inherent. In contrast, the exact date of occurrence remains questionable, probably after 2050.



*There are five key factors that will determine the Romanian military thinking.*

*These are: shaping a post-petroleum society, tackling pollution and water stress areas, identifying disruptive technologies and tackling cyber space, reformation of UN Security Council, and redefining the global system of alliances.*

<sup>13</sup> *Ibid.*

<sup>14</sup> *International Futures*, 2020.

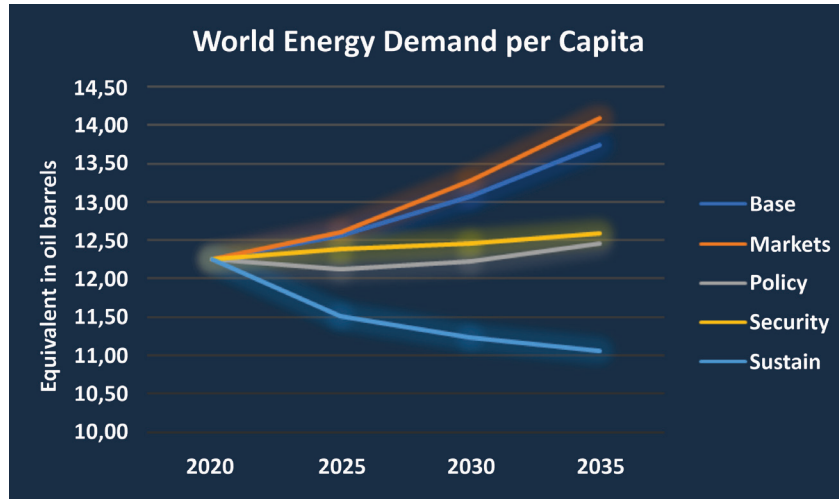


Figure 1: World Energy Demand per Capita<sup>15</sup>

\* The Base Scenario takes into account continuing the present policies. The Markets Scenario accentuates the economic measures, the Policy the impact of public policies, the Security the impact of national securitisation and Sustain Scenario the implementation of ecological policies.

According to IHS Global Insight estimates from 2013, shale gas will represent 60% of the US market by 2035. This estimated growth will be accompanied by an investment process that will total over \$ 1.9 trillion and will create over 1.6 million jobs until 2035.

This is primarily due to the occurrence of hydraulic fracturing and shale gas exploitation. According to IHS Global Insight estimates from 2013, shale gas will represent 60% of the US market by 2035. This estimated growth will be accompanied by an investment process that will total over \$ 1.9 trillion and will create over 1.6 million jobs until 2035.

**This factor challenges the Romanian military thinking twofold.** First of all, we need a *technological transformation*. This refers to the efficiency of the energy consumption of the military equipment and to the reduction of the carbon footprint of the military actions. Second of all, we need to mitigate risks drawn from *energy security*. This refers to ensuring national energy independence and protecting the critical infrastructures involved in producing or distributing energy.

### (2) Tackling pollution and water stress areas

In 2015, the great leaders signed the Paris Agreement – a document that aims to limit the rise of global temperature with 1.5° C by 2050<sup>16</sup>.

<sup>15</sup> Credit: *International Futures*, 2020.

<sup>16</sup> *Official Journal of the EU*, 2016.



There is much to be done in this regard. First of all, we have to reduce the use of coal with 50% by 2050 – an ambitious goal. The International Energy Agency predicted in 2017 that by 2050 the world would still rely on fossil fuel energy at over 70% IEA.

The use of freshwater represents a key point. The exploitation and use of freshwater are on the maximum slope worldwide, according to the *Global Strategic Trends: The Future Starts Today*<sup>17</sup> report estimates from 2017. By 2050, we anticipate massive increases in exploiting freshwater (with 1.5 trillion m<sup>3</sup> more water than in 2010). Under these conditions, **more than half of the world’s population** will not have access to freshwater in 2050.

In Romania, the tendency of using freshwater is difficult to identify. International Futures scenarios tend to identify a turning point in 2040 that will need to be supported by a well-structured ecological policy, as shown in the *figure 2*. According to NIC estimates, Romania will have some severe stress related areas of access to water.

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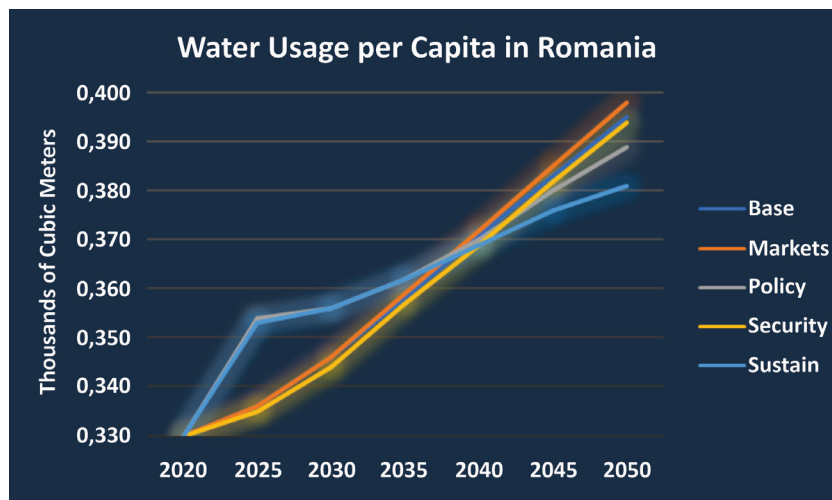


Figure 2: Water Usage per Capita in Romania<sup>18</sup>.

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<sup>17</sup> \*\*\*, UK Ministry of Defence, *op. cit.*, pp. 17-18.

<sup>18</sup> Credit: International Futures, 2020.



This factor challenges the Romanian military thinking as to ensure that the civil population and military forces have access to freshwater. Downsizing the carbon footprint will become a sensitive issue in 2050 press releases. Never the less, **the stress related areas of access to water** could lead to social revolts and attempts to force its redistribution.

### *(3) Identifying disruptive technologies and tackling cyber space*

Modern technologies and their impact on military actions establish major research themes. Authors like M.L. Cummings<sup>19</sup>, Stephan de Spiegeleire et al<sup>20</sup> and Panwar<sup>21</sup> describe the possibilities of using artificial intelligence (AI) in the military field. Some important states – such as the US – intend to militarise the cloud<sup>22</sup>. Last but not least, the impact of IoT on military conflicts becomes a key point in ensuring initiative and freedom of action of forces, as Tonin<sup>23</sup> notes.

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RAND Europe and HCSS have synthesised in a study the main technological issues of our day that can influence the endowment of forces. The themes are (1) the sensorisation and expansion of networks; (2) machine learning and artificial intelligence; (3) globalisation of technology; (4) space as an operating environment; (5) human development; and (6) renewable energy and energy weapons<sup>24</sup>.

Today's practice illustrates another major topic: cybersecurity and cybercrime. In 2016, some North Korean actors staged a cyberrobbery that damaged the Bank of Bangladesh with \$81 million<sup>25</sup>. In the same year, North Koreans launched the WannaCry ransomware that produced

<sup>19</sup> M.L. Cummings, *Artificial Intelligence and the Future of Warfare*, The Royal Institute of International Affairs, Chatham House, 2017.

<sup>20</sup> S. de Spiegeleire et al., *Artificial Intelligence and the Future of Defense: Strategic Implications for Small- and Medium-Sized Force Providers*, The Hague Centre for Strategic Studies (HCSS), 2017.

<sup>21</sup> R.S. Panwar, *AI in Military Operations*, IDSA Strategic Comments, www.idsa.in, 2018, retrieved on 12 February 2020.

<sup>22</sup> \*\*\*, US Army, *Army Cloud Computing Strategy*, 2015.

<sup>23</sup> M. Tonin, *The Internet Of Things: Promises and Perils of a Disruptive Technology*, <https://www.nato-pa.int/document/2017-internet-things-tonin-report-175-stctts-17-e-bis>, retrieved on 10.02.2020.

<sup>24</sup> *European Defence Matters*, 2017.

<sup>25</sup> D.R. Coats, *Statement for the Record Worldwide Threat Assessment of the US Intelligence Community*, United States Army War College, 2018.



dramatic effects worldwide<sup>26</sup>. In 2017, the US National Cybersecurity and Communications Integration Center (NCCIC) has disclosed publicly that NotPetya malware shut off the local electricity during actions of the Russian Federation in Ukraine. **NotPetya has managed also to stop the functioning of the Chernobyl Nuclear Power Plant monitoring system in addition to the damages of over 10 billion dollars**<sup>27</sup>.

On these premises, it is very difficult to anticipate the technological developments that influence military thinking in 2050. **However, we can do some estimation.** One of the most important consequences of technical evolutions is that powerful states will be able to use *nuclear-charged weapon systems* in space by 2050, which will lead to the definition of a new operational space. A second estimation concerns the quality of data and information. GST believes that, as the amount of information will expand, especially in cyberspace, it will be harder to differentiate between truth and fake news<sup>28</sup>. Thus, who will have access to information and data directly from the source, will be stronger. We expect that by 2050, some non-state actors to have access to high-resolution satellite images of the Globe, fundamentally influencing the balance of military confrontations. Certain states and non-state entities have already developed algorithms for civilian population analysis. We expected that these to be used in the planning of asymmetric actions by non-state actors by 2050. It is slightly unclear how the Romanian military thinking will manage to tackle these issues.

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However, the main risk-generating factor in 2050 will be cybercrime. Some authors consider the ability to control cyber space as the future dominant form of power of actors of any kind. Future cyber-actions will be able to create effects on critical infrastructures, industrial facilities and may stop access to public services, **especially for military forces engaged conducted in military actions.** According to GST this will require

<sup>26</sup> *Strategic Cyberspace Operations Guide*, 2018.

<sup>27</sup> M. Scott et al., *Cyberattack Hits Ukraine Then Spreads Internationally*, *New York Times*, 26 June 2017, <https://www.nytimes.com/2017/06/27/technology/ransomware-hackers.html>, retrieved on 10.02.2020.

<sup>28</sup> \*\*\*, UK Ministry of Defence, *op. cit.*, pp. 129-137.





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the development of a legislative and action framework that is more adequate to protect against cyberattacks<sup>29</sup>.

#### *(4) Expansion of the UN Security Council*

United Nations (UN) is – according to previous examples in history – the organisation that aims to preserve the status quo mentioned by the treaties following a war (in this case, the Second World War). The UN has managed to maintain its integrity and to remain an important player in world security, presenting its philosophy of peace building. The international practice and the researchers in the field question the success of the organisation due to its institutional capacity for reform and transformation, especially related to Security Council. In essence, the project of the UN Security Council remained partially anchored in the situation of 1945. Since its first meeting in 1952, the membership of the permanent members has remained unchanged (the five winning states of the war). The number of non-permanent members increased from six members to ten members elected for a two-year term. Therefore, the stakes of the reforms are aimed at increasing the portfolio of the permanent members as they have the right to veto. There are several interest groups promoting reform. According to the Ministry of Foreign Affairs, we can identify a number of four groups of states interested in the reform process<sup>30</sup>. They are listed in *table 1*.

<b>The group</b>	<b>Total number</b>	<b>Supplementary permanent members</b>	<b>Supplementary non-permanent members</b>
G4 Germany, Brazil, Japan and India	25	<i>Plus 6 members:</i> 2 African states 2 Asian state 1 Latin America state 1 Western Europe State	<i>Plus 4 members:</i> 1 African state 1 Asian state 1 SE European state 1 Latin America state

<sup>29</sup> *Ibid.*

<sup>30</sup> The four groups were outlined according to the official data of the Ministry of Foreign Affairs, available in the article *Reforma Consiliului de Securitate ONU*, vezi <https://www.mae.ro/node/1589>, retrieved on 12 February 2020.



The group	Total number	Supplementary permanent members	Supplementary non-permanent members
Unity for Consensus Italy, Argentina, Pakistan, Mexico	35	Total remains the same.	<i>Plus 20 members:</i> 6 African states 5 Asian states 4 Latin America states 3 Western Europe states 2 Se Europe states
African Union (Ezulwini Consensus)	26	<i>Plus 6 members:</i> 2 African states 2 Asian state 1 Latin America state 1 Western Europe State	<i>Plus 5 members:</i> 2 African states 1 Asian state 1 SE European state 1 Latin America state
Group of the 21	<i>Promoting only change in procedures.</i>		

Table 1: Interest groups correlated to revision the UN Security Council<sup>31</sup>

We believe that growing the number of permanent members of the Council may increase the positive perception of international actors about the UN and may limit their revisionist actions. **This factor influences the Romanian military thinking from a fundamental perspective.** The UN Security Council regulates the pulse and intensity of the interventions and determines the global framework for interpreting security. For this reason, the lack of consensus on Security Council reform (especially permanent members) will certainly encourage revisionist attempts to address the international status quo. Therefore, the assurance of national security will be directly affected, by stepping into a new phase that is heading towards conflict.

*(5) Redefining the global system of alliances*

The global system of alliances ensures the distribution of power between the actors of international relations, being a marker of peace and conflict. The historical experience of two antagonistic blocks of allies is crucial in this regard. Moreover, today’s world has outgrown

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<sup>31</sup> Credit: the author.



*Redefining the global system of alliances will definitely cause changes in the extent of the technical endowment, in the procedures but also in the organisation of the Romanian military system. The geographical position of Romania has demonstrated throughout history that the redefinitions of the membership of various alliance systems have not had a positive dynamic contribution on national security.*

the bipolar paradigm of the Cold War and become multipolar. Some authors consider multipolarity an intermediate step towards a new bipolarity and examine the growth of China or India in relation to the US<sup>32</sup>. Those authors place China or India in a potential challenger for the US after 2040. For this reason, any alliance system that includes China or India becomes, in turn, a marker of possible conflict. Therefore, by 2050, a balanced distribution of power between the US, China, the Russian Federation, India, Japan and the European Union is desirable. The transformation of the European Union project into a more solid one, with a larger federal substance, becomes a nexus of the 2050s. The cultivation of the exchange of human, material and economic resources represents a bandage for the possible conflictual elements. 2050 brings a “no go area” for a possible alliance developed along the axis **China-India-Russian Federation** and a series of “named area of interest” regarding the **strengthening of the European Union and the Transatlantic Partnership**. The enlargement of the Alliance and of the European Union is necessary for the foundation of a viable international strategic position of all the countries. The dual foreign policy game of some state actors within these organizations cannot have positive consequences at international level.

**This fact or influences the Romanian military thinking** from a fundamental perspective. Redefining the global system of alliances will definitely cause changes in the extent of the technical endowment, in the procedures but also in the organisation of the Romanian military system. The geographical position of Romania has demonstrated throughout history that the redefinitions of the membership of various alliance systems have not had a positive dynamic contribution on national security. From the point of view of the Black Sea exit, Romania

<sup>32</sup> In this respect, we should mention H.P. Pant, *Contemporary Debates in Indian Foreign and Security Policy*, New York: Palgrave Macmillan, 2008. He considers India as a potential challenger for the SUA. Another analysis that must be taken into account is the one conducted by G.J. Ikenberry, *The Future of the Liberal World Order: Internationalism after America*, *Foreign Affairs* 90(3), 2011, <http://www.eastlaw.net/wp-content/uploads/2016/09/Future-of-Liberal-world-order-90ForeignAff56.pdf>, retrieved on 12 February 2020. He sees China as a potential challenger for the USA. This idea is also embraced by H. Kissinger, in *On China*, The Penguin Press, New York, 2011.

becomes a *sui-generis* state of the North Atlantic Alliance and of the EU. Against the backdrop of Turkey's cryptic game in the region, as well as the actions of the Russian Federation, Romania's road to 2050 must be predictable for the current allies, but even more consistent in terms of a sustainable European project. Defining regional projects (such as B9) only strengthens the strategic position of our country. The military technique will have to keep up with the innovations in scientific research in the Allied community. This will prove unlikely to be achieved at the level of 2050, if European defence initiatives will not gain strength and the EU will not identify concrete ways of providing domestic insurance.



### CONCLUSIONS ON THE ADAPTATION OF THE ROMANIAN MILITARY THINKING

Essentially, the anticipation represents a mobile through which the Romanian military thinking can create the basis of Romania's securitisation in 2050. Even if we shall define security with other landmarks in 2050, this concept will remain the dome under which citizens manage to make a living, feeling in safety. For this reason, the Romanian Army will have to adapt and find solutions to fulfil its missions.

This article has presented the main factors that will have an impact on national security in 2050, in order to draw some lessons for the Romanian military thinking. Probably one of the most important issues to tackle with is the transition towards an ecological (post-petroleum) society. This will happen against the increased pollution and the precariousness of fresh water resources. The interactions of the two factors will create the premises for profound changes in Romania, from technological adaptation to adapting the day-to-day life.

**The Romanian military thinking** will have to react and support Romania's energy security. At the same time, it must prepare the military technological adaptation and downsize the carbon footprint of military actions. The final effect will have a tripartite structure, aimed at (1) ensuring national energy independence, (2) protecting the critical infrastructures involved in the energy production

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or distribution process, and (3) preventing social upheavals because of the precariousness of fresh water resources.

From our point of view, technological innovations represent the most disruptive factor to anticipate in the Romanian military thinking. Although innovations will profoundly transform our society, it is not clear at this time when and if they will truly trigger a new **revolution in military affairs**, as the **machine-gun appearance** did, for example.

However, it is certain that, in this very moment, serious steps are being taken to apply a new concept – the Internet of Things – that **can become the engine of this revolution**. Connecting all devices to an integrating platform, based on 5G speeds, will create the foundation for cascading effects, both positive and negative. The major opportunities of the IOT-5G binomial will allow the increased awareness and sensorisation of the modern combat environment. There are also negative effects, including increased vulnerability to cyber-attacks. Considering that some entities have already developed algorithms for civilian population analysis and that they will also have access to detailed maps through various satellite platforms, this will turn them into feared enemies. Therefore, the Romanian military thinking will have to find solutions to cope with the expansion of the networks that will allow the monitoring of all the specific elements of the training environment or the modern battlefield, from individual performances to deepest threats.

At the same time, the Romanian military thinking will have to counteract the new **possibilities of designing the force in military actions** (cosmic space, cyber space, air space – with reference to drones and drone swarms). A balance will be needed between military technological investments and the cultivation of a specific alliance system. For this reason, the redefinition of the global system of alliances or the UN Security Council will definitely determine changes in the extent of technical endowment, in the procedures applied in times of crisis but also in the organisation of the Romanian military system. Integrating cyber actions into current operations is one of these changes.

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