

**NATIONAL UNIVERSITY OF PUBLIC SERVICE**

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**The Potential of Utilizing Artificial Intelligence for the Activities of Modern National  
Intelligence Services**

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## **Presentation of the research topic and justification of actuality**

Ever since the conclusion of the Cold War and the dawn of the information age, the challenge national intelligence services face is no longer the insufficient amount of information available, but rather the processing of the excessive amount of information flowing in. The new situation was first recognized by the US Intelligence Community (IC) during the period of the war on terror following the attacks of September 11, 2001. The process was deepened by the appearance of other transnational threats, primarily the proliferation of weapons of mass destruction and the emergence of cyberspace hazards, in addition to the challenges posed by asymmetric warfare and the fight against terror. In parallel with the expansion of the range of transnational threats, traditional military and national security challenges have reappeared at an ever-accelerating pace, essentially starting with Russia's military intervention in Georgia in August 2008, and – primarily for the United States of America – with the rise of China. The "Arab Spring" and the Syrian civil war, the appearance of the terrorist organization ISIL/DAESH,<sup>1</sup> the creation of the Syrian-Iraqi "Caliphate" and the phenomenon of foreign terrorist fighters attacking Western targets,<sup>2,3</sup> the massive illegal migration crisis, and the annexation of Crimea as well as the Ukrainian-Russian war are all warnings to the parallel existence and mutually reinforcing nature of old and new challenges and threats.

In the era of postmodern societies and the emerging multipolar world order, it is an ever-increasing challenge for intelligence services to respond to the information needs of decision-makers with timely, relevant, analyzed and evaluated information and to provide well-founded forecasts.

The research was largely focused on national intelligence, however, I only used open source information and have fully complied with the provisions of the law CLV of 2009 on the protection of classified data.

I closed my manuscript on November 9, 2022.

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<sup>1</sup> Islamic State of Iraq and the Levant/Islamic State of Iraq and Sham. DAESH is the abbreviation of the organization's Arabic name.

<sup>2</sup> BARRETT, Richard – EL-SAID, Hamed (2017): *Enhancing the Understanding of the Foreign Terrorist Fighters Phenomenon in Syria*. A United Nations Office of Counter-Terrorism report. Accessible: [http://www.un.org/en/counterterrorism/assets/img/Report\\_Final\\_20170727.pdf](http://www.un.org/en/counterterrorism/assets/img/Report_Final_20170727.pdf) (Date of download: November 15, 2018.)

<sup>3</sup> BYMAN, Daniel (2017): *Beyond Iraq and Syria: ISIS' ability to conduct attacks abroad*. Transcript of the author's hearing at the US Senate. Accessible: <https://www.brookings.edu/testimonies/beyond-iraq-and-syria-isis-ability-to-conduct-attacks-abroad> (Date of download: November 15, 2018.)

## **The scientific problem**

National intelligence must consider how to meet the expectations of decision-makers in a changing and increasingly unpredictable security environment. Analysis and evaluation organizations play a special role in this, as the central elements of strategic intelligence services.

Increasing level of cooperation, organizational restructuring, expanding the number of personnel and training, and technical development can all be solutions to cope with the problem.

The most promising direction for the technical development of intelligence services is the acquisition and development of specialized software based on artificial intelligence (AI), significantly increasing efficiency. It is difficult to map out the available, relevant solutions and their manufacturers, and to formulate realistic expectations, which is an essential condition for requesting significant resources for procurement. Adapting new equipment have effects on the organizational structure, the daily work of the personnel and on the training system, which also needs to be taken into account. In the case of technical developments, an integrated approach is also important, avoiding unnecessary expenses, insular operation that hinders efficiency, and security problems.

## **Hypotheses**

1. The lack or low level of automation greatly contributes to the overload of the human workforce of intelligence services, because people perform work processes that can be done more efficiently by machines.

2. Technical obscurity and outdated organizational structure of intelligence services both limit the quality and speed of information processing and information flow (thereby of answering decision-makers' information requests). Organizational transformation and technical developments strengthen each other in developing intelligence. The technical paradigm shift must also be taken into account when creating new structures.

3. In light of the challenges facing intelligence as a whole, the level of domestic integration and international cooperation must be increased, thereby increasing the quality and speed of information flow both within the intelligence system and towards decision makers. The increase of budgetary resources and human resources, as well as the creation of new coordination bodies are not sufficient in themselves to achieve this. For the desired results, it is

necessary to adapt the most advanced information processing, sharing, as well as data fusion software.

4. In order to meet the challenges and to take advantage of the opportunities, the use of AI becomes inevitable in all the independent branches of strategic intelligence (GEOINT,<sup>4</sup> HUMINT,<sup>5</sup> IMINT,<sup>6</sup> MASINT,<sup>7</sup> OSINT,<sup>8</sup> SIGINT,<sup>9</sup> CYBINT<sup>10</sup>) and in all-sources analysis and evaluation as well as in the management of the services,.

### **The aim of the research**

My goal was to analyze modern intelligence activities mainly by processing literature available in English as well as using primary sources, and by exploring the organizational transformations, the current capabilities and the trends within the US Intelligence Community. Based on this, I intended to outline the potential of utilizing artificial intelligence from the point of view of national intelligence. In examining the possibilities provided by AI, I considered not only the tasks of national intelligence, but also organizational theory aspects and the effects of the changes on intelligence personnel.

I carried out the research from the point of view of the professional user, based on the general theory of intelligence studies, in the absence of extensive IT knowledge. It was not my goal to gain a deep understanding of artificial intelligence technologies, but to map out the possibilities and their respective realistic utilization. Therefore, I provide an overview of the most important concepts related to artificial intelligence in the thesis, without examining the technological foundations in depth.

According to my intention, the content of the dissertation is easy to understand and useful for a wide range of intelligence professionals. I tried to ensure that my dissertation contributes to the scientific foundation of the modernization of Hungary's national intelligence system, which fits into the process of the reform of the broad state administration and national defense. I worked in the spirit of the national vision formulated in the current National Security

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<sup>4</sup> Geospatial Intelligence.

<sup>5</sup> Human Intelligence.

<sup>6</sup> Imagery Intelligence.

<sup>7</sup> Measurement and Signature Intelligence.

<sup>8</sup> Open Source Intelligence.

<sup>9</sup> Signals Intelligence.

<sup>10</sup> Cyber Intelligence.

Strategy,<sup>11</sup> i.e. "*creating a secure and successful Hungary in the long term in a changing world*", as well as the Strategy's statement: "*we are laying the foundation stones of a successful Hungary in the present*". I consider the military intelligentsia of the reform era, whose European-level scientific achievements made the successes of the Hungarian Civic Revolution and War of Independence of 1848–1849 possible, to be my role models in this field.

### **Research methods**

During my research, I mainly followed a *descriptive and inductive research strategy* to explore correlations. The research can be considered as *applied research*, but some of its elements – especially the processing of English language primary sources and literature on modern strategic intelligence and intelligence analysis – also meet the criteria of *basic research*.

I used *exploratory methods*, processing and analyzing both primary and secondary sources (documents). In the course of the research, I personally consulted organizations and individuals – companies and their staff producing AI-based software – from whom I could also obtain primary source information. Unfortunately, I could only partially utilize information from these sources, since their information is mostly classified.

During the processing of the sources, I primarily presented recent US experiences and approaches, and examined the most important governmental and private sector developments and approaches affecting the independent branches of intelligence. My goal was to provide theoretical knowledge, as well as practical understanding, therefore I present the new technologies through examples of private companies that provide an accessible and detailed description of the capabilities of their products and services. Thanks to this, by studying the thesis, the reader gets a general idea of the currently available technologies.

### **Research summary**

In the thesis, I summarized knowledge relevant to the topic in seven chapters.

In the *first chapter*, I reviewed the understanding related to the concept and importance of artificial intelligence, and presented the ways of using AI in public administration, healthcare and the stock market. I examined machine vision and creative artificial intelligence, two priority

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<sup>11</sup> Magyarország Nemzeti Biztonsági Stratégiája – „Biztonságos Magyarország egy változékony világban”. 1st annex of Government resolution 1163/2020. (IV. 21.). *Magyar Közlöny*, issue 81 of 2020, 2101–2119.

areas of AI developments, and processed the relevant strategies of the European Union and the Hungarian AI strategy.

In the second chapter, I presented the development and importance of psychometrics, which is the basis of online political influence campaigns, its adaptation to the world of social media, and its exploitation in political influence campaigns. I examined the use and role of online influence campaigns in the Brexit process and Donald Trump's rise to power. I reviewed the military methodology behind political campaign strategies and NATO's Military Policy on Strategic Communications.

In the *third chapter*, through the presentation of military uses of AI, I reviewed the most important trends and technologies, as well as the impact of new developments on warfare. I presented the approach of NATO, the United States of America, the United Kingdom, China and Russia in relation to AI, and examined the main American and British military developments in the field.

In the *fourth chapter*, through the examination of modern intelligence, I presented its basic tasks, as well as the intelligence cycle and its criticism, and I reviewed the tasks of the independent branches of intelligence. I examined the development, significance and use of Social Media Intelligence (SOCMINT).

I presented the structure and system of the US Intelligence Community, the current National Intelligence Strategy, and the relevant findings of the National Security Commission on Artificial Intelligence.

I reviewed the concepts related to Information Operations and Cyber Operations as special tasks of intelligence, the history of their application, and the relevant organizations and strategies of the United States of America and NATO.

I examined organizational theory and management models relevant to intelligence reform, as well as organizational change management theories. As a case study in organizational theory, I analyzed the reform of the Central Intelligence Agency (CIA) both from the point of view of intelligence and organizational theory.

In the *fifth chapter*, I presented the concept, tasks and role of intelligence analysis in the intelligence cycle. I reviewed the system and methodology of analysis in the US Intelligence Community, paying particular attention to analysis and evaluation, the preparation of briefings (production), dissemination, and the management of databases.

In the *sixth chapter*, I presented the US Intelligence Community's approach to the possibilities of using specialized AI-based software. Primarily, by reviewing the capabilities provided by private companies selling AI-based intelligence software and services, I presented

the opportunities that new technologies provide for independent branches of intelligence (OSINT, SIGINT, GEOINT, IMINT, MASINT) and cyber defense.

In the *seventh chapter* – mainly by examining the fusion and task management systems offered by dominant IT companies in the sector – I presented the opportunities provided by AI in the field of intelligence analysis and evaluation. I also analyzed the capabilities of the US Department of Defense's new data warehouse system.

### **Summary of conclusions**

**During the development of intelligence services, it must be taken into account that digital innovation, the breaking down of organizational barriers and the development of the training system of the services are in a dialectical relationship, influencing and presupposing each other.** These three basic elements of the reform must interweave the fabric not only of the separate services, but of the entire intelligence system, otherwise, as isolated islands, they are not only doomed to failure, but may also cause work process anomalies and pose security risks.

With the introduction of new technologies, the services must constantly revise their organizational structure and procedures, because they were developed for different circumstances. During the reforms, internal regulations and procedures should not be taken as revelations carved in stone, since they were made in the past, in past situations. Instead of their solutions, we must take the goals of our predecessors into account. It is a wrong approach to use the solutions of analog systems as a basis for digital technologies.

**Another obstacle to the effective use of AI in intelligence is the entrenchment of the 20th century organizational structure and work organization.** The outdated organizational structure makes intelligence staff disinterested in the introduction of improvements, therefore, the reforms must be backed by a clear and unambiguous intent of the leadership. The monolithic, functional separation model must be replaced by a task-oriented structure and supplemented with the flexibility provided by strategic networks. By using general examples already in operation, the new solutions must be adopted depending on the tasks, needs and possibilities of the given service, which requires the experience and will of the management, as well as the dynamism of those of the executive staff who require change.



**Training and organizational restructuring in itself will not eliminate the overload of the human workforce, because its main cause is the absence or low level of automation.**

Lacking automation, services do not have the necessary capacities to expand modernization.

In the absence of appropriate personal and organizational prerequisites for the introduction of new technologies, costly developments will not lead to positive results and may even hinder daily work. Validation of access rights in IT systems requires special care, creating the need of cooperation between IT and security professionals. Failure to do so almost guarantees a breach of confidentiality, but the fear of this cannot be an excuse for the failure to change. The principle of "need to know/right to know" can be enforced better and more safely with suitable IT systems than by erecting bureaucratic walls between disciplines, which partially sacrifices efficiency. With the proper application of modern, dedicated intelligence software systems, a level of security can be achieved which is incomparably higher than that of "analog" solutions.

It is important to emphasize that reforms should be introduced continuously, but carefully, with a dynamic and experimental approach. It is advisable to introduce new solutions in smaller groups, on an experimental basis, to synthesize the experiences gained in this way, and then to apply those to the entire system. The reform of the sub-areas and their impact on each other must be constantly reviewed, enabling rapid correction.

**The use of artificial intelligence causes a qualitative and quantitative paradigm shift for intelligence as a whole.** The information-sharing capabilities of the platforms also represent a new opportunity for cooperation between various branches of intelligence.

The independent branches of intelligence and the opportunities provided by AI for cyber defense can be grouped as follows.

**Open Source Intelligence (OSINT)/Publically Available Information (PAI):** AI-based OSINT systems are suitable for mass monitoring, collection, translation, organization, pre-evaluation, and transmission of information found on the internet. The information in the database is easy to search. More advanced systems are suitable for identifying people, characters<sup>12</sup> (e.g. graffiti) and objects<sup>13</sup> from images and videos. OSINT systems also have SOCMINT capabilities either integrated or as a separate module.

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<sup>12</sup> Optical Character Recognition – OCR.

<sup>13</sup> Object Recognition – OR.

**Social Media Intelligence (SOCMINT):** SOCMINT systems meet the specific requirements of intelligence gathering through social media. For the strategic use of SOCMINT information, the manual, individual investigation and monitoring of social media profiles, as well as their analysis and evaluation, is not sufficient in itself. The number of persons, groups and networks detected during SOCMINT activity can easily reach an order of magnitude which exceeds the limited human resource capacity of intelligence services and law enforcement organizations. Therefore, it is advised to use specialized software that substitute part of human activity. Many companies offer such solutions. The common feature of the software packages is that they offer integrated solutions for automated detection of SOCMINT and PAI sources, the extraction of information and the monitoring of social media sites (also blogs, chat rooms, etc.), and the visualization, analysis and evaluation of extracted information. Some of the software packages also include advanced translation programs. The drawing of relationship networks, the (semi-)automatic extraction of metadata,<sup>14</sup> and the sentiment analysis of groups can also be considered a general feature. The most advanced solutions are able to create and manage vast amounts of social media handles,<sup>15</sup> thus greatly increasing the amount of extracted information. The use of this solution is also justified if the target persons and groups communicate in large numbers openly or using a low level of operational security (e.g. migration, demonstrations, etc.). In the future, it is expected that technologies enabling the automated production of written content<sup>16</sup> will also be used, in order to create even more lifelike handles.

Some companies specialize in sub-areas of SOCMINT, such as semi-automatic creation and management of handles. Such software allows a virtual persona to be born online in minutes based on the legend created by intelligence services and law enforcement organizations. The method ensures that minor errors and inconsistencies, which are almost unavoidable during manual input, do not occur. Cover profiles enable penetration into closed user groups and the "dark web" (the password-protected, closed part of the internet). Thoroughly developed, software-managed and maintained handles make it possible to detect and monitor illegal or adversarial activity on social media, to identify target persons and to extract information about them.

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<sup>14</sup> The activity, friends, etc. of the users of the social networking sites.

<sup>15</sup> Cover profiles.

<sup>16</sup> Natural Language Generation – NLG.

**Human Source Intelligence (HUMINT):** In the information society, creating a legend that underpins HUMINT activities is unthinkable without a well-planned and maintained digital presence. The information displayed on different internet interfaces must be coherent, and the activity shown on social media must reflect the image of a real person. Human sources become suspicious if the person approaching them does not have an extensive online presence. When applying solely manual methods, this is difficult and time-consuming, and the possibility of making mistakes is high, therefore it is best to use options provided by virtual HUMINT even in the case of classic HUMINT activities.

SOCMINT systems also create opportunities for HUMINT to discover and approach new contacts. It is therefore advisable to establish cooperation between SOCMINT and HUMINT organizations, since HUMINT specialists can continue their work where the possibilities of SOCMINT are exhausted.

**Signals Intelligence (SIGINT):** SIGINT deals with more data compared to other branches of intelligence, therefore AI-based SIGINT systems primarily provide assistance in the (semi-)automatic processing and analysis of acquired big data. This is particularly important in the case of data from national telecommunications and internet service providers, with particular regard to metadata (call time and duration, geographical location of participants, types of devices and their operating systems, etc.) and selectors (phone numbers, e-mail addresses, social media and chat program profile names and unique identifiers, etc.). Typically, SIGINT software packages are also capable of network analysis, transcribing and translating intercepted speech, and voice recognition. The basis of the analysis here is also entity extraction.

**Image Intelligence (IMINT):** The application of AI has created the possibility of widescale and even automatic processing of images done by satellites, reconnaissance aircraft, surveillance cameras, etc. Based on their databases, such systems are able to discover various objects appearing on images with increasing accuracy, so their abilities in such tasks already exceed those of human IMINT analysts. At the same time, they can be most useful as assistants to IMINT analysts, because by making the handling of acquired images and databases easier, the software greatly facilitate the performance of more complex analyses. Several companies already offer services that provide high-resolution satellite images from anywhere on Earth, which can be compared with images taken decades ago.

**Geospatial Intelligence (GEOINT):** GEOINT provides added value by visualizing, organizing and comparing information, therefore the potential uses of AI are probably the

widest in this field. Utilizing GEOINT software and services, high-precision maps, presenting the real situation can be created based on own or purchased satellite images. Several companies are already able to produce 3D maps based on satellite images and images generated by Synthetic Aperture Radar, on the basis of which the terrain can be explored virtually. Such high-precision software can be suitable for covering the entire surface of Earth. High-precision maps that include historical information and are connected to arbitrary databases play a key role in revealing anomalies and generating forecasts.

In terms of exploiting GEOINT opportunities, the highest level of technology is probably represented by the "Sentient" system developed jointly by the National Geospatial-Intelligence Agency (NGA) and Google. By applying geospatial intelligence technologies, Sentient is able to integrate information from all branches of intelligence in real time covering the entire Earth.

**Cyber defense:** The foundations of cyber protection systems are databases created and maintained by the developers containing malicious software, the organizations using such tools and their procedures. They monitor IT systems of the protected organization in real time and issue warnings in the event of cyber attacks and cyberspace intelligence attempts. At the same time, they are able to start to eliminate threats and mitigate damage. With automated analysis and investigation tools, they are suitable for identifying the offending person or organization, on the basis of which they can also carry out countermeasures. Cyber operation simulations, exercises and trainings can also be carried out using the systems.

**Measurement and Signature Intelligence (MASINT):** The use of artificial intelligence-based data warehouse systems is now essential for the efficient processing of information from increasingly sophisticated sensors providing ever more data. GEOINT systems have a huge potential in the effective use of MASINT information, either by visualizing sensor data or comparing it with information from other intelligence branches. Similar results can be achieved by using data fusion systems.

**Intelligence activities are based on information; all functions of intelligence are information-driven. The totality of the information obtained by data collectors and the information needs of decision-makers are only viewed as a whole by the leaders of**

**intelligence services and the organizations dedicated for analysis, therefore they are at the center of the intelligence cycle.<sup>17</sup>**

**AI can potentially be used in all activities of analytical work.**

**Analysis and evaluation of information:** The simple and rapid availability of information greatly facilitates clarification, the use of correct and accepted expressions, spelling check (also for technical terms), distance measurement, and the display of settlements, objects, and processes on maps. Advanced systems can support the standardization and quality assurance of simple analytical procedures (comparison, samples, etc.) and structured procedures (biographies, summaries of military exercises and budgets, background information reports, etc.). It is also possible to collect and organize information into report drafts (matrixes, risk analysis models, regional security complex models, etc.).

**Preparation of briefings (reports):** In addition to the use of templates that automatically fulfill form and content requirements, the quick availability and exportability of information, as well as task management and collaboration options greatly facilitate and speed up report writing. It is important not to waste valuable time with the collection and organization of existing information, and the formulation of requests of information (RFI) tailored to the different data collectors. It is possible to automatically prepare simple reports (e.g. press reviews). The time freed up in this way can be used to create the added value of analysis (conclusions, evaluations and forecasts).

An important, but difficult to fulfill requirement when solely utilizing traditional methods, is the visualization of the information contained in the reports, in which advanced systems can also be of great help.

The collaboration systems enable the parallel preparation of different parts of the reports, which are transparent to all participants, as well as the quick and efficient control and approval of reports. With effective communication options, senior management and the management of the analysis organization can easily share their own evaluation with the analysts, which can be a useful guideline during the preparation of reports.<sup>18</sup>

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<sup>17</sup> During the management of the data collectors' information-gathering activities, analysts are equal partners of data collectors, the central role of the analysts does not constitute a hierarchical difference.

<sup>18</sup> In the current, pyramid-like, monolithic structures, analysts rarely come into direct contact with management. The flow of information through middle managers is too slow and haphazard to provide detailed guidance in daily work.

**Management of databases:** Solutions suitable for handling big data provide multi-level, differentiated, optimized query options (providing information relevant not only for intelligence reports but also statistical data for evaluating the work of data collectors, or information required for strategic reports to monitor the long-term processes of the target country or region, etc.). OSINT information can be collected automatically in external and internal databases of the analysis organization. OSINT, as well as IMINT and GEOINT, processing open source information wholly or in part, offer additional special possibilities, since their application can be used to realize collaboration on protected but unclassified systems, speeding up and simplifying cooperation both within and outside the services, especially with regard to the elements of the services operating in remote locations. OSINT information is particularly suitable for establishing common (basic) situational awareness either within the services or for the intelligence system as a whole, as well as between intelligence and decision-makers.

Cloud-based data repositories greatly facilitate the national and international cooperation of intelligence services, as it is possible to grant access to arbitrary parts of the database or simply export the desired information.

**Management of the reporting system:** Task management and reporting systems enable the import and easy maintainability of lists of users (decision-makers) and their information needs. Based on these, the distribution lists of reports can be easily compiled, and artificial intelligence based on machine learning can also make suggestions. Primarily in the case of simple reports (collections) created on the basis of open information, not only the creation, but also the dissemination can be automated.

With the help of modern database management systems, information dissemination can move away from sending reports. Organizations obliged to cooperate and decision-makers can get access to parts of the database, so they can query and export the necessary information themselves. This approach can be implemented most easily in the case of open information, because systems enabling secure, cloud-based management of classified data are expensive and their creation requires the development of national standards. As an alternative solution, Collection Coordination and Intelligence Requirement Management (CCIRM) can also be provided with access to the database, enabling simple information needs to be answered without the involvement of analysts.

**Management of the intelligence cycle (management of information-gathering activities of data collectors):** Fusion systems can be used to speed up and improve the quality

of the interpretation of tasks. Analysts or a dedicated CCIRM organization can easily collect the information already available (including open source information with the help OSINT organizations) and determine the required missing information and its nature.

The management of the services can prioritize information needs and, if necessary, create individual virtual working groups to answer them, defining their leadership and powers. It is helpful if the ongoing tasks of the affected staff can be easily queried, so that their workload is transparent, and their existing tasks can be postponed to a later time on the instructions of the manager.

RFIs formulated in order to obtain required information should contain the relevant information that is already available, which not only prevents duplications and thus unnecessary work, but also provides analytical support for data collectors. AI can greatly contribute to this. Since, by utilizing modern data management systems, the first step of task interpretation is to collect the information already available, it is easy to share that with data collectors.

With the aid of modern database management systems, the activities of data collecting organizations and individual employees can be easily evaluated, thereby increasing the objectivity of the evaluation of the information gathering activities of data collectors.

**Operational support:** The utilization of database systems can increase the quality and extent of analytical support provided to data collectors. In addition to providing relevant information to RFIs, this can be done by providing data collectors with access and query options to parts or the whole extent of analysis databases. Access to data may also be well utilized for intelligence gathering operations. In the case of military operations, intelligence organizations must establish similar cooperation with operational planners and reconnaissance and operations forces. By providing differentiated access to data repositories, the preparation of operations (e.g. in the form of training and the provision of information necessary for operation planning) can be more effectively supported.

AI capabilities based on OSINT, IMINT and GEOINT offer a special opportunity also in operational support, since these disciplines provide (possibly real-time) information that can be easily shared and utilized.

## **Scientific results**

During the research, I explored the desirable functioning, structure and expected technical level of the modern intelligence system and the analytical organization within it. After that, I examined in detail trends of technological developments affecting the independent branches of intelligence as well as analytical activities and the appropriate ways of their utilization, which led to new scientific results not only from a domestic but also from an international point of view. By proving the hypotheses, I pointed out that the desired capabilities are only attainable if AI is utilized on the basis of the general theory of intelligence, and we adapt the organizational framework to new technologies and procedures. This holistic approach to technological and organizational correlations can also be considered a novel approach to intelligence activities.

During the writing of the dissertation, I achieved the following scientific results.

1. I was the first in Hungary to scientifically address Social Media Intelligence (SOCMINT). During the research, I determined the place of SOCMINT within Open Source Intelligence (OSINT) and explored the possibilities offered by SOCMINT.

2. I explored the operation of AI-based political influence campaigns. I proved that the effectiveness of influence campaigns was greatly increased by the utilization of artificial intelligence, big data and psychometrics, defining the methodology of political campaigns for a long time.

3. I organized and updated information and assessments related to the structure and operation of the US Intelligence Community. I explored the interrelationships between technological development, organizational transformation and the training of intelligence personnel. Based on my research, I have proven that the inevitable technological development only leads to a significant increase in the capabilities of intelligence if it is accompanied by a change in the organizational structure of the services and the attitude of the personnel.

4. I defined the possibilities of using AI-based software for independent branches of intelligence and analysis. I proved that software offered by IT companies on a commercial basis can greatly expand the capabilities of intelligence services of countries with more modest resources, creating opportunities that were previously considered the exclusive prerogative of great powers. I proved that the main challenge for modern intelligence is no longer the availability of advanced software, but the integration of solutions offered by the private sector.



## **Recommendations**

The thesis provides a broad overview of the opportunities and challenges presented by the spread of artificial intelligence. This knowledge is now essential for those working in senior positions in public administration or preparing for a leadership career. In my opinion, the information contained in the first three chapters of the dissertation (The Concept of Artificial Intelligence, its Subfields, and the National Security Significance of its Spread; The Utilization of Big Data in Influence Campaigns; The Military Use of Artificial Intelligence) may, in my opinion, well supplement the common training material of the Military Sciences and Officer Training Faculty, the Faculty of Public Governance and International Studies, and of the Faculty of Law Enforcement of the University of Public Service (UPS), as well as of doctoral schools and leadership training courses, among other institutions.

The fourth and fifth chapters (Tasks and Structure of Modern Intelligence; Tasks and System of Modern National Intelligence Analysis) can contribute to the undergraduate and master's degree programs organized by the National Security Institute of UPS.

Finally, the sixth and seventh chapters (The Potential of Utilizing Artificial Intelligence in the Independent Branches of National Intelligence; The Potential of Utilizing Artificial Intelligence in National Intelligence Analysis) may serve as a practical guide for the development of civil and military intelligence, law enforcement, and counter-terrorism services as well as for efforts to enhance cooperation between them. The reform of the US Intelligence Community could serve as an example, where independent services operate according to uniform principles and professional-technological standards, smoothing their cooperation and improving their usefulness for decision-makers. The creation of wide-scale application of artificial intelligence for intelligence exceeds the capabilities of individual services, especially when issues in connection with the Hungarian language are concerned. Achieving the goals set out in Hungary's Artificial Intelligence Strategy is only possible through joint effort of the services with the involvement of Hungarian IT companies and academia. In addition to the participants, the entire Hungarian society could benefit from the results of cooperation between the three areas.

## **Practical applicability**

I chose the topic of my doctoral thesis based on my previous domestic and international professional experience, recognizing the personnel, organizational and technological

challenges facing our national intelligence system, with the intention of making the best possible use of the opportunities provided by the Zrínyi Defence and Armed Forces Development Program. I am convinced that national intelligence analysis is the central element of national intelligence, the development of which is vital for the national intelligence system as a whole, for national defense, and the modernization of Hungarian state administration as well.

The information contained in the dissertation can provide support in the planning and implementation of the organizational and technological modernization of the national intelligence system, as well as in the development of necessary human competencies. It is my intent that the presentation and evaluation of products and services representing current state-of-the-art technology, broken down into the independent branches of intelligence as well as to analysis functions, could serve as a professional guide for organizations introducing or developing artificial intelligence.

#### **Author's publications on the subject<sup>19</sup>**

1. ERDÉSZ Viktor (2022): Organizational theory aspects of the intelligence enterprise. *National Security Review* 8. évf. 1. szám 16–29.
2. ERDÉSZ Viktor (2021): Az IDGA konferenciája a mesterséges intelligencia szerepéről a hírszerző elemzés-értékelésben. *Felderítő Szemle* 20. évf. 1. szám 75–89.
3. ERDÉSZ Viktor (2020): A mesterséges intelligencia alkalmazásának lehetőségei és kockázatai a közigazgatásban és a gazdaságban. *Felderítő Szemle* 19. évf. 4. szám 78–91.
4. ERDÉSZ Viktor (2020): Az irányítás és az elemzés-értékelés rendszere az amerikai Hírszerző Közösségben. *Nemzetbiztonsági Szemle* 8. évf. 2. szám 3–17.
5. ERDÉSZ Viktor (2020): A mesterséges intelligencia fogalma, jelentősége és hatásai a védelmi szektorra. *Felderítő Szemle* 19. évf. 1. szám 118–132.
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## **Professional and academic curriculum vitae**

### **Personal data**

Family Name: ERDÉSZ

First Name Viktor

Date of Birth: 17<sup>th</sup> December 1981

Place of Birth: Budapest, Hungary

Nationality: Hungarian

Rank: Captain

**Professional Military Service** since 2011

### **Military Education:**

2010 NATO Open Source Intelligence course, Oberammergau, Germany

2018– National University of Public Service, Doctoral School of Military Sciences

### **Civilian Education**

2000–2008 Eötvös Loránd University, Faculty of Law and Political Sciences (specialization in political sciences)

### **Language Skills**

Hungarian	native
English	STANAG 6001 3-3-3-3 - fluent
German	Grade A2 - basic conversation

### **Career**

2006–2007	Strategic Forecasting, Inc. (Stratfor)
2009–2012	Military Intelligence Office (HU MIO)
2012–	Military National Security Service (HUN MNSS)