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Modern Battlefield and Necessary Reflection in Military Leader's Education and Training

Moderní bojiště a nezbytná reflexe při vzdělání a výcviku budoucích leaderů

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Abstract: The article describes attributes will influence character of modern warfighting and presents the basic approach to prepare commanders and leaders of "new generation". The operational environment describes determinants and characteristic of today's and future warfighting. Technological development as booster, change the tools and the procedures but not the nature of war. Level of training and leadership quality multiplies combat power. The key findings and recommendations support fundamental idea of ability to lead and manage hybrid systems in volatile multi-dimensional environment, using various tools and sources, appropriate to specific environment[1] and specific tactical level mission[2], stressed in last chapter as result of this study. The article´s aim is support discussion, which directions we will adapt currently ongoing or newly creating study programs, preparing new generation of warriors – leaders.

Abstrakt: Článek popisuje atributy, které budou ovlivňovat character moderního boje a prezentuje možné přístupy k přípravě velitelů a leaderů nové generace tak, aby byli schopni zvládnout budoucí výzvy. Operační protředí popisuje hlavní charakteristiky současného a především budoucího válčení. Technologický rozvoj je vnímán jako "urychlovač", jež změní nástroje a procesy, nikoliv však principy válčení. Úroveň vycvičenosti a kvalita leadershipu znásobuje bojovou sílu.

Key words: Education and Training; Modern Battlefield; Multi Domain Warfare; Operational Environment; Technology.

Klíčová slova: Vzdělání a výcvik; modern bojiště; multidoménový boj; operační prostředí; technologie.

1 Political, Military, Economic, Social, Information, Infrastructure, Physical Environment and Time

2 Mission, Enemy, Terrain, Troops available, Time, Civilian considerations

INTRODUCTION

Security is one of basic national interest of the state. The security environment is changing, let´s say, world is VUCA (Volatile, Uncertain, Complex, Ambiguous)[3]. After quite calm decades, from perspective of European states, suddenly erupted territorially limited conflict of high intensity at Ukraine. Furthermore, we can mention also another instable locality as Balkan, Caucasus, African Sahel, Arctic competition, or still ongoing conflict in middle East, and last but not least Indo-Pacific area tensions. All areas mentioned above are important for European security from multiple reasons.

The operational environment, which is important from military standpoint appears to be diverse and unstable.

The very important factor-is a technology, which can decisively support military effort to fulfill task on all levels – strategic, operational and tactical. The understanding operational variabilities (as explains for ex. Hrnciar[4],[5]), ability to adapt in environment and task and capability to fully use technologies is challenge for leaders of future.

The aim of article is to recommend approach to prepare new leaders, which will operate and lead teams in various environment, using different tools, adequate to 21st century.

1 METHODOLOGY

The usual and basic research methods were used as well as phenomenon analysis, analytical induction[6], empirical experience and triangulation[7]. The synthetize view on future conflicts was used to look for future leader's abilities. The comparison of relevant literature and add their own statements, using expertise and holistic view led into the general approach to education of new leaders. Structure and chapters of the article reflects methodologic sequence of thinking about topic. Statements are based on mix of deep analysis of literature and logical way outs from the problem. Using deductive and inductive methods of research, the outputs of article boost academic and expert discussion.

3 Bennett, N., Lemoine, J.: What a difference a word makes: understanding threats to performance in a VUCA world. Bus. Horiz. 57(3), 311–317 (2014)

4 Hrnčiar, Michal. 2018. "The Counter Insurgency Operating Environment." *International conference KNOWLEDGE-BASED ORGANIZATION* 24 (1): 87-92. https://doi.org/10.1515/kbo-2018-0013.

5 Hrnčiar, Michal. 2017. "Keystones of irregular warfare". International conference KNOWLEDGE-BASED ORGANIZATION 23(1): 150-154. DOI:10.1515/kbo-2017-0023

6 Hendl, Jan. 2016. *Kvalitativní výzkum: základní teorie, metody a aplikace*. Čtvrté, přepracované a rozšířené vydání. Praha: Portál, p. 130 and 284.

7 Ref. 2, p. 151.

The article is not focused on leadership as a discipline, like for ex. Marchado and Brandao [8] or on selectively described issues from small units level perspective, like for ex. Nohel et.al. [9,10], Stodola et.al.[11,12] or Ivan eta al.[13] The article is focused for statements, which determinates "Training", as a part of DOTMLPFI acronym, which is perceived from "DOTMLPFI matrix perspective", using explanation of Baxa[14].

On the other hand, leadership perspective and "bottom up" perspective is necessary, reflected and incorporated. Therefore, this topic is viewed from tactical leader´s perspective, what is also limitation. Article also reflects realistic power and capacities[15] of Czech Republic and Army of the Czech Republic, as a part of society.

2 OPERATIONAL ENVIRONMENT AND TECHNOLOGICAL DEVELOPMENT CHARACTERISTICS

This chapter describes and analyses operational environment and future development characteristics, what will open new possibilities for future warfighting.

The principal allied publications highlight the following situations of instability that are likely to characterize the future: competition for access to the global commons, the

8 Machado, A.M., Brandão, C. (2019). Leadership and Technology: Concepts and Questions. In: Rocha, Á., Adeli, H., Reis, L., Costanzo, S. (eds) New Knowledge in Information Systems and Technologies. WorldCIST'19 2019. Advances in Intelligent Systems and Computing, vol 931. Springer, Cham. https://doi.org/10.1007/978-3-030-16184-2_73

9 Nohel, J., Flasar, Z. (2020). Maneuver Control System CZ. In: Mazal, J., Fagiolini, A., Vasik, P. (eds) Modelling and Simulation for Autonomous Systems. MESAS 2019. Lecture Notes in Computer Science(), vol 11995. Springer, Cham. https://doi.org/10.1007/978-3-030-43890-6_31

10 Nohel, J., Stodola, P., Flasar, Z. (2021). Combat UGV Support of Company Task Force Operations. In: Mazal, J., Fagiolini, A., Vasik, P., Turi, M. (eds) Modelling and Simulation for Autonomous Systems. MESAS 2020. Lecture Notes in Computer Science(), vol 12619. Springer, Cham. https://doi.org/10.1007/978-3-030-70740-8_3

11 Stodola, P., Drozd, J., Nohel, J., Michenka, K. (2020). Model of Observation Posts Deployment in Tactical Decision Support System. In: Mazal, J., Fagiolini, A., Vasik, P. (eds) Modelling and Simulation for Autonomous Systems. MESAS 2019. Lecture Notes in Computer Science(), vol 11995. Springer, Cham. https://doi.org/10.1007/978-3-030-43890-6_18

12 Stodola, P., Drozd, J., Nohel, J. (2021). Model of Surveillance in Complex Environment Using a Swarm of Unmanned Aerial Vehicles. In: Mazal, J., Fagiolini, A., Vasik, P., Turi, M. (eds) Modelling and Simulation for Autonomous Systems. MESAS 2020. Lecture Notes in Computer Science(), vol 12619. Springer, Cham. https://doi.org/10.1007/978-3-030-70740-8_15.

13 IVAN, Jan, Michal SUSTR, Ondřej PEKAR a Ladislav POTUZAK. Prospects for the Use of Unmanned Ground Vehicles in Artillery Survey. In: Proceedings of the 19th International Conference on Informatics in Control, Automation and Robotics [online]. SCITEPRESS - Science and Technology Publications, 2022, 2022, s. 467-475 [cit. 2023-07-25]. ISBN 978-989-758-585-2. Dostupné z: doi:10.5220/0011300100003271

14 BAXA, Fabian. Jak rozumět zkratce DOTLMPFI v podmínkách Armády ČR: Trendy výstavby ozbrojených sil České republiky ve vazbě na vývoj bezpečnostního prostředí. Brno: CBVSS, 2015, 30 s.

15 BRIGZALOVÁ, Lenka, Vojtěch MÜLLNER, Jakub ODEHNAL a Jiří NEUBAUER. Do Economic Determinants Affect the Size of Military Spending?. Vojenské rozhledy [online]. 2022, 31(3), 63-83 [cit. 2023-07-25]. ISSN 12103292. Dostupné z: doi:10.3849/2336-2995.31.2022.03.063-083

possibility of the opening of an eastern flank, the impact of disruptive technology, increased cyber threat, widespread natural disasters, a demographic explosion in megacities, the emergence of conflict between non state actors, the ability to dominate space, the threat of interstate conflict, the use of weapons of mass destruction.

From this complexity NATO has derived the 5 prospective military strategies that underline the characteristics, that will define a modern military force, such a force will have to be: credible, agile, aware, networked, and resilient. These characteristics are not only important within NATO but are equally essential at a national level. [16]

Characteristics of future conflict will be:[17,18,19,20,21]

- Prevalence of asymmetric / non-traditional and hybrid conflicts as opposed to what was previously termed symmetric or traditional conflict;
- Possibility of high intensity symmetric conflict can´t be screened out, including nuclear weapons utilization;
- Persistence of conflicts, requiring long term intervention to produce long term effects;
- Congestion of parts of the battle space, ranging from congested entry points to the fact that many engagements will take place in littoral or urban areas with the presence of a large number of actors (multinational, joint and governmental, non-governmental, international, population, etc.) in the area of operations;
- Difficulty to identify key targets. Given the large range of actors present in a congested battle space it will be very difficult to discriminate between benign and malign actors;
- Vulnerability of forces, in particular lines of communication, military infrastructure and aerial port of debarkation (APOD) / seaport of debarkations (SPOD);
- Increasing restrictions imposed by national and international laws and public support.

It is necessary to highlight facts and statements, which are more descriptive to future deployment of Czech army, but respecting the overall trends.

16 *Future operating environment post 2035: Implication for Land forces*. 2019. Italian Army Headquarters.

17 "THE FUTURE OPERATIONAL ENVIRONMENT, ITS IMPACT ON THE DIFFERENT COMPONENTS, THE ROLE OF LAND FORCES AND THE PRIORITIES TO BE GIVEN AS FAR AS FORCE ENGAGEMENTIS CONCERNED." 2018. , no. 12: 28. https://finabel.org/wp-content/uploads/2018/12/THE-FUTURE-OPERATIONAL-ENVIRONMENT-ITS-IMPACT-ON-THE-DIFFERENT-COMPONENTS-THE-ROLE-OF-LAND-FORCES-AND-THE-PRIORITIES-TO-BE-GIVEN-AS-FAR-AS-FORCE-ENGAGEMENTIS-CONCERNED-.pdf.

18 Security 2040: Perils and Promise Over the Near Horizon. Santa Monica, CA: RAND Corporation, 2018. https://www.rand.org/pubs/corporate_pubs/CP897.html.

19 "Global trends 2040" A more contested world." : 12. https://www.dni.gov/index.php/gt2040-home/gt2040-deeper-looks/future-of-the-battlefield.

20 The Free Library. S.v. Joint Operating Enviroment 2040.." Retrieved Sep 26 2023 from https://www.thefreelibrary.com/Joint+Operating+Enviroment+2040.-a0668195954

21 AFC Pam 525-2: FUTURE OPERATIONAL ENVIRONMENT: FORGING THE FUTURE IN AN UNCERTAIN WORLD 2035-2050. 2020. U.S. ARMY FUTURES COMMAND.

Technology will strongly multiply the force potential, in case of correct utilization. This statement is interesting for armies, which do not respond with amount of sources and has to dispone with quality, instead of quantity. The multi-domain or cross-domain battles will be focused on impacting the people, living in urban areas. Territory of Europe is more urban or rural, than natural. Climatic change and technological development can open new challenges for competing, as natural sources, energetic sources and components, migration and this challenge can be overtaken from diplomatic battle field to military operations. In fact, all instruments of national power - DIME (Diplomatic, Information, Military, Economic) can be used and combined. We can face internal or external instability. This evoke the idea, that the forces will operate in environment, where will solve wide spread portfolio of missions, in instable conditions, speeded by technological development, operating in more domains. Rapid adaptability not only of armies, but also of society as itself could be crucial.

Technological development was and is accelerator for reaching new capabilities. Machines and teams are getting more lethal, more quick, more effective. Human crews and operators has to be adapted for new devices, as soon as DOTLMPFI system.

Based on analysis of relevant documents, [22,23,24] are presented technological trends, which will directly influence ways of warfighting and related to this, also requirements for leaders.

From new technologies, we can mention as biggest game changers as following: Unmanned systems, additive manufacturing capabilities (as a 3D printing), biotechnologies improving soldiers, new energy technologies (battery storages), directed energy weapons, Big data and advanced analytics, artificial intelligence, autonomy, space technologies, hypersonic.

The technological development will be characteristic by: connectivity, lethality, autonomy, sustainability. Technologies will enable from viewpoint of operations: fast offense, zone defense, distributed warfare, hybrid and non-kinetic warfare, multi-domain warfare.

By new solutions will be equipped following actors: great and regional powers, non-state actors (as private companies), insurgent and terrorist groups.

The mixture of new technologies will cause most of abilities more available, current sanctuaries less safe, heightened risk of miscalculation and escalation, more deadly-though not necessary decisive.

22 STO. 2020. "Science & Technology Trends 2020-2040: Exploring the S&T Edge." Www.nato.int. https://www.nato.int/nato_static_fl2014/assets/pdf/2020/4/pdf/190422-ST_Tech_Trends_Report_2020-2040.pdf.

23 Fučík, Jakub. 2021. *Technologický vývoj: implikace pro schopnosti ozbrojených sil ČR 2020*. Brno: Univerzita obrany.

24 "The Future of the Battlefield." 2021. Global trends 2040: 12. https://www.dni.gov/files/images/globalTrends/GT2040/NIC-2021-02493--Future-of-the-Battlefield--Unsourced--14May21.pdf.

Despite technological development, principals and paradigms of military tactics[25] will not change.

Conflict in Ukraine as important reference point

The conflict between Ukraine and Russia shows us lessons about this type of conflict. This single lesson can highlight generally known statements, or approaches, which can be applicable for future warfighting.

If we are to be prepared for future conflict, it is vital that we learn from experience and adjust our thinking about war[26]. It is important to mention, that this conflict is one of varieties of conflicts and does not mean, that next war will be the same or similar. There still exists typical trap of preparation for past conflict. Still, there are some points or lessons and statements, which can be crucial for preparation for future conflict and implying education and training [27].

Ability to cover all warfighting functions using unusual and non-traditional tools, techniques and actors. Visible was support of STARLINK, which enabled intelligence and communication on all levels. Using commercial tools and applications can significantly help. There increased amount of "home made" applications, installed into tablets and smart phones. Operators and tactical level commanders use them. The other topic is operational security, which can be weak part of these systems. We can mention much more examples, like using commercial drones, hunting equipment etc.

From beginning of conflict, Ukraine forces demonstrated high level of adaptability and flexibility, using opportunities. They used terrain, weaknesses and mistakes of enemy for their own success, despite fact, the combat ratio did not favorited them. They used appropriate tools and techniques, tactics and procedures (TTP´s). Typical examples were ambushing convoys in first months of war in North-East Ukraine, destroying cumulating forces by bridging Siverskyi Donets in May 2022 or defending Hostomel airport.

Leadership, as a core warfighting function is, based on authorities, appropriate tools and positive examples. General Syrskyj, general Zalushnyi or general Budanov are presented as examples of "new generation leaders" defending their homeland. They have visible results of their duty and they are used as part of STRATCOM. We can mention, that the morale of forces is partly and in / directly influenced by specific personalities. At tactical level is valid the same principle. Much more is visible mission command approach, than centralistic approach of command and control. Coherence of leadership from strategical to tactical level can positively influence collective spirit, what is glue of unity of forces facing pressure. This fact can underline for opposite side, esp. the part of opposites - The Wagner Group. The professional part has own values and specifics, which can

25 Zůna, Pavel. 2021. *Paradigmata vojenské taktiky*. Litomyšl: H.R.G. spol. s r.o.

26 McMaster, H.R. 2017. "Learning from Contemporary Conflicts to Prepare for Future War,." Orbis 2017 (3): 303-321. https://www.sciencedirect.com/science/article/pii/S0030438717300467.

27 Spišák, Ján. 2022. "Military Aspects of the War in Ukraine." Vojenské rozhledy 31 (4): 103-118. https://doi.org/10.3849/2336-2995.31.2022.04.103-118.

be glue for the "core" of mercenaries[28] and we can mention, that this is one of reasons, why is this group most effective tool on Russian side.

Ukrainian conflict shown us necessity of synchronized and simultaneous application of arms and branches.[29] Combined arms have to reflect appropriate task organization structure, fitting with scale of operation and other variabilities.[30]

Tactical level units on both sides of conflict are equipped by drones[31]. They are able to conduct they own reconnaissance, call effective artillery fire, bring overview to commanders or deliver lethal effect on specific target. Using drones, their incorporating into small units or creating "drone units" is crucial for nowadays success in battle against well-equipped and trained opposite.

There exists much more topics, examples and lessons from Ukrainian conflict, but above mentioned, have direct impact on approach, how to prepare new generation of leaders.

The conflict, which nature was not predicted couple years ago, has happened. Territorially limited high intensity conflict, consuming amount of sources, destroying not only military targets. The techniques, tactics and procedures of 90´s, mixing new capabilities of 21st century. Which type of conflict and which nature will be next?

3 SYNTHETIZED VIEW ON THE FUTURE WARFIGHTING ON TACTICAL LEVEL

This chapter synthetize view on future conflicts, using statements from previous chapters. Their synthesis consists logical way-outs, what creates framework for explain approach to education and training of new generation leaders.

Future battlefield will take place on various territories and regions. From Central-Europe type of terrain, through forests or deserts to cities or mega-cities. Actors on battlefield at tactical level will be consist from formations of unmanned devices or manned-unmanned teams (MUM-T), through combined arms formations, modern equipped troops (for ex. exoskeletons), troops equipped by technology of 20th century, including the audience of population (not only in case of stabilization or humanitarian operations).

28 Katz, Brian, Seth G. Jones, Catrina Doxsee, and Nicholas Harrington. "Moscow´s mercenary wars: The Expansion of Russian Private Military Companies." Center for strategic and inernational studies. https://russianpmcs.csis.org/.

29 Jager, Jeff. 2018. "Challenges of mechanized and combined arms warfare: Lessons for Ukraine from Syria and Iraq." Middle East Institute. https://www.mei.edu/publications/challenges-mechanized-and-combined-arms-warfare-lessons-ukraine-syria-and-iraq.

30 Fox, Amos. C. "REFLECTIONS ON RUSSIA'S 2022 INVASION OF UKRAINE: COMBINED ARMS WARFARE, THE BATTALION TACTICAL GROUP AND WARS IN A FISHBOWL." ASSOCIATION OF THE UNITED STATES ARMY. https://www.ausa.org/publications/reflections-russias-2022-invasion-ukraine-combined-arms-warfare-battalion-tactical.

31 Franke, Ulrike. "Drones in Ukraine and beyond: Everything you need to know." Europian council for foreign relations. https://ecfr.eu/article/drones-in-ukraine-and-beyond-everything-you-need-to-know/.

There exist various combinations of conflict characteristic, related to PMESII - let's say METT-TC / PMESII matrix[32], existing in multidimensional environment and evolving, influencing by additional actors.

The power of NATO and also Czech army is in common effort. Interoperability in all fields is general requirement to face not only strong, modern equipped and prepared enemy, also hybrid threats and other crises needed military participation.

Using explanations from Zůna (Ref. 12) from perspective of areas, characteristic will be synergy across domains, using polarity of utilization of forces, ability to use continual, distributed or mixed maneuvering areas and focusing on urban areas.

From perspective of time, there will be effort to change operational tempo, sequence and frequency of activities, in order to misbalance enemy in his managing "time" entity. This trends and approach is nothing new, only is more effective and visible because of technologies. Mentioned aspect will be displayed at all levels of command and control. Specific realization at tactical level will be visible and characterized by constant movement and dispersion of formations, as a part of force protection[33].

Capacities of Czech Republic enable us create formations up to brigade level, which will be part of multinational divisions. From NATO perspective, it seems, that basic formation will be minimal brigade, maybe division level (Ref. 15), it means command structure has to be extremely mobile and connected. Mission command concept[34] will support this architecture and influence requirements to leaders. "Digital leading" will be usual.[35]

Integrating idea, which can describe one crucial point, is adaptability. Meaning from long perspective, as a wider transformation of forces and also from short term perspective, meaning changing of behavior and actions at tactical level.

All this statements create requirements on leaders. For purpose of this study, it is dealt with tactical level leaders only.

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32 Leedom, Dennis & Mcelroy, William & Shadrick, Scott & Lickteig, Carl & Pokorny, Robert & Haynes, Jacqueline. (2023). Cognitive Task Analysis of the Battalion Level Visualization Process. P. 47. Available at: https://www.researchgate.net/publication/267375938_Cognitive_Task_Analysis_of_the_Battalion_Level_Visualization_Process

33 KIMBALL, Machael J. Defining the Future Army. *Futures seminar: The United States Army in 2035 and Beyon*. Pennsylvania, USA: Centre of Strategic leaderhip: US Army war college, 2017, (4), 13-17. Dostupné také z: https://publications.armywarcollege.edu/wp-content/uploads/2022/11/3700.pdfZačátek formuláře

34 U.S. Department of the Army, Mission Command, Army Doctrine Reference Publication 6-0 (Washington, DC: U.S. Department of the Army, May 12, 2012), 1-2, https://fas.org/irp/doddir/army/adrp6_0.pdf (accessed May 21, 2017).

35 SINGER, Peter W. Tactical Generals: Leaders, Technology, and the Perils. In: Brookings [online]. Washington: The Brookings Institution, 2009, 27 July 2009 [cit. 2023-07-28]. Dostupné z: https://www.brookings.edu/articles/tactical-generals-leaders-technology-and-the-perils/

4 REQUIREMENTS ON TACTICAL LEVEL LEADERS

This chapter synthetize statements from previous chapters. Its aim is to present significant abilities for leaders. Based on these abilities can be in last chapter offered arrangements to reach them.

In 2040, nowadays students will be battalion commanders[36] and tactical level leaders in lieutenant-colonel ranks, some of them in higher positions, directly leading tactical level operations. New study program students, starting their study from 2025, will be on company level or staff officers on battalion or brigade level. Based on this fact, has been set milestone, as reference point year 2040. There will meet the appropriate status of modernization, foresight of future environment and results of education and training programs, which we have power to influence.

Tactical level leaders will use and face: various kinds of weapons and tools in multiple domains, different terrain conditions, network-centric warfighting, various social and cultural environments, variety missions and task, speeding and misbalanced time frame, various human sources and interlocutors. The authors agree with Štěpánek and Saibert[37], and their proposal of commanders competencies. But still, the most exposed and necessary abilities will be:

- Wide general overview;
- Wide scope;
- Flexibility; [38]
- Adaptability for new tools, environment and procedures";
- Ability to select necessary tools and procedures, fitting to specific task;
- Ability to take a risk in order to gain quick-action advantage.

This all has to be used in multi-domain environment, with lack of time, made by tactical level unit with possible operational or strategic level impact.

As indispensable part of requirements will be excellent English and minimal moderate level of physical shape.

36 BOYER, Al a Cole LIVIERATOS. The changing character of followers: Generational dynamics, technology and the future of army leadership. In: Modern war institute at West Point [online]. USA: West Point, 16 Jun 2022 [cit. 2023-07-28]. Dostupné z: https://mwi.westpoint.edu/the-changing-character-of-followers-generational-dynamics-technology-and-the-future-of-army-leadership/

37 ŠTĚPÁNEK, Přemysl and Richard SAIBERT. Officer's Competencies. *Vojenské rozhledy*. 2020, 29 (1), 051-070. ISSN 1210-3292 (print), 2336-2995 (online). Available at: www.vojenskerozhledy.cz

38 STŘÍBRNÝ, Jakub, František MILICHOVSKÝ, Veronika KOLEŇÁKOVÁ and Lenka ČADOVÁ. Relevance of Transactional Leadership in Czech Armed Forces: Case of Military Students. *Vojenské rozhledy*. 2022, 31 (3), 101-120. ISSN 1210-3292 (print), 2336-2995 (online). Available at: www.vojenskerozhledy.cz

This statement does not mean, that set of commander's competencies will be basically changed[39, 40].

5 IMPLICATIONS AND RECOMMENDATIONS FOR EDUCATION AND TRAINING OF TACTICAL LEVEL LEADERS

The very last chapter offers arrangements to education and training of leaders of new generation, to "don't asleep disruptive changes" and be successful leader reflecting modern warfighting with modern tools in various operational environment.

The leader must be firmly grounded in the fundamentals of tactics, technology, and leadership. This will require a greater fusion between education and training.[41]

General idea of educational and training (E&T) program should be based on overall ability to control hybrid systems in turbulent conditions, respecting European Sectoral Qualifications Framework for Military Officer[42]. Definitely, the idea of E&T curricular content should not be based on economy and management in typical conception, as some previous study programs. Very important seems to be elements of systems, their abilities, relations to other elements and new abilities, modified by modifiers. Crucial elements or groups of elements should be operated by human, therefore understanding technical issues should be necessary. Especially higher officers should be able to reduce and canalize chaotic and hazardous situations. This means, theory of control of hybrid systems as a core, complemented by disciplines according to "warfighting functions". These subjects have to add foreign languages, physical training and discipline shaping cadets with culturally-historical value, delivered also via hidden curriculum.[43]

In praxis of E&T it means, that wide overview and scope of topics require amount of time allocation, which is necessary to find. The opportunity is to include e-learning, and other online methods including online collaboration, as a part of education. This can save time and the rest of time dotation use for active methods adapted to students

39 CENTER FOR ARMY LEADERSHIP. 2013. *Commander's handbook for unit leader development*.

40 BANKS, Stephen, David ECKLEY, Silas G. MARTINEZ, Mark STACKLE a Louis G. YUENGERT. *Strategic Leader Meta-Competencies*. Department of Command, Leadership, and Management School of Strategic Landpower: U.S. Army War College, Carlisle, 2020. ISBN 1-58487-826-6. Dostupné také z: https://publications.armywarcollege.edu/wp-content/uploads/2022/11/3740.pdf

41 SHIVANE, Lt Gen A B. Military Leadership Challenges in the Future Technology Embedded Battlespace. In: Rakhsgha Anirveda [online]. India, Delhi: PBG Media Ventures, 12 Jun 2022 [cit. 2023-07-28]. Dostupné z: https://raksha-anirveda.com/military-leadership-challenges-in-the-future-technology-embedded-battlespace/

42 SAIBERT Richard. European Sectoral Qualifications Framework for Military Officer Profession from the Perspective of the Czech Republic. *Vojenské rozhledy*. 2021, 30 (3), 059-074. ISSN 1210-3292 (print), 2336-2995 (online). Available at: www.vojenskerozhledy.cz

43 LICKOVÁ, Markéta. Skryté obsahy v procesu vojenského profesního vzdělávání. *Vojenské rozhledy (Czech Military Review)*, 2021, **30(62)**(4), 141-153. ISSN 1210-3292. doi:10.3849/2336-2995.30.2021.04.141-153

of "Z" generation[44]. But still, the content should be focused on theory of control hybrid systems supporting "modern military art". Nevertheless, absolvents have to be able to use "methods and tools of 20th century" for warfighting. The reason is, that dynamics of conflict can after spending modern devices lead the actors to wearing out and using reserves, mainly older tools and different procedures. This ability requires not only applying modern technologies, working automatically, but also deep understanding of issues and their natures.

Multi domain and cross domain battlefield, also at tactical level, leads to tight cooperation and leading wide range of processes, therefore "multidisciplinarity" is the key. It seems, that in conditions of Czech army training and educational system should cooperate branches and departments to share and educate their unique experiences. The interaction needs also developed leading and managing, based on cooperation and focused on goal, using horizontal collaboration,[45] also undertaken an appropriate risk, what is high quality skill-sated absolvent[46]. Future operational environment, characteristic by complexity, leads to using cross-subject exams.

Differences between actors on battlefield, also varied composition of units and formations leads to necessary ability to understand differences of behavior, in order to effective leadership. Units can be composed from professional soldiers, from 18 years of age to approx. 50 years of age (but also more), added by active-reservists and additionally hired specialists, both gender, consisting generation gaps[47]. General resilience of population is decreasing, therefore keeping and boosting resilience and agility would be part of E&T programs. Not only physical, mental as well.

CONCLUSION

The authors agree with statement that, combat power is created from morale, technical tools, fire power, maneuverability, amount of entities, organization culture, level of training, leadership quality, structure of command and control and level of military

44 NICOARA, Gabriela-Florina. Leadership Of The New Military Generations - Premises And Predictions. The defence horison journal [online]. Austria, Wienna: TMW Horizont Gesellschaft mbH, 2022, 17 November 2022 [cit. 2023-07-28]. ISSN 2710-3722. Dostupné z: https://www.thedefencehorizon.org/post/leadership-new-military-generations-premises-predictions

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46 Kompan, Jaroslav, Hrnčiar, Michal. (2022). Harmonisation via education of engineering officers' competences with demands of contemporary operating environment. In: INTED2022: 16th International Technology, Education and Development Conference (ed. Luis Goméz Chova, Agustín López Martínez, Ignacio Candel Torres). Valencia: IATED, 2022, pp. 1886-1892. ISBN 78-84-09-37758-9.

47 Ref. 24

science.[48] Although, this statement is approx. 40 years old, is very precisely defined and still valid. The article touch almost all mentioned aspects of this statement. The tools and procedures of modern war are changing, the nature and principles of war not. Success in battle and war, can be reached by synergy of mentioned essentials, where the educated officer-leader is in the middle.

The article described the attributes, which will influence character of modern war-fighting and introduced basic approach to prepare commanders and leaders of "new generation", being able to go through the challenges.

The goal of article was to introduce and discuss actual statements to educate new leaders, who will be able to face future challenges. The statements support "warrior--scholar culture that expects and cultivates both physical and intellectual capacity". No technology can replace human decision-making and risk analysis. In the battlefield of the future, technology will increase available information, but only sharp minds and skilled hands can bring that information to bear.[49] The most important results and recommendations of authors support core idea of ability to lead and manage hybrid systems in volatile multi-dimensional environment, using various tools and sources, appropriate to specific PMESII and METT-TC. In this spirit has to be reflected in study programs and curriculums in career courses.

LIST OF ABBREVIATIONS

APOD	Aerial port of debarkation
DIME	Diplomatic, Information, Military, Economic (Instruments of national power)
DOTMLPFI	Doctrines, Organization, Training, Materiel, Leadership, Personnel, Facilities, Interoperability (Acronym helping to direct and consider development, used not only in military environment)
E&T	Education and training
METT-TC	Mission, Enemy, Terrain, Time, Troops, Civilians (Consideration of any operation, most like tactical level)
MUM-T	Manned-Unmanned Teams
PMESII	Political, Military, Economic, Social, Information, Infrastructure, Physical environment, Time (Operational variables or also Dimensions of battlespace)
SPOD	Seaport of debarkation
VUCA	Volatility, Uncertainty, Complexity, Ambiguity (character of current and close future world)

48 *Vševojsková operační a taktická terminologie: 1. díl: Vojenská věda, operační umění a všeobecná taktika*. 1983. Praha: Ministerstvo národní obrany.

49 DILLENBACK, Maj Dan. The Army Must Reward Smart Leaders, Not Just Strong Ones, if We Want to Win the Next War. In: Military.com Network [online]. 2023, 14 April 2023 [cit. 2023-07-28]. Dostupné z: https://www.military.com/daily-news/opinions/2023/04/14/army-must-reward-smart-leaders-not-just-strong-ones-if-we-want-win-next-war.html

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