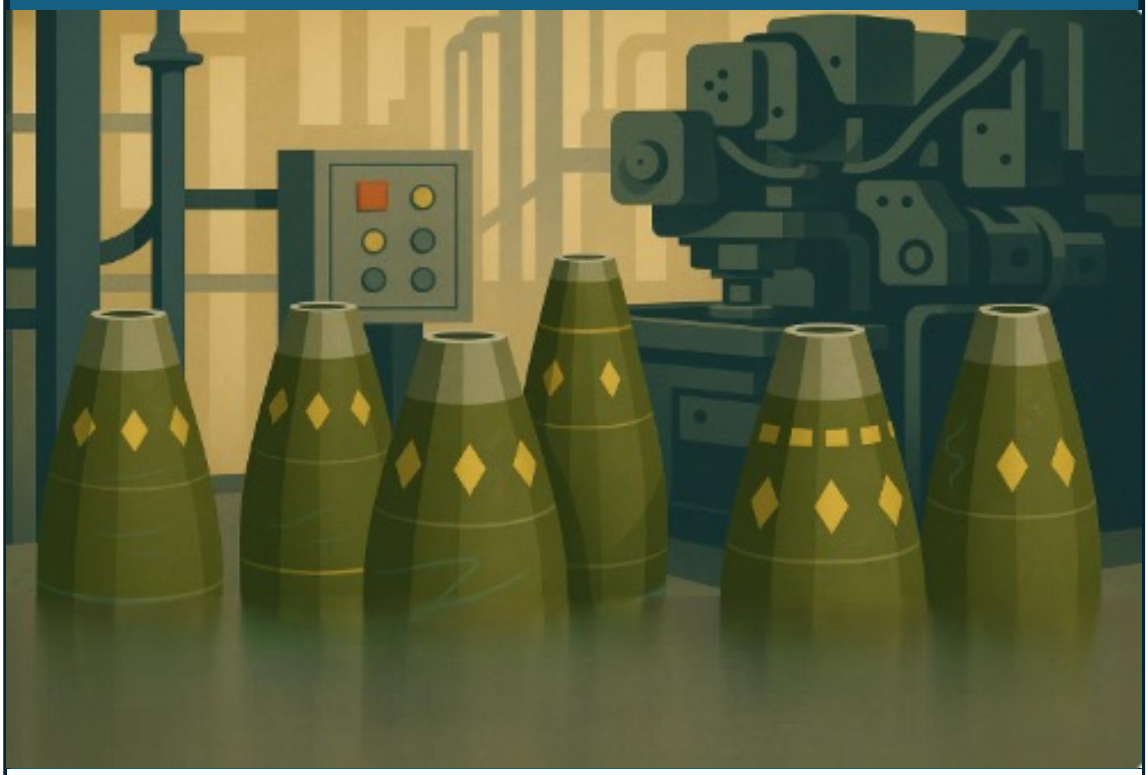
Building Defence Capabilities for Future Uncertainty

Edited by
Laurenz Fürst, Ugurhan Berkok, David Last, Odin Bartsch



Building Defence Capability for Future Uncertainty is a timely volume from established and new scholars and practitioners who met in Stockholm in 2024 at the International Society of Military Sciences annual conference. How should small democratic countries prepare for new security challenges? The original research in this volume addresses strengthening domestic defence, modernizing military capabilities, improving professional military education, and fostering better public-private cooperation.

As an uncertain future confronts educators, defence planners, and technical staff, this collection will provoke thoughtful discussions and new approaches.

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The International Society of Military Sciences (www.isofms.org) is a consortium of defence universities in small democratic countries that collaborate for mutual improvement.

The Polish Association for Security aims to improve security in the broadest sense through education, prevention, and collaboration.

NATO's Defence Education Enhancement Program (DEEP) is a collaborative initiative that supports partner nations in reforming and strengthening their professional military education systems through curriculum development, faculty training, and strategic guidance.

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Veronika Hinman (born Poniscjakova) is Deputy Director and Senior Teaching Fellow at the Portsmouth Military Education Team (PMET), University of Portsmouth, UK. She holds a PhD in International Relations from the University of Nottingham, with a research focus on political violence and terrorism. For the past six years, she has delivered professional military education (PME) at two Royal Air Force bases: RAF Cranwell and RAF Halton, teaching officer cadets and non-commissioned officers, respectively. This experience has shaped her academic interest in PME as both a teaching practice and a research area. Her broader research interests include international security, irregular warfare, and conflict studies. Veronika is a Fellow of the Higher Education Academy and regularly appears on international broadcast media to comment on defence and security issues.

Dr. Harry Kowal is a retired Brigadier-General and Principal Emeritus of the Royal Military College of Canada (RMC). His 42 years of service includes 33 years as an Air Force Officer and 9 years as Principal RMC. He was appointed to command three times and served as Director General Military Careers. His Governor-in-Council appointment as Principal carried with it responsibilities as special advisor to the Minister of National Defence and Academic Advisory to the Commander of the Canadian Defence Academy. He also served as an Executive Head with the Council of Ontario Universities and Universities Canada and as President of the Canadian Aeronautics and Space Institute. He is currently working as a consultant. Dr Kowal holds a doctorate, three master's degrees and professional military education (Command and Staff Course and Executive Leadership Program (Canadian Forces College) and National Securities Program (Australian Centre for Defence and Strategic Studies)).

Bagus Jatmiko is an Indonesian Navy officer who holds a PhD in Information Sciences from Naval Postgraduate School in Monterey, California. With a strong blend of academic expertise and operational experience, he has served in various command and staff roles across multiple levels of the naval organization. His background gives him a strategic perspective on maritime defense challenges, particularly in the Indo-Pacific dynamic security environment. He currently leads the Wargame Center in the Indonesian Naval Command and Staff College. His research and professional focus lie in defense and security issues, particularly information operations and warfare, underwater infrastructure protection, and the responsible-AI in the military domain. He is a firm advocate for integrating emerging technologies to enhance national defense capabilities and maritime security posture. Furthermore, he champions a holistic approach in forwarding the future of defense, which lies in harmonizing cutting-edge technology with empowered personnel and agile organizations.

Maria Juczewska is a seasoned international professional with over a decade of experience in research and study across Europe and the United States. She holds two M.A. degrees and is currently a Ph.D. candidate in the Security Sciences at the War Studies University, Warsaw. A graduate in International Affairs from The Institute of World Politics in Washington, D.C., Mrs Juczewska specializes in international relations, U.S. statecraft, and the security landscape of Central and Eastern Europe. Her research experience includes presentations at international conferences in New York, Buffalo, Stockholm, Cracow, and Jastarnia, as well as invited lectures at West Point Academy and Georgetown University. In 2018-2019 she doubled as a Research Fellow in Polish Studies of the Victims of Communism Memorial Foundation, where she focused on bringing Polish history to American audiences. As a perpetual learner, Mrs

Juczewska brings a well-rounded and original perspective to her scholarly investigation in security sciences.

Lt-Col Johanna Jungwallius is a Military Teacher at the Swedish Defence University. She holds a Master's degree in War Studies, with a focus on military strategy and security and defence policy. At the Department of Systems Science for Defence and Security, she teaches theory and research methodology within the Higher Officer Programme. She has previously served as Chief of Staff at the tactical level and as Chief of Plans at the Air Warfare Centre. Her contribution to this book draws on extensive experience in the Swedish Air Force, particularly in relation to capability development and quality assurance. She is also engaged in academic research on norm dynamics in security policymaking, with a peer-reviewed article forthcoming in the Scandinavian Journal of Military Studies.

Lieutenant-Colonel Kyrre Tromm Lindvig (b. 1976) is an active-duty Norwegian Army officer. He has served in a variety of positions on a tactical and operational level and has extensive experience from international operations. Deployments include among others Afghanistan (both ISAF and RSM), Mali (UN) and the Middle East (OIR). He is currently teaching at the Staff College of the Norwegian Defence University College. He defended his Ph.D in cultural studies at the University of Oslo in 2008. In addition, he was visiting research student at the Hebrew University in Jerusalem 2011–2013 and he is an alumnus of the Senior SOF leadership course at the Nato Special Operations University in Belgium. His research interests include special forces operations, the role of humanities in military thinking and education, military and tactical intelligence as well as cultural studies.

Martin Lundmark (PhD) is a Senior Lecturer in the academic institution Systems science for defence and security at the Swedish Defence University in Stockholm. He has over 25 years of research experience in the field of defence acquisition, defence industry, defence innovation and related topics. His PhD Transatlantic Defence Industry Integration (2011) was published in the field of business administration at the Stockholm School of Economics. Current research focuses on defence logistics with particular emphasis on security of supply, and defence industry supply chains; organization of military prototype development and dual-use innovation; multilateral arms collaboration. He joined the Swedish Defence University in 2017. Prior to that he worked at the Swedish Defence Research Agency (FOI) 1998-2017. He has been a guest researcher at MIT (Boston) and Fondation pour la Recherche Stratégique (FRS, Paris). He has published in these areas, contributing significantly to both academic scholarship and policy discussions on military logistics and questions related to defence industry and defence acquisition.

Col. Oleksandr Maistrenko is a Doctor of Military Science and a Professor of the Department of Special Operations Forces of the National Defence University of Ukraine. He is a Specialist in Rocket and Space Systems, Aviation and Cosmonautics Engineer. He holds a Master of Combat Application and Management of the Land Forces Units Actions and a Doctor of Military Sciences, PhD in Military Arts, Professor in the Armaments and Military Equipment sphere. His scientific interests are the evaluation of the effectiveness of the functioning of military systems, Resilience of the functioning of human-technical systems, Military education, Training of PhD students, Ballistics. He held various positions in the Armed Forces of Ukraine serving in several combat roles including senior operator, service chief, battery commander, division chief of staff, division commander; and several scientific roles such as doctoral student, leading researcher, head of the research department, associate professor, professor, deputy head of the department,

and head of the department. He directly participated in the Russian-Ukrainian war in 2015, and 2022.

Marco Marsili is a researcher with a focus on international relations, international (humanitarian) law, human rights, and the implications of emerging technologies on global 18 security. He holds a PhD in History, Security Studies and Defense and has published extensively on topics related to cognitive warfare, cybersecurity, and the intersection of technology, international (humanitarian) law and human rights. He has directed international research projects, and collaborated with EDA, NATO STO, DIANA, and the Centre for Advanced Defence Studies (CASD)/Institute for Defence Research and Analysis (IRAD) of the Italian Ministry of Defence. Dr. Marsili is affiliated with Cà Foscari University of Venice, where he integrates the Research Institute for International Studies, and can be reached at info@marcomarsili.it/marco.marsili@unive.it. ORCID: 0000-0003-1848-9775. For further info: https://www.marcomarsili.it.

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Christopher J. Morris is a Wargaming and Modelling Subject Matter Expert with Calian Europe, currently working at the NATO Joint Warfare Centre in Stavanger, Norway. He holds a PhD in Law and has a strong academic and operational background in counter-terrorism, violent extremism, and threat analysis. Prior to his current role, he served as a Teaching Fellow in Air and Space Power at the University of Portsmouth, delivering professional military education in partnership with the Royal Air Force. His experience also includes lecturing in policing and international relations, and field experience in the middle east. Christopher has led funded research projects, and regularly publishes on topics such as radicalisation, military pedagogy, and digital learning. He is a Fellow of the Higher Education Academy and an active member of the Military Operations Research Symposium and the Society for Terrorism Research.

Marsetio is a former Chief of the Indonesian Navy with the last rank of admiral. He is also a full professor at the Indonesian Defense University (IDU), Jakarta, Indonesia, with a research focus on the maritime security domain. He is currently positioned as the special advisor for the minister of science and high education of the Republic of Indonesia. He has extensive experience in both academic and practical aspects of maritime security. During his time as the Chief of the Navy, his focus is to build collaboration between the ASEAN navies in the framework of confidence-building measures (CBM). In his time now, he is a prolific writer and a keen researcher

with writings in articles, journals, and books. His focus is mostly on maritime security in the South China Sea.

A/SLt Isaac Nitschke is a graduate of the Royal Military College of Canada with a bachelor's in military and strategic studies. Upon graduation, he commissioned as an officer in the Royal Canadian Navy and began graduate studies at Queen's University (Kingston, Ontario), pursuing a Master of Arts in Political Studies focusing on International Relations. His research interests focus on defence and security policy, in particular maritime security, information warfare, and hybrid warfare.

Tali Neumann is the Head of Marketing and Digital Platforms at the crowdsourced consultancy Wikistrat. She holds a B.A. in Psychology and Business Administration from Tel Aviv University (TAU). With nearly a decade of experience in media-related roles, she has worked in public relations and advertising, served as a military journalist in the Israeli Defense Forces (IDF), and later as a commander at the IDF Spokesperson's Military Journalists' course.

Megghi Pengili specialises in defence innovation governance, defence ecosystems and knowledge management, energy defence resources and cybersecurity in the Eastern Mediterranean, AI-Public Private Partnerships and Anticipatory Governance in defence, and other defence issues. She is a Visiting Fellow at the University of Leeds, where she obtained her PhD in Innovation's Governance and Defence Studies. She holds an MA in International Relations from the University of Sussex and an Executive Master in EU Studies from the Centre Internationale de Formation Européenne. Two- time "George C.Marshall Centre" Scholar (2007 & 2025) and Blavatnik Centre for Interdisciplinary Cyber Studies Visiting Fellow (2021-24), she has received many European and international scholarships. She worked in national and international defence establishments before academics. She has taken numerous military and defence courses in Italy, her native country, and abroad. She was Civil Wars Journal's Assistant Editor (2022-24). Megghi joined TRENDS US as Senior Advisor in March 2025.

Anne Reiffenstein, CD, is a retired artillery officer who served in the Canadian Army for 28 years, joining in 1989 as part of the early generation of women in the combat arms. Throughout her career, she took on diverse roles in operations, strategic and tactical planning, defence resource management, professional military education, training development, and leadership. Following her military career, Anne has embraced new challenges, hosting and producing podcasts and multimedia projects, teaching in business schools and professional military education programs, and consulting on learning development, education, and military professional development. She is a Doctoral candidate in Business Administration at Royal Roads University, exploring digital phronesis—the intersection of digital ethics, decision-making, and leader development—with a focus on how to cultivate it in leaders.

Lt-Col. Patrik Stensson holds a MSc in engineering physics and a PhD in Informatics from Uppsala University. He is currently the Chief Scientist of the Swedish AirForce and is also a lecturer at the Swedish Defence University. His research interests lie in the (necessity of the) human role in making technology truly useful (and morally justified), in practice, and therefore in particular the difficult human position (regarding for example possibility of control and responsibility) in relation to AI-enhanced information systems and so-called autonomous systems.

Col. Viktor Savchenko (born 19 July 1980) is an officer in the Marine Corps of the Armed Forces of Ukraine. He holds a master's degree in strategic studies (USA, 2022) and in Combat Employment and Command of Ground Forces Units (National Defense University of Ukraine, 2015). He has extensive command and staff experience at operational and operational-strategic levels, including roles as Chief of Combat Training of an Airborne Brigade and Chief of Operations of the Marine Corps Command. He served in peacekeeping missions in Iraq (2004–2005) and Kosovo (2008–2009), and participated in NATO exercises in North Macedonia, Poland, Jordan, and Montenegro. He has collaborated with international working groups to coordinate foreign partner support. His professional expertise includes planning, evaluation, and implementation of transformation processes in the Armed Forces of Ukraine, as well as operational-level risk management. He is married and has three children.

Dr. Khalid Mahmood Shafi is an accomplished researcher, academician, and practitioner, with three decades of experience in climate change, disaster management, policy advocacy, conflict resilience, and security. He served in a senior leadership role, commanding operations in conflict zones for over three years, and also a year with UN. Academically, Dr. Shafi has been Professor of Practice at NUST and served as Director at ISSRA, leading strategic research initiatives. He earned a postdoctoral fellowship at Copenhagen Business School and holds a PhD, focused on climate–security nexus. He has authored two books on climate policy (one with a foreword by former UN Secretary General Ban Ki Moon), published extensively in peer reviewed journals, and serves as editor of a reputed journal. He has designed and taught postgraduate and professional courses on climate securitization and is a frequent speaker at academic forums. He can be reached at LinkedIn and khalidmayo@hotmail.com

Acknowledgement

The idea for an international collaboration between defence universities in small countries was born in discussions between Allard Wagemaker and Alexander Bon of the Netherlands Defence Academy (NLDA) and Walter Feichtinger of the Landesverteidigungsakademie (LVAK). The International Society of Military Sciences was launched in Amsterdam in May 2008 by representatives of the Austrian National Defence Academy, the Netherlands Defence Academy, the Baltic Defence College, the Norwegian Defence University College, the Swedish Defence University, the Royal Danish Defence College, the Finnish National Defence University, and the Royal Military College of Canada. The vision, energy, and continuing engagement of Walter Feichtinger (Austria), Hannu Kari (Finland), Alexander Bon (Netherlands), Niels Bo Poulson (Denmark), and the many other representatives and supporters from each institution have been essential to continuing the life of this organisation. The 16 annual conferences, rotating between institutional members, and the periodic workshop events for graduate students or on specific themes have made the ISMS a vibrant part of the international ecosystem for professional military education. It could not have evolved without the support of the Deans, Rectors and commandants who make up the uneasy constellation of professional duty and academic freedom in each of our member institutions. At critical junctures, leaders have stepped up to rescue the ISMS when it threatened to cease working. Alexander Bon launched the Society's first website hosted in the Netherlands. Ryszard Szpyra brought Poland into the Society in 2016. Anders Sookermany (Norway) picked up the 2017 conference at short notice, and Ryszard Szpyra (Poland) hosted the tenth anniversary conference in 2018, inviting Commandants and Rectors to rejuvenate the Society and reaffirm its mandate. Harry Kowal (Canada) found funding for the Society's website, which is now funded by Canada until 2028. Hannu Kari (Finland) and David Last (Canada) mounted virtual conferences during the global Pandemic of 2020 and 2021. Anders Sookermany (Norway) has led the editing of the Handbook of Military Sciences, published by Springer and now available online free thanks to funding from the Norwegian Defence University College. Paulo Marreiros brought Portugal into the Society in 2023, and Andreas Rüdisüli has shepherded Switzerland's accession successfully. Kjell Engelbrekt (Sweden) negotiated the publication arrangement with NATO DEEP under which this volume and the preceding book of abstracts has been made available free online.

Everyone involved in this project has incurred many debts to insure its timely and effective completion.

Foreword

There are at least three reasons behind the abrupt shift, in the first half of the 2020s, from drowsy inattention to a reinvigorated focus on building new and better defense capabilities. One reason is the dizzying speed of technological evolution in the world's most advanced economies driven by rapid scientific innovation, intense competition and corporate profit-seeking, as well as war itself. Another is the growing political ambitions of several world leaders, apparently seeking to break free from the relative complacency of their post-Cold War predecessors. A third reason is the sheer necessity of scaling up defense forces and improving the skills of military professionals, in order to be in a position to deter and defend against adversaries not seldom influenced by the two aforesaid developments.

This volume speaks primarily to the latter set of issues. The powerful impetus experienced by governments and institutions charged with building new and better defense capabilities will no doubt serve to energize and accelerate the efforts of people, businesses and military organizations in the second half of the 2020s and beyond. The same goes for academies and universities responsible for the research and education of soldiers, officers and auxiliary civilian staff. It is not enough to simply ramp up production and activities, relying on legacy programs and generic knowledge. Before scaling up, military educational institutions must take into account how the world of warfare is changing in ways that substantively alter the preconditions for tactics, operations and strategy. Moreover, tomorrow's war will be fought with the capabilities that we design, acquire and deploy today (as well as with yesterday's equipment), along with doctrine developed to align with the former. In part, this presupposes careful reflection and planning rather than short-termism, so that defense capabilities are up to the tasks of the future. That being said, we also need to suppress the understandable desire to consistently optimize the new capabilities which we procure and instead make room for pragmatic adaptation and subsequent improvement once systems come online. Key qualities going forward must be defense capabilities that can be mass produced, are agile and deployable across a wide range of contingencies, and the software of which can be easily updated. For defense forces that rely on conscripts, ease of use must be factored in already at the design stage.

The 2024 ISMS Annual Conference placed a premium on scholarly and military-professional contributions that revolved around the overarching theme of competing priorities at a time of rising military expenditures: "Scaling Up, Learning Lessons, Ensuring Quality." In putting together this volume based on papers that in one way or another addressed this theme in the context of building defense capabilities, the authors and editors have sought to enhance our understanding of how to best weigh options that live up to all three of those fundamental objectives. In the transatlantic area and across the world, many of us will be preoccupied with getting the right blend of such priorities in the coming five to ten years.

Kjell Engelbrekt

President, International Society of Military Sciences (ISMS)

28 July 2025

Preface

In September 2024 soldiers and scholars from more than twenty countries gathered at the Swedish Defence University in Stockholm to present and discuss new research at the annual conference of the International Society of Military Sciences. The conference theme of *Scaling Up, Learning Lessons, Ensuring Quality* gave participants an opportunity to reflect on the rapid changes to global security since Russia's invasion of Ukraine in 2022. The Book of Abstracts has now been published as a record of every paper presented at the Conference. This volume serves to continue the discussion of a subject central to the military profession and national security. How can small countries build defence capabilities for an uncertain future?

Since September 2024, the world has become more uncertain, with continuing and evolving wars in Ukraine and the Middle East, and a new tariff war threatening to undermine the stability of the global economy while the US pushes its allies to spend more on defence. Parallel to the ISMS conferences in Stockholm (September 2024) and Amsterdam (October 2025) the NATO Defence Economics Working Group has met in Bordeaux and will produce papers by distinguished defence economists on how best to achieve and take advantage of the new and higher spending targets. As we focus on building capabilities in small countries, defence economics becomes everyone's business. These papers will be published separately.

The four sections of this collection address strengthening domestic defence, modernizing military capabilities, improving professional military education, and fostering public-private cooperation. Authors hail from the member and partner countries of ISMS, and we are pleased to welcome individual contributors from other countries, whether or not they are small and democratic. Contributions at the ISMS are welcomed from young scholars and new practitioners, and from grizzled veterans who bring decades of experience to the discussions. We are grateful to the many reviewers who have helped to advance the essential work of the Society, and our thoughts are with those who struggle for the security of their countries and the safety of their citizens in difficult times.

International Society of Military Sciences

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Austrian Ministry of Defence

Chair of ISMS Working Group on Security and Defence Policy

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List of Abbreviations

ADF - Australian Defense Force
AI - Artificial Intelligence
ALE - Automatic Link Establishment
AMOS - Arctic Mobile Observation System
AOTD – Latvian Ministry of National Defence (*Antrasis operatyviniu tarnybu departamentas*)
APTs - Advanced Persistent Threats
ASAP - Act in Support of Ammunition Production
BLOS - Beyond-Line-of-Sight transmission
BLS - Bureau of Labor Statistics
BMOQ - Basic Military Officer Qualification
C2 - Command and Control
C2IS - Command and Control Information Systems
CAF - Canadian Armed Forces
CBP - Capability Based Planning
CCoR - Cadet Chain of Responsibility
CDS - Cross-Domain Solutions
CIMIC - Civil-Military Cooperation
CO_2 - Carbon Dioxide
CPSA - Canadian Political Science Association
CRMs - Critical Raw Materials
CRT - Current Reality Tree
CSF - Critical Success Factors
DAS - Distributed Acoustic Sensing
DE - Desirable Effects
DEIC - Defense Environmental International Cooperation
DIANA - Defence Innovation Accelerator for the North Atlantic
DIB - Defence Industrial Base
DIL - Disconnected, Intermittent, and Limited Networks.
DIME+E - Diplomacy, Information, Military, Economy, + Environment
DOD - US Department of Defense's
DRC - Disaster Response Communications
DSA - Dynamic Spectrum Access
DSSS - Direct Sequence Spread Spectrum
DTAIWG - Digital Transformation and Artificial Intelligence Working Group
DTIB - Defence Industrial and Technological Bases
EDA - European Defence Agency
EDF - European Defence Fund
EDI - Equity, Diversity and Inclusion

EDIP - European Defence Industry Program
EDIRPA - European Defence Industry Reinforcement through common Procurement Act
EDIS - European Defense Industrial Strategy
EDRT - European Defence Research & Technology
EDT - Emerging and Disruptive Technologies
EDTIB - European Defence, Technological and Industrial Base
EDTs - Emerging Disruptive Technologies
EEZ - Exclusive Economic Zone
EFIS - Estonian Foreign Intelligence Service
EMIC - The Estonian Military Intelligence Centre
EMP - Electromagnetic Pulse
EU - European Union
EW - Electronic Warfare
FCAS - Future Combat Air System
FHSS - Frequency Hopping Spread Spectrum
FRT - Future Reality Tree
FSO - Free-space optical
GDPR - General Data Protection Regulation
GenAI - Generative AI
GEO - Geostationary Satellites
GMACCC - Global Military Advisory Council on Climate Change
GRU - Russian military intelligence
HF - High-Frequency
HIPS - Host-Based Intrusion Prevention Systems
HUMIT - Human Intelligence
IAI - Israel Aerospace Industries
IBTS - Individual Battle Task Standards
IDF - Israel Defense Forces
IEEE 802.1AE - MACsec
IFTS - International Flight Training School
IHL - International Humanitarian Law
IHRL - International Human Rights Law
IJVs - Joint Institutional Ventures
INS - Intermediate Nodes
IoBT - Internet of Battlefield Things
IoMT - Internet of Military Things
IPR - intellectual property rights
ISE - Initial Support Estimate
ISR - Intelligence, Surveillance, and Reconnaissance
ISS - Estonian Internal Security Service

ITS - Intelligent Tutoring Systems
JAS - Security Authorities Act (julgeolekuasutuste seadus)
JIT - Just-in-Time
JRC - European Commission Joint Research Centre's
KAP - Knowledge, Attitude, and Practice
KAPO - Estonian Security Police (*Kaitsepolitseiamet*).
KKS - Defence Forces Organisation Act (kaitseväe korralduse seadus)
KM - Knowledge Management
LAWS - Lethal Autonomous Weapon Systems
LEO - Low Earth Orbit Satellites
LGS - Leonardo Global Solutions
MDO - Multi-Domain Operations
MEO - Medium-Earth Orbit Satellites
MFA - Multi-Factor Authentication
MIC - Military-Industrial Complex
MIDD - Latvian Defence Intelligence and Security Service, (*Militārās izlūkošanas un drošības dienests, saīsināti*)
MIPv6 - Integration of Mobile IPv6
MNs - Mobile Nodes
MoD - Ministry of Defence's
MP - Military Police
NATO - North Atlantic Treaty Organization
NC - Necessary Conditions
NCOs - Non-Commissioned Officers
NEMO - Network Mobility Protocols
NKVD - People's Commissariat for Internal Affairs
NOAA - US National Oceanic and Atmospheric Administration
Nordefco - Nordic Defence Cooperation
NPM - New Public Management
NVIS - Near Vertical Incidence Skywave
OI - Organisational Innovation
OSINT - Open-Source Intelligence
PD - Professional Development
PER - Performance Evaluation and Review
PFS - Perfect Forward Secrecy
PL - Project Leader
PLARF - The People's Liberation Army Rocket Force
PMCs - Private Military Companies
PME - Professional Military Education
PMIPv6 - Enhancements to Proxy Mobile IPv6

PMO - Program Management Office
PPPs - Public Private Partnerships
PPT - Physical Performance Test
QKD - Quantum Key Distribution
R&T - Research and Technology
RF - Radio Frequency
Riigikogu - Parliament of Estonia
ROC - Resistance Operating Concept
ROTP - Regular Officer Training Plan
S&T - Science and Technology
SAB - Constitution Protection Bureau (*Satversmes aizsardzības birojs*)
SAFE - Security Action for Europe
SATCOM - Satellite Communication
SCS - South China Sea
SDN - Software-Defined Networking
SDP - Software-Defined Perimeters
SDRs - Software-Defined Radios
SECI - Socialization-Externalization-Combination-Internalization
SFIA - Skills Framework for the Information Age
SHF - Super High Frequency
SIGNIT - Signals Intelligence
SIPRI - Stockholm International Peace Research Institute
SMEs - Small and Medium Enterprises
SOEs - State-Owned Enterprises
SoI - System of Interest
SoS - Systems-of-Systems
SSCL - Space Strategies Consulting Ltd
TACSAT - Tactical satellite communications
TCNs - Tactical Communication Networks
TCP/IP - Transmission Control Protocol/Internet Protocol
TOC - Theory of Constraints
TSR - Time, Space, and Relative Strength
UAE - United Arab Emirates
UAVs - Unmanned Aerial Vehicles
UDE - Undesirable Effects
UHF - Ultra-High Frequency
UK - United Kingdom
UN - United Nations'
UNCLOS - United Nations Convention on the Law of the Sea
UNDP - United Nations Development Programme

UNEP - United Nations Environment Programme
UNESCO - United Nations Educational, Scientific and Cultural Organisation
UPS - Uninterruptible Power Supplies
USAFNC - US Air University Negotiation Centre
VC - Axon Ventures Capital
VDD - Latvian State Security Service *(Valsts drošības dienests)*
VHF - Very High Frequency Radios
VSD - Latvian civilian intelligence service *(Valstybės saugumo departamentas)*
WHO - World Health Organization
WPNP - US West Point Negotiation Project
ZT - Zero Trust
ZTA - Zero Trust Architecture