NATO
Lessons
Learned
Conference
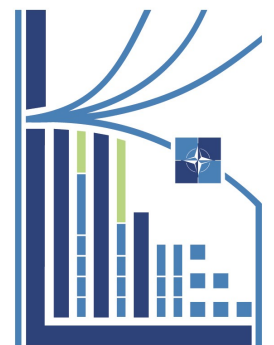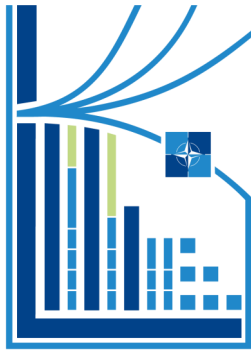(NLLC)
Lisbon
4 - 5 May 2022

NATO
OTAN

NLLC22

20 years of learning

An event in support of the
NATO Lessons Learned Community

4 - 5 May 2022
12.30 to 17.00 GMT

A flashback of two decades of learning to gain insights for the next five years

Contents

Editorial

Just a quick word from me to say what a pleasure it has been to work on this edition of the NATO Lessons Learned Conference (NLLC) which was held in a hybrid (virtual-live) format for the first time in its history.

This event was an opportunity to look back to face forward. Something we at the JALLC are used to doing; after all, analysis and Lessons Learned is all about looking at past events to understand what worked well and what could be better. This process leads to change, and change leads to progress. I think it's safe to say that, over the past 20 years, the JALLC has contributed to the progress of the Alliance, and that's no small thing for an HQ of just 50 staff.

This year's edition was quite representative of the concept of marrying the past with the future; the hybrid nature of the event allowed us to host the NLLC as we have always done in the past: live with speakers on stage and an audience present. But this year, like last year, we had our online presence as well, contributing to the discussions and content. And I think that this is the future for many events like the NLLC. We've learned lessons, we have found better ways of "doing things." And this is what it is all about for us at the JALLC.

This magazine is not intended to report on the event. It is intended to give those who attended the NLLC22 a reminder of what we achieved and for those that could not attend, a flavour of what was shared, discussed, agreed, and disagreed on.

A final thanks to everyone involved as well as the backstage crew. This event does not work without the support of a lot of people; you know who you are.

See you all at the next NLLC,

Jodie Lazell

The JALLC notes that, certain speakers that addressed the NLLC22 audience in May, have left their post since the date of the NLLC22. In this magazine, we refer to them in the context of the post they filled at the time of the NLLC22. Please consult the relevant NATO bodies' organizational structure for the most up to date information regarding who is currently filling a post.

Welcome to the NLLC22 Magazine

Colonel Manuel Rosa
Chief of Staff JALLC & Head of Communications Working Group

I'd like to welcome you all to this magazine covering the NATO Lessons Learned Conference (NLLC) 22 which took place from 04 to 05 May. Building on the success and lessons learned from the NLLC 21, this year we brought you the event in a hybrid format, presenting the conference live from the studio in Lisbon, with key speakers and presenters on stage (in person or in hologram) and the audience logging in to the virtual event from all over the world. This hybrid way of working is very representative of how we have learned during the COVID-19 pandemic and changed the way we work; perhaps forever.

One thing that struck me during this years conference is how this Alliance is a coming together of Nations, forces, people, and different perspectives and opinions. And it is perhaps this combination of desire to come together with the open-mindedness of those who work within the organization allowing us to receive new ideas and explore new possibilities. This desire has also allowed NATO to achieve its objectives. From the JALLC's perspective, this means 20 years of learning for and with the Alliance: something to be proud of.

The effective implementation of the NATO Lessons Learned Roadmap (2021-2025) provides a unique opportunity to increase our level of ambition and implement a comprehensive approach to Lessons Learned across NATO in coherence with Nations and Partners, and in this respect asked us to: "Think big, act small and fast." And the NLLC 22 is perhaps a good example of that concept. We think big in terms of the conference theme, we act small in the sense that we utilize the very specific NATO Lessons Learned (LL) Community over a short period of time to get results: and we got results.

The four panels that took place over the course of the NLLC22 addressed topics intended to cover the broader conference themes which are presented in this magazine on pages 14 to 21. I hope they provide a useful summary of what was discussed as well as some highlights from the Key Takeaways of each panel.

The rest of the magazine is dedicated to providing an overview of the various presentations, discussions, and general NLLC22 activity as well as some interesting statistics that give an insight into the importance and success of the event.

The findings derived from the NLLC22 are presented in a JALLC Report which is available on the classified version of the NATO LL Portal.

We hope you enjoy the magazine, and we look forward to seeing you at the next NATO Lessons Learned Conference.

Chief of Staff JALLC

Colonel Manuel Rosa

"A Flashback of two decades of learning to gain insights for the next five years"
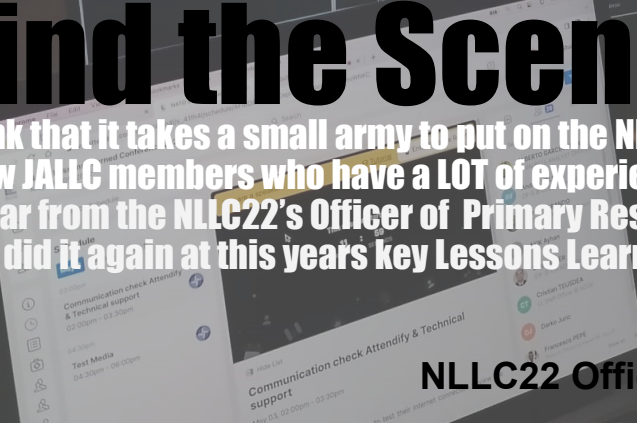
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Behind the Scenes

You might think that it takes a small army to put on the NLLC22, but the core team is made up of just a few JALLC members who have a LOT of experience in organizing these types of events. We hear from the NLLC22's Officer of Primary Responsibility, Stefan Olaru, about how his team did it again at this years key Lessons Learned event.

Stefan Olaru
NLLC22 Officer of Primary Responsibility

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The JALLC is celebrating its 20th Anniversary this year, and within its first year of existence, the first NLLC was held. Back then it was a much more simple affair, more of a working group than a conference. But over the years, it has developed to what it is today: NATO's key event on the Lessons Learned calendar. But the conference doesn't happen on its own: it takes a dedicated team of people from the Lessons Learned Management Division Head acting as Conference Director, to the staff assistant in the JALLC's Support Branch to keep all the wheels on the wagon and it rolling forward towards the conference date.

The NLLC team is usually made up of a few experienced "core members" who have already organized multiple events, as well as new(er) members of the JALLC staff who are perhaps seeing the NLLC for the first time. It's this mix of experience and fresh perspectives that keep the event on its toes: always looking for better ways to do things, better content, and better delivery.

This year was an extra challenge for the NLLC22 Team because it was the first time running the event in a hybrid format. After last year's successful virtual event (a consequence of the COVID-19 pandemic), it was decided to keep the online ele-ment of the event and combine it with the traditional full presence format. The result was a resounding success and one that will likely be repeated in the future.

Perhaps one of the trickiest elements of running the hybrid format was making sure it ran to time. When there is just a live audience listening to live speakers, it doesn't matter too much if things "*run a little late,*" as everyone is running on the same time-zone and the event doesn't "*switch off*" when the time runs out. But when you have a virtual audience watching with the time limited in online sessions, you really have to work hard to keep everyone to schedule. Nevertheless, the event was another success, and we're looking forward to the next one.

Stefan Olaru

Opening Remarks:
Deputy Supreme Allied Commander Transformation

General Paolo Ruggiero

Deputy Supreme Allied Commander Transformation (DSACT), General Paolo Ruggiero addressed the NLLC22 audience as a hologram. Speaking to the live and online audience, he noted that the Conference is an opportunity for the JALLC to help the entire Alliance building a robust and successful Lessons Learned process.

In this article, we take a brief look at some of the key points from the General's opening remarks.

From the hologram cabin on the NLLC22 Studio stage, General Ruggiero encouraged the NATO Lessons Learned Community to consider how it can contribute to the process of implementing the *NATO Lessons Learned Capability Improvement Roadmap 2021-2025*, which will enhance NATO's Lessons Learned management, analysis, and exploitation. The General further noted that learning from the past will give us the means to bridge this Roadmap with Allied Command Transformation's (ACT) Warfare Development Agenda, underlining the high expectations ACT leadership had of the Conference as *the* event to discuss, analyse, and synthesize concepts of key relevance to the wider Lessons Learned Community. General Ruggiero invited participants to debate how we collectively face this environment and the what the *way ahead* for the NATO Lessons Learned Community is.

The General went on to give the audience some questions to consider during the event, covering aspects of Lessons Learned such as the scope, the responsiveness, the need for strategic level lessons, and our ability to reach out, particularly in light of the, as he put it himself: "*...long-planned, brutal and unprovoked invasion of Ukraine."* This situation requires all NATO entities to think how to best
identify and implement the lessons of what is happening now.
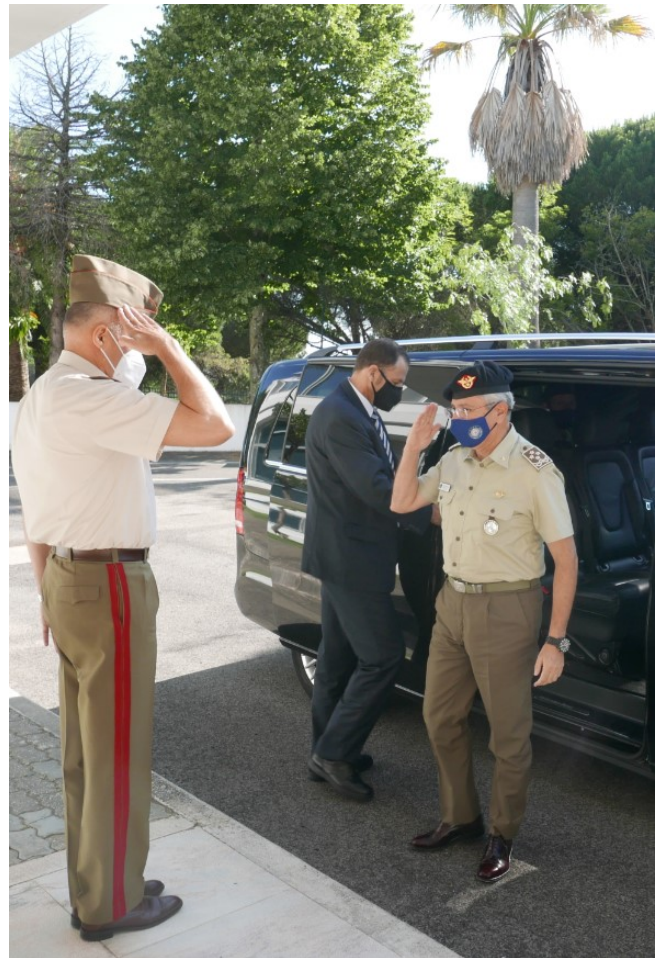
General Ruggiero visited the JALLC in 2021 in order to be briefed on the responsiveness and reliability of the NATO Lessons Learned Capability, and how flexibility and innovation in this field are improving the Alliance's ability to meet Lessons Learned requirements at the speed of relevance.

Click on the image to connect to Supreme Allied Commander Transformation's (SACT) video message, setting out his vision of NATO's adaptation for the foreseeable future. The two pivotal priorities to achieve this vision are the "Digital Transformation" allowing the Alliance to fully take advantage of its data and involving the establishment of capabilities and services designed to securely maximize its potential; as well as the timely delivery of new, critical capabilities or improving the agility of NATO's processes.

General Ruggiero then elaborated on some of the technological issues of the NATO Lessons Learned Process that are being addressed by ACT. Specifically, the need to accelerate change and how to speed up the adaptation of NATO's Lessons Learned ecosystem to the digital age were mentioned in this regard. This operationally-informed and data-driven Digital Transformation is one of the major outcomes of the Warfare Development Agenda and will enable quicker and more efficient data sharing across NATO and non-NATO entities.

DSACT finished his address by encouraging the audience to bring and discuss their ideas, and make use of the excellent opportunity to take an active role in shaping improvements to NATO's Lessons Learned Capability, noting that the vitality of the network will be the key for success in this domain. The exploitation of findings from our Lessons Learned programme must improve the Alliance's ability to better understand the current security environment, improving our ability to deter and respond to sudden crises.

" To meet any challenge, the first step is always to understand. "

Deputy Supreme Allied Commander Transformation, General Paolo Ruggiero, beamed onto the stage of the NLLC22 via hologram, inviting the NATO Lessons Learned Community to look forward, lean forward, think forward.

A Strategic Perspective on the Importance of Lessons Learned:
Adapt or Perish

**General (Rtd.) Curtis Scaparrotti
Speaking as Former SACEUR**

Drawing on his long career in the US Army and his tenure as Supreme Allied Commander Europe (SACEUR), General (Rtd.) Curtis Scaparrotti addressed the NLLC22 audience on the last day of the Conference. Speaking to the audience via video link, the former SACEUR highlighted issues in the sharing and implementing of Lessons Learned he has observed during his tenure in NATO and proposed some potential alternatives based on his own personal experience.

General Scaparrotti spoke from his own extensive experience as a senior NATO decision-maker, observing first, in his very candid style, that the turnover of high ranking military personnel in NATO is often too frequent, making it difficult for senior leadership to build on learned experiences. This makes the NATO Lessons Learned Process an essential tool to ensure continuity and to guarantee that identified good practices are learned and implemented regardless of personnel rotation.

General Scaparrotti further noted that NATO Leaders often lack the necessary rigour and absolute candour needed when approaching the NATO Lessons Learned Process, noting that he himself had to put his hand up and claim responsibility for this approach to Lessons Learned in the past as well. Citing his past experience as Commander of the Joint Command of the International Security Assistance Force in Afghanistan, the General pointed out that leaders often dislike admitting some of their decisions either failed or proved less than optimal.

However, in order for NATO to improve, we need to learn from these mistakes and be more transparent when sharing them with senior leadership and Allied Nations.

Source: NATO Website

General Scaparrotti has long been a proponent for a 360° Defence Posture across SACEUR's Area Of Responsibility, a concept that was carefully considered at the recent Madrid Summit.

General Scaparrotti continued to highlight the importance of NATO leadership being honest about learning Lessons from failures as well as successes, noting the importance of NATO Exercises, such as TRIDENT JUNCTURE 2018 as a "*safe space*" to experiment, train, and exercise. NATO Exercises are a critical venue to capture experiences that can be turned into Lessons and Best Practices for NATO.

Answering questions from the NLLC22 audience, the General explained to the audience that, in terms of Lessons Learned just being some administrative task that needs to be done at the end of the day, NATO and national leaders should remember that subordinates often see things that the superiors will never see and are often more accurate in identifying issues and potential solutions. As such Senior Leadership is not only responsible for the implementation of Observations and Lessons and the general running of the NATO Lessons Learned Process, but also, crucially, for fostering an environment conductive to sharing observations and critiques from all relevant personnel.

In follow up questions relating to "*hearing*" subordinates who are perhaps closer to the issues being observed, the General detailed how he personally tried to ensure junior staff would feel comfortable and motivated in bringing issues to his attention, so as to implement potential fixes. A leader, the General explained, must promote the right mind-set among his staff, if he wishes any Lessons Learned Process to be successful. Specifically, he observed that the more senior a leader is, the better his listening skills must be. Group-think, and general human nature to want to rely on more experienced and senior leadership, leads to recurring mistakes, he said, which is why he consistently encouraged subordinates to speak up and take part in the decision-making process.

Defence cooperation between NATO and Ukraine, a crucial member of NATO's Partnership for Peace programme, has seen significant development ever since the unprovoked Russian invasion on 24 February 2022. To learn more, read the article from the NATO website.

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"Lessons Learned must be a routine thing that we do routinely."

General (Ret) Curtis Scaparrotti

JALLC Studio

General (Rtd.) Curtis Scaparrotti addressed the NLLC22 audience via video link, delivering a presentation and responding to a few questions candidly from both the online and live NLLC22 audience.

Making the Right Call

Michael Roberto
Trustee Professor of Management;
**Bryant University (USA)**

2003 Columbia Space Shuttle Launch

Intervening at the NLLC22, Professor Roberto gave a brief presentation on how leaders in different sectors take high-stakes risky decisions. Using the example of the 2003 Columbia Space Shuttle incident, Professor Roberto challenged the audience to think about how they take difficult decisions.

7 **In this article we present some of the key thoughts from Prof. Roberto's presentation and take a closer look at five techniques that he identifies that can help anyone *make the right call*.**

Starting with the example of the 2003 Columbia Space Shuttle incident, Prof. Roberto noted that NASA became comfortable with an acceptable level of risk relating to pieces of foam shedding and hitting the shuttle during launch. However, in the 2003 incident, a junior engineer noticed that this case was different and that, in his expert opinion, the level of risk was higher; even unacceptable. He knew that the US military could potentially help by taking pictures of the shuttle in space, which would allow damage assessment, but he did not have the authority to request the assistance; he needed senior leadership for that. Despite asking NASA through its chain of command, his request was denied; NASA did not request assistance from the US Military. The engineer was frustrated and wanted to send a

> ## "We need to make it safe for people to talk about it and encourage them to come forward."

04052022 Dr Michael Roberto

JALLC Studio

Dr. Michael Roberto
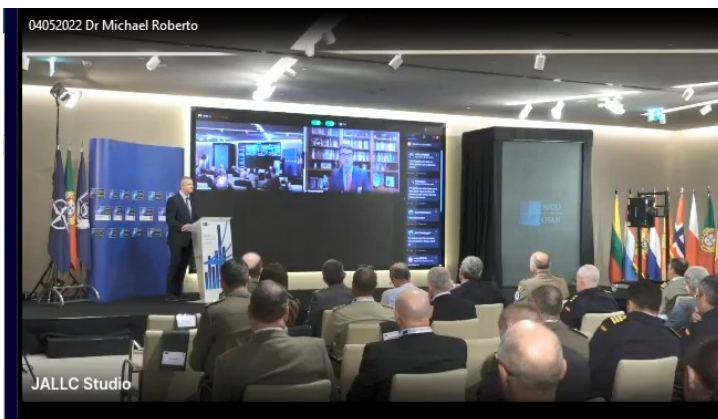
Five Techniques to make the right call

Devils Advocate

Asking one or more team members to constructively critique the idea.

Alternatives Under Review

Separate into sub-groups. Come up with and critique each others alternative plans to arrive at multiple refined options.

Pre-Mortem

Anticipate the After Action Review. What does it look like? What went wrong and right?

The Near Miss or Good Catch

Learning from things that almost went wrong or better; learning from how we prevented it from going wrong.

Working Backwards

When about to make a decision, anticipate what the press release listing potential benefits achieved through this decision is going to look like a few months down the line.

The Cuban Missile Crisis: US President Kennedy and advisors confer after EXCOMM Meeting of 29 October, 1962. L-R: Special Assistant McGeorge Bundy, President Kennedy, Assistant Secretary of Defense Paul Nitze, Chairman of the Joint Chiefs of Staff General Maxwell Taylor, Secretary of Defense Robert McNamara. White House, West Wing Colonnade.

Decades later, Robert McNamara mentioned in a conversation with Prof. Roberto that they used some of these five techniques described to prepare their advice for the President.

confrontational email, but his colleagues warned against it by saying that it would be bad for his career. Later in a meeting, he had an opportunity to interject about the foam strike, but he said he didn't do it because he felt it was not his place to do so as such a junior member of the team. As a consequence, it was decided that the incident was not a risk to the flight, and six days later the shuttle was destroyed as it tried to re-enter the Earth's atmosphere due to a hole caused by the foam strike.

In analysing NASA's arguably flawed decisions, Prof. Roberto notes that they chose to downplay what was acknowledged as an ambiguous risk under the circumstances. This, he noted, is a very natural human and organizational tendency to downplay ambiguous risks and threats. When we have a clear and present risk or threat, we are very good at rallying and taking timely decisions. But where that risk is neither clear, nor present, we tend to not want to face the potential reality the risk or threat poses

How can we do better? Prof. Roberto asks the audience. He then presents five techniques (see above) that can help tackle taking high-stakes risky decisions. These techniques allow us to gather as much information about the potential risk/threat as possible so that which makes it less ambiguous and more clear. This, in return, can help us to take an informed decision and, ultimately (and hopefully), make the right call.

> **"Let's celebrate near misses as good catches, and learn from them."**

20 YEARS
Of Lessons Learned

"Human beings, who are almost unique in having the ability to learn from the experience of others, are also remarkable for their apparent disinclination to do so."

Douglas Adams

An overview of two decades of Lessons Learned

Ms. Jacqueline Eaton, Principal Operational Research Analyst (PORA), JALLC

Noting that it's much harder for an organization to learn than for a human to learn, Ms. Eaton explained that when she first joined NATO, she was struck at how the organization struggled with knowledge retention, one of the main causes of which, is the fact that the military staff rotate in and out of posts (usually) within three years. This implies that, assuming it takes someone at least a year or two to become an expert in their field, by the time they have acquired the knowledge and experience required to do the job, it's time to leave. As such, she noted, this makes it even more important to ensure that the organization learns, and not just its staff.

Turning to how the NATO Lessons Learned Capability has developed over the years ("...*in 2003, there was darkness*…"), Ms Eaton set out the various Directives, Plans, and Roadmaps that have ensured the continuous improvement of the capability, up to the present day NATO LL Capability Improvement Roadmap (2021-2025).

Then, noting the JALLC's contributions to Lessons Learned over the years, such as training courses and the NATO Lessons Learned Portal and how those have evolved to meet user needs and make Lessons Learned more accessible and usable, she acknowledged that there is still work to do to improve the Alliance's understanding of Lessons Learned.

Ms. Eaton asked the question: but what does this all mean for NATO; are we learning lessons? Although NATO has come a long way, and we do have standardized processes, tools, and procedures in place, we still have to improve how we actually reuse lessons. Currently NATO does a good job of collecting lessons, but we still have a habit of "*setting them to one side*" and not doing anything with them. As the previous JALLC PORA would call them "*Lessons Admired.*"

The JALLC has produced over 200 reports over the past 20 years, covering a wide range of NATO Operations, Exercises, and other activities. These JALLC reports not only capture potential lessons and best practices, but place them in a context, which is critical to understanding they can be re-used in the future. Moreover, they are often the only comprehensive record NATO has of the experiences from these activities.

Ms. Eaton talking about NATO Lessons Learned Capability.

And despite real change being made on the basis of JALLC recommendations, it remains a painful fact that, a recent internal study found that in the last five years, only around one in three of JALLC analysis recommendations have been endorsed, 7% were not endorsed, and 10% partially endorsed. A whopping 50% have received no feedback at all from the Strategic Commands or analysis customer.

Finally, Ms. Eaton offered some of her own ideas about how NATO can not just do things better, but understand when we need to do things differently, which is where innovation and transformation

ON THE RIGHT ROAD
The NATO LL Improvement Roadmap 2021-2025

Colonel Giovanni Chessari, LL Branch Head, HQ SACT

NATO has done much to ensure that its NATO Lessons Learned (LL) Capability continues to evolve and develop to meet the needs of the Alliance. From the very first LL Roadmap in 2009, followed by the NATO LL Optimization Action Plan (2017), which heralded the recent overhaul of NATO LL Portal, to the latest guidance on the improvement of the capability on the NATO LL Capability Improvement Roadmap (2021-2025) (the Roadmap). Colonel Chessari, the LL Branch Head at HQ SACT, briefed the audience on the ongoing and future efforts relating to the Roadmap.

Colonel Chessari listed the Four Lines of Effort set out in the Roadmap which are as follows: NATO LL Governance, LL Management and Battle Rhythm of the two Strategic Commands, Lessons Collection and Exploitation, and LL Capability Innovation.

Noting the high level of ambition of the Roadmap, which is intended to drive the improvement of the NATO LL Capability over the next years, the Colonel went on the highlight some of the new focus areas in the Roadmap, which include initiating a review of the NATO LL Policy, reinforcing lessons collection from operations and exercises, and improving Joint Analysis and LL Active Content Management.

Despite having to cope with the consequences of the COVID-19 pandemic, the Roadmap has still managed to deliver during its first year. Colonel Chessari highlighted a number of areas that were addressed under the Roadmap during 2021, including improving leadership engagement and developing LL Innovation activities.

Looking ahead to this year and beyond, the Colonel set out some of the objectives that he wants the LL community to reflect on, which include strengthening LL coordination with NATO HQ and developing a new NATO LL Standard. However, he noted that we need to remain open minded and ready to adjust our objectives and plans to ensure the optimal improvement of the NATO LL Capability.

> "We are talking about innovation in the NATO Lessons Learned Process; what innovative tools and ideas can improve the process itself."

General Chessari presenting the NATO LL Improvement Roadmap 2021-2025.

# Lessons Learned in support of the Warfare Development Agenda

The first Panel of the NLLC22 focused on how Lessons Learned (LL) can support the Warfare Development Agenda. NATO faces persistent competition from multiple actors across multiple domains. The Alliance's Warfare Development Agenda is a planning tool to implement the NATO Warfighting Capstone Concept: a North Star vision for NATO's future Military Instrument of Power that includes multi-domain operations, resilience, cognitive work, and much more.

Panel Key Speaker, Major General Guillermo Cavo, Deputy Chief of Staff Joint Force Development, first set the scene for this panel which was followed over the NLLC22 days by intensive and productive panel discussions, culminating in the Key Takeaways presented here.

In February 2021, the North Atlantic Council approved the NATO Warfighting Capstone Concept (NWCC) as the Alliance's warfare development concept. In conjunction with the NATO Military Strategy (NMS) and the Concept for Deterrence and Defence of the Euro-Atlantic Area (DDA), the NWCC sets out an ambitious, but realistic trajectory for the development of NATO's military instrument.

The NWCC is a key element in the next generation of military thinking in NATO. To achieve the ambitious goals of the NWCC, Allied Command Transformation is managing the Alliance Warfare Development Agenda (WDA): a threat informed, risk and opportunity-based framework aligning the warfare development activities of NATO and Nations. The WDA is the culmination of conceptual and planning work across the entirety of the Alliance.
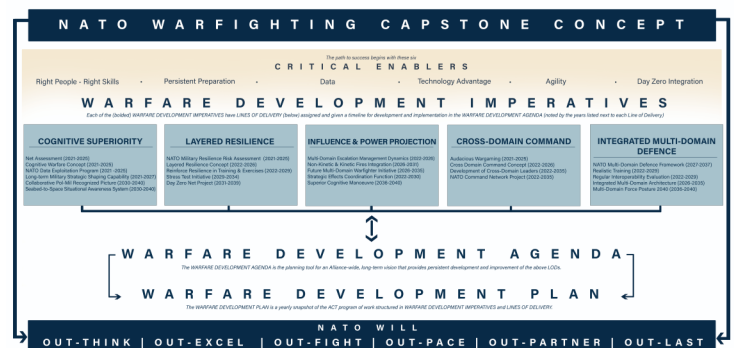
During the NLLC22, the panel discussions on this topic revealed the need for a strategic alignment and engagement across NATO, with Allies, Partners, and other organizations in line with the Warfare Development Imperatives set out in the WDA.

The potential NATO LL Policy update / review may provide some ground for such an alignment from the LL perspective that could allow for improved

> **"Careful consideration should be given to unlearning lessons already learned in the past [...] which may not be applicable to the future operating environment..."**

Finally, the panel participants agreed on the need for further investigation of ways, means, roles, and responsibilities for lessons implementation in support of the WDA, whereby HQ Supreme Allied Commander Transformation appears to be the main Lessons Learned gateway to the Military Committee and Allies and to be a customer for specific JALLC Joint Analysis report(s) looking at the WDA implementation.

Major General Cavo addresses the NLLC22 audience in the studio in Lisbon, Portugal.

transfer of knowledge / lessons between Allies and NATO Entities. Knowledge transfer is very relevant from the WDA perspective; some Allies can afford more resources that can advance more quickly in terms of WDA implementation. As such they should be able to provide early feedback and observations to be exploited by other Allies.

The panel discussions also indicated the need to include feedback loops in each WDA Line of Delivery to generate checkpoints that will allow for the capture and sharing of relevant observations, supporting any review and update of the WDA.

Currently, Simulation and Wargaming activities appear the most suitable venues with the potential to identify lessons that can be further considered in the WDA's implementation. The panel participants also discussed the concept of *"unlearning"* lessons already learned in the past or current Alliance operating environment, but may not be applicable to the future security environment.

Key Takeaways:

Updating the NATO LL Policy may provide some ground for a strategic alignment and engagement from the LL perspective across NATO, with Allies, Partners, and other organizations in line with the Warfare Development Imperatives resulting in improved transfer of knowledge / lessons between Allies and NATO Entities.

There is a need to include feedback loops in each WDA Line of Delivery to generate checkpoints that will allow for the capture and sharing of observations, supporting any review and update of the WDA.

Careful consideration should be given to unlearning lessons already learned in the past or current Alliance operating environment, but which may not be applicable to the future operating environment as envisaged with the WDA.

Innovation in Support of Lessons Learned

The second NLLC22 Panel was aimed at gaining further understanding on how innovation can support Lessons Learned (LL). Since the JALLC hosted the New Technologies Event in 2018, it has remained dedicated to understanding how new technologies can potentially make learning lessons easier and more efficient.

The Key Speaker for the second Panel was Dr. Michael Street, Head Innovation and Data Sciences in NATO's Communications and Information Agency, who presented his perspective of how Innovation can support and is supporting Lessons Learned in NATO. The panel worked with both online participants as well as those onsite to develop their Key Takeaways.

The panel discussions started with the key question: "*Why should the Alliance innovate and what does innovation mean for the Alliance?*" The contributions from the panel members and audience showed that innovation has many connotations and should not only be understood as a thought, as an idea, but also as a process. As such, innovation in NATO does not come down to just technology, but requires a certain mindset—reflecting the right attitude towards technology and innovation—and must follow a correct process, reflecting how we can identify and use suitable technology. Moreover, it's not just the implementation of new technology that can be considered as *innovative;* implementing a new process can be just as innovative as any new technology.

In fact, it's a combination of new technology, the right mindset, and suitable processes, that reflects the way NATO will need to innovate in order to adapt, stay ahead of its adversaries, and maintain the Alliance's strategic edge. NATO committed to innovation at the Warsaw Summit, which aimed to identify advanced and emerging technologies, evaluate their applicability in the military domain, and implement them through innovative solutions and efforts through a more efficient use of the common-funded capability delivery process.

Recent efforts such as the Defence Innovation Accelerator of the North Atlantic (DIANA) and the Defence Innovation Fund are proof of the innovation mindset in NATO.[1]

I think that's the single best piece of advice: constantly think about how you could be doing things better and questioning yourself.

Elon Musk

[1] DIANA is a NATO ground-breaking initiative to sharpen the Alliance's technological edge and was approved on 07 April 2022. Initial details are available online; and The Defence Innovation Fund is a multinational Fund that will help NATO to retain its technological edge by enabling investment in dual-use technologies of potential application to defence and security. Initial details are available online.

In terms of governance, the highest level mechanisms in place to promote innovation in NATO include the Innovation Board (NATO Enterprise) and HQ Innovation Unit & Innovation Task Force which follow specific processes to embed innovation in NATO's activities. These processes are fundamental to usher in innovation, as technology only makes sense when processes are updated and up to speed with changing times and when the right people are able to use the right new technologies. Given these efforts, NATO must continue to gain a better understanding of the impact of new technologies such as artificial intelligence and data mining, together with their defence capabilities, on the Alliance's current and future activities.

Dr. Michael Street takes questions from the online and onsite audience.

The panel discussions emphasized the Alliance's need to train LL experts in data science concepts that, in addition to learning from individual observations / lessons, can help extract tacit knowledge from unstructured data from exercises, operations, and routine activities using a big data framework. The ongoing work to develop NATO LL specialized ontologies and lexicons was also discussed and confirmed the relevance of the initial development of the Observation Collection & Analysis Tool (OCAT). The panel discussions also revealed the benefits of multinational collaboration within the Science and Technology Organization network with regard to identifying lessons, projects, and new technologies available in or from nations. Such lessons, projects, and new technologies could be considered in terms of the capability development efforts towards the delivery of the new NATO LL Toolset, as the main effort within the Innovation Line of Effort of the NATO LL Capability Improvement Roadmap (2021 – 2025).

Key Takeaways:

Innovation implies three elements: new technologies, processes, and mindset (as the main driver). But LL staff need to be trained with the right skills to ensure LL innovation is effective.

LL effectiveness is not only about quantity but also about quality and organizational changes leading to improvement.

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Lessons coming from projects and use of new technologies within national (e.g. US experience with the next version of their LL system) and multinational collaboration networks (e.g. through the Science and Technology Organization), should be considered during the development of the New NATO Lessons Learned Toolset.

"**Lessons Learned effectiveness is not only about quantity but also about quality and organizational changes leading to improvement.**"

Lessons from Exercises: overcoming challenges and short-falls

The panel that looked at lessons from exercises focussed on identifying the challenges and shortfalls from learning lessons before, during, and after an exercise and how these challenges can be overcome as well as how lessons can be better used to improve exercise design.

The main constraint identified, relates to competing time lines and priorities between the Exercise Reporting Process and the NATO Lessons Learned (LL) Process. Key Speaker, Air Commodore Adrian Hill, DCOS Spt, HQ AIRCOM, reminded the audience of why NATO conducts exercises, highlighting some known challenges and potential solutions to set the scene for the panel discussions that resulted in the Key Takeaways.

The scene was set by the key speaker who reminded the audience in the plenary session of the rationale behind why NATO conducts exercises: deterrence, assurance, preparation for Operations (crisis and war), to improve existing capabilities, enhance interoperability and standardization, and to maintain or increase readiness and responsiveness. However, while the rationale was considered to be correct, the questions raised during the panel discussion referred to whether or not the right things are always exercised.

Given the frequency of NATO Exercises and their importance to the Alliance and the Allies, the NATO LL Capability should be engaged to support the improvement of the exercises and potentially contribute to addressing some of the related challenges.

In this respect—based on their NATO-, international, national-, and personal- experiences—the panel members discussed several aspects of learning lessons from NATO Exercises which related mainly to: leadership's role in driving the LL mindset in exercises; lessons collection and prioritization; and constraints of Exercise Stage 4.

Logos from NATO Exercises of the Steadfast Series. Exercises are important tools through which the Alliance tests and validates its concepts, procedures, systems, and tactics. More broadly, they enable militaries and civilian organizations deployed in theatres of operation to test capabilities and practise working together efficiently in a demanding crisis situation. You can find out more about NATO Exercises here.

"Panel participants unanimously agreed that the cadence of the execution of exercises in conjunction with the NATO LL Process is demanding and may not allow for sufficient effort invested in collecting observations."

Key Takeaways:

The NATO LL Process does not always allow for the time needed to do LL during an exercise and initiating the NATO LL Process for relevant observations.

Reviewing the key NATO Exercise planning and reporting documents may provide the opportunity to innovate, adapt, and apply lessons, so that exercise design can ensure prioritization and collection of observations during an exercise.

Innovative ways to show that LL is an opportunity to improve the way NATO works, rather than an extra reporting burden, may serve to improve the quality of LL in exercise reporting.

The panel participants unanimously agreed that the cadence of the execution of exercises in conjunction with the NATO LL Process is demanding and does not allow individuals to commit adequate time for preparation, often resulting in limited effort being invested in collecting observations to initiate the NATO LL Process.

Stage 4 of the exercise process was emphasized specifically in terms of lacking credible timelines and alignment for delivering robust analysis products that could result in better LL throughout the exercise process. Finally, the panel discussions suggested the need to bring LL innovation into exercises, especially by addressing the user requirements for the new NATO LL Toolset relating to exploiting large datasets generated during exercises.

Top: Air Commodore Adrian Hill asking a fundamental question during his presentation on Lessons from Exercises.
Bottom: The panel at work, developing the Key Takeaways during the NLLC22.

Lessons from Operations: overcoming challenges and shortfalls

This NLLC22 Panel looked at Lessons from Operations and touched upon the changing nature of NATO operations, applying the NATO Lessons Learned (LL) Process in operations, leadership and the LL Mindset, as well as LL information sharing.

17 **Key Speaker Major General Boga Ribeiro noted that the last 20 years of NATO operations focused on a wide variety of the lower end of conflict intensity, core tasks, and types of operations; and that the immediate future for NATO will require preparation for more complex, wide, intense, and fast operational environments. The panel then prepared their Key Takeaways based on the discussion covering a range of related topics.**

As the NLLC22 sought to provide a flashback of two decades of learning to gain insights for the next five years, the panel engaged in a discussion of how NATO operations have evolved during this period to lower intensity conflicts with a focus on crisis management and cooperative security core tasks. Consequently, most lessons relate to these types of operations and led to relevant changes in the policies, doctrine, and capabilities relating to these two core tasks.

However, the fast evolving global security environment and the challenges it poses show that the Alliance's future operating environment will drive the nature of future NATO operations which will likely involve multi-domain, complex, intense, and fast operational environments with more focus on collective defence.

As such, the NATO LL Capability will need to adapt accordingly and consider in more depth the relevant archived lessons and new lessons coming from exercises to ensure the Alliance is fully prepared for the nature of new operations.

> **"...the NATO LL Capability will need to adapt (...) and consider relevant archived lessons and new lessons coming from exercises to ensure the Alliance is fully prepared for the new nature of operations."**

One of the key challenges discussed by the panel refers to how to embed lessons in operations' planning activities. In order to ensure that lessons are part of the planning process, LL priorities and guidance should be included in both strategic and operational level plans, and LL repositories (first the NLLP and following with national repositories) should be consulted to identify topical lessons before an operation.

General Boga Ribeiro addresses the NLLC22 audience in the studio in Lisbon, Portugal.

Another challenge pointed out by the panel was the exploitation of lessons in operations at the speed of relevance to ensure availability of the right capabilities and successful operational conduct. An operational commander needs to ensure that observations are collected and submitted within the NATO LL Process during an operation, and not just afterwards.

After discussing other challenges such as those relating to Leadership and Mindset as well as LL information sharing, the panel worked to develop their Key Takeaways.

Key Takeaways:

This potential future reality of faster-paced, intense conflict, should perhaps result in the need to reconsider the way NATO LL Capability is employed in operations such as ensuring the continuous collection of observations throughout the duration of the operation and not only during after action reviews.

Providing LL training, advertising successful LL stories, standardization, and incorporating new technologies in LL tools appear suitable ways to overcome barriers to LL information sharing relating to mindset, interoperability, and technical issues.

In operations, an LL mindset and timely implementation of remedial actions are critical factors for the mission success.

NLLC22 Agenda

Tuesday 03 May

14:00 | Welcome desk for external participants opens

15:00 | Welcome Coffee

15:30 | NLLC Overview and administrative remarks: **Mr Stefan Olaru** - Research Analyst; JALLC

16:00 | Panels set-up; workflow; sequence; topics – initial discussions between panel members.

18:30 | Icebreaker

Wednesday 04 May

08:30 | Parallel breakout sessions for panel preparation. Discuss on-site: main topics, questions, ideas, structure the work and findings

09:45 | Coffee Break

10:15 | Parallel breakout sessions for panel preparation. Discuss on-site: main topics, questions, ideas, structure the work and findings

11:45 | Lunch Break

13:00 | NLLC Introduction: **Mr. Stefan Olaru** - Research Analyst; JALLC

13:07 | Welcome to NLLC22: **Brigadier General Bogdan Cernat** – Commander; JALLC

13:15 | Opening Remarks: **General Paolo Ruggiero** – Deputy Supreme Allied Commander Transformation (DSACT); HQ SACT.

13:30 | Invited speaker from Academia: **Prof. Michael Roberto** – Professor of Management; Bryant University, USA

14:00 | Overview of two decades of LL: **Ms. Jacqueline Eaton** – Principal Operational Research Analyst; JALLC

14:30 | Ongoing and future efforts within the NATO LL Improvement Roadmap (2021 – 2025): **Colonel Giovanni Chessari** – LL Branch Head; HQ SACT

15:15 | Individual presentations:

> Panel 1: NATO's Warfighting Capstone Concept (NWCC) & Warfare Development Agenda (WDA) – current status; **Major General Guillermo Cavo** – Deputy Chief of Staff (DCOS) of Joint Force Development (JFD); HQ SACT;

> Panel 2: Innovation in support of LL – **Dr. Michael Street**; Head Innovation and Data Sciences in NATO's Communications and Information Agency;

> Panel 3: Overcoming challenges in learning enduring lessons in Exercises; **Air Commodore Adrian Hill** – DCOS Support; AIRCOM;

> Panel 4: Overcoming challenges in learning enduring lessons in Operations; **Major General João Boga Ribeiro** – Deputy Commander; NATO Rapid Deployable Spanish Corps (NRDC Spain)

16:45 | Daily wrap-up & Preparation for Day 2: **Mr. Stefan Olaru** - Research Analyst; JALLC.

17:00 | Forums open for discussions and individual contributions online with initial facilitation.

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Thursday 05 May

08:30 | Panel discussions / Parallel breakout sessions: online participants will join the panel chosen in the registration form via GoToMeeting

09.45 | Coffee Break

10:15 | Parallel breakout sessions: continuation of the panel discussions

11.45 | Lunch Break

12:30 | The Online plenary session was opened- Communication check

13:00 | Day 2 introduction: **Mr. Stefan Olaru** - Research Analyst; JALLC

13:05 | Invited speaker: **General (Rtd) Curtis Scaparrotti** – Senior Counsellor, The Cohen Group, and former SACEUR

13:30 | Panel 1: Takeaways regarding LL in support of the Warfare Development Agenda

14:00 | Panel 2: Takeaways regarding innovation in support of LL

14:30 | Coffee Break

15:00 | Panel 3: Takeaways regarding overcoming challenges in learning enduring lessons from Exercises

15:30 | Panel 4: Takeaways regarding overcoming challenges in learning enduring lessons from Operations

16:00 | NLLC 22 Closing Remarks: **Brigadier General Bogdan Cernat** – Commander; JALLC

16:10 | Next steps: **Mr. Stefan Olaru** - Research Analyst; JALLC

16:20 | NLLC Platform open for questions & comments
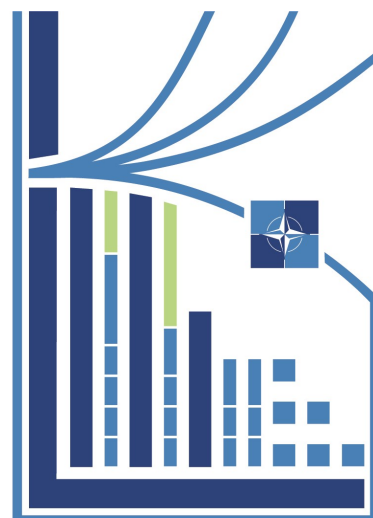
If you are interested in finding out more about the NLLC22 speakers, you can download a copy of the NLLC22 Biographies Booklet from the Classified version of the NATO Lessons Learned Portal.
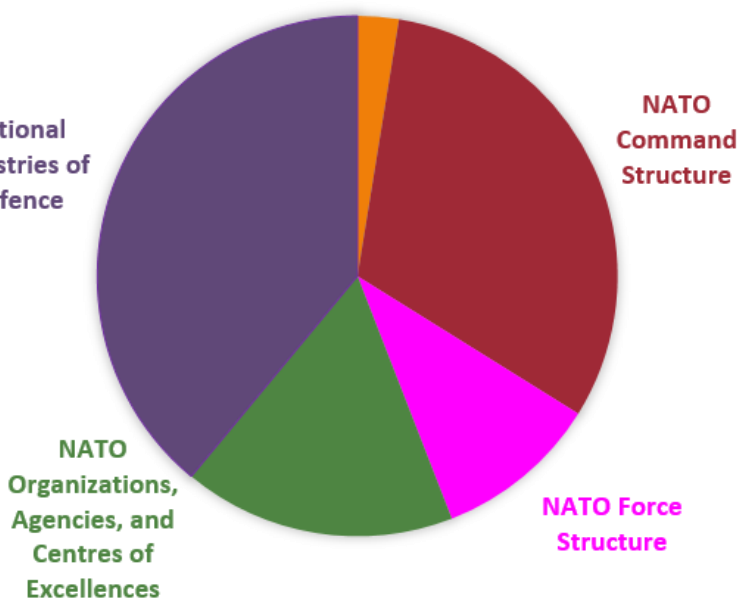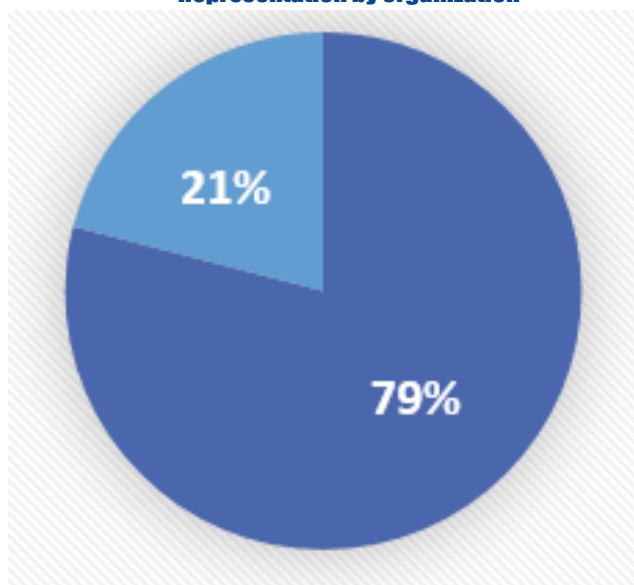
NLLC22
20 years of learning

NLLC22 @ a Glance

Nation		Count	
Albania		1	
Belgium		5	
Bulgaria		6	
Canada		9	
Croatia		4	
Czech Republic		17	
Denmark		2	
Estonia		1	
France		10	
Germany		16	
Greece		11	
Hungary		9	
Italy		25	
Latvia		4	
Lithuania		8	
Netherlands		9	
Norway		5	
Poland		16	
Portugal		23	
Romania		24	
Slovakia		2	
Slovenia		3	
Spain		25	
Türkiye		21	
United Kingdom		23	
United States		34	
Partner Nations		4	

Representation by Nation

21

NATO HQ

NATO Command Structure

National Ministries of Defence

NATO Organizations, Agencies, and Centres of Excellences

NATO Force Structure

Representation by organization

21%

79%

■ Military personnel   ■ Civilian personnel

NLLC22 Statistics

98.5% of participants felt the NLCC22 was very well or well prepared and facilitated.

81% of participants that provided feedback were very likely to recommend the NLLC to a colleague next year

239 participants attended the NLLC22 online; 81% of them indicated that the NLLC should continue to offer remote participation in the future as well (see charts right).

6% Very unlikely

14% Maybe

81% Very likely

Recommending an online component to NLLC

Comments about the NLLC22

"The Conference presented a unique opportunity to gather NATO personnel from across the Alliance, and confront them with speakers from academia, the private sector and beyond. I expect many of these fruitful discussions to be brought forward in the months to come."

"The conference is the main event for the NATO Lessons Learned Community, and provided insight into the future of LL"

"Congratulations to the NLLC team for the successful Conference! It was truly well –thought and professionally organized! Despite the technical challenges of running a hybrid conference, you managed to overcome them in a professional way, well done! "

ONE CONFERENCE

317 registered participants, 22 Entities, 29 Nations