



14 - 16 October

NATO LL

Conference 2019 Magazine



Welcomes from
COM JALLC and
SACT



Setting the Context



JALLC Updates



Exercise TRJE 18



Challenges and
Opportunities



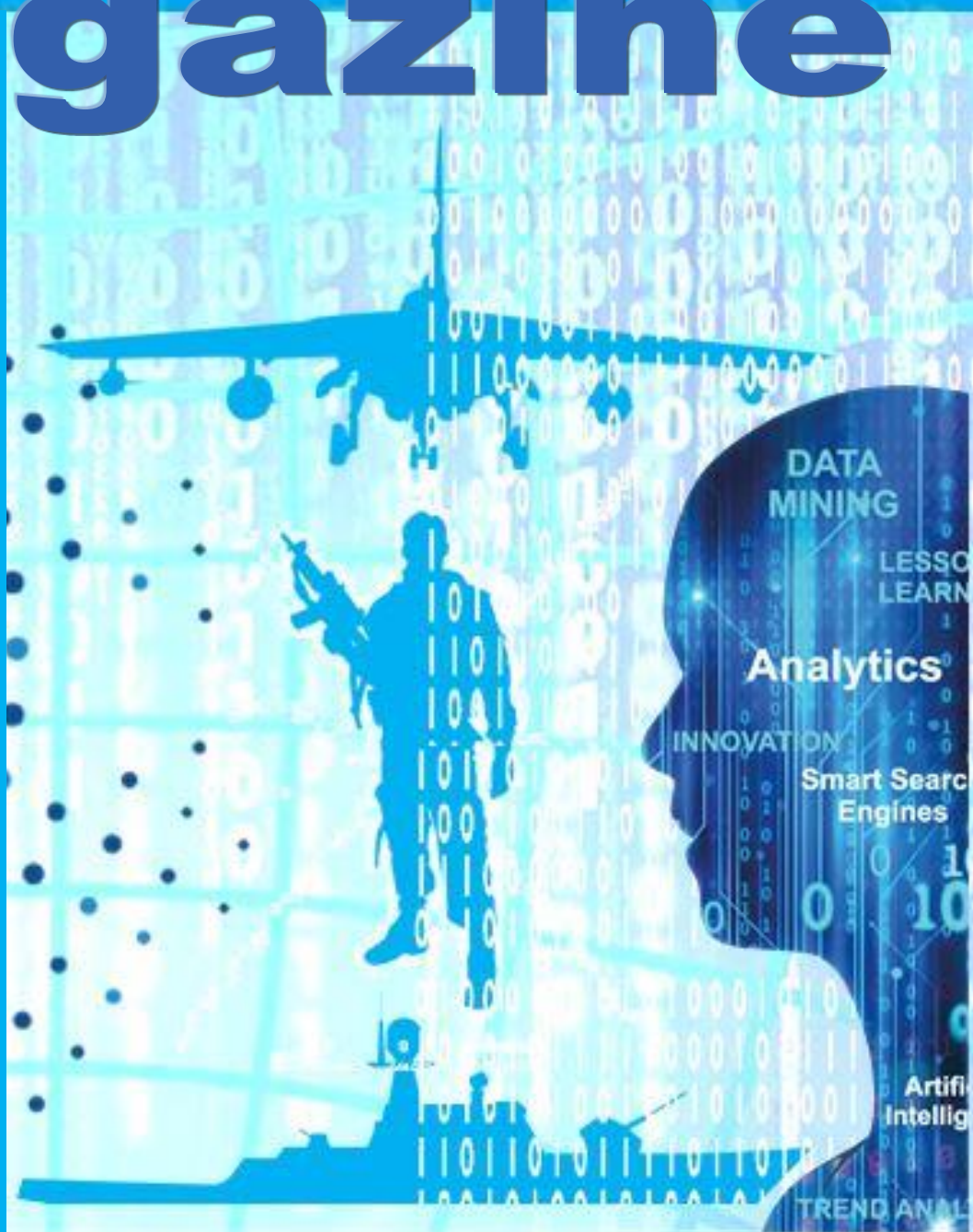
Lessons from
Partners



New Technologies



And lots more!



Improving the NATO LL Capability to Enhance NATO's Warfighting Capability



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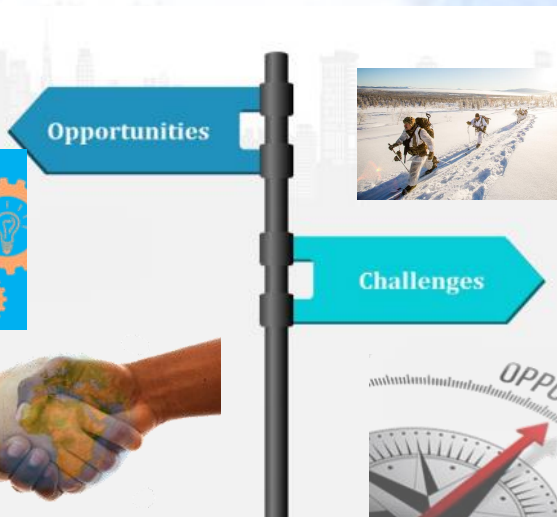
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Editorial from Commander JALLC

BGEN Bogdan Cernat, Romanian Army

I'd like to welcome you all to this magazine covering the NATO Lessons Learned Conference 2019 (NLLC 19) which took place from 14 October to 16 October at the NOVA School of Business and Economics near Lisbon. I hope this magazine will provide you with an overview of the speeches, presentations, and general flow of the event.

This year we were lucky to have a diverse group of speakers address the audience, from many different backgrounds, speaking on many different topics. And it is this diversity in the Lessons Learned (LL) Community that makes it such a rich source of ideas and inspiration on how to improve and innovate to achieve a more efficient and effective NATO Lessons Learned Capability. And yet, despite this diversity, or perhaps indeed *because* of it, we're still able to address the theme of this year's conference:

Improving the NATO Lessons Learned Capability to Enhance NATO's Warfighting Capability.



This theme was amply addressed, not only through the impressive series of presentations, panels, and updates, but also through the audience's interaction with the conference via direct discussion and using the technology provided. Indeed, the level of interaction achieved during the Conference was fantastic and facilitated the exchange of ideas necessary to meet my own and Supreme Allied Commander Transformation's expectations for this event.

During the conference, we took a long hard look at our own actions with regard to the NATO Lessons Learned Capability from each of our own perspectives: whether from HQ SACT, or SHAPE; whether from the JALLC, the JWC, or a National Command; or whether from an operation or an Exercise. Everyone who works with the NATO LL Capability or benefits from it, is part of the NATO LL Community.

We also looked at how the NATO Lessons Learned Capability has been implemented so far, and what we are doing to spread the Lessons Learned word throughout the Organization, and beyond to our Partners, as well as how Exercises contribute to organizational and operational learning. We also spent time discussing some of the challenges relating to implementing our LL Capability and what needs to *Change*.

I think, at heart we all want that *Change*, we all want the Alliance to improve and we all want our own HQ to be more effective and efficient when it comes to Learning Lessons. I don't think I heard anyone say during the conference: ***Oh no, NATO is fine we don't need to change a thing.***

The problem is that change is hard...

I think Rear Admiral Kirk made an interesting point in this respect in his presentation on the second day, stating that sometimes we need to feel *pain* in order make a necessary change. And, as he reminded us, Darwin said that it is not the strongest species that survives, but the one that is most able to change.

This need to change was echoed throughout the conference, along with another interesting point that was brought up in almost all of the presentations; that **CHANGE** inevitably means we may **FAIL**. However, we cannot be afraid to fail; to fail is to **LEARN**.

As Mr. Doraton noted: failure isn't a bad thing, unless you are not learning from it. In fact, not to try because we risk failure is a failure in itself.

It was also interesting for me, as a newcomer, to get an external perspective on how NATO as an organization are perceived when it comes to learning lessons.

The nature of NATO, as a political-military Alliance, means that we are often so focused on what we are doing internally—how we need to learn lessons better—that we often forget the value of understanding how *others* learn lessons and how we can *learn* from that learning. I certainly gained a fresh perspective on Institutional Lessons Learned, and I hope you all appreciated this opportunity to gain some objectivity on our own Lessons Learned Process.

A point that came to my attention from both Professor Hardt's and Dr Dyson's presentations is the risk associated with not sharing our valuable Lessons information. Whether we deem it *Knowledge Hoarding*, or *Information Siloing*, I think we all instinctively feel that a successful Lessons Learned Process needs us to share.

It has been fascinating to hear from our Partners and National and International Organizations: there is much we can learn from each other, and that starts by listening to each other. We all have pretty much the same challenges to face when it comes to *doing* Lessons Learned and implementing New Technology, but this conference has shown that there are many different ways to address those challenges. We as a community should not only remain open to new solutions, but remain curious and driven to find the best possible way of solving the problem.

Finally, we cannot deny the important role technology is playing and will continue to play in the future of warfighting. Therefore we must fully understand both sides of the New Technologies Damocles Sword: yes, technology offers us amazing opportunities to be bigger, better, faster, stronger; but it offers our potential adversaries those same opportunities. We must therefore ensure we fully understand all aspects of this *Brave New World* in order to fully exploit the available *Opportunities* to ensure that we do not allow New Technology to turn into a *Challenge*.

In sum, these three days have made it clear to me that we need to better recognize where we need to change: whether that is change to how we do leadership, change to our processes, or change to our tools. We need to feel able to make those changes and accept that we may fail, understanding that failure is just another opportunity to learn.

We are, after all the community in NATO that is focused on ensuring the Alliance can keep learning lessons; so we ourselves cannot be afraid of this learning curve.

Finally, I would like to thank my staff for organizing the event. It was, once again, a great success and full of opportunities to learn, share, and network and I am certainly looking forward to the next iteration of the NATO Lessons Learned Conference which will be announced some time in 2020.





Welcome from Supreme Allied Commander Transformation

General André Lanata



Supreme Allied Commander Transformation General André Lanata welcomed participants to the conference with a video message...

General Lanata first thanked Portugal for hosting the event and Brigadier-General Cernat, Commander of the JALLC, for organizing it.

This year the main focus of the conference was improving NATO's Lessons Learned (LL) Capability to enhance NATO's Warfighting Capability. Lessons Learned are one of the essential strands of warfare development activities, and ensuring that the process is always improving is vital for the support of our warfighters.

He noted that the format of the conference, with speakers from NATO, the Nations, our Partners, and academia, provided a great opportunity to share insights on the latest developments in LL and to think about a possible new NATO-wide LL Plan for the period to 2025.

The mission for the conference was an important and timely one, he said. The character of warfare evolves, and NATO needed to observe, orientate, decide, and act faster in the new operating environments. He encouraged the conference participants to think added value, and bring forward ideas to shape the NATO LL Process.

The NATO Command Structure has recently achieved considerable results in Lessons-sharing with the NATO LL Portal (NLLP) and LL support to NATO Exercises. But there was still more to do to implement the policy fully, particularly in strengthening cooperation within NATO.

The goal should be to achieve effective engagement and lessons sharing by Nations, elevation to political-military level of the strategic lessons coming from all NATO's key activities, and identification of high-level priorities for the collection of future lessons.

General Lanata said that he was looking forward to seeing what the conference participants, as a community of subject-matter experts, would come up with in ideas to support warfare development. He encouraged participants to bring and discuss their ideas and take an active role in shaping improvements.

Setting the Context...

Brigadier General Ilmars Lejins, ACOS JFD

Colonel Manuel Santos, SHAPE J5

The theme of the 2019 NATO Lessons Learned Conference was one that would require the needs of both Strategic Commands to be taken into consideration. To ensure the correct context was provided from both commands, we invited BGEN Ilmars Lejins and COL Manuel Santos to speak about the two elements of the Conference theme from their Command's perspective. The result was an opportunity for the audience to hear first hand what the thinking is at the Strategic Level when it comes to the NATO LL Capability and NATO's Warfighting Capability and how the two need to interact.

Improving NATO's LL Capability

Brigadier General Ilmars Lejins, Assistant Chief of Staff, Joint Force Development, opened the day's presentations, speaking about the status of implementing the NATO LL Capability and the way ahead.

He considered that much progress had been made on the NATO LL Optimization Plan (NLLOAP), drawing on the good work of predecessors. There has been considerable growth in the number of entries in the NATO Lessons Learned Portal (NLLP), and the JALLC was much more engaged in providing LL support to operations and exercises. However, there were still gaps in governance, in drawing together strategic LL, in the NLLP, and—in particular and most challengingly—in the culture to support LL.

Nevertheless, he noted that it was encouraging to see that a lot of the NLLOAP has already been implemented and progress is being made to cover more under the new NATO-wide LL Plan 2020-25, which will provide added value by focusing on good governance, delivery, and LL innovation.

The LL vision for 2025 is that strong leadership will make the NATO LL Process an integral and natural part of daily staff work throughout NATO, using innovative and leading-edge technology to allow for easy and fast management and exploitation of Lessons to improve all aspects of the Alliance and make NATO a true learning organization.

The overall aim was to enhance NATO's Warfighting Capability, in line with the Warfighting Capstone Concept, focused on the development of NATO's military instrument of power over the next 20 years.

The LL should be driven by leadership, deliver on process, and we should aim to produce a new LL toolset, harmonized and interoperable with NATO's IT tools.

Tangible outcomes were needed, and BGEN Lejins invited all NLLC 19 participants to be active and make their mark.



When it comes to the NATO LL Capability, is the glass half empty or half full? Does it really matter?

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The Warfighting Capability that NATO Needs

Colonel Manuel Santos, SHAPE J5, discussed the warfighting capability that NATO needs, a capacity that is constantly evolving.

The Wales Summit of 2014 had emphasized readiness, the Warsaw summit of 2016 had emphasized multinationality, and the Brussels Summit of 2018 had emphasized responsiveness, all of which increased the need for interoperability. NATO needed highly capable, deployable, and trained forces. Allied Command Transformation's (ACT) focus was therefore on interoperability and its clear force multiplier effect. Many capabilities in the past had had interoperability as an afterthought. What was needed instead was a culture of interoperability by design.

The Allied Command Operations (ACO) Forces Standards cover the minimum requirements the Nations must meet in providing NATO forces. They cover capabilities, training, readiness, and also interoperability. Interoperability tools, such as standards, LL, and experimentation, have to work in an integrated way. Interoperability should be seen as human and procedural, at least as much as technological.

He noted that interoperability is a cycle, rather than a one-off. The aim will be to define requirements, propose solutions, implement the chosen solutions, observe any gaps and shortfalls, and then start again. Lessons and observations from operations, training, and evaluations should feed in to that cyclical process.

ACO's aims are to:

- include references to interoperability doctrine, standards, and terminology in its directives and SOPs;
- focus on interoperability in exercises and evaluations;
- include interoperability – suitability and risk assessment – in the NATO Defence Planning Process;
- provide observations and lessons from ACO-led activity, such as operations, exercises, and evaluations;
- assess the implementation of interoperability standards by NATO bodies; and
- communicate observations and lessons to standardization bodies.

Colonel Santos said that the emphasis on interoperability should be neither only from the top down nor only from the bottom up—but from both. He requested the support of the LL community, the Nations and NATO HQs in recognizing that there are gaps and shortfalls in interoperability and in emphasizing its importance in everything that they did.



JALLC



LL Engagement & Training

Lieutenant Colonel Rigo Genz reminded the audience that LL Training had been added in early 2018 as the fourth pillar to the NATO LL Capability – in addition to LL Structure, Process, and Tools.

As well as the two-hour LL online course for general awareness and the five-day LL Staff Officer Course for Subject Matter Experts, a new NATO LL Management Course will be offered for the first time in the week after NLLC 19 in Oberammergau, Germany. This course will provide the opportunity for hands-on experience and a deeper dive into the subject.

The JALLC Advisory and Training Team (the JATT), has also been providing tailored LL training around the globe in 2019 and will continue to do so in 2020.



The NATO LL Portal



Commander Pedro Viegas described the growth in the number of entries on the NLLP, which was partly the result of data migration from the NATO Command Structure to the NLLP. Commander Viegas highlighted that:

- The JALLC has implemented over 180 improvements to the way the NLLP in the last two years.
- In the short term, the JALLC is working on the NLLP Improvement Plan 2019.
- In the medium term, there will be further NLLP improvement, implementation of the new NATO LL Plan 2020-25, and the integration of New Technologies.
- It is expected that the NATO Communication and Information Agency will take over some of the technical functions of the NLLP from 2020.
- In the longer term, the focus will be on a new LL Toolset with plans to discontinue the present NLLP from 2025.

Updates & Insights

The JALLC provided brief updates on the state of play on three key LL topics, summarizing the LL Engagement and Training programme, the latest on the NATO LL Portal, and some key insights on the NATO LL Capability pursuant to a recent JALLC study.

LTC Rigo Genz
CDR Pedro Viegas
LTC Fabrizio Ottaviani

NATO LL Capability: JALLC's Perspective

Lieutenant Colonel Fabrizio Ottaviani spoke about the status of the NATO LL Capability, from the JALLC perspective. After studying key documents and conducting interviews, the study concluded that all the necessary pillars for the NATO LL Process were in existence, but the outcomes from the process were too often less than they should be.

Possible causes of these poorer than expected outcomes that might require attention included:

- difficulties in filling LL posts and keeping post-holders focused on LL, given, among other things, the extent of dual-hatting and internal reassignment;
- hierarchical and functional issues related to the location of LL posts in the command structure, which led to problems of prioritization and communication;
- the large amount of generic rather than HQ-specific information in much of the documentation; and
- the LL mindset and culture – there can be a lack of concern and formal action when requirements for action and deliverables are not met.

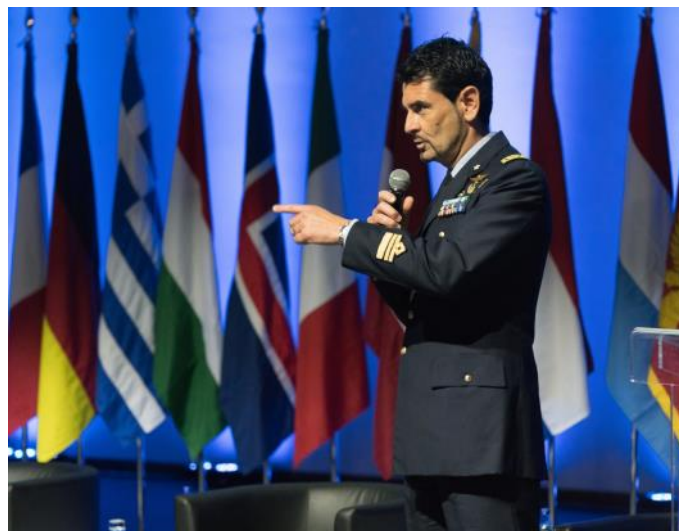
The root cause seems to be the current prioritization given to LL in NATO.

As an example, LTC Ottaviani described how aviation safety in the Italian Air Force had tended to be ignored in the early 1990s, and the safety record was relatively poor. It is now rooted in airmen's culture. What changed was that the functional area was put directly below the Air Force's Chief of Staff. The structures, tools, and processes that were already in place then began to work as had been intended.

He noted that the study does not judge the prioritization given to LL as it is in reality. It merely points out that, given the situation, changing that prioritization is the right direction in which to go.

Different layers for intervention have been identified. People do not, however, need to wait for the main change in prioritization before taking action.

LTC Ottaviani noted that action at any level would be likely to make a difference, and participants were asked to think about what they could do to address potential challenges – as Commander JALLC had said in his welcome, the purpose of NLLC 19 is to receive participants' biggest, best, and brightest ideas.





NATO LL Capability: Insights

Mr David Noon, JALLC

Ms Louise Hoehl, NCIA



Mr David Noon described the findings from JALLC's support to the implementation of the NATO LL Process during Exercise TRIDENT JUNCTURE 2018 (TRJE 18).

TRJE18 was the largest NATO exercise in a generation, and all 29 NATO Nations plus two Partners, Sweden and

Finland, participated. 60 ships, 6 998 vehicles, 274 aircraft, and 51 372 personnel were involved at the peak of the Live Exercise. In addition to the main exercise objectives, over 20 experimentation activities took place.

The JALLC identified differences between the execution of the NATO LL Process during routine HQ activity, during a major exercise. These differences are likely to be the result of:

- the increased volume of lessons identified during an Exercise, and the speed at which they are uploaded to the NLLP;
- the complexity of the subject matter;
- the large number of unprocessed and unstaffed observations; and
- difficulties in keeping people engaged in the NATO LL Process, particularly post-exercise.

Not all issues raised by senior commanders and by Nations had found their way into the formal NATO LL Process and, consequently, they had not been uploaded into the NLLP for sharing and exploitation.

For example, some Nations experienced difficulties with cross-border checks, some deployed with inadequate winter clothing, and some vehicles were not equipped with winter tyres. These issues could have real-world implications. If they are not addressed and the lessons are not shared, there is a risk that Nations could turn up to the fight late and ill equipped to contribute to the mission effort.

In response to the findings, the JALLC will review the training offered at the LL Staff Officers Course and the LL Management Course. Additionally, the exercise-related findings have been uploaded to the NLLP, with a recommendation that the NATO LL Working Group review them.

TRJE18 has nevertheless been the largest single-event contributor to the volume of observations uploaded to the NLLP to date, with over 560 entries, representing 23 per cent of the total.

TRJE18 - CONTEXT	
<p>Exercise Identification</p> <ul style="list-style-type: none"> • OSE: HQ SACT • OCE: JFC NAPLES • LIVEX: 25 Oct – 07 Nov • CAX/CPX: 14 Nov – 23 Nov • Scale: MJO+ 	<p>Numbers</p> <ul style="list-style-type: none"> 60 Ships 6,998 Vehicles 274 Aircraft 51,372 Personnel
<p>Location</p> <ul style="list-style-type: none"> • Norway / Northern Europe, Atlantic Ocean and Baltic Sea • LIVEX attended by all 29 NATO Nations plus 2 Partners (SWE & FIN) 	<p>Main Exercise Objectives</p> <ul style="list-style-type: none"> • Train and certify NRF 2019 with JFC Naples as JTF HQ • Strategic Communications for deterrent messaging • Over 20 Experimentation activities

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TRIDENT JUNCTURE 18



Ms Louise Hoehl spoke about the NATO Communications and Information Agency's (NCIA) LL experiences at TRJE 18. NCIA supports over 20 Exercises each year, delivering secure communications for all the HQs, and participating in the post-exercise discussions on LL, led by the units being supported. TRJE 18 was on a different scale, however, with much greater complexity.

Senior management at NCIA was therefore keen to use TRJE 18 as an opportunity to capture its own lessons and to make its own improvements, as NCIA. That meant that a centralized, NCIA-specific

approach was needed. This was done at a distance, with Ms Hoehl remaining at base, and recruiting and training IT Points of Contact on the ground to collect observations in a template.



The process was a success, with 57 observations identified, from which it was possible to distil common areas, key topics, and themes. Those were checked against the First Impressions Reports, which provided a reality check on the impact that the issues identified had had in the field. The underlying causes were prioritization/funding/awareness of known issues; planning; late information exchange requirements; and keeping up with configuration management.

To ensure that the lessons were followed up, they were divided into groups: those where action was already in hand, those where NCIA could contribute to an existing process led by others, those which needed cross-NCIA action, and those which would be handled in the normal course of NCIA business as changes were made to tools and so on. The attention of the NCIA leadership could be directed to the third group. NCIA experienced some of the challenges all NATO organizations face in doing LL in how to capture observations, turn them into Lessons Identified, and then actually learn those lessons.

LL from Exercises into Doctrine

RADM Jim Kirk, Deputy Commander and COS JWC

Rear Admiral James Kirk spoke about his experience of transforming LL from exercises into doctrine. The Joint Warfare Centre (JWC) saw itself as NATO's fulcrum for warfare development, lying between ACT and ACO. Together, the JJJ—JWC, JALLC and the Joint Force Training Centre (JFTC)—could provide greater leverage for the Alliance.

Since events in Ukraine, the exercise programme had changed in ambition and scale. Exercises are becoming increasingly complex, with more stakeholders and participants, and diverse training audiences. It is important for the planners to pivot and adjust, so that the learning provides the understanding of the political, economic, and social infrastructure that is vital to unleash the courage and ability of NATO forces. The value of Exercises is not just in testing HQ processes, but also in exposing the different levels of command to each other's ways of thinking and planning.

Opportunities

Until now, the "Big Rocks" that training audiences had to cope with were information management, campaign synchronization, civil-military inter-action, STRATCOM, and joint targeting. Those are still valid, but new concerns are emerging. These are command and control, joint effects (i.e. the integration of lethal and non-lethal effects), countering



hybrid/non-linear effects, cyber, and space. Exercises are testbeds to put new organizations and doctrines under scrutiny—for example, items on Space and Cyber are now being regularly introduced. Exercises are where we can muster manpower and materiel and try them out. It is important to test these in challenging circumstances—what hurts us makes us stronger, and we adapt best at the point of pain.

Challenges and Opportunities Panel

The first Challenges and Opportunities Panel looked at three very different areas where NATO is not only facing challenges, but turning them into opportunities for improvement. Three Panellists presented their topics and then challenged the audience to take the opportunity to quiz them, using the Crowdcity App and through audience interaction.

Challenges

LL in the Space and Cyber Domains

Air Cdre Philip Lester, Head of Doctrine, UK Development, Concept and Doctrine Centre

Air Commodore Philip Lester spoke about LL in the Space and Cyber domains, from the perspective of an individual Nation. He said that we need to get better at remembering Lessons that had already been learned, before considering new Lessons. An observation may include superficial technological changes, but the underlying geo-strategic thinking may be the same as for previous Lessons. Resources are not used effectively if leadership assumes too quickly that a situation is totally new.

It is important to get the jumping off point right. LL and doctrine should provide the baseline of understanding from which leaders make their decisions. Learning Lessons at the level of an individual Nation is already difficult, let alone in an Alliance of 29. It is clear from military history that adversaries target vulnerabilities. As an Alliance and as Nations, we need to work more collaboratively to make sure that the two new domains of Space and Cyber do not create a vulnerability that can be exploited. It is a challenge for both NATO and the Nations to integrate the new domains into the existing operational domain structure of Air, Land, and Maritime. In this respect, the UK is trying to produce an integrated five-domain operating concept—not three domains plus two.

We need to dominate the information, to achieve military advantage. Lessons is a good example of how we do that. The UK is engaging with organizations to ensure that Lessons are accessible, relevant, and of use. Air Commodore Lester reminded the audience that we often focus too much on the final deliverable of a report or other product. There were also indirect benefits from the NATO LL Process from, for example, liaison with peers: the journey is important as well as the destination.



Challenges & Opportunities

The journey is important as well as the destination...



Standardization & Interoperability Lessons

Mr Cornelious Doraton, USA NATO Standardization



Mr Cornelious (Ham) Doraton spoke about standardization and interoperability LL. He reminded participants that the military is small in comparison with society as a whole, but its role is very important. That meant that the impact of one individual might be multiplied ten-fold.

Standardization is vital both in NATO and in everyday life. Standards provide NATO Allies, Partners, and friends with a basis for mutual understanding, and are used as tools to facilitate communication, measurement, commerce, and development. Standards are

everywhere and play an important role, nationally and multinationally, by facilitating military and industry interaction.

Interoperability is important to NATO, because the whole is almost always greater than the sum of its parts. Interoperability requires standardization. In order to succeed, NATO must cooperate internally, with non-NATO players and find ways of sharing and exploiting information across boundaries.

Standard development, validation, and interoperability are not important for their own sakes, but to allow NATO to achieve a state of readiness. We bring forces and leaders together in discussions and exercises to achieve readiness, not just to share information.

Mr Doraton described how he has worked with the JALLC over the years to embed interoperability and standardization through the Capable Logistician exercises. Using a combination of national functional area experts and JALLC analysis team meant that the team not only captured observations but validated all the necessary steps to turn the information into Lessons Identified, including the identification of the appropriate action body.

The value of the JALLC contribution was evident in the analysts' ability to help the functional area Subject Matter Experts (SME) articulate their observations in a consistent and analytically sound manner. This analytical support helped extend the applicability of the observations, and to draw out more holistic conclusions and recommendations.

The output was therefore not just individual observations made by individual SMEs within individual areas, but a coherent collation of lessons, with multiple interdependencies, developed by a team of experts.



Challenges and Opportunities Panel



The second Challenges and Opportunities Panel gave participants the opportunity to learn from and be challenged by different perspectives on NATO Lessons Learned—from two academics and from a representative of SHAPE.

Professor Heidi Hardt spoke about overcoming barriers to learning within the Alliance and how international organizations develop institutional memory.

She noted that NATO policies on military rotation and civilian personnel contracting can make it difficult to retain institutional memory. That can be a problem for organizations involved in life and death decision-making. Professor Hardt's research from 2015 with 120 NATO elites, plus analyses and three case studies, indicated that there could be inadvertent barriers to LL in NATO.



Noting that, although International Organizations tend to be designed in a similar way, with member states as the ultimate decision makers, there are considerable differences in how they retain institutional memory. First, process design can incentivize people to use informal systems, such as memos and Food for Thought papers, rather than the official process. Second, member states often collect knowledge in silos. Third, where an international organization has as single repository, it is likely to be used.

Some of the barriers to learning that Professor Hardt highlighted, included elites not always being aware that a repository exists or that it is their responsibility to report LL; a fear of reputational risk in reporting lessons; reports perceived as being watered down or self-censored to the point where they are no longer useful; and the need for endorsement of the analysis slowing the process down. Informal processes are then used instead because they avoid such barriers, which can pose problems for the explicitness and accuracy of the information and risks information being lost as staff change. It may also mean over-reliance on a small number of influential people in informal networks.

Suggestions to improve matters included ensuring that there are explicit handovers when people moved posts, safe spaces to discuss informally, greater accessibility of documents, and reinforcing the point that responsibility for implementing LL rests with everyone.

LL and Strategic Management

Dr. Henrik Heidenkamp, SHAPE

Dr. Henrik Heidenkamp presented on the links between LL and Strategic Management. This was timely, given that ACO had recently revised its Strategic Management directive, including adding references to the NATO LL Capability, and was about to publish its new Strategic Management Plan.

The aim is to develop the Command so that it is fit for purpose and to enhance NATO's warfighting capability. That can be done more effectively, validly, and reliably if it is based on LL. Doing so also improves the justification for ACO's resource requirements. There are therefore strong arguments for incorporating LL in the Strategic Management cycle, particularly in relation to the management of risk.

There is some evidence that the NATO LL Process is not as mature as it should be, and there are cultural, organizational, and educational challenges which affect Strategic Management and the linkage with LL.



NATO has 29 national, at least three military, and various civilian and professional cultures. These are not necessarily aligned, and establishing a culture in which Strategic Management, LL, and the linkage between them can flourish is challenging. Organizational challenges include the stovepipe nature of the organization, the role of the many governance boards, and the rotation of personnel. Educational challenges include the level of knowledge of Strategic Management, of LL, and of the organization itself.

The point is not that we cannot make progress in the face of those challenges, but that we have to accept that they are inherent to the organization and are not going to change in the short term. Success should therefore be defined against the organization as it is, rather than the organization as we think it is, or would like it to be. Doing so is important, because setting an unrealistic definition of success can disincentivize people.

There is an increase in external pressure to get this right. The Nations want NATO to justify its priorities and costs more fully, and the priorities and planning board has therefore demanded a risk-based approach. That requires understanding the objectives. There is a drive to improve the internal control system, and therefore pressure for an evidence-based, controlled, and informed approach. Actions to take now might include making NATO products, processes, and structures more visible and sharing information better between the LL and the ACO Strategic Management communities.

Interorganizational Learning and the British Army

Dr Tom Dyson, Royal Holloway University of London

Dr Tom Dyson spoke about LL best practices from the perspective of the individual Nation and a bottom-up approach, as a different way of looking at LL than just the perspective of NATO and a strategic approach.

He noted that although the NATO LL Handbook provides details of the NATO LL Process, it does not explore important organizational processes. The academic literature identifies the potential of LL, but tends to explore why Lessons cannot be learned, rather than identifying best practice or describing the empirical state of play. There are therefore gaps in our understanding of LL.



Formal educational processes can play a role in challenging embedded cultural preferences. The wider management studies literature, for example on health services, stresses formal learning processes.

Dr Dyson's research considered the fundamental features of best practice in LL and the extent to which they had been implemented, using case studies of the British and German Armies. The aim was to determine which variables facilitate and which undermine the emergence of effective Lessons processes.

An organization's ability to identify, assimilate, and exploit knowledge—its absorptive capacity—is key. This requires knowledge acquisition, management,

dissemination, and transformation. New knowledge must be combined with existing organizational knowledge in a culture of experimentation to encourage creativity. The institutional structures for LL must encourage lessons to be seen as important, immediate, and personal to create a broad culture in which LL can flourish.

Dr Dyson described the British Army's experience of having a high-level review team look at observations in the first instance, to assess the accuracy, relevance, and value of the information, make initial judgements on actions to take, and to identify problems, remedial actions, action bodies. The remedial action itself is then overseen by a cross-functional team, which reviews the output from the high-level team, assigns responsibilities, and ensures that action is taken. To exert influence, a cross-functional team in an organization needs control over scarce resources, centrality in information networks, formal authority, and "disruptive" personnel.

Dr Dyson described factors that can make a difference to an organization's culture and incentivize people to behave in certain ways. These include: embedding the values of experimentation and creativity in training and education; providing time for internalizing and reflection; finding ways to reward creativity, experimentation, and continuing education; providing safe spaces to fail; and encouraging learning from what has happened in the past. The financial investment to create such factors was small, while the potential benefit was huge.



Challenges & Opportunities

Lessons from Partners



Learning from others is an efficient and effective way to learn. Finding out how someone else “solved the problem” can provide new insights into the way we do things. At the NLLC 19, we took time out to hear from some of our Partners how and what they are doing in Lessons Learned.

LL from African Stand-by Forces

Ms Jane Chirwa, African Union Commission



This LL Process has been a success and, for the future, the aim will be to enhance it by continuing to learn from NATO’s approach to LL.

Ms Jane Chirwa spoke about LL from African Standby Forces and Peace and Security Operations. She said that in 2016, the AU Peace and Security Council noticed that there was very little documentation on the challenges and successes of operations, particularly on the long-running AU Mission in Somalia.

After an extensive study, an LL Process was therefore set up, drawing from the experience of other international organizations including NATO, with the guiding principles of early stakeholder involvement, internal (member state) drivers, non-attribution of issues raised, safe spaces for sharing, sharing of information, and cyclical feedback loops.

When there is a request for an LL study from a senior authority, the first step is a desk review. There is then a field visit, involving focus groups and discussions, and the production of a field report. That is presented to a high-level

stakeholder meeting, and the LL outcomes are presented to the AU Peace and Security Council for decision on future action. This process includes elements of the process for JALLC Joint Analysis Reports as well as of the NATO Lessons Learned Process.

This LL Process has been a success and, for the future, the aim will be to enhance it by continuing to learn from NATO's approach to LL, as well as from internal experiences, and benefiting from LL training and capabilities. The aims are to bring knowledge management into the process, enhance access and information flow, identify focal points, and enhance the codification and management of documents.

It is clear that political decision-making and clarity of roles and responsibilities are key, and the process must be driven by the member states.



Improving the Ukrainian Army LL Capability **COL (ret.) Yuriy Paschuk, Ukrainian Army Scientific Centre**

Colonel (ret.) Yuriy Pashchuk spoke about the approach to improving the Ukrainian Army LL Capability.

The current system had been inherited from the Soviet Union in 1991, before the improvements brought about by operations in Afghanistan had taken place. The system has since changed to meet the needs of modern warfare and the current global security threat environment.

The challenges that Ukraine faces are similar to those faced by all organizations in developing a LL Capability, including NATO, and are to do with the level of awareness and understanding of the system; the quality of training; the need for published standards and a unified template; the development of LL organizational structures and prioritization; the quality of analysis; the approach to the outward flow of realistic information; the sharing of LL, because of issues with tools and software; and perceptions over implementation of LL.

The challenges that Ukraine faces are similar to those faced by all organizations in developing a LL Capability...



The Ukraine's priority was to embrace interoperability. A roadmap to get there that aimed to use the best of the present system and the best of the NATO LL Process was produced in December 2018. The aims are: to create an organizational structure with LL Staff Officers and Points of Contact at the tactical, operational, and strategic levels; to organize LL training for all personnel; and to use the improved LL tools consistently. The biggest challenge, as always in this arena, is overcoming the mindset that an LL process is not necessary.

New Technologies Panel

Updates & Perspectives



After the Success of the New Technologies Event in 2018, it was time to update the community on progress and plans.

Then four very different perspectives were presented on how New Technologies are being incorporated in the real world at the NATO, the International, the National, and the Local levels

Innovation in HQ SACT

Commander Dietmar Teufel, HQ SACT Innovation Branch

Commander Teufel spoke about innovation and exploiting disruptive technologies. Other

countries are moving in that direction and delivering fast. NATO therefore had to deliver at the speed of relevance too. There is always a risk of failing when we operate in innovative areas and ways, but the point was to fail fast and move on with that knowledge.

He then gave a brief overview of the Emerging and Disruptive Technologies (EDT) Roadmap. EDT Roadmap activities are prioritized through five main Lines of Effort—on data science and artificial intelligence, autonomy, hypersonic technology and directed energy weapons, biotech human enhancement, and quantum technologies. The goal is to understand these technologies and their potential, demonstrate possible applications, and exploit technologies to inform policy changes, inform defence planning, feed future capabilities, and ensure interoperability by design. SACT's intention is clear—we should not just talk about New Technologies but should deliver through them.

LL Enabling Line of Effort / EDT Roadmap

Mr Stefan Olaru, JALLC

Mr Stefan Olaru said that one of the Enabling Lines of Effort for the EDT Roadmap was LL. Following the New Technologies Event 2018, the JALLC had collected the 55 LL challenges highlighted, analysed all the data gathered, and investigated 112 applications and products on the market and 300 technical features to determine the extent to which they had the potential to meet those challenges. In a

first for NATO, the JALLC then engaged the NCIA to collect all the data from Exercise TRJE 18—a total of 3.9 terabytes from six locations and two security domains—and is using that dataset to investigate the potential of Data Science Tools.



Overall, the JALLC was exploring NATO Unclassified LL information using data science tools, exploring Big Data analysis in the context of LL using information from Exercise TRJE 18, making improvements to the NLLP, and gathering information from NLLC 19. The aim as always was to develop a new LL toolset to support LL Capability Development (CAPDEV) efforts.

Exploration of LL using Data Science Tools

Mr Filipe Vieira, JALLC

Mr Filipe Vieira spoke about one of the JALLC projects—the exploration of LL information using data

science tools. The aim was to consider how to capture and analyse the largely untapped dataset from operations, missions, and exercises, as well as the full potential of the NLLP data from Lessons, documents, and reports, and to identify trends and Lessons with strategic relevance. This is part of the overall work to develop a new NATO LL toolset.

At present, much of the time of analysts can be taken up with reading lots of documents and extracting relevant information, rather than with analysis and presenting findings. If machine learning could analyse large amounts of data for keywords and trends, the analysis could be done much more efficiently and at the pace needed.

The study of the information in the 425 documents in the NLLP started in February and is planned to finish in early 2020 with the production of a report. The data science team from NCIA has been assisting in the work. A NATO LL lexicon of some 3000 words has been created, using Word Cloud to scan documents for the most-used relevant terms and weighting them. The aim is to create a machine learning tool that can extract relevant nuggets from documents and data for human analysts to consider. The next steps will be to consider automated identification of Lessons Identified and Best Practices, the identification of topic frequency trends, how to target information to the right people, and the development of new NATO toolset capabilities such as automatic translation.

NATO Exercise Big Data Exploration

Dr Mihaela Racovita, JALLC

Dr Mihaela Racovita spoke about another and related JALLC project: NATO

Exercise Big Data Exploration. Big Datas—characterized by volume, velocity, and variety—may contain embedded Observations, Best Practices, and Lessons Identified that are never reported, contextual information about lessons, and clues about the needs of users of LL. For example, data from functional areas such as geospatial intelligence, core services such as email and document management, and information on exercise management may contain much tacit information relevant to lessons. Big Data tools can save time, helping to keep pace with real life and speed analysis. They can increase confidence in the results, providing more evidence and patterns of association to back up analytical claims. We need to learn how to access lessons in Big Data as fast as possible and navigate the challenges in doing so.

The JALLC was considering:

- How we can use exercise data to increase the quality of NLLP products;
- How we can help people access the right LL information at the right time;
- Whether we can extract tacit LL knowledge; and, most ambitiously, and
- Whether we can construct predictive LL models.

We must manage challenges and expectations: Big Data analysis is not a universal cure. We need to ensure replicability; and learn from experimentation—in this regard, our failures are as important as our successes. The report from the project will be available in early 2020.



NATO

CAPDEV Governance Model Colonel Paul Malessa, HQ SACT CAPDEV

Colonel Paul Malessa presented the new governance model for NATO’s common-funded capability delivery. After the Cold War, the perceived urgency for delivering new capabilities reduced and the timescales extended. With the current speed of technological and political-military development, that can no longer be appropriate.

A new governance model has therefore been instituted, which should be followed from beginning to end to be effective. The number of “gates” or decision points has been reduced to four, with an emphasis in the first two of defining the requirements and considering alternatives rather than rushing straight to—perhaps yesterday’s—solutions and financing.

The value added is a reduction in timescales, clearer responsibilities and accountability, greater transparency and flexibility, planning for the full lifecycle, and full coverage of DOTMLPFI (*Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities, Interoperability*).



Mr Charles Macmillan gave an International Organization perspective, speaking about the Europe Media Monitor.

The Joint Research Centre (JRC) represents 10 per cent of the staff of the European Commission and offers lots of tools and approaches for text analysis and data mining. Its mission is to be an evidence base for policy making, supporting the policies made now and horizon scanning for the future. He explained how, in 2002, the European Commission had replaced its “cut and paste” news monitoring system for its spokespeople with a tool that scoured 11 000 relevant news sites and 325 000 articles each day.

The Europe Media Monitor structures data—80 per cent of the data in the world at present is lost in unstructured text. The aim is to provide information in usable format to its 25 000 visitors a day, with keyword searching on 400 000 key words, and 5000 categories and topics, over 70 languages. Technology allows for wider coverage of sources and

International Organizations

Europe Media Monitor Applications Mr Charles Macmillan, EU Commission, JRC

languages than would otherwise be possible. There is automatic collection of data and the highlighting of the relevant part of each webpage. Data can be categorized by topic, policy area, or institution, so that teams can be sent the most relevant information. Newsletters can be tailored for team or individual use. The Monitor allows for tonality, a range of possible spellings of names, identification of geographic locations, and quote extraction from articles in 19 languages.

It provides alerts on clustering and trends, the top 10 stories by language, and some information about spikes in disinformation or anti-European Commission articles. It provides content analysis in real time, and can be tuned for precision or recall, to provide no false positives, or to provide everything that is conceivably relevant. Its output is a first stage, however, and there remains a need for human interpretation. At present, the architecture is simple and flexible and the expertise in-house, providing close contact with the customer and an effective feedback loop. Maintaining the close bond between user and provider and a consistently fast turnaround will be challenging as the provision is scaled up.



An aerial photograph of a city, likely Washington D.C., showing a large star-shaped park in the center. The image is overlaid with a grid of thin white lines. The text is written in a bold, blue, sans-serif font, centered over the image.

**After the Cold
War, there
is a RENEWED
sense
of URGENCY
for delivering
capabilities...**

National

US J7 National LL Toolset Development

Mr Albert Musgrove, US J7

Mr Albert Musgrove provided a national perspective from the United States, speaking about the US Joint LL Information System.

The system has all Commands on one database, contains over 450 000 observations and 400 000 documents, supports over 4000 users, and works at all classification levels. It provides a single search tool, collaborative workspaces, and automated workflow for issue resolution. It is provided free to users, and offers significant cross-defence savings.

The underlying technology is coming to the end of its useful life, however, and there was a need to improve content analytics. A new system is being developed and is expected to be ready in two years. That system should be able to pick out the relevant entries for analysis.



The aim is for the system to be interoperable internally with other US systems and externally with NATO. If all Nations operated their LL systems on the same network, it could be possible to build a system in which any NATO LL tool pulled LL from the Nations. In the meantime, NATO at least needs to develop a STANAG to support all the NATO LL to be pushed out to the Nations and vice versa.





Mr Miguel Pinto Luz gave a local perspective on technology and how the municipality of Cascais, where the NLLC 19 was held, has been a Smart City for 650 years. Being smart is about solving problems, both by using technologies and in other ways. Cascais is the fourth largest municipality in Portugal, with a population of over 210 000. It contains 20 per cent expatriates, more than 120 nationalities, four universities, five hospitals, 65 schools, and 11 international schools. Its strategic areas of focus are education and knowledge, health and well-being, quality public space and environment, the cultural offerings, and public safety. The city’s mission is to make Cascais the best place to live for a day or a lifetime.

The city has evolved from being technology driven to being technology enabled, led by the city council. The next step is for citizens and companies to use the technology to co-create the city with the council.

As many as 95 per cent of interactions with the municipality can be done digitally and a large percentage of actual transactions are completed online. That has been facilitated through the introduction of the Cascais ID, creating a single sign-in process. That was a huge effort, with many challenges, including ensuring that the process meets

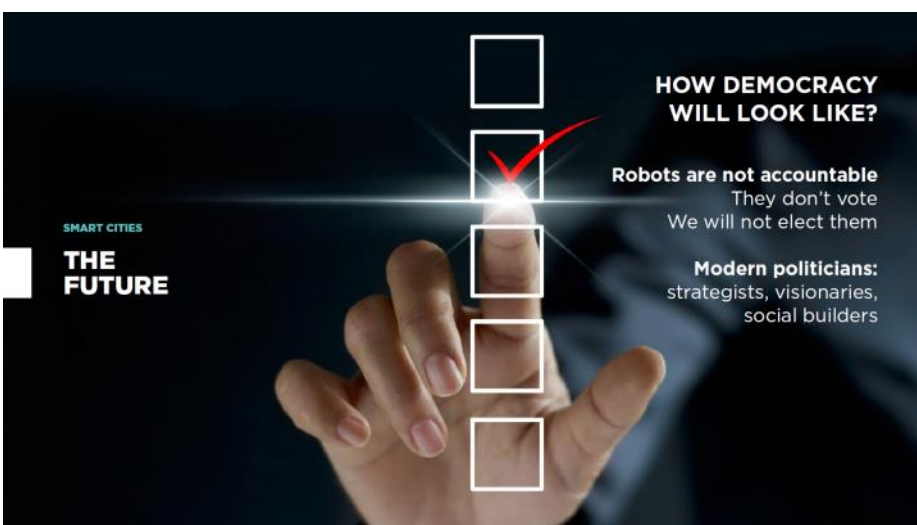
the General Data Protection Regulation, but it is now a reality. The system will reward citizens with points for positive behaviours, such as visiting a museum or recycling, which can be exchanged to pay for parking, event tickets and so on.

Another technological advance in Cascais is its centralised and integrated control centre, which has been a game changer. It has three important traits: a forthcoming predictive command capability—for example, to predict traffic pinch points, bus capacity requirements; a catalogue of active resources, with each entity being a system—for example, each bus is a system that needs tyres, a driver, Wi-Fi, fuel; and, with the most disruptive potential, a catalogue of services, with each signing a service-level agreement with citizens to e.g. repair a hole in the road within six hours of its being reported. The centre itself resolves 75 per cent of the issues reported, with a further 20 per cent being resolved by the municipality.

Only 5 per cent of issues require the involvement of a separate organization. At the beginning, the municipality communicated all information to everyone. Now, it is possible to push specific information to relevant audiences.

Local

Cascais—Smart City for 650 Years Mr Miguel Pinto Luz, Deputy Mayor, Cascais



MobiCascais is the mobility portal and holds all the information about the multimodal transportation system, enabling users to manage, reserve, and pay for travel.

The future is likely to involve self-driven vehicles for public transport, free travel, facial recognition technology, and real-time transactions.

Much like in NATO, the key to the future will be data capture, coordination, and management, and freeing up leaders from activities that can be automated to focus on leadership.

The logo for Crowdicity, featuring the word "crowdicity" in a white, lowercase, sans-serif font inside a white speech bubble shape on an orange background.

At the NLLC 19, the JALLC maintained its reputation for introducing innovative and useful new technologies as part of the conference itself.

New for this conference, was the use of collaborative and ideas-generating platform Crowdicity to capture the ideas and contributions of all the participants. Everyone was encouraged to log ideas, questions, and comments and respond to the daily NLLC 19 challenge.

At the end of the first day, there was the opportunity for participants to discuss three topics that had emerged from the Crowdicity App discussion: how best to encourage the senior leadership to support the Lessons Process; how to measure the effectiveness of the NATO LL Process; and how to encourage all the various communities to “feed” the NLLP. Participants rose to Brigadier General Bogdan’s challenge to come up with their big ideas, bright ideas, and best ideas.

After the first set of presentations on day 2, participants had the opportunity to discuss the issues raised on the Crowdicity App with the Panel. There was, for example, a call for greater synergy of the JALLC, the JWC, and the JFTC, also known as JJJs, both in general, and specifically to improve the NATO LL Process. There was also support for more engagement with the Centres of Excellence and specific Communities of Interest as the Subject Matter Experts. There was further chance for discussion after the second set of presentations, with interesting conversation about intelligence sharing, appropriate tools for analysis, the role of artificial intelligence and machine learning, how to present LL information in a way that would find traction with NATO leadership, and how to provide safe spaces for honest reflection.

On day 3, the New Technologies Panel discussed a wide range of topics, informed by activity on the App, including how the rapid deployment of New Technologies would impact on their work, the importance of incremental and modular development of systems, how the procurement systems helped and hindered, how to stimulate innovation through technology, and the extent to which technology could replace human effort.

Finally, the conference experimented with using the Crowdicity App for a real-time discussion. Some members of the LL community were invited on stage to present and explain what their needs from a new LL tool were.

This prompted a highly interactive session, with participants discussing with neighbours and then using the Crowdicity App to comment on what had been said. The comments were immediately available on screen in real time, and the overall results were displayed at the end of the session in a Word Cloud diagram. The Crowdicity App remained live after the conference closed to capture further reflections and reactions to the comments made.



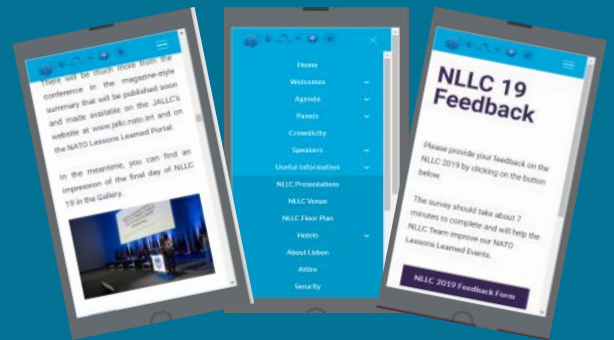


The NLLC 19 App Learning Lessons in Action



Welcome to your conference web app. You can find everything you need to know about the conference here.
Enjoy!

AGENDA



At the New Technologies Event held by the JALLC in 2018, the JALLC Event App was introduced to replace the traditional paper Welcome Pack and Conference Booklet. The App allowed the event organizers to not only provide participants with all the information on the event that they needed, but also allowed for real-time updates, a blog, news articles on the event and much more.

After the success of the JALLC Event App, the next iteration of the app was tailored to meet the needs of the NLLC 2019, including read ahead material and useful links to other apps and information that was used during the event. The App is specifically designed to be mobile device friendly and participants were encouraged to use it during the event to provide input and feedback throughout.

The App was once again very well received and scored 97.6 per cent as good or very good on the NLLC 2019 feedback survey, confirming that the App is the best way for JALLC event organizers to provide participants the information they need.

The JALLC is now considering how else it can use the App, potentially in smaller events like work groups and seminars to improve audience communication and participation.



NATO Lessons Learned Conference 2019

Conference Agenda



Day 1 Monday, 14 October

- 10:10 | Admin remarks—Ms Jackie Eaton, JALLC OPR
- 10:15 | Welcome from SACT (video)
- 10:20 | Welcome from JALLC Commander BGEN Bogdan Cernat
- 10:30 | Improving NATO's Lessons Learned Capability—BGEN Ilmars Lejins, HQ SACT ACOS JFD
- 11:10 | The Warfighting Capability that NATO Needs—COL Manuel Santos, SHAPE J5
- 11:50 | Introduction to Crowdicity—Crowdicity Team
- 12:00 | Group Photo
- 12:15 | Lunch
- 13:30 | Analysing the NATO LL Capability: the JALLC Perspective—LTC Fabrizio Ottaviani, JALLC
- 14:00 | NATO LL Capability: Insights from Exercise Trident Juncture 2018—Mr David Noon, JALLC
- 14:30 | Coffee
- 15:00 | JALLC Engagements and LL Training—LTC Rigo Genz, JALLC
- 15:30 | NATO LL Portal Developments—CDR Pedro Viegas, JALLC
- 15:45 | NATO LL Community Insights and Recommendations
- 16:45 | Daily Wrap Up—Ms Jackie Eaton, JALLC OPR



Day 2 Tuesday, 15 October

- 09:00 | Admin Remarks—Ms Jackie Eaton, JALLC OPR
- Challenges and Opportunities—Morning Panel
- 09:10 | Innovation and Learning in NATO's Operational Level Exercises—RADM James Kirk, Dep COM and COS, JWC
- 09:50 | NCIA Lessons from TRJE 18—Ms Louise Hoehl, NCIA
- 10:10 | LL in the Space and Cyber Domains—Air Cdre Philip Lester, UK Development, Concepts and Doctrine Centre
- 10:30 | Coffee
- 11:00 | NATO Operational Interoperability and Standardization—Mr Cornelious (Ham) Doraton, USA NATO Standardization
- 11:30 | Morning Panel Discussion
- 12:30 | Lunch
- Challenges and Opportunities—Afternoon Panel
- 13:30 | NATO's Lessons in Crisis: Overcoming Barriers to Learning within the Alliance—Prof. Heidi Hardt, University of California
- 14:15 | Coffee



14:45 | The Linkage between LL and Strategic Management—Dr. Henrik Heidenkamp, ACO Strategic Management Planning

15:20 | Exploring the Fundamentals of LL Best Practice: an Academic Perspective—Dr Tom Dyson, Royal Holloway University of London

16:00 | Afternoon Panel Discussion

16:45 | Daily Wrap Up—Ms Jackie Eaton, JALLC OPR



Day 3 Wednesday, 16 October



09:00 | Admin Remarks—Ms Jackie Eaton, JALLC OPR

Lessons from our Partners

09:05 | LL from African Standby Forces and Peace and Security Operations—Ms Jane Chirwa, African Union

09:25 | An Approach to Improving Ukrainian Army LL Capability—COL (ret.) Yuriy Pashchuk, National Army Academy Ukraine

New Technologies Panel

09:40 | Opening Remarks—Mr Stefan Olaru, JALLC

09:50 | Innovation and Exploiting Disruptive Technologies—CDR Dietmar Teufel, HQ SACT Innovation Branch

10:00 | LL Enabling Line of Effort / EDT Roadmap—Mr Stefan Olaru, JALLC

10:10 | Exploration of NU LL Information Using Data Science Tools—Mr Filipe Vieira, JALLC

10:20 | NATO Exercise Big Data Exploration—Ms Mihaela Racovita, JALLC

10:30 | Coffee

11:00 | New Governance Model for NATO's Common-Funded Capability Delivery—COL Paul Malessa, HQ SACT CAPDEV

11:20 | Local Perspective—Smart City for 650 Years—Eng. Miguel Pinto Luz, Cascais Deputy Mayor

11:40 | National Perspective—US Joint LL Information System—Mr Albert Musgrove, US Joint Chiefs of Staff, JLLD

12:00 | International Organization Perspective: Europe Media Monitor—Mr Charles Macmillan, EU Commission Joint Research Centre

12:20 | Lunch

13:35 | New Technologies Panel Discussion

14:15 | Coffee

14:45 | Crowdstorming and Crowdicity

15:35 | Panel Wrap Up

15:45 | Closing Remarks—COM JALLC

15:55 | Conference Wrap Up—Ms Jackie Eaton, JALLC OPR



SACT and COM JALC



General André Lanata was confirmed by the North Atlantic Council as Supreme Allied Commander Transformation on 07 June 2018.

He joined the French Air Force academy in 1981 and qualified as a fighter pilot in 1984. Throughout his career, he has acquired extensive experience, both as a fighter pilot and as an operational commander. As a staff officer, he served in both plans and policy, at air and joint levels. In 2000, he was assigned to the Plans-Programs division at FAF headquarters. In 2002, he joined the Joint Staff as the Operational Coherence officer in charge of the preparation of joint forces and force protection.

Between 2004 and 2006, he was Commander of Air Force Base 188 and all French Air Forces in Djibouti. He joined the Air Staff in 2006 as deputy and then chief of Plans. From 2008 to 2011, he was assigned to the Secretariat for National Defence and Security as the deputy director for international and strategic affairs. In 2011, he became Deputy Chief of Operations at the Joint Staff. He worked particularly on the financing of French operations, bilateral and multilateral agreements such as the Combined Joint Expeditionary Force concept, and the transformation of the organization. From 2013, he was the chief of Plans at the Joint Staff, in charge of all military programs, financial planning, and arms control. In September 2015, he became Chief of Staff of the Air Force, which strengthened his relationships with Air Chiefs throughout the Alliance and among Partner nations. In this capacity, he implemented an ambitious transformation plan for the French Air Force.

General André Lanata was awarded the rank of Grand Officier in the French Legion of Honour Order and Commandeur in the National Merit Order. He has flown 146 combat missions in six different theatres of operations and has more than 3300 flying hours, mostly on Mirage F1CR and Mirage 2000D. He earned two war crosses, one with a palm, and the Cross of Military Valour.



Brigadier General Bogdan Cernat was born in Bucharest, Romania, in 1969. He graduated from the Infantry School in 1991 and took his first assignment as platoon commander and instructor in the 98th Special Training Battalion. He served as platoon and company commander in the 30th Guards Regiment. In June 2007, BGEN Cernat took his first staff assignment as chief of Future Logistics Ops in the Joint Logistics Command. He was then chief of the Protocol Office of the national Ministry of Defence. Between February 2009 and May 2014, he was assigned within the General Staff as Chief of the Military Police Division.

In this role, he directly advised his Chief of Defence on the relevant aspects of homeland force employment, as well as employment in theatres of operations; policy development; and contribution to and implementation of relevant international standards. Later, within the national Military Police, he led the analysis in support of the capability development and training of the military police forces, which contributed to the implementation and improvement of these forces. BGEN Cernat also initiated and implemented the national Lessons Learned structure and process within his division and supported its wider implementation across the military police forces. In May 2014, BGEN Cernat was assigned as the commander of 30th Guards Brigade, assuring development of human capital; high readiness combat status; and force protection for strategic military installations. He also had responsibility for military ceremonies, particularly those involving the Romanian President, and for the design, development, and implementation of Lessons Learned procedures.

BGEN Cernat holds a Master's in national defence and security from the Romanian National Defence University and a bachelor's degree in marketing from the University of Economic Studies in Bucharest. He is a 2013 graduate of the US Army War College in Carlisle, Pennsylvania. Throughout his career, BGEN Cernat has received several awards and medals, granted by various entities, including at presidential level.

Guest Speakers



Born into a Latvian émigré family in California, **Brigadier General Ilmars Lejins** grew up in Sweden and was schooled in West Germany. At the end of the Soviet occupation, he returned to Latvia and joined the Latvian Armed Forces in 1993. His career with troops has been at every level up to Brigade Command and included deployment to IFOR/SFOR. He set up a professional NCO training system, completed a demanding tour in Afghanistan, and was Commander of the 2nd Infantry Battalion., the Land Forces Mechanized Infantry Brigade, and head of the Land Forces. His staff assignments have been at LVA JHQ and at NATO, including being Branch Head for military cooperation, J9, and the LVA SNR at NATO JFC Brunssum. He is now ACOS JFD at NATO ACT, Norfolk.



Colonel Manuel Santos was one of the Artillery class of 1987 in Madrid. After some years with the Spanish Army in the Air Defence Command, the Personnel Command, and Plans and Policy Branch, he became an LL Staff Officer at ACT. He then returned to Spain to take responsibility for international relationships for the Spanish Army. He was Commander of the 81st Air Defence Artillery Regiment in 2015-16 and DCOS OPS at UNIFIL HQ in Lebanon in 2017. He is now Plans and Policy Branch Head at NATO SHAPE in Belgium.



Rear Admiral James Kirk graduated from the US Naval Academy and received his commission in 1990. He has since served in a variety of afloat and ashore billets as a Surface Warfare Officer in the US Navy. He has served afloat on destroyers, cruisers, frigates and staffs, including USS Fife, USS The Sullivans, USS Hue City and USS John S. McCain. He has commanded both USS De Wert (2008-09) and USS Zumwalt (2013-16). Ashore, RADM Kirk served as executive assistant to the Navy's Chief of Legislative Affairs and the Director of Surface Warfare and Action Officer on the Joint Staff, J8. In 2017, he was assigned as Deputy for Weapons and Sensors to the Director of Surface Warfare. He became the Joint Warfare Centre's Deputy Commander and Chief of Staff in May 2018.



Air Commodore Philip Lester was Head of Doctrine, Air Space, and Cyber at the UK Defence think tank the Development, Concept and Doctrine Centre, based in Wiltshire. He was commissioned into the Royal Air Force (RAF) in 1987 and joined the RAF Regiment in 1989. As a Group Captain, he commanded RAF High Wycombe, and was responsible for the nine US Air Force air bases in the UK and the 1200 Air Command employees who worked on them. Operationally, he has seen service in Saudi Arabia, Turkey, Northern Ireland, Cyprus, Bosnia, Iraq, and Afghanistan. In staff appointments, he has worked in HQ Air Command, the Headquarters of the Director of the Royal Armoured Corps, the Permanent Joint HQ, and the UK Defence Academy. He has also served in five US headquarters.



Ms Louise Hoehl has a professional analysis career spanning 20 years across multiple areas of defence and security, in the UK Ministry of Defence, US Department of Defense and NATO. At present, she is a Principal Scientist in the NCIA, providing Operational Analysis support, primarily to ACT, in the NATO Defence Planning Process. Louise has experience of providing decision-making support in multiple areas of defence and security, including force planning, procurement, and science and technology.

Guest Speakers



Mr Cornelious (Ham) Doraton is the US Army NATO International Standardization and Interoperability Representative and functional expert for the Army in NATO Headquarters, Brussels. He represents, delegates, supports and deliberates US Army policies, positions, interests, and initiatives to senior NATO and US officials. He develops, harmonizes, and observes implementation of Army multinational force interoperability policy in NATO standardization fora, by integrating two broad areas of knowledge and expertise: the policies, structure, and procedures of international military cooperation within the NATO and EU frameworks; and national security and national military strategies, policies, and programmes for technology, research and development, logistics, cooperative armaments, and tactical doctrine.



Prof. Heidi Hardt is an Associate Professor of Political Science at the University of California, Irvine. Her research examines effectiveness, knowledge, and change in international organizations, particularly in conflict management. She has expertise in NATO, the EU, the UN, international cooperation, crisis management, military operations, organizational learning, organizational culture, and gender mainstreaming and gender in Science, Technology, Engineering, and Medicine. She has had two books published, and her research appears in several journals. She received her PhD from the Graduate Institute of International and Development Studies, Geneva, and her MSc in European Studies from the London School of Economics.



Dr. Henrik Heidenkamp is the Coordinator for Policy Management and Plans at NATO's SHAPE in Mons, Belgium. He is responsible for the development and continuous improvement of the ACO Strategic Management system. He has direct responsibilities for the development of ACO's objectives and for managing the plan to deliver the core military outputs within the resources assigned. Prior to his present role, Dr. Heidenkamp worked as a research analyst with the JALLC and has also worked as a senior research fellow at the Royal United Services Institute for Defence and Security Studies in London.



Dr Tom Dyson is a senior lecturer in international relations at Royal Holloway College, University of London. Between September 2019 and April 2020, he is also a Visiting Fellow at the Bundeswehr Centre for Military History and the Social Sciences, Potsdam. Dr Dyson is the author of *Organisational Learning and the Modern Army: A New Model for Lessons Learned Processes* (2019).



Colonel (ret.) Yuriy Pashchuk is a lead researcher at the Ukrainian Army Scientific Centre. He served in the Soviet Armed Forces from 1977 to 1991 and then in the Ukrainian Armed Forces until 2005. During his military career, he was assigned to numerous staff and operational positions in the Air Force and Army, including tours in Angola, the former Yugoslavia, and Sierra Leone. After his retirement from the Ukrainian Army, he worked mostly in the National Army Academy (Lviv, Ukraine), He has a Master's in Strategic Studies from the US Air War College and a PhD in technical sciences.

Guest Speakers



Ms Jane Talingana Chirwa is a Knowledge Management Officer working in the Policy Lessons Learned and Knowledge Management Section of the Policy Development Unit within the Peace Support Operations Division of the African Union Peace and Security Department. Ms Chirwa provides support in spearheading Lessons Learned exercises for the African Union Peace Support Operations and facilitates the implementation of the AU Lessons Learned methodology. She holds an MA in International Relations and an Executive MA in Managing Peace and Security in Africa.



Commander Dietmar Teufel is a senior analyst in HQ SACT's Innovation Branch. He has had assignments in the German Navy, and has seen service in the Mediterranean Sea, the Gulf of Aden, and Afghanistan. He was assigned to the Bundeswehr Office for Defence Planning, where he served as a senior research analyst. At HQ SACT, he served three years as an LL staff officer for training and management. He holds a Master of Science Degree from the US Naval Postgraduate School in Monterey, California.



Colonel Paul Malessa, HQ SACT CAPDEV, served in operational and staff officer roles in the German Army and had assignments in the Ministry of Defence and the Federal Chancellery. In 2005, he became Divisional Chief of the Joint Strategic Reconnaissance Command. He was Divisional Chief for Simulation, Modelling, and C4 at the Joint Warfare Centre in Stavanger and in 2014 he was assigned to ACT. In June 2016, he became branch head of the NATO Network Enabled Capability, Plans, and Interoperability Branch in Norfolk. After major reorganization in the HQ structure, he took over responsibility for the newly established Programme Management Office early in 2019.



Miguel Pinto Luz is the Deputy Mayor of Cascais. Since 2005, he has held various senior public posts within the Cascais Municipality and has represented Cascais Council in the municipal and intermunicipal world. He was also Director of the Paula Rego Foundation and Vice President of the Lisbon Regional Tourism Organization. Under the XX Constitutional Government of Portugal, he held the office of Secretary of State for Infrastructure, Transport and Communication. He obtained a Master's in Computer Networks from the Instituto Superior Tecnico and an MBA from the University of Navarra. He is currently reading for his PhD at the Rotterdam School of Management, Erasmus University.



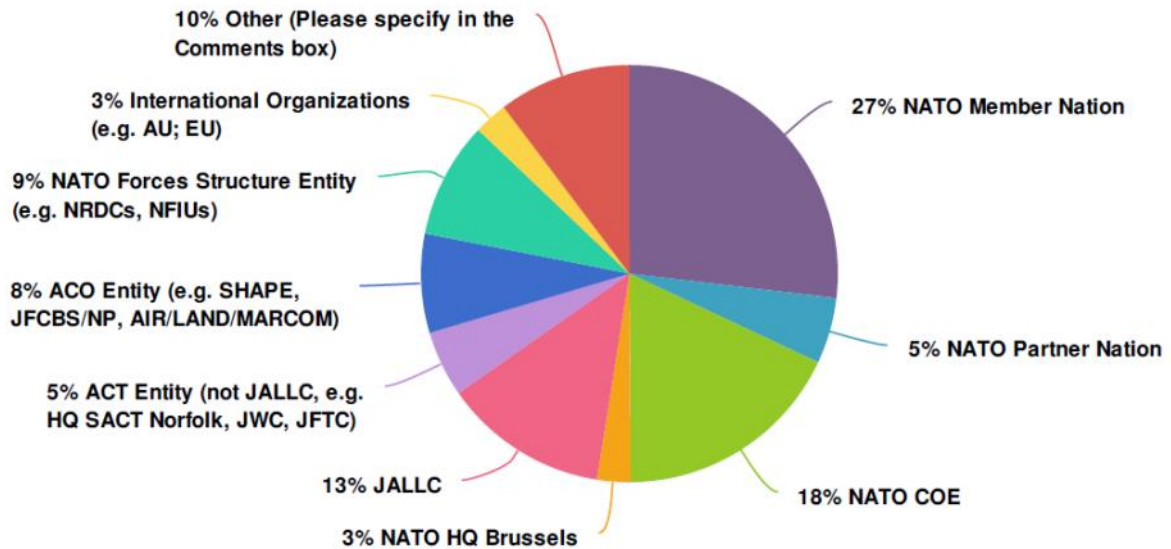
Mr Albert Musgrove has worked as an analyst in US joint-level Lessons Learned since February 2003. He has participated in multiple projects, covering the breadth of US world-wide military operations, from humanitarian assistance to combat and counterinsurgency. He is currently responsible for the management of the US Lessons Learned information management tool, the development and implementation of the next generation of the tool, and policy for the US defence-wide lessons community of practice. Prior to working in lessons, Mr Musgrove was a Surface Warfare Officer in the US Navy.



Mr Charles Macmillan is Deputy Head of the Text and Data Mining Unit at the European Commission's Joint Research Centre (JRC) in Ispra, Italy. The role of the JRC is to provide scientific support to the policy-making process, independent of national or commercial influence. The Text and Data Mining Unit brings together expertise in Big Data infrastructures and analysis, data cataloguing and management, robust statistical data analysis, innovation monitoring, text mining, and media monitoring. Charles joined the unit to work on the Europe Media Monitor platform, which gathers and analyses around 300 000 news articles per day from online sites around the world. His current research focuses on online disinformation.

NLLC 2019 at a Glance

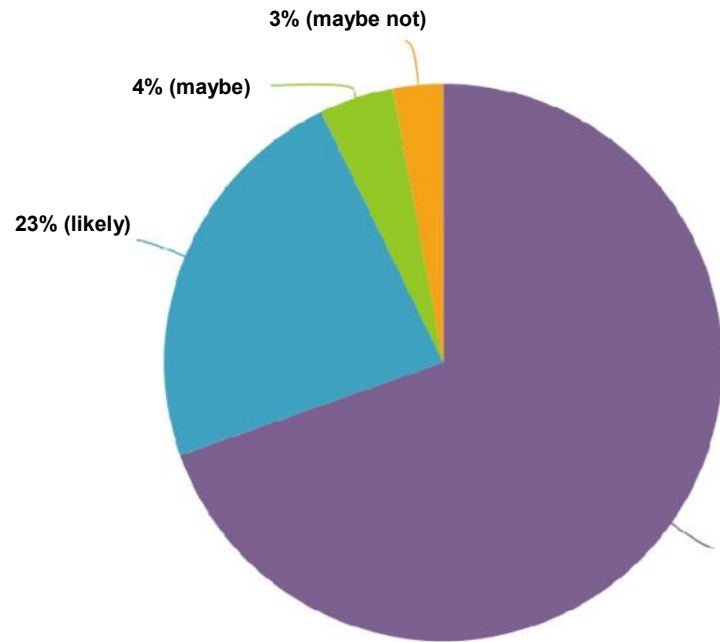
177 Participants from 79 Entities



“The Crowdicity app improved opportunities to share points of view and get answers”



“A good variety of speakers and audience interaction”



93%

said they would recommend the event

70% (extremely likely)

“Very informative and interesting presentations, great conversations during the breaks”

challenges community lessons
 share speakers breaks
 conference networking
 nato | panel app
 day great | crowdcity
 event | good meeting
 presentations organization
 technologies people opportunity
 opportunities

technology
 broadly presentations
 good long short
 needed conference slightly
 learned time data
 event perfect days lot
 information excellent topics

It is good to share both frustrations and ideas

	Very Poor ← → Very Good				
Overall coverage of the conference theme	0	0	7	34	36
Count	0.0%	0.0%	9.1%	44.2%	46.8%
Row %					
Amount of time allocated to the conference and its panels	0	0	8	33	36
Count	0.0%	0.0%	10.4%	42.9%	46.8%
Row %					
Usefulness of the conference to your current job	0	3	11	24	40
Count	0.0%	3.8%	14.1%	30.8%	51.3%
Row %					

NLLC

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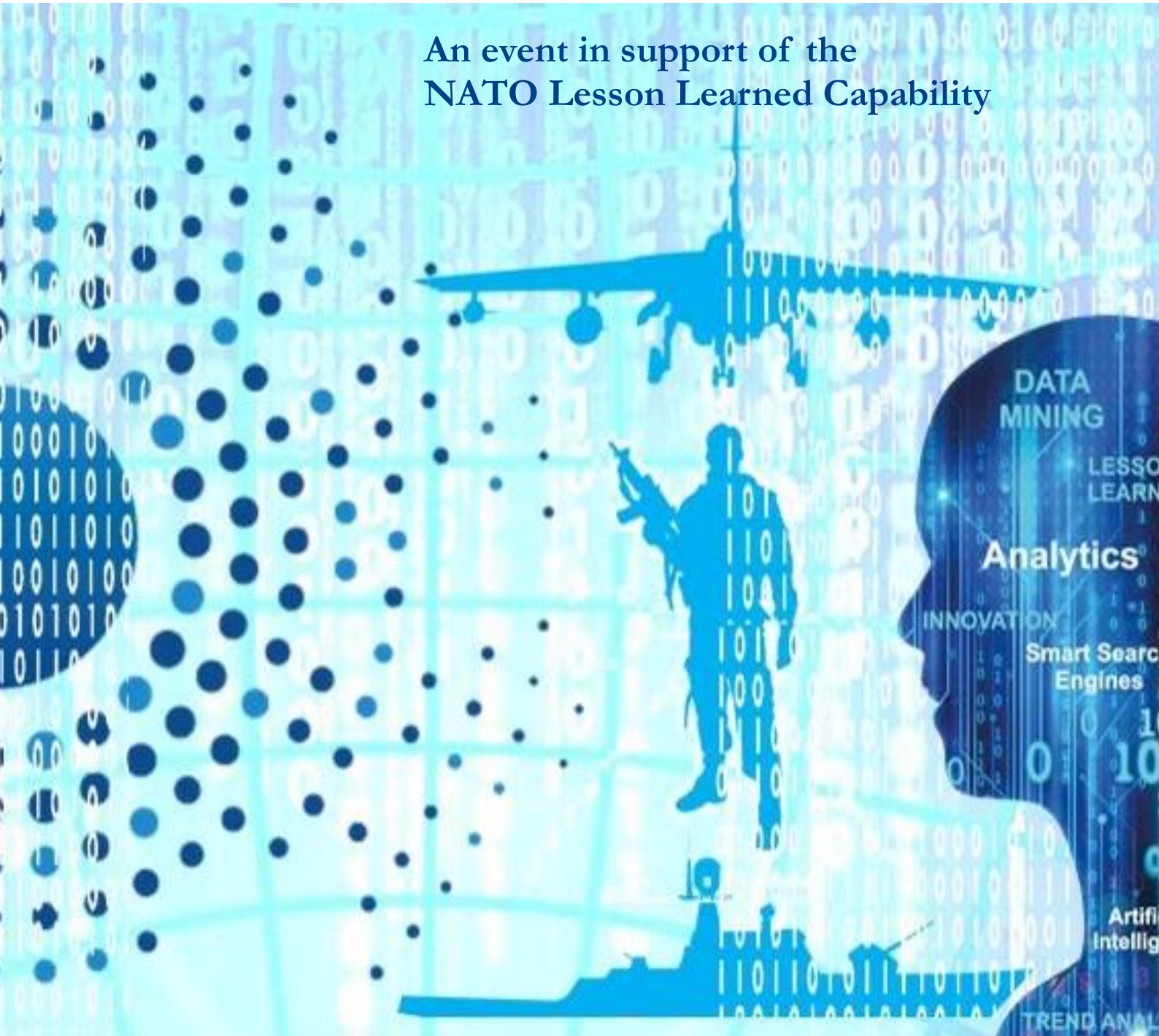
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