

Partnership for Technology in Peacekeeping

**Next Tech Peacekeeping**

# 4<sup>th</sup> International SYMPOSIUM 2018

**14-18 May 2018**

Sheraton Berlin Grand Hotel Esplanade  
Berlin, Germany

Information and Communications Technology Division  
United Nations Department of Field Support



Federal Ministry  
of Defence



GERMANY  
FOR UNITED NATIONS  
SECURITY COUNCIL  
2019-20





Berlin Skyline, Germany

# Table of Contents

<b>04</b>	Welcome Notes
<b>06</b>	Agenda at a Glance
<b>07</b>	Agenda Topics
<b>08</b>	Welcome Address
<b>10</b>	Keynote Speakers
<b>13</b>	Presenters / Conference Organizers
<b>14</b>	Panel Discussions
<b>15</b>	Moderators: Working Groups
<b>16</b>	Symposium Programme
<b>23</b>	Working Group Descriptions



# Welcome Note



**Dr. Ursula von der Leyen**

Minister of Defence

Federal Republic of Germany

Dear participants,

It is my pleasure to welcome you in Berlin to the 4th International Partnership for Technology in Peacekeeping Symposium of the United Nations.

The UN is the cornerstone of multilateral cooperation. It is an ongoing endeavour of us all to keep the United Nations strong and to improve its mechanisms wherever possible. In fact, we, the Member States, are called upon to keep the UN capable, efficient and credible. Germany is deeply committed to strengthening the UN system and ready to take on more responsibility.

Germany is working on many strands to strengthen the UN system. We are an active supporter of UN peacekeeping, providing know-how, expertise and personnel. The Bundeswehr is participating in a range of demanding UN peacekeeping missions such as MINUSMA in Mali, UNIFIL off the coast of Lebanon and UNAMID in Darfur.

We know that effective UN peacekeeping requires a broad spectrum of capabilities. Germany is part of the UN's Peacekeeping Capabilities Readiness System. We have registered a range of civilian as well as military capabilities. Furthermore, we are committed to providing innovative contributions to UN peacekeeping, for instance in training and technology.

Germany is a founding member of the UN's strategic initiative "Partnership for Technology in Peacekeeping". We firmly believe that innovation and technology are essential to advance and improve UN peacekeeping.

I strongly believe in the potential of innovation for operational success. Integrating modern technologies into our peacekeeping missions can make a huge difference with respect to effectiveness and efficiency. Modern technologies support our efforts to secure peace and stability on the ground, particularly in demanding conditions like vast mission areas, asymmetric risks and limited resources.

The Partnership for Technology in Peacekeeping Symposiums reaffirm our commitment to the initiative. More importantly, they provide us with fresh ideas and crucial input. This 4th Symposium will therefore be a vital contribution towards keeping UN peacekeeping modern, effective and relevant.

I wish you an inspiring and successful conference!





**Mr. Anthony O'Mullane**

Director

Information and Communications Technology Division,  
Department of Field Support, United Nations

It is with great pleasure that I welcome you to the 4th International Partnership for Technology in Peacekeeping Symposium. I wish to offer my sincere thanks to the Government of the Federal Republic of Germany, our host. Germany has been a great supporter and one of our partners since the start of our innovation journey.

The power of partnership was highlighted in 2015 with the publication of the High-Level Independent Panel on United Nations Peace Operations (HIPPO) report. The section “Uniting our strengths” demands a field-focused and people-centric peace operations, and encourages an innovation-driven, strategic and results-oriented approach. The report highlights the potential for technology-centred innovation to be a transformative force in implementing the Organization’s field-based mandates and emphasises the critical role partnerships can play in this transformation.

The challenge has been to inculcate an innovative culture into supporting and implementing UN Peacekeeping operations. Progress has been made over the last four years but a lot of work remains to be done. The support of our partners has been fundamental and is needed now more than ever as we begin to provide more technology and innovative solutions in support of operations. The change in culture requires support from all stakeholders and is a key operational objective of the Department of Field Support and the Information and Communications Technology Division.

The landscape in which UN Peacekeeping operates is changing rapidly. Technological advances are changing how armed conflicts are being waged. The UN Secretary-General has warned that rapidly evolving technological advances pose unforeseen challenges to regional and global stability, stating; “Advances in technology are giving rise very quickly to new methods and means of warfare, with potentially undesirable or unclear consequences”.

New technologies, such as artificial intelligence and 3D printing, can be used for military purposes. Innovations intended for civilian applications, such as synthetic biology or facial recognition software, can be repurposed for harmful outcomes. Such developments will impact the future role of the UN in conducting Peacekeeping operations. Implementing an effective field-focused innovation and technology structure now will leverage effective technologies in support of Peacekeeping operations while developing an inhouse innovative culture, laying the foundation for supporting future operations.

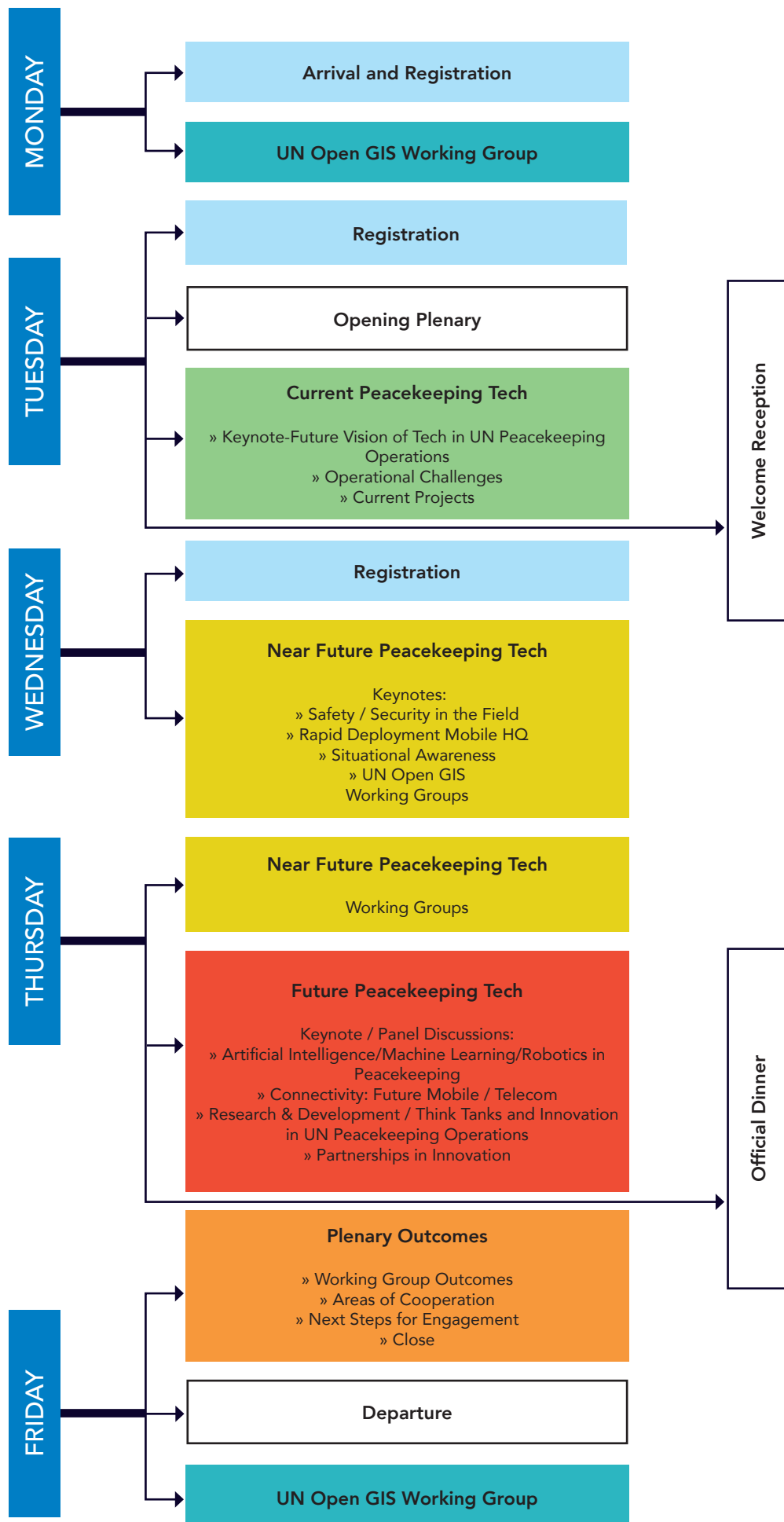
The symposia on partnerships for technology and innovation in peacekeeping, held in conjunction with Member States and academia, have resulted in outputs that include the development and implementation of ground-breaking technology solution projects in the areas of Force protection, information security and training.

“Next Tech Peacekeeping” is about moving to the next level in achieving excellence in field technology innovation and establishing a field-focused innovation and technology support structure aimed at facilitating innovation in an integrated manner at all levels.

We invite you to actively participate in plenaries, working groups and panel discussions and welcome your expertise and knowledge to create practical solutions that can support our ongoing peacekeeping efforts.

Thank you for joining us, and I wish all participants an enjoyable and productive week.

# Agenda at a Glance



# Working Groups

## Agenda Topics

### Technology in Peacekeeping Intelligence

Increasingly, highly sensitive information needs to be collected, classified, correlated and shared in UN peace operations. Policies, procedures and platforms must be developed that protect and manage such information.

### Convoy and Patrol Protection

While supporting mission points of presence, UN convoys have been targeted by extremist groups or even gangs of outlaws at alarming rates. The UN is exploring available technologies and best practices that will contribute to protecting UN personnel and equipment, and civilians, and allow for effective mandate implementation.

### Improving Security through Situational Awareness

Situational awareness is key to decision-making around the implementation of mandates and to mitigate risks—whether, for example, to monitor compliance to an agreement by belligerent parties or a threat to a UN camp. Discussions will focus on the best technical solutions available to peacekeeping.

### Training and Capacity Building

Investing in innovation for training and capacity-building leads to enhanced operational efficiency and effectiveness in the field. With more than 100,000 authorized personnel deployed in often remote and high-risk locations, peace operations require specialized and high-performing military signals and ICT capabilities as the backbone of command, control and situational awareness.

### United Nations Open GIS (Geospatial Information System) Initiative

The UN Open GIS Initiative is a partnership between the Organization, Member States and other technology-contributing partners. It is working to identify and develop an open source enterprise GIS platform, solutions and technical capacities that meet the requirements of peacekeeping operations.

# Panel Discussions

### Innovative Technologies in Information and Communications

Combining existing research and development with academic and UN Peacekeeping expertise to forge a strong partnership is the way to advance next technological innovations that serve peacekeeping and sustainable development. “Next Tech” explores innovations on the edge of mainstream adoption, with a focus on technological discoveries and new opportunities that can have a great impact.

# Welcome Address



**Dr. Ursula von der Leyen**

**Minister of Defence**

Germany

Ursula von der Leyen started her political activities in 1990 when she became a member of the Christian Democratic Union (CDU). From 2001 to 2003 she held various political offices at municipal level in the Hanover region. In 2003 she became a member of the Lower Saxony state parliament and was appointed State Minister of Social Affairs, Women, Family Affairs and Health. In 2005 Ursula von der Leyen started her career in federal politics as Federal Minister of Family Affairs, Senior Citizens, Women and Youth. In 2009 she became a Member of Parliament (Deutscher Bundestag) and was appointed as Federal Minister of Labour and Social Affairs. After her election as member of the CDU Executive Committee she was elected as party vice chairwoman in 2010. In 2013 she was appointed as Minister of Defence.



**Ms. Lisa M. Buttenheim**

**Assistant Secretary-General**

Department of Field Support,  
United Nations

Ms. Lisa M. Buttenheim was appointed Assistant Secretary-General for Field Support in June 2016. Previously, she was the Secretary-General's Special Representative and Head of the United Nations Peacekeeping Force in Cyprus, where she served concurrently as Deputy Special Adviser of the Secretary-General in the Good Offices mission. She has spent more than thirty years in the Organization, with extensive experience at Headquarters and in the field, with a concentration on Middle East- and Balkans-related issues. In 2004, she served as Director of the Asia and Middle East Division in the Department of Peacekeeping Operations through 2007, and as Director of the Middle East and West Asia Division in the Department of Political Affairs, from 2008 to 2010. She holds a bachelor's degree in political science and English from Stanford University, California, and a master's degree in international economics and Middle East studies from the Johns Hopkins University School of Advanced International Studies, Washington, DC.

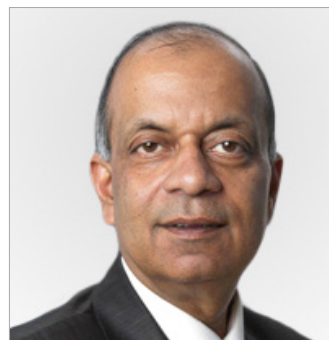
## Video Remarks



**Mr. Jean-Pierre Lacroix**

**Under-Secretary-General**

Department of Peacekeeping  
Operations, United Nations



**Mr. Atul Khare**

**Under-Secretary-General**

Department of Field Support,  
United Nations



# Welcome Address



**Mr. Thomas Silberhorn**

**Parliamentary State Secretary**

Federal Ministry of Defence,  
Germany

Thomas Silberhorn became Parliamentary State Secretary to the German Federal Minister of Defence in 2018. He served in the same position at the German Federal Ministry for Economic Cooperation and Development from 2014 to 2018. In the German Bundestag, he was Christian Social Union spokesperson for Foreign Affairs, Defence, European Union Affairs, Economic Cooperation and Development, Human Rights and Humanitarian Aid, from 2005 to 2013. Mr. Silberhorn has been a member of the German Bundestag since 2002. After receiving his degree in law in 1994, he was Academic Assistant at the University of Bayreuth and a lawyer since 2001 (dormant).



**Mr. Stephan Mayer**

**Parliamentary State Secretary**

Federal Ministry of the Interior,  
Building and Community,  
Germany

Stephan Mayer is member of the German Bundestag and deputy chairman of the CSU group on the county council Altötting since 2002. From 2002 to 2018 Stephan Mayer used to work as a lawyer. He was a member of the executive Committee of the Union of Expellees and President of the THW-Bundesvereinigung e.V. Stephan Mayer was born in 1973 in Burghausen.



**Mr. Walter J. Lindner**

**State Secretary**

Federal Foreign Office, Germany

Walter Lindner is State Secretary of the German Federal Foreign Office. His previous assignments included German Ambassador to the Republic of South Africa, Special Representative of the Federal Government for the Ebola Crisis, Spokesperson for the German Foreign Minister, and Director for Sub-Saharan Africa and the Sahel. Overseas, his diplomatic posts led him to Turkey, Nicaragua, the USA, and as German Ambassador to Kenya and Venezuela. He joined the diplomatic service in 1988. His educational background includes studies in music, law with political sciences and Spanish in Munich, Graz and Boston. He is also an active musician, arranger and music producer.

### **"Next Tech Peacekeeping: a Vision for the Future of Field Technology"**

Mr. Anthony O'Mullane was appointed Director of the Information and Communications Technology Division (ICTD) in January 2016. He has worked for the United Nations for twenty-three years in ICT, twenty-one of which were in United Nations Peacekeeping Operations beginning in 1994 in the Balkans where he was deployed in Croatia, Bosnia and Kosovo. He served in UN missions in Sierra Leone, Pakistan/India, Afghanistan and Lebanon before moving to Headquarters in 2014. As Director for Global Operations, he managed the implementation of the early phases of the inaugural ICT Strategy, focusing on modernizing the infrastructure of the UN Secretariat and creating the platforms for future solutions to enable the core work of the Organization. Under his direction, ICTD is optimizing how core ICT services are delivered. He has also initiated the process of transforming the division into an innovation and technology solutions provider to field operations.

### **"Political Challenges to Peacekeeping"**

Dr. Géza Andreas von Geyr is the Director-General for Security and Defence Policy at the German Federal Ministry of Defence. Throughout a distinguished career in the German Foreign Service, prior to his current position, Dr. von Geyr served as Vice President of the German Federal Intelligence Service. He holds a Ph.D. in communication and history (Budapest, Vienna, and Munich).

### **"Operational Perspective in UN Peacekeeping"**

Colonel Lucian Andrei (Romanian Army) is currently serving in UN Headquarters in New York, working as Chief of the Assessment Team in the Office of Military Affairs / Department of Peacekeeping Operations. Colonel Andrei was originally an infantry officer who has served at every level of command: from platoon to brigade level. More recently, he worked as the head of the intelligence function at the strategic level, as well as at the political-diplomatic level. His previous operational experience includes tours of duty in Operation Iraqi Freedom and other NATO posts. Colonel Andrei holds a Masters of Military Science from the National Defense University, and a Masters of Geopolitics and International Relations.



**Mr. Anthony O'Mullane**

#### **Director**

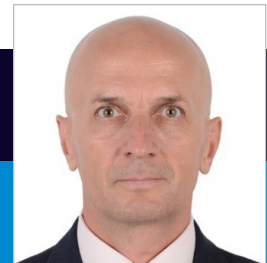
Information and Communications Technology Division, Department of Field Support, United Nations



**Dr. Géza Andreas von Geyr**

#### **Director-General**

Security and Defence Policy, Federal Ministry of Defence, Germany



**Colonel Lucian Andrei**

#### **Chief Assessment Team**

Office of Military Affairs, Department of Peacekeeping Operations, United Nations

# Keynote Speakers

### **"Operational Perspectives from the Field: MINUSMA"**

Prior to his assignment as Deputy Director of Mission Support in MINUSMA, Mr. Antchev served in the United Nations Interim Force in Lebanon (UNIFIL) as Chief Joint Logistics Operations Centre and Chief Property Management Section from 2007 to 2013. From 2002 to 2005, he served with the United Nations Mission for the Stabilization of the Democratic Republic of Congo (MONUSCO) as the Officer-in-Charge of Military Support, Planning and Liaison Section, Chief Contingent Owned Equipment Unit, and as a Logistics Officer. In 2001, he served as a Planning Officer in MPS/OMA/DPKO. Mr. Antchev has a Master's Degree in Business Administration from Nov Bulgarski University in Bulgaria, a Master's Degree in Mechanical Engineering from the Bulgarian Military Academy, and a post-graduation degree in defence studies from the Bulgarian War and Staff College.

### **"Challenges Introducing Technology to Peacekeeping"**

Mr. Eduardo Artigas has more than twenty-eight years of peacekeeping experience, fifteen of which have been spent in the field, working in missions in the Middle East, Southeast Asia, Africa, and Central America. Previously, Mr. Artigas was Chief ICT in the United Nations Truce Supervision Organization (UNTSO), Jerusalem; the United Nations Logistics Base (UNLB), Italy; and the United Nations Stabilization Mission in Haiti (MINUSTAH). Before joining the UN, he was the Technical Director of the Uruguayan Radio State Network. His current interest is in new technologies in support of peacekeeping operations.

### **"How Peacekeeping Can Benefit from Space Tech: Nano Satellites and Sensors"**

Dr. Jaan Praks is an Assistant Professor of Electrical Engineering at the Department of Electronics and Nanoengineering at Aalto University. He also leads the Finnish student satellite programme at Aalto University. The student satellite project Aalto-1 started from a small teaching project in 2010. The second satellite project, the Aalto-2, was successfully launched in April 2017. The team is currently working on the Aalto-3 satellite. Although helping Finns reach space, Mr. Praks is actually Estonian, having studied physics in the University of Tartu. In addition to small satellites, his professional interests include remote sensing techniques, namely SAR polarimetry, SAR interferometry, and spectral imaging.



**Mr. Anton Antchev**

**Deputy Director of Mission Support**

United Nations  
Multidimensional Integrated  
Stabilization Mission in Mali  
(MINUSMA)



**Mr. Eduardo Artigas**

**Chief Field Mission Support Section**

Information and  
Communications Technology  
Division, Department of Field  
Support, United Nations



**Dr. Jaan Praks**

**Assistant Professor**

Electrical Engineering  
at the Department  
of Electronics and  
Nanoengineering, and  
the Director for Aalto  
Satellite Project  
Aalto University, Finland

# Keynote Speakers



### **"The role of next generation technology in UN Field Missions"**

Mr. Wolfgang Weiszegger has thirty-seven years of United Nations experience, thirty-four of which were in service to the Departments of Peacekeeping Operations, Political Affairs, and Field Support. He served in various peacekeeping and political missions in the Middle East (Kuwait/Iraq, Jerusalem, Damascus, Beirut, Naqoura), Cyprus, Balkans (Kosovo), Africa (Darfur, Somalia & Democratic Republic of Congo, Kinshasa), Americas (Haiti), as well as at Headquarters in New York (Headquarters Committee on Contracts and Headquarters Property Survey Boards) in public information, humanitarian, security, logistics, administrative and management positions. Previously, he held the positions of Director of Mission Support for African Union/United Nations Hybrid operation in Darfur (UNAMID), Chief of Integrated Support Services for UNIFIL, Acting Director of Mission Support and Deputy Director of Mission Support for UNAMID, Chief of Mission Support with United Nations Special Coordinator (UNSCO).



**Mr. Wolfgang Weiszegger**

**Director of Mission Support**

United Nations Interim Force in Lebanon (UNIFIL)

### **"Blockchain for Peace: How Technology Innovation can Create Change"**

Mr. Dominik Schiener is a young entrepreneur from Italy who is focused on realizing the Machine Economy. At an early age, he was involved in the Blockchain ecosystem, with his first start-up in Switzerland in 2013 at the age of 17. He is the Co-Founder of IOTA, a disruptive new technology that enables machines to store and send money frictionlessly between one another. In 2017, he co-founded the IOTA Foundation and established Germany's first non-profit foundation, which enables and fosters permissionless ecosystems powered by distributed ledgers. He co-leads the IOTA Foundation and oversees the overall realization of the vision and the partnerships with multinational companies, NGOs and governments. He is working on how to bring a nascent technology like IOTA to market-readiness.



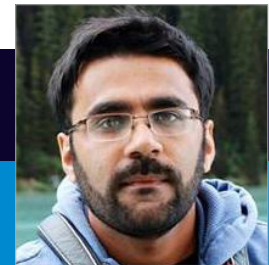
**Mr. Dominik Schiener**

**Chairman**

IOTA Foundation, Berlin

### **"Internet Access for All - a Human Right: Focus on Connectivity Innovation Applications"**

Dr. Kashif Ali designed to empower remote and rural communities across the world through sustainable and community-driven hardware system, reliable software design, and field deployments. OpenCellular Grants (OCG) is a programme to fund, promote and accelerate the non-commercial development and deployment of OpenCellular (OC) equipment in rural areas where access to cellular is limited. The successful development and adoption of OC in rural communities could lead to significantly more people gaining access to cellular service. The OCG grant programme is specifically designed to address this opportunity.



**Dr. Kashif Ali**

**Lead/Chair**

OpenCellular Project,  
Telecom Infra Project (TIP)

# Keynote Speakers

# Presenters



**Lieutenant Colonel (GS)  
Stefan Lemm**

**Head of Military Operations Unit**

Information Communications Technology  
Division, Department of Field Support,  
United Nations



**Lieutenant Colonel (GS)  
Dr. Ekkehard Griep**

**United Nations Team**

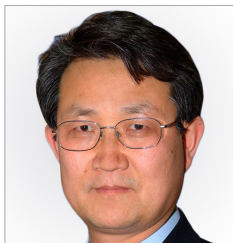
Directorate-General for Security and  
Defence Policy, Federal Ministry of  
Defence, Germany



**Mr. Dalibor Petrovic**

**Chief Project Management  
Office**

Information and  
Communications Technology  
Division, Department of Field  
Support, United Nations



**Mr. Kyoung-Soo Eom**

**Chief Geospatial Information Section**

Information and Communications  
Technology Division, Department of Field  
Support, United Nations



**Mr. Widmark Valme**

**Chief Technology Development,  
Design and Planning Unit**

United Nations Global Service Centre,  
Department of Field Support,  
United Nations

# Conference Organizers



**Ms. Katrina Miles**

**Partnership for  
Technology in  
Peacekeeping  
Coordinator**

Military Operations  
Unit, Information and  
Communications Technology  
Division, Department of Field  
Support, United Nations



**Mr. Jan-Simon  
Dörflinger**

**Desk Officer**

United Nations Team,  
Directorate-General for  
Security and Defence  
Policy, Federal Ministry of  
Defence, Germany



**Lieutenant Colonel  
Frank Gaebel**

**Desk Officer**

Protocol, Federal Ministry of  
Defence, Germany



**Mr. James Smith**

**Business Analyst**

Military Operations  
Unit, Information and  
Communications Technology  
Division, Department of Field  
Support, United Nations

## "Machine Learning, Robotics and Internet of Things: Managing UN Peace Missions Smarter"

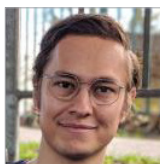
Panel: Brigadier General Dr. Michael Färber, Mr. Wolfgang Weiszegger, Mr. Daniel Gasperz



**Brigadier General Dr. Michael Färber** is Deputy Director-General for Cyber/Information Technology (CIT) at the German Federal Ministry of Defence. He previously served as Chief of Division Cyber-/IT-Governance within the same directorate. He held several commanding and specialized positions within the German Armed Forces and NATO. He holds a Ph.D. in Electrical Engineering from the University of the Bundeswehr in Hamburg.



**Mr. Wolfgang Weiszegger**, Director of Mission Support (DMS), UNIFIL, has served in various peacekeeping and political missions in the Middle East, Africa and Americas as well as at UNHQ in public information, humanitarian, security, logistics, administrative and management positions. Previous he was as Director of Mission Support for UNAMID.



**Mr. Daniel Gasperz**, Director, The Awesome Foundation at Google, Amsterdam, is an entrepreneur from Rotterdam who wants to build and grow ventures that take on humanity's greatest challenges and push the world forward through social innovation. He is also the founder of Hashtagmars.com—a global community of scientists, engineers and entrepreneurs dedicated to realizing human settlement on Mars; the founder of the Awesome Foundation Amsterdam; and an alumnus of ECE's Student Entrepreneurs Excellence Program. He is working as a Product and Marketing Engineer at Google.

## "Working with Academia, Think Tanks, Research and Innovation Labs"

Panel: Dr. Julie A. Maupin, Dr. Michael L. Best, Mr. Adrian Escribano Malva



**Dr. Julie A. Maupin**, JD/MA (Yale), is the Director of Social Impact & Public Regulatory Affairs, IOTA Foundation, and a leading expert on the legal, regulatory, and economic policy dimensions of blockchains and other distributed ledger technologies. A dual-trained lawyer and economist, her expertise spans cryptocurrencies, smart contracts, prediction markets, data analytics, and artificial intelligence in Internet of Things environments. Dr. Maupin holds a Ph.D. in international studies (IHEID, Geneva), a Juris Doctor and M.A. Economics (Yale) and a Bachelor of Science in Economics (University of Washington).



**Dr. Michael L. Best** directs the United Nations University Institute on Computing and Society (UNU-CS) in Macau SAR, China. He is a professor, on leave, with the Sam Nunn School of International Affairs and the School of Interactive Computing at Georgia Institute of Technology, where he directs the Technologies and International Development Lab. Professor Best is co-founder and Editor-in-Chief Emeritus of the widely read journal, *Information Technologies and International Development*. He holds a Ph.D. from MIT and has served as director of Media Lab Asia in India, and head of the eDevelopment group at the MIT Media Lab.



**Mr. Adrian Escribano Malva** is the Innovation Consultant at the Science Park of the Universidad Politécnica de Valencia specializing in green tech initiatives. He previously served on the European Commission and the Spanish Ministry of Foreign Affairs in design, assessment, management, implementation, monitoring and evaluation of Foreign Aid programs in Vietnam, Cambodia and Mali. He is a Fulbright Scholar and has a Master Degree from Tufts University.



## Technology in Peacekeeping Intelligence

### Major Ellen Regeling

Assessment Officer, Office of Military Affairs, Department of Peacekeeping Operations, United Nations

### Mr. Guillaume Criloux

Chief Geospatial Analysis Unit, UN Geospatial Information Section, Information and Communications Technology Division, United Nations

### Mr. Miguel Lens Pardo

Air Operations Officer, Air and Transportation Services, Logistics Support Division, Department of Field Support, United Nations

### Mr. Boris Meyer

Strategic Support Officer, Field Mission Support Section, Information and Communications Technology Division, United Nations

### Lieutenant Colonel Axel Weber,

Subject Matter Expert, Federal Ministry of Defence, Germany

## Convoy and Patrol Protection

### Lieutenant Colonel Jose Latorre

Policy and Doctrine Team Officer, Office of Military Affairs, Department of Peacekeeping Operations, United Nations

### Mr. Bryan Sand

IED Threat Mitigation Advisor, United Nations Mine Action Service

### Mr. Miguel Lens Pardo

Air Operations Officer, Air and Transportation Services, Logistics Support Division, Department of Field Support, United Nations

### Lieutenant Colonel Athanasios Dimitriou

Subject Matter Expert, Ministry of Defence, Greece

## Improving Security through Situational Awareness

### Lieutenant Colonel (GS) Stefan Lemm

Head of Military Operations Unit, Information and Communications Technology, Division and Office of Military Affairs, Department of Field Support, United Nations

### Ms. Beatrice Puyo

Chief Geospatial Information Section, United Nations Interim Force in Lebanon (UNIFIL)

### Mr. Widmark Valme

Chief Technology Development, Design and Planning Section, UN Global Service Centre, Department of Field Support, United Nations

### Dr. Walter Dorn

Subject Matter Expert, Canada

## Training and Capacity Building

### Ms. Jade Mali Mizutani

Programme Management Officer, UN Signals Academy, Information and Communications Technology Division, Department of Field Support, United Nations

### Ms. Silvia Francavilla

Training Coordinator, UN Signals Academy, United Nations Regional Service Centre, Entebbe

### Mr. Mark Polane

Business Relationship Manager / Telecommunications Officer, United Nations Regional Service Centre, Entebbe

## UN Open GIS

### Mr. Ricardo Arias

Science & Technology Advisor, US Africa Command, Co-Chair UN Open GIS

### Mr. Anthony Calamito

Chief Geospatial Officer, Boundless

### Prof. Massimiliano Cannata

OSGeo and University of Applied Sciences & Arts of Southern Switzerland

### Mr. Guillaume Criloux

Chief Geospatial Analysis Unit, UN Geospatial Information Section, Information and Communications Technology Division, Department of Field Support, United Nations

### Dr. HaeKyong Kang

Research Fellow, Korea Research Institute for Human Settlements, OpenGDS and UN Open GIS Secretariat

### Mr. Dong-Joo Koh

Chief Geospatial Information Service, United Nations Mission in South Sudan (UNMISS)

### Prof. Impyeong Lee

OpenGDS, Seoul City University

### Dr. Sangkeon Lee

Korea Research Institute for Human Settlements

### Ms. Andrea Leong

Senior Policy Officer, Singapore

### Prof. Ki-Joune Li

OpenGDS, Pusan National University and Co-Chair UN Open GIS

### Mr. Brian Monheiser

Senior Director, US Federal Programme at Boundless

### Mr. Timur Obukhov

Geospatial Information Officer, UN Geospatial Information Section, Information and Communications Technology Division, Department of Field Support, United Nations

### Mr. Kais Zouabi

Chief Client Solutions Delivery Section, United Nations Global Service Centre

# Symposium Programme

## Daily Agenda

### Monday, 14 May 2018

13:00 – 17:00	Arrival of Participants and Registration
13:00 – 14:30	<b>UN Open GIS Working Group - Opening and Introduction</b>
14:30 – 15:00	Coffee Break
	<b>UN Open GIS Working Group - How is the Vision Holding Compared to Progress</b> Each spiral leader will briefly present a status update of the work in the spiral, the progress made and what remains to be done. The Panel will also try and identify existing gaps, internal to spirals, or functional gaps.
15:00 – 17:00	<b>Moderator:</b> Mr. Kyoung-Soo Eom, Chief UNGIS and Co-Chair UN Open GIS <b>Presentations:</b> Prof. Ki-Joune Li, OpenGDS, Korea and Co-Chair UN Open GIS; Mr. Ricardo Arias, Science & Technology Advisor, US Africa Command, Co-Chair UN Open GIS; Mr. Guillaume Criloux, Chief Geospatial Analysis Unit, UNGIS

### Tuesday, 15 May 2018

08:00 – 16:00	Arrival of Participants and Registration
	<b>Opening Plenary: UN Symposium on Partnership for Technology in Peacekeeping</b>
	<b>Opening Remarks</b> <b>Welcome Remarks:</b> Ms. Lisa Bутtenheim, Assistant Secretary-General, Department of Field Support, United Nations Mr. Thomas Silberhorn, Parliamentary State Secretary, Federal Ministry of Defence, Germany <b>Welcome Remarks (video):</b> Mr. Jean-Pierre Lacroix, Under-Secretary-General, Department of Peacekeeping Operations, United Nations Mr. Atul Khare, Under-Secretary-General, Department of Field Support, United Nations
10:00 – 12:00	<b>Keynote Presentation:</b> <b>"Next Tech Peacekeeping: A Vision for the Future of Field Technology",</b> Mr. Anthony O'Mullane, Director Information and Communications Technology Division, Department of Field Support, United Nations <b>Group Photo: All</b>
	<b>Moderator:</b> Ms. Katrina Miles, Coordinator of Partnership for Technology in Peacekeeping, Information and Communications Technology Division, Department of Field Support, United Nations
12:00 – 13:00	Lunch Break

## Symposium: Current Technology in UN Peacekeeping Operations

13:00 – 14:00	<b>Opening Plenary:</b>	<b>Operational Challenges in Peacekeeping</b>
	<b>Keynote Presentations:</b>	<p><b>"Political Challenges to Peacekeeping"</b>, Dr. Géza Andreas von Geyr, Director-General for Security and Defence Policy, Federal Ministry of Defence, Germany</p> <p><b>"Operational Perspective in UN Peacekeeping"</b>, Colonel Lucian Andrei, Chief Assessment Team, Office of Military Affairs, Department of Peacekeeping Operations, United Nations</p>
	<b>Moderator:</b>	Lieutenant Colonel (GS) Dr. Ekkehard Griep, United Nations Team, Federal Ministry of Defence, Germany
14:00 – 14:15	Coffee Break	
14:15 – 15:30	<b>Opening Plenary:</b>	<b>Operational Challenges in Peacekeeping</b>
	<b>Keynote Presentations:</b>	<p><b>"How UN Partnership Technologies can Benefit AU Peace Support Operations"</b>, Mr. Benedicto Képi, African Union (AU) Headquarters</p> <p><b>"Operational Perspectives from the Field: MINUSMA"</b>, Mr. Anton Antchev, Deputy Director of Mission Support, MINUSMA</p> <p><b>"Challenges Introducing Technology to Peacekeeping"</b>, Mr. Eduardo Artigas, Chief Field Mission Support Section, Information and Communications Technology Division, Department of Field Support, United Nations</p>
	<b>Moderator:</b>	Ms. Katrina Miles, United Nations
15:30 – 16:00	Coffee Break	
16:00 – 17:30	<b>Opening Plenary:</b>	<b>Partnerships and Projects</b>
	<b>Moderator:</b>	<b>"Introduction and How to Become a Partner"</b> , Mr. Stefan Lemm, Head of Military Operations Unit, Information Communications Technology Division, Department of Field Support, United Nations
	<b>Presentations:</b>	<p><b>MINUSMA Mission Secure Network</b>, Partner: France</p> <p><b>UN Mission Colombia Rapid Deployment</b>, Technisches Hilfswerk (THW, Federal Agency for Technical Relief), Partner: Germany</p> <p><b>MINUSCA Surveillance and Security</b>, Partner: Israel</p> <p><b>UN Signals Academy</b>, Partner: Japan</p> <p><b>UN Open GIS Working Group</b>, Partners: Republic of Korea, United States of America</p>
18:30 – 19:00	Transport to Federal Ministry of Defence	
19:00 – 19:30	<b>Technical Demonstration: UN Modular Command Centre, THW and Bundeswehr</b>	
	<b>Remarks:</b>	<p>Mr. Thomas Silberhorn, Parliamentary State Secretary, Federal Ministry of Defence, Germany</p> <p>Mr. Stephan Mayer, Parliamentary State Secretary, Federal Ministry of the Interior, Building and Community, Germany</p>
19:30 – 21:00	<b>Welcome Reception:</b>	Casino, Federal Ministry of Defence
	<b>Remarks:</b>	<p>Dr. Ursula von der Leyen, Federal Minister of Defence, Germany</p> <p>Ms. Lisa Buttenheim, Assistant Secretary General Department of Field Support, United Nations</p>



## Wednesday, 16 May 2018

13:00 – 17:00 Registration

### Symposium: Near Future Technology in UN Peacekeeping Operations

09:00 – 10:30 **Keynote Presentations**

**"How Peacekeeping Can Benefit from Space Tech: Nano satellites and sensors"**, Dr. Jaan Praks, Assistant Professor Aalto University, Finland

**"Rapidly Deployable Integrated Mission Headquarters"**, Lieutenant Colonel (GS) Dr. Ekkehard Griep, United Nations Team, Federal Ministry of Defence, Germany

**Moderator** Lieutenant Colonel (GS) Stefan Lemm, United Nations

10:30 – 10:45 Coffee Break

#### Near Future PK Tech Plenary

10:45 – 12:00 **Presentations**

**"United Nations Situational Awareness Programme, An Overview"**, Mr. Dalibor Petrovic, Information and Communications Technology Division, Department of Field Support, United Nations

**"United Nations Open GIS Update"**, Mr. Kyoung-Soo Eom, Chief Geospatial Information Section, Information and Communications Technology Division, Department of Field Support, United Nations

**"Introduction to Working Groups"**, Lieutenant Colonel (GS) Stefan Lemm, United Nations

**Moderator** Ms. Katrina Miles, United Nations

12:00 – 13:00 Lunch Break

#### Moderated Discussions: Working Groups

Defining the role of technology solutions within the context of UN Peacekeeping

#### Working Group Meetings by Topic

##### "Technology in Peacekeeping Intelligence"

*The Cycle* – A brief introduction to Peacekeeping Intelligence (PKI) and the PKI cycle.

*Imagery* – This session discusses the acquisition and analysis of UAS and satellite imagery and tools available for producing imagery-based intelligence products.

**Moderators** Ms. Ellen Regeling, Office Military Affairs - Lead; Mr. Guillaume Criloux, Chief Geospatial Analysis, UNGIS; Mr. Miguel Lens Pardo, Air and Transportation Services, Logistics Support Division, DFS; Mr. Boris Meyer, Strategic Support Officer, ICTD; Lieutenant Colonel Axel Weber, Subject Matter Expert, Germany

##### "Convoy and Patrol Protection"

*A View from the Ground* – This will highlight the current threat, especially in Mali and Somalia, and outline technology and training solutions that are utilized with a goal to identify gaps and innovative solutions.

**Moderators** Mr. Jose Latorre, Office of Military Affairs, DPKO - Lead; Mr. Bryan Sand, IED Threat Mitigation Advisor, United Nations Mine Action Services; Lieutenant Colonel Athanasios Dimitriou, Subject Matter Expert, Greece; Mr. Miguel Lens Pardo, Air and Transportation Services, Logistics Support Division, DFS, United Nations

## Working Group Meetings by Topic

13:00 – 13:45	<p><b>“Improving Security through Situational Awareness”</b></p> <p><i>Situational Awareness (SA)</i> as key to both implementation of a mandate and to mitigate risks with examples and best practices from MINUSMA and UNIFIL. Discussion about United Nations peacekeeping situational awareness requirements and its technical approach to deliver a suite of tools to meet this demand.</p> <p><i>Sensor and Data Analysis to improve SA/Security</i> – Discussion about the United Nations’ approach to utilize innovative technologies to improve situational awareness and security, including Big Data analysis and sensor data management.</p>
	<p><b>Moderators</b> Lieutenant Colonel (GS) Stefan Lemm, Head of Military Operations Unit, ICTD - Lead; Ms. Beatrice Puyo, Chief GIS, UNIFIL; Mr. Widmark Valme, Chief Technology Development, Design and Planning Section, UN Global Service Centre; Dr. Walter Dorn, Subject Matter Expert, Canada</p>
	<p><b>“Training and Capacity Building”</b></p> <p><i>Bridging Current Uniformed Capability Gaps</i> - Discussion about possible avenues to fill existing uniformed capability gaps to generate high-performing and specialized enabling capabilities for ICT.</p> <p><i>Increasing Women Participation in UN Peacekeeping</i> - An examination of the approaches to address gender imbalances and to create a conducive environment for female ICT uniformed personnel deployment.</p>
	<p><b>Moderators</b> Ms. Jade Mali Mizutani, Programme Manager, UN Signals Academy - Lead; Ms. Silvia Francavilla, UN Signals Academy, UNRSCE; Mr. Mark Polane, Business Relationship Manager, UNRSCE</p>
	<p><b>“UN Open GIS - Better Defining the Role of Open Source Solutions in the UN Context”</b></p> <p>At the inception of the UN Open GIS Initiative, several goals were identified. However, the technology landscape, including GIS, is one in constant evolution, as is the UN operational context. During the session, panel members will work on formulating changing and emerging needs that were not initially captured or identified.</p>
	<p><b>Moderator</b> Mr. Kyoung-Soo Eom, Chief UNGIS and Co-Chair UN Open GIS</p>
	<p><b>Presentations</b> Mr. Brian Monheiser, Senior Director, Boundless; Dr. HaeKyong Kang, OpenGDS and UN Open GIS Secretariat; Professor Maria A. Brovelli, OSGeo, Politecnico di Milano and Chair of UN Open GIS Spiral-II Capacity Building; Mr. Kais Zouabi, Chief CSDS (GIS), UNGSC</p>
13:45 – 14:00	Coffee Break
14:00 – 15:00	<b>Moderated Discussions: Working Groups</b>
15:00 – 15:30	Coffee Break
15:30 – 16:00	<b>Plenary: Near Future Technology in UN Peacekeeping Operations</b>

09:15 – 10:00	<b>Moderated Discussions: Working Groups</b>	
	Defining the role of technology solutions within the context of UN Peacekeeping	
	<b>Working Group Meetings by Topic</b>	
	<b>"Technology in Peacekeeping Intelligence"</b>	
	<i>Data</i> – The aim of this session is to discuss the technology we are using now, or can start using in the near future, for the gathering and analysis of Big Data and other data sources, and its secure processing.	
	<b>Moderators</b>	Ms. Ellen Regeling, Office Military Affairs - Lead; Mr. Boris Meyer, Strategic Support Officer, ICTD; Lieutenant Colonel Axel Weber, Subject Matter Expert, Germany
	<b>"Convoy and Patrol Protection"</b>	
	<i>A view from the Top</i> – The goal of this session is to highlight the work done at the strategic and operational level through doctrine and policy and to examine how this is closely related to the introduction of new technologies in the generation of comprehensive solutions. <i>A view from the Front</i> – This session will focus on the future of peacekeeping and threats to convoys.	
	<b>Moderators</b>	Mr. Jose Latorre, Office of Military Affairs, DPKO - Lead; Mr. Bryan Sand, IED Threat Mitigation Advisor, UNMAS - Co-Lead; Lieutenant Colonel Athanasios Dimitriou, Subject Matter Expert, Greece
	<b>"Improving Security through Situational Awareness"</b>	
	<i>Airborne ISR capabilities for Situational Awareness and Security</i> – A discussion about the current use of airborne sensor platforms and options for a better utilization in peacekeeping.	
	<i>Rapidly Deployable Capabilities for PK missions</i> – A discussion about current plans for rapidly deployable forces and headquarters and requirements for improvement.	
	<b>Moderators</b>	Lieutenant Colonel (GS) Stefan Lemm, Head of Military Operations Unit, ICTD - Lead; Mr. Miguel Lens Pardo, Air and Transportation Services, Logistics Support Division, DFS; Dr. Walter Dorn, Subject Matter Expert, Canada
	<b>"Training and Capacity Building"</b>	
	<i>Exploring new partnerships for building capacity on near future tech</i> - The discussion will focus on the identification of entry points for partnerships on training and capacity building for incoming technologies.	
	<b>Moderators</b>	Ms. Jade Mali Mizutani, Programme Manager, UN Signals Academy - Lead; Ms. Silvia Francavilla, UN Signals Academy, UNRSCE; Mr. Mark Polane, Business Relationship Manager, UNRSCE
	<b>"UN Open GIS – Bridging the Gaps: Towards Spirals Integration and Piloting 'Prototype' of UN Open GIS System"</b>	
	One of the inescapable lessons of the first two years of the UN Open GIS Initiative is the complexity to efficiently coordinate work between spirals. The aim of this session is to identify the efficiencies and pain points of the work in Spirals, and locate where additional efforts need to be applied to deliver a better-integrated solution towards the implementation of a pilot project of the UN Open GIS system prototype in a UN peacekeeping mission.	
	<b>Moderators</b>	Prof. Ki-Joune Li, OpenGDS, Korea and Co-Chair UN Open GIS; Mr. Kyoung-Soo Eom, Chief UNGIS and Co-Chair UN Open GIS
	<b>Keynote Presentations</b>	Mr. Anthony Calamito, Chief Geospatial Officer, Boundless; Mr. Guillaume Criloux, Chief Geospatial Analysis Unit, UNGIS; Mr. Dong-Joo Koh, Chief GIS, UN Mission in South Sudan (UNMISS); Dr. Sangkeon Lee, Korea Research Institute for Human Settlements (KRIHS)

10:00 – 10:15	Coffee Break	
10:15 – 11:00	<b>Moderated Discussions: Working Groups</b> Defining the role of technology solutions within the context of UN Peacekeeping	
11:00 – 11:15	Coffee Break	
11:15 – 12:00	<b>Plenary: Near Future Technology in UN Peacekeeping Operations</b>	
12:00 – 13:00	Lunch Break	
<b>Symposium: Future Technology in UN Peacekeeping Operations</b>		
13:00 – 14:00	<b>Plenary: Technology Frontier Topics in UN Peacekeeping Operations</b>	
	Opening Remarks	“The Role of Next Generation Technology in UN Field Missions”, Mr. Wolfgang Weiszegger, Director of Mission Support, UNIFIL, United Nations
	Keynote Presentation	“Blockchain for Peace: How Technology Innovation can Create Change”, Mr. Dominik Schiener, Chairman, IOTA Foundation, Berlin
	Moderator	Ms. Katrina Miles, United Nations
14:00 – 14:15	Coffee Break	
14:15 – 15:00	Panel Discussion	“Machine Learning, Robotics and Internet of Things: Managing UN Peace Missions Smarter”, Brigadier General Dr. Michael Färber, Deputy Director-General for Cyber/Information Technology (CIT), Federal Ministry of Defence, Germany; Mr. Wolfgang Weiszegger, Director of Mission Support, UNIFIL; Mr. Daniel Gasperz, Director, The Awesome Foundation at Google <b>Questions and Answers</b>
	Moderator	Mr. Dalibor Petrovic, Chief Project Management Office, Information and Communications Technology Division, United Nations
15:00 – 15:15	Coffee Break	
15:15 – 15:45	Keynote Presentation	“Internet Access for All – a Human Right: Focus on Connectivity Innovation Applications”, Dr. Kashif Ali, Lead/Chair of OpenCelluar Project, Telecom Infra Project (TIP)
	Moderator	Ms. Katrina Miles, United Nations
15:45 – 16:00	Coffee Break	
16:00 – 17:00	Panel Discussion	“Peacekeeping Innovation and Partnerships – the Way Forward: Working with Academia, Think Tanks, Research and Innovation Labs”, Dr. Julie Maupin, Director of Partnerships, IOTA Foundation, Berlin; Dr. Michael Best, Director of United Nations University Macau Labs, United Nations; Mr. Adrian Escribano Malva, Innovation Consultant at the Science Park of the University Politécnica de Valencia <b>Questions and Answers</b>
	Moderator	Lieutenant Colonel Axel Weber, Subject Matter Expert, Germany
	<b>Sym: Future Technology in UN Peacekeeping Operations Plenary</b>	
17:00 – 17:30	Moderator	Mr. Widmark Valme, Chief Technology Development, Design and Planning Section, UN Global Service Centre
19:45 – 22:00	Cocktail Reception and Official Dinner:	Sheraton Berlin Grand Hotel Esplanade
	Remarks:	Mr. Walter J. Lindner, State Secretary, Federal Foreign Office, Germany; Ms. Lisa Buttenheim, Assistant Secretary-General Department of Field Support, United Nations



## Friday, 18 May 2018

09:15 – 11:00	<b>Summary Plenary Session and Closing</b> <b>"Recap and Goals of the Symposium, Outcomes and potential areas of cooperation, Next steps for Engagement"</b>
	<b>Moderators</b> Mr. Eduardo Artigas and Lieutenant Colonel (GS) Stefan Lemm, ICTD, United Nations
11:00 – 11:30	Coffee Break
11:30 – 12:00	<b>Closing Remarks</b> Mr. Anthony O'Mullane, Director ICTD, United Nations
	End of symposium
14:00 – 15:15	<b>UN Open GIS - Architecture and Spirals (Is the Current Model Optimal?)</b> Designed as a follow-up to Thursday, this short session aims at questioning the Spiral model—to adjust it or come up with a more efficient one.
	<b>Moderator and Presentation</b> Professor Ki-Joune Li, OpenGDS, Pusan National University
15:15 – 15:30	Coffee Break
15:30 – 17:00	<b>UN Open GIS: Future Plan &amp; Closing</b> How to and what will be achieved from implementation of the pilot project of UN Open GIS system prototype in a UN peacekeeping mission? What is in store for the UN Open GIS Initiative in the next two years? Is it time to enlarge to more players, at the risk of diluting the efforts? Should the focus remain on Peacekeeping? Are there other actors out there who could make a difference? How to reach them and include them in the initiative? What technology should be prioritized? This session will try to address these questions and lay out a mechanism for a response.
	<b>Moderator</b> Mr. Kyoung-Soo Eom, Chief UNGIS
	<b>Moderator and Presentation</b> Professor Ki-Joune Li, OpenGDS, Pusan National University; Mr. Ricardo Arias, Science & Technology Advisor, USAFRICOM; Mr. Kais Zouabi, Chief CSDS (GIS), UNGSC, Mr. Anthony Calamito, Chief Geospatial Officer, Boundless

# Working Group Descriptions

## Technology in Peacekeeping Intelligence

A variety of technologies exist to collect, analyse, disseminate and secure information to meet requirements for decision-making and to inform operations related to the safety and security of UN personnel and the protection of civilians. These technologies include but are not limited to Unmanned Aerial Systems, ground sensors, tethered aerostats/balloons, perimeter security, analysis software, and secured networks. Participants will be asked to share their experience and expertise in the design and use of coherent solutions, integrating sensors with operations within a directed cycle.

The discussion will focus on satellite imagery analysis with specific questions to be explored: What are the best practices for integrating new and emerging earth observation satellite platforms into the analytical toolbox: new sensors, smaller sensors, daily (or better) sensors, radar sensors, fusion radar-optical? What are the best solutions for the fusion of information sources to deliver better-integrated products: space and airborne imagery, open source information, knowledge of local context, UN internal and external reporting, etc.?

## Convoy and Patrol Protection

United Nations peacekeeping missions that operate in challenging environments usually are required to maintain camps and bases in remote areas where the infrastructure is minimal or non-existent. While supporting a mission's points of presence, UN convoys can be targeted by extremist groups or even gangs of outlaws. The alarming rate at which such attacks are taking place has increased during the past years. The UN is exploring available technologies and best practices that will contribute to protecting civilians, UN personnel and equipment; and allow for effective mandate implementation.

Specific questions will be explored: What are the best practices regarding the composition and movement of convoys to secure communications? What are the best available platforms for vehicle-mounted and UAV/GAV sensors? Best practices regarding civilian, police and military responses and tactics?

## Improving Security through Situational Awareness

Whether it is required to monitor belligerent parties' compliance with an agreement or a UN camp that is threatened, situational awareness is key to both implementing the mandate and to mitigating risk. Discussions will focus around United Nations peacekeeping situational awareness requirements and its technical approach to deliver a suite of tools to meet this demand.

Participants will be asked to share their experience and expertise in using situational awareness technologies, especially for protection. These technologies include but are not limited to Unmanned Aerial Systems, ground sensors, tethered aerostats/balloons, perimeter security. From a process standpoint, they will be asked how situational awareness is established and maintained, and how the information is shared between various military components or between civilians and the military.

Specific questions will be explored: What are the lessons learned and best practices derived from identifying, prototyping, testing and fielding technology solutions? What are low-cost, high-return areas that could be prioritized? What format should the UN use (to acquire equipment and train UN personnel, totally outsource as a service or another option)?

The discussion will cover rapid deployment capabilities, and it may also include the topic of interim headquarters for the start-up of missions, the technologies required for their support, and UN requirements for implementation.

## Training and Capacity Building

Investing in innovation for training and capacity-building leads to enhanced mission operational efficiency and effectiveness. With more than 100,000 authorized personnel deployed in often remote and high-risk locations, DFS-supported peacekeeping operations require specialized and high-performing military signals and ICT capabilities as the backbone of command, control and situational awareness.

Adequate training for military and police signals and ICT specialists is therefore essential to ensure that they have the prerequisite knowledge and skills essential to providing technological solutions that respond and adapt to each mission's specific operational requirements and evolving mandate.

The UN Signals Academy has been established as a response to bridge identified capabilities gaps and to enhance the preparedness of this specialized personnel for deployment to UN peacekeeping missions. While continuing to provide training to meet current communications and IT capabilities needs, the UN Signals Academy emerges as a natural hub and capacity-enabler for training targeted to uniform personnel on operating incoming technologies as they are introduced into field operations.

Specific topics will be explored: strengthening coordination and adopting

integrated approaches, including through the expansion of the triangular partnership model and joint efforts towards the establishment of certification standards; promoting training as a capacity enabler for incoming technologies in synergy with situational awareness/GIS initiatives and ensuring programme relevance in a constantly changing environment; increasing women participation in peacekeeping and mainstreaming gender; enhancing troops' level of preparedness and linking training with actual deployment; building TCCs/PCCs training capacity and reinforcing local ownership; and addressing language barriers.

## UN Open GIS Initiative

Open GIS aims to leverage free and open-source-based geospatial technologies in support of peace operations. The United Nations is working with Member States and technology contributing partners—taking full advantage of their expertise and experience—to identify and develop an open source enterprise GIS platform as well as solutions and technical capacities that meet the requirements of the field missions.

Specific questions will be explored: Do you consider an Open Source GIS system a viable, sustainable, cost-effective alternative to a commercial off-the-shelf equivalent? What would be key benefits/advantages of Open Source GIS solutions for the United Nations operations? What would be the anticipated challenges/difficulties in establishing and maintaining hybrid solutions, open source and commercial solutions?

## Innovative Technologies in Information and Communications

Innovation and technological development are key elements of peace and stability. The ability to improve upon existing technologies, apply them in new ways in different places, and to change the way we use technology to impact behavior will define the next technological revolution. However, it doesn't necessarily involve brand-new technologies.

"Next Tech" explores innovations on the edge of mainstream adoption, with a focus on technological discoveries and new opportunities that will have a great impact. It will be technologies that have long been on the margin of the mainstream that become "the next big thing" because they achieve cost competitiveness relative to established technologies.

Conversely, other technological innovations can come from new ideas that introduce original characteristics valued by the market. These technologies generally take the market by storm and their adoption is swift.

Technology experts from both the private and public sectors have been invited to present on frontier technologies and to discuss their potential for mainstream adoption, especially in a peacekeeping environment. Participants will be asked to share their experience and expertise in formal and informal innovation programme establishment and management.



Federal Ministry  
of Defence



GERMANY  
FOR UNITED NATIONS  
SECURITY COUNCIL  
2019-20

**4TH INTERNATIONAL SYMPOSIUM OF  
PARTNERSHIP FOR TECHNOLOGY IN PEACEKEEPING**

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