

The inaugural Atlantic Future Forum on Cyber Security and Artificial Intelligence

Monday 22 October 2018

HMS QUEEN ELIZABETH

at anchor off New York City













Welcome

A very warm welcome to the Royal Navy's new aircraft carrier, HMS Queen Elizabeth, for today's inaugural Atlantic Future Forum.

The Armed Forces of the United Kingdom and the United States of America share a special bond that has stood for generations; a bond forged in the heat of operations spanning the whole of the globe. In today's deteriorating global security climate, faced with the breathless pace of technological advance, there has never been a more important time for our great nations to work ever more closely together.

Moreover, as we meet today's challenges side by side, so too must we make sure we retain our competitive edge against a diversifying range of potential adversaries so that we are ready for the challenges of tomorrow. The key to this is collaborative capability development, the benefits of which have been recognised on both sides of the Atlantic for a long time.

The success story behind Queen Elizabeth's presence here today is just one great example of the close collaboration between our two countries. As the biggest ship ever built for the Royal Navy was brought to life in the United Kingdom, our Fleet Air Arm and Royal Air Force pilots, ground crew and engineers have been here in the United States, working with their American counterparts to master the extraordinary capability that is the F-35B, the STOVL variant of the world's first 5th generation fighter. Anyone involved in maritime aviation knows that aircraft carrier operations are far from simple and it is testament to the skill, professionalism and hard work of all involved, British and American alike, that ship and aircraft were successfully brought together for the first series of flying trials a few weeks ago.

This forum is not just about military capability though. The technologies that shape all our lives often stem from advances in military technology. For example, this year marks the 60th anniversary of the Defense Advanced Research Projects Agency (DARPA) – the agency of the US Department of Defense that created the forerunner to the worldwide web. It is just one of a host of innovations initially designed for military use but now a part of everyday life for all of us. So today is a valuable opportunity for us to come together, share our knowledge and experience, and help each other both to understand and resolve the common technological challenges we face on both sides of the Atlantic. Hopefully we will also build new enduring relationships along the way. More than this, I am confident that the Atlantic Future Forum will become the premier event in which industry and government can come together to share experiences and insights and to discuss and shape these vital issues.

That work starts here in New York today.



First Sea Lord

Admiral Sir Philip Andrew Jones, KCB, ADC







Foreword

Our mighty HMS Queen Elizabeth carrier is much more than a warship, more than just the launch pad for our 5th generation F-35B Lightning strike fighters, more even than the flagship of our navy and our nation. Her four acres of sovereign territory provide a unique platform to forge and strengthen our partnerships with allies – especially with our greatest friend the United States.

That bold new era starts today when HMS Queen Elizabeth hosts the inaugural Atlantic Future Forum in New York Harbour. We know the dazzling advances of digital technology and the coming of the age of Artificial Intelligence open up wonderful opportunities for our nations. But we've also seen the devastating power cyber gives our adversaries to cause chaos on a global scale. Just as we've watched a new era of conflict disintegrate the old divisions between civilian and military, between domestic and international.

So we're bringing together the brightest minds from both sides of the pond to get to grips with these growing challenges. Our two great nations have a remarkable history of innovation. Together we have given the world everything from the world wide web and DNA computing, to radar and the jet engine. But now we need the policy, business and academic leaders in our Forum to find answers to new questions. What are the threats? What rules must we abide by to make sure new technologies are used for good? How can we stay ahead of the curve? And how can we seize the new opportunities arising to benefit not just our Armed Forces but society as a whole?

These might be tough challenges, but they are not insurmountable. Look at what our nations have already achieved together. We're working on F-35B – the biggest military project anywhere in the world. We're joining forces on quantum computing, robotics and miniaturisation. And with the great carrier of Global Britain's hopes, now ready to sail the seven seas, side-by-side with our greatest partners, there is surely no limit to what we can achieve together.



Secretary of State for Defence,

The Rt Hon Gavin Williamson CBE MP





Britain's New Flagship

HMS Queen Elizabeth is Britain's first 5th generation aircraft carrier and the largest warship ever built for the Royal Navy.

HMS Queen Elizabeth and her sister ship, HMS Prince of Wales, are three times larger than the previous generation of British carriers. At 65,000 tons, with a length of 280m and a flight deck covering four acres, she can support up to 48 fixed wing and rotary aircraft and travel at speeds exceeding 25 knots.

HMS Queen Elizabeth has been designed and built around the 5th generation fighter jet F-35B. The Queen Elizabeth class carriers will be the only vessels in the world capable of fully supporting the jet, incorporating many technological advances and innovations. The Lockheed Martin F-35 Lightning II stealth multirole fighter will be the cornerstone of the Royal Navy's Carrier Strike capability for years to come.

HMS Queen Elizabeth is a strategic asset providing the UK's 'conventional deterrent'. She will deliver Carrier Strike effects around the globe – a moving airfield capable of launching jets to conduct missions over land and sea anywhere, at any time.

She will also be capable of taking on Air Manoeuvre and Amphibious Assault roles, using Merlin and Chinook helicopters and will deploy the Royal Navy's CROWSNEST 'over the horizon' airborne surveillance and control. She will operate and deploy as part of a UK Carrier Strike Group, including Type 45 destroyers, ASW Frigates and Astute class attack submarines.

HMS Queen Elizabeth is the UK's new flagship and is expected to remain in service for the next 50 years.





Atlantic Future Forum Agenda

11:00 – 11:15	Welcome from Admiral Sir Philip Jones KCB ADC
	Message from Rt Hon Gavin Williamson MP Secretary of State for Defence UK
11:15 – 11:30	Keynote Address from Rt Hon Dr. Liam Fox MP Secretary of State for International Trade
11:30 – 12:30	Expert Panel 1: How are emerging technologies shaping our future and driving the need for military change?
	 Chair: • David Bond - Security and Defence Editor, Financial Times Panel: • Commodore Ian Annett – Assistant Chief of Staff for Information Warfare & CIO, Royal Navy • Rear Admiral David Hahn – Chief of Naval Research, US Navy. • Sean Kanuck – Director of Cyber, Space and Future Conflict at IISS • Dr. Chris C Demchak – RDML Grace M. Hopper Professor of Cyber Security and Director, Cyber and Innovation Policy Institute, U.S. Naval War College
12:30 – 13:30	Lunch
13:30 – 14:10	Expert Panel 2: How do we gain decision advantage through cyber security and develop the policies we need?
	Chair: • Leigh Morris Sloane – Managing Director of IISS-Americas Panel: • Secretary Michael Chertoff – Executive Chairman and Co-Founder of The Chertoff Group • Dr Ian Levy – Technical Director, National Cyber Security Centre • General Keith Alexander – Chief Executive of IronNet Cybersecurity • Charles Forte – Chief Information Officer, Ministry of Defence
14:10 – 15:00	Plenary 1: Cyber security in a volatile world
	 Chair: • Leigh Morris Sloane – Managing Director of IISS-Americas Panel: • Deon Viergutz – Vice President of Cyber Solutions at Lockheed Martin • Dr Adrian Nish – Head of Threat Intelligence at BAE Systems • David E. Hamilton Jr – President of Guardtime Federal • John Watters – Executive Vice President at FireEye



15:00 – 15:30	Break
15:30 – 15:50	Keynote Address from Teresa Carlson Vice President of Amazon Web Services
15:50 – 17:00	Plenary 2: How Artificial Intelligence will shape the world of the future Chair: • David Bond – Security and Defence Editor, Financial Times Panel: • André Pienaar – Chief Executive Officer at C5 Capital • Josh Sutton – Chief Executive Officer at Agorai • Morag Watson – Vice President of Digital Innovation at BP • Dr. Bradley Betts – Managing Director and Head of Artificial Intelligence at BlackRock, US • David Tagg-Oram – Artificial Intelligence and Data Programme Director, Royal Navy
17:00 – 17:30	Closing Address
	The Signing of the Accord
17:30 – 19:30	Evening Reception Hosted by Captain Jerry Kyd, HMS QUEEN ELIZABETH Board of Trade Awards Presented by Rt Hon Dr. Liam Fox MP Beating Retreat HM Royal Marines
19:30	Depart

Speakers and Participants



General Keith Alexander is founder and CEO of IronNet Cybersecurity and is one of the world's leading authorities on cyber security. A four-star Army general, he was previously the first commander, and the highest-ranked military official, of the US Cyber Command, the National Security Agency, and the Central Security Service. He led these Department of Defense agencies during the conflicts in Afghanistan and Iraq when attempted cyber-attacks against the US began to increase.



Commodore Ian Annett RN is the Assistant Chief of Staff and Chief Information Officer at the Royal Navy. His previous staff appointments include the Ministry of Defence Central Staff in the Directorate of Naval Operations and Defence Staff in Washington, DC as the Embassy's Maritime C4ISR desk officer. Following his promotion to Commodore, he returned to Navy Command with responsibility for all information capabilities, including satellite communications, networks, cyber and electronic warfare.



Dr Bradley Betts is the Managing Director of the Global Equity Research team within BlackRock's Systematic Active Equity group. He focuses on the use of machine learning, artificial intelligence, and natural language processing for generating alpha. Dr Betts's service with the firm dates back to 2008, including his years with Barclays Global Investors (BGI), which merged with BlackRock in 2009. Prior to BGI, Bradley was a scientist at Quantcast, the Principal Computer Scientist at NASA's Ames Research Center and a Lecturer and Research Scientist in the School of Medicine at Stanford University.



David Bond is the Security and Defence Editor for the Financial Times. An experienced journalist and broadcaster, he writes on topics including cyber security, cyber welfare, aerospace and defence, and US/UK politics. He has written for The Daily Telegraph, the Evening Standard, and The Sunday Times and was the BBC Sports Editor during the London 2012 Olympics.



Teresa Carlson is the Vice President for Amazon Web Services' worldwide public sector business, where she is responsible for operations, strategy, sales and business development. Prior, to Amazon, she was Vice President of Federal Government Business at Microsoft, among several other positions, and Worldwide Vice President of marketing and business development for Lexign Incorporated. Among her many honours is the March of Dimes Heroines in Technology Lifetime Achievement Award. She is also one of the Washingtonian's 100 Most Powerful Women.



Michael Chertoff is the Executive Chairman and Co-Founder of The Chertoff Group and the former Secretary of the U.S. Department of Homeland Security. He is also Chairman of the Board of Directors of BAE Systems. At Chertoff, Michael provides high-level strategic counsel to corporate and government leaders on a broad range of security issues, from risk identification and prevention to preparedness, response and recovery. Before heading up the Department of Homeland Security (2005–2009), Michael served as a federal judge on the US Court of Appeals for the Third Circuit.



Dr. Chris C Demchak is the RDML Grace M. Hopper Professor of Cyber Security and Director, Cyber and Innovation Policy Institute, U.S. Naval War College. Author of many articles on societal/large enterprise security difficulties with large-scale information systems, Dr. Demchak is co-director of the NWC Center for Cyber Conflict Studies. As an early member of the Intelligence and Security Informatics (ISI) research field, she is now an executive board member of the Washington-based Cyber Conflict Studies Association (CCSA). Her research focuses on cybered surprise in organisations, cyber tools, and emergent choices cyber security/deterrence strategies.



Charles Forte is the Chief Information Officer for the Ministry of Defence (MOD). He is responsible for strategy and policy on the exploitation, operation, interoperability and protection of information and digital technology across the MOD. This includes cyber security and resilience; the promotion of new ways of working, information technology-enabled innovation; and the delivery of effective IT services. Charles has 38 years industry experience gained from leading IT globally as Deputy Group Global CIO at BP, as CEO of Global IT Services at Prudential and as Interim CIO at Thames Water.



Rt Hon Dr. Liam Fox MP was appointed the Secretary of State for International Trade and the President of the Board of Trade in 2016. He was the former Secretary of State for Defence (2010-2011). Fox held several ministerial roles in John Major's Conservative government. He has served as the Constitutional Affairs Spokesman (1998-1999), Shadow Health Secretary (1999-2003), Conservative Party Chairman (2003-05), Shadow Foreign Secretary (2005) and Shadow Defence Secretary (2005-10).



Rear Admiral David J. Hahn USN is the Chief of Naval Research and Director of Innovation, Technology Requirements and Test & Evaluation. Hahn is a decorated submarine commander and has held several acquisition roles within the Navy since 2007. These include Major Programme Manager for the Submarine Combat and Weapon Control Systems programme and Joint Test and Evaluation Test Director and Programme Manager for advanced submarine research and development. He previously served as a senior technical advisor to the Deputy Chief of Naval Operations for Information Warfare/Director of Naval Intelligence.



David E. Hamilton Jr is the President of Guardtime Federal, LLC, a US subsidiary of an international data systems integrity firm and he is the CEO of consulting firm Eagle Aerie, Inc. He has served on the Committee of the National Academies of Science for Innovation and Experimentation and continues to serve as a consultant to the Air Force Scientific Advisory Board. Prior to Guardtime and Eagle Aerie, David was in the Civil Service, serving 11 years in the Senior Executive Service and 29 years in uniform.



Rear Admiral Nicholas Hine CB RN is the Assistant Chief of the Naval Staff (Policy). RAdm Hine was formerly the Assistant Director of the Maritime Change Programme, the Director Iraq Maritime and Training and a Team Leader Warfare Officers and Ratings. In 2011, he was the Commanding Officer of the frigate HMS Westminster and in 2012 he was the Defence Policy Advisor to HM Treasury.

ATLANTIC FUTURE FORUM

Speakers and Participants



Sean Kanuck is the Director of Cyber, Space and Future Conflict at the International Institute for Strategic Studies (IISS). He leads the Institute's Cyber, Space and Future Conflict Programme, assessing advanced technologies and forecasting the evolution of strategic risk. Prior to joining the IISS in 2007, he served five years as the United States' first National Intelligence Officer for Cyber Issues at the Office of the Director of National Intelligence. He also has a decade of government experience in the Central Intelligence Agency's Information Operations Center, as an Intelligence Fellow at the White House, and as part of the US delegation to the United Nations Group of Governmental Experts on international information security.



Dr lan Levy is the Technical Director of the National Cyber Security Centre, prior to which he was Technical Director of Cyber Security and Resilience at GCHQ. Ian leads on developing defences to manage cyber threats. This involves fostering technical innovation to find solutions that can protect the UK from large scale cyber-attacks, and day-to-day malicious cyber activity.



Dr Adrian Nish is the Head of Threat Intelligence at BAE Systems. He has experience both in investigating the technical components of attacks, as well as their socio-political drivers. Adrian regularly advises businesses and governments on cyber issues. He has recently worked with multinational operations to tackle cyber-criminal groups, as well as leading research into some of the most sophisticated cyber-espionage campaigns disclosed to date. Other research interests include data-driven security, and the emerging discipline of cyber threat intelligence.



David Tagg-Oram is the Director of Artificial Intelligence and Data Programme for the Royal Navy. He is a multi-disciplinary technologist who directs Programme Nelson, which was formed to rapidly accelerate the exploitation of advanced data analytics and artificial intelligence in the Royal Navy. Prior to the Navy, he held positions at the Government Legal Department, BAE Systems, The Home Office and in the Department for Work and Pensions.



André Pienaar is a Managing Partner and the Founder of C5, a specialist technology investment group focused on cyber security, cloud computing and big data analytics. André serves on the boards of several cyber security companies, including the IronNet Cybersecurity, the Haven Group and ITC Secure. He has also advised the 6th Duke of Westminster on the establishment of the new Defence and National Rehabilitation Centre (DNRC) in the United Kingdom, as a state of the art centre for the rehabilitation of British military veterans. André is a dedicated philanthropist, lawyer and an expert on cyber law and cybercrime.



Leigh Morris Sloane is Managing Director of international research institute, IISS—Americas, managing operations and outreach for the Washington office and working closely with her IISS colleagues around the world to ensure that constituents based in the Americas connect with the Institute's world-leading research and convening power. Leigh has more than 20 years' experience in the international affairs arena at the nexus of research, higher education and policy making. Prior to IISS, Leigh served as Chief of Staff at the Brookings Institution and she was previously the Executive Director of the Association of Professional Schools of International Affairs (APSIA).



Josh Sutton is the Chief Executive of Agorai, a global platform that provides an inventory of turnkey software solutions, technology and data needed for any company to join the AI economy. Their mission is to ensure that the benefits of AI are owned and controlled by everybody across the globe. John frequently speaks on how AI can be leveraged to transform business models and has been quoted in leading publications, such as Harvard Business Review, Forbes, AdWeek, CNBC, Venture Beat and Huffington Post. Prior to Agorai, Josh held positions at Sapient, Publicis. Sapient, NPower and AI Capital.



Deon Viergutz serves as the Vice President of Cyber Solutions at Lockheed Martin Rotary and Mission Systems, an organisation that delivers full-spectrum multi-domain advanced cyber and electronic warfare solutions and services, for Department of Defense, Intelligence, Homeland, and international customers. At Lockheed Martin, he has held numerous leadership positions and has worked in Strategy and Analysis where he supported strategy initiatives for the company, with emphasis on logistics and sustainment, information technology, and homeland security



Morag Watson is the Vice President of Digital Innovation at BP. She works with leading technology companies in Silicon Valley and ensures BP is taking advantage of the latest emerging trends in digital technology. Her job involves experimenting and probing the latest and greatest technology coming out of the digital space and looking at what has the potential to transform BP, the industry and the world. She has held multiple leadership positions at BP and was the Chief Financial Officer and later Vice President, for the North America Commercial Fuels Marketing business.



John Watters is the Executive Vice President, Chief Corporate Strategy Officer at FireEye. In this role, he oversees a unified global organisation combining Mandiant, FireEye iSIGHT Intelligence, and FireEye as a service operation. John has also served as Executive Vice President of Global Services and Intelligence. He joined FireEye when they acquired iSIGHT Partners, the company he founded in 2006. Under John's leadership, iSIGHT Partners built a global network of intelligence experts that today extends the reach of FireEye's threat intelligence capability. For the past two decades he has been an active investor in other innovative cyber security companies, including TippingPoint Technologies, Archer Technologies and Netwitness.



Our Strategic Partners

The Atlantic Future Forum wishes to thank the following companies for their advice and support in staging this inaugural Forum on board HMS Queen Elizabeth

Amazon Web Services



For over 12 years, Amazon Web Services (AWS) has been the world's most comprehensive and broadly adopted cloud platform. Today, AWS powers hundreds of thousands of businesses in 190 countries around the world. AWS offers over 125 fully featured services for compute, storage, databases, networking, analytics, machine learning and artificial intelligence, Internet of Things, mobile, security, hybrid, virtual and augmented reality, media, and application development, deployment, and management. AWS services are trusted by millions of active customers—including the fastest-growing startups, largest enterprises, and leading government agencies—to power their infrastructure, make them more agile, and lower costs.

BAE Systems



BAE Systems is a leading defence, aerospace and security company. Our advanced defence technology protects people and national security, and keeps critical information and infrastructure secure. We search for new ways to provide our customers with a competitive edge across air, maritime, land and cyber. We employ a skilled workforce of more than 83,200 people in over 40 countries, and work closely with local partners to support economic development by transferring knowledge, skills and technology.

BlackRock



BlackRock manages pension funds, mutual funds, index funds and a variety of investment strategies. With \$6.3 trillion in assets under management, millions of people and the world's biggest institutions and governments trust BlackRock to help them reach their investing goals. BlackRock's risk management and analytic capabilities are essential components of an investment management process that spans asset classes and the world. iShares is the world's leading provider of exchange traded funds, representing more than 900 funds and more than \$1.8 trillion in assets under management. Aladdin is a technology championed by major institutions worldwide for its ability to help them understand complex investment portfolios and the potential risk therein.

BF



BP operates in 70 countries worldwide. We find and produce oil and gas on land and offshore. We move energy around the globe. We manufacture and market fuels and raw materials used in thousands of everyday products. But the world is changing fast and BP is changing with it. The mix of energy that provides heat, light and mobility for billions of people is shifting towards lower carbon sources, driven by advances in technology and growing concerns about climate change. We're determined to play our part – helping to meet the world's need for more energy whilst also reducing carbon emissions.

C5 Capital



C5 Capital is a transatlantic specialist technology investment group focused on cyber security, artificial intelligence, and cloud computing. C5 recognises the critical role these technologies play in our global security and seeks to create an advanced ecosystem of technologies, talent, and capital, to enable the best solutions to solve the most challenging problems. C5 combines multiple verticals in its cyber investment strategy, including a substantial focus on the late stage/growth equity investments, an early stage venture capital accelerator and a broad network of operating partners, skilled in deep tech, to enable solutions to create value. This combination puts C5 in a differentiated class as the premier global firm with this mission-driven purpose. C5 creates its global reach from its London headquarters to offices in Washington, DC, Munich, Bahrain and Luxembourg.

COS



CQS is a multi-strategy asset manager founded by Sir Michael Hintze in 1999. Our deep experience allows us to offer solutions for investors across a range of return objectives and risk appetites. We are an active asset manager with expertise across the corporate credit spectrum. Our fundamental belief is that it is our rigorous hard work that enables us to be imaginative and that discipline and hard work generate insight. To us, investment is about finding value where it is hard to identify. Looking further and deeper permeates everything we do. We are committed to delivering performance and high levels of service to our investors.

INEOS



INEOS products make a significant contribution to saving lives, improving health and enhancing standards of living for people around the world. In 20 years, we have grown to become one of the world's 50th largest companies, with sales of around \$60 billion, employing 20,000 people across 171 sites in 24 countries. We produce energy and raw materials that are essential in the manufacture of a wide variety of goods: from paints to plastics, textiles to technology, medicines to mobile phones - chemicals manufactured by INEOS enhance almost every aspect of modern life. We are also about to build a new uncompromising 4x4, the spiritual successor to the Defender. We are a Challenger for the next Americas Cup in 2021.

Lockheed Martin



Lockheed Martin is a global security and aerospace company, employing approximately 100,000 people worldwide. Principally engaged in research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services, the company this year received three Edison Awards for ground-breaking innovations in autonomy, satellite technology and directed energy. Lockheed Martin UK is the Corporation's UK-based arm. With 16 key sites across the UK employing approximately 1,700 people, LMUK is a UK Government strategic partner, spending approximately £1 billion annually, supporting 1,000 companies in its supply chain. F-35 programme investment alone will sustain 20,000 UK jobs during the production phase.

Raytheon



Raytheon Company is a technology and innovation leader, specialising in cyber security, defence and civil government solutions. With operations globally, Raytheon in the UK is a prime contractor and major supplier to the UK Government, serving the aerospace, defence and commercial markets. A major economic contributor to the UK, the company has facilities in England, Scotland and Wales and supports jobs in every region. In Cyber, Raytheon delivers solutions for every part of society, from government agencies to private businesses. The company's capabilities include defence intelligence services, information management, geospatial intelligence and cyber security, with the ability to train at scale.



The Accord A Framework for Cooperation

The UK and US recognise the benefits of the Atlantic Future Forum as a collective body of experts to promote engagement between Government, Military and Industry in a framework for dialogue and cooperation in the Cyber and Artificial Intelligence (AI) domains. The Forum will make it easier to identify and work together on opportunities with the potential to promote and challenge current thinking in Cyber technology and AI.

The UK and US are committed to a framework for dialogue and cooperation in the field of Cyber and Artificial Intelligence to ensure that this special relationship remains the world leading partnership for cyber security, defence and Artificial Intelligence.

At the conclusion of this inaugural Atlantic Future Forum, the participants are invited to add their signatures to The Accord



Thank you

Thank you for attending today.

The organisers would like to thank the following for their assistance and advice in staging the Atlantic Future Forum 2018

HMS QUEEN ELIZABETH and her Ship's Company
Rear Admiral Nicholas Hine CB RN, Assistant Chief of Naval Staff (Policy)
Captain Jerry Kyd RN, Commanding Officer, HMS QUEEN ELIZABETH
British Defence Staff, British Embassy, Washington DC
British Consular General, New York
Department for International Trade
CTN Group

Event Delivery Team

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Cdr John Fitzpatrick RN, Rebecca Denholm, Anne Spaven, Jules Richmond, Emily Lingard, Stewart Milton, Lt Doug Wharry RN, Katie Lockett, Juliet Godfrey, Robin Thompson, Carol Lamb, Imogen Oppe and all the members of the Event Delivery Team

Project Lead

Hon Captain Stephen Watson RNR

To keep up-to-date with the Atlantic Future Forum visit us at www.royalnavy.mod.uk/aff and use the hashtag #QEAtlanticForum

Programme designed and produced by Lucy Thompson



