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The Future of Blood in a Changing World: Innovation and Resilience in the UK's Blood Supply

Parliamentary roundtable report

28 October 2025, 10:00 – 12:00, House of Lords Committee Room 3A

Speakers

Dr Lise Estcourt (Medical Director for Transfusion, NHSBT), **Dr Susan Walsh** (CEO, Immunodeficiency UK), **Kathleen Rowe** (Chair, Blood Transfusion Association)**, Dr Anna Millan Alvarez** (CEO, Banc de Sang i Teixits)**, Gerry Gogarty** (Director of Blood Supply, NHSBT)**, Dr Ronald Ti** (Affiliate Lecturer, Defence Studies Department, King's College London), **Professor Tim Hodgetts** (Former Surgeon General of the UK Armed Forces, Associate Fellow, Chatham House).

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Attendees

Bell Ribeiro-Addy MP, **Freddie van Mierlo MP**, **Andrew George MP**, **Baroness Ritchie of Downpatrick**, **Prof Renata Gomes** (NHSBT), **Wayne Lawley** (NHSBT), **Stephen Thomas** (JPAC), **Helen McDaniel** (DHSC), **Dr Satarupa Choudhuri** (NIHR), **Mike Lewis** (NIHR), **Alan Prosser** (Welsh Blood Service, WBS), **Tony Docherty** (Scottish Blood Service, SBS), **Dr Joan Ramon Grifol** (BST), **Pilar Cordoba** (BST), **Major Dan Willis** (Royal Centre for Defence Medicine, MoD), **Colonel Lucinda Blake** (Royal Centre for Defence Medicine), **WO Stella Gale** (84 Medical Supply Squadron), **Kate Burt** (Haemophilia Society), **Carol Burt** (Sickle Cell Society), **Rich Collins** (Inflammatory Neuropathies UK), **Carol Bewick** (British Society for Haematology), **Prof Neil Robertson** (Association of British Neurologists), **Alexa Wetzel** (PPTA), **Marilena Vrana** (PPTA), **Robert Turpin** (BSI), **Matthew Cawson** (TBCT), **Tom Smith** (TBCT), **Naren Vinayak** (TBCT), **Rossina Funes Santimoni** (RPP), **Celia Miray Yesil** (RPP), **Charles Waller** (RPP), **Ben Phan** (RPP), **Margaux Devreese** (RPP).

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Key Findings

- NHSBT now supplies plasma for medicines and is on track to deliver over 240,000 litres by 2025–26. However, to meet overall demand, NHSBT needs around 5,000 blood donations every day and must recruit nearly 140,000 new donors annually.
- Plasma-derived medicines like immunoglobulin are essential for treating immunodeficiencies, but the UK still relies heavily on imports, particularly from the US.
- NATO's Medical Manifesto and Action Plan, endorsed at the 2024 and 2025 summits, identify blood availability as a key risk under the category of medical logistics.
- In a moderate-scale conflict, modelling suggests around 1,000 casualties per week, with 20% requiring transfusion and each needing an average of 8 units of whole blood, equating to a demand of roughly 10,000 units weekly.

- Automation and digital integration were identified as key enablers of a resilient blood system, improving efficiency, traceability, and responsiveness.
- There is a need for a UK regulatory translation pathway to ensure that novel blood products can be adopted more rapidly during emergencies.

General Overview

The event explored how the UK can strengthen the resilience and sustainability of its blood and plasma supply amid rising clinical demand and growing geopolitical risks. It aimed to address critical challenges such as declining donor numbers, increasing reliance on plasma imports, particularly from the US, and limited processing capacity. Discussions focused on the need to modernise infrastructure, expand domestic collection and adopt advanced technologies, positioning blood security as a national priority integral to both NHS resilience and broader national preparedness.

Panel 1

Scaling for Demand: Building the UK's Blood and Plasma Infrastructure for the Future of the NHS

The first panel, chaired by Baroness Finlay and moderated by Mariam Zaidi, examined the UK's ability to meet growing demand for blood and plasma in the face of mounting operational and demographic pressures. Recent declines in donor registrations, down 26% between 2019 and 2020, with 2023–24 recording a four-year low, and ageing donor demographics highlight the urgent need to future-proof the system. Blood stocks fell to critically low levels in 2022 and 2023, driven by reduced collections, staffing shortages and seasonal pressures, prompting delays to care. With rising demand from rare diseases and new therapies, there is a need to scale domestic collection, invest in advanced processing, and reduce reliance on imports. Key themes included innovation, workforce capacity, donor diversity, and the strategic imperative to strengthen UK self-sufficiency.

Assessing the current capacity and infrastructure gaps in England's blood services.

Dr Lise Estcourt, Medical Director for Transfusion, NHS Blood and Transplant

Dr Lise Estcourt's presentation outlined the growing pressures on England's blood services, underscoring both clinical need and systemic fragility.

She opened by illustrating how blood underpins almost every area of healthcare: from supporting premature babies and trauma patients, to enabling major surgery, childbirth and cancer care. However, the system faces serious constraints. She notes that the voluntary donor base is now less resilient than it was pre-pandemic, with both the whole blood and O negative donor base below 2019 levels. This is especially concerning because O negative blood is used universally in emergencies.

Dr Estcourt outlined a series of structural vulnerabilities within the blood system, including a finite supply, limited capacity for collection, testing and manufacturing, persistent workforce shortages, and fragmented data systems between NHSBT and hospitals that

hinder real-time stock visibility and outcome tracking. She also pointed to a growing set of external threats, such as the emergence of climate-driven infectious diseases like mosquito-borne viruses, highlighting the need for enhanced surveillance and rapid testing infrastructure. These risks are compounded by recent crises, including amber alerts for red cells in 2022 and 2024, and a cyberattack that severely disrupted transfusion services in London hospitals, resulting in halted surgeries and emergency patient relocations.

Finally, Dr. Estcourt called attention to the Transfusion Transformation Strategy, currently in draft, which aims to implement Recommendation 7 from the Infected Blood Inquiry. This includes measures to improve governance, digital infrastructure, component development (e.g. dried plasma), education and standardisation across transfusion care.

In closing, she emphasised that while NHSBT can currently provide blood to meet daily needs, the system is not resilient. A secure blood supply, she said, is essential to the nation's health and requires greater donor diversity, better integration with the wider NHS and sustained investment in innovation and infrastructure to respond to future surges and unmet needs.

Blood supply challenges and its impact on patient care

Dr Susan Walsh, CEO, Immunodeficiency UK

Dr Susan Walsh delivered a compelling presentation highlighting the essential role of plasma-derived therapies, particularly immunoglobulin (IG), in treating people with primary and secondary immunodeficiencies, conditions that impair the immune system and leave patients highly vulnerable to life-threatening infections.

She explained that IG therapy is a life-saving treatment used by nearly 15,000 people in the UK. It is not manufactured synthetically but must be fractionated from human plasma. Most of the UK's IG supply has historically been imported, making the system vulnerable to global shortages, as seen during the COVID-19 pandemic when plasma donations dropped and some products were withdrawn from the UK market due to better prices being secured elsewhere.

As a result, Dr Walsh highlighted that shortages in IG have direct and serious consequences for patients, including delayed or skipped treatments, reduced doses, increased hospital admissions for severe infections such as pneumonia or sepsis, and greater reliance on antimicrobials, raising concerns around antimicrobial resistance. These shortfalls also lead to lost days at work or school due to illness, further impacting quality of life and public health outcomes.

She welcomed the UK's recent milestone of producing its own IG from UK-sourced plasma, achieving 30% self-sufficiency and praised the UK Plasma for Medicines Programme. However, she stressed that more plasma collection centres are urgently needed to build long-term security.

Dr Walsh concluded with a powerful message: patients are not passive recipients, many are willing to help, raise awareness and even donate, but the system must support and scale to meet growing demand. As diagnosis improves and therapeutic uses expand, planning for sufficiency, resilience and equity in plasma supply must be a national priority.

Europe's blood innovation – what can we learn from the European case?

Kathleen Rowe, President, Blood Transfusion Association (BTA)

Kathleen Rowe, President of the Blood Transfusion Association (BTA), brought an international and systems-level perspective to the discussion, urging the UK to treat blood not as a medical commodity but as strategic national infrastructure, integral to both health security and patient care.

Rowe introduced the BTA as a global association representing leaders in blood component and bag manufacturing, focused on promoting safe, efficient and innovative blood systems. She highlighted its role in shaping the new EU SoHO Regulation.

Rowe highlighted how SoHO's flexible, yet robust regulatory approach enables the adoption of new technologies, such as automation, pathogen inactivation and digital traceability across blood systems. Early adopters like Germany and France have reported improved efficiency, reduced waste and higher product quality. Furthermore, she noted that the European experience shows how collaboration has harmonised standards, stabilised supply chains, improved care equity and demonstrated that standardisation drives quality while cross-border cooperation boosts innovation and resilience.

Turning to the UK, Rowe emphasised that the country faces a dual challenge: a declining donor base and increasing clinical demand, a dynamic seen across Europe but compounded by unique domestic constraints. As the population ages and therapies like CAR-T cell treatments and gene therapies become more common, both the quantity and quality of blood and plasma supply will need to rise. Rose stated that what has worked in the past will not necessarily meet the needs of the future.

She stressed, however, that these technologies must be embedded in a strategic regulatory framework that gives clarity, predictability and long-term support to the organisations responsible for delivering the blood supply. Drawing parallels to the SoHO framework, she suggested that a UK-specific regulatory model, co-created with NHSBT, MHRA and other stakeholders, could achieve this without duplicating European structures.

Dr Anna Millan Alvarez, CEO, Banc de Sang i Teixits (BST), Catalonia

Dr Anna Millan Alvarez, CEO of Banc de Sang i Teixits (BST), shared an international perspective on how Catalonia has built a resilient and digitally integrated blood system serving eight million people. As the region's sole provider of SoHO products, BST has combined centralisation, automation and innovation to deliver both routine and emergency care effectively.

She explained that BST's "vein-to-vein" model links donor recruitment, collection, processing and transfusion through a single coordinated network. This structure enables real-time monitoring, forecasting and redistribution of blood components, improving efficiency and ensuring rapid response during shortages.

Automation, introduced over a decade ago, has been central to this progress, streamlining processing, while reducing errors and enhancing quality and traceability. Staff can now focus on higher-value tasks, supported by real-time operational data that strengthens both safety and planning. A step towards this has been their major innovation, GEA, BST's unified

digital platform linking hospitals, mobile units and the central facility. Fully compliant and interoperable with Catalonia's health system, it enables traceability, real-time decisions and automated donor engagement, marking a fundamental shift in how BST operates.

She also highlighted their use of AI and machine learning to improve donor recruitment, especially for mobile plasma drives. She described a data-driven system that identifies likely donors, optimises scheduling and tailors outreach via SMS, WhatsApp or email, improving efficiency, reducing missed appointments and helping to stabilise plasma supply.

Dr Millan concluded with BST's current priority, the "Golden Challenge", a goal to reach 65,000 plasma donations by 2026. While Catalonia is self-sufficient in most plasma products, it still imports around 60% of its immunoglobulin from the U.S. Achieving this target, she said, depends on optimised processes, resource investment and strong institutional support.

Her presentation underscored that resilience in blood systems is driven by the integration of technology with strategic planning and system-wide coordination, a lesson many UK participants found directly relevant to domestic reform efforts.

Q&A Session

- *Baroness Finlay opened the Q&A by commending the Catalonian model and asking whether BST had a system to encourage recipients of blood or plasma products, or their families, to give back by becoming donors. She reflected on the UK's cultural hesitancy to discuss the real value of these treatments, noting that many patients and families may not appreciate the cost or scarcity of these lifesaving products, often assuming they are in limitless supply.*

  - **Dr Millan** responded by explaining BST's two-pronged approach. First, donors receive an SMS when their blood is used for a patient, a gesture that has proven highly motivating. Second, BST carries out low-key promotional activities in hospital waiting areas, particularly in surgical and emergency departments, targeting family members while maintaining patient privacy. The organisation is also working to inform recipients more directly about their transfusions, though this is still in development.
  - **Dr Susan Walsh** built on this by highlighting that families of patients receiving plasma-derived therapies are often eager to donate, but are unable to due to the UK's limited infrastructure, only three centres currently collect plasma.
  - She pointed to significant untapped goodwill, exemplified by charities like Rich Collins' Neuropathy UK, whose members frequently ask how they can give back. These communities, she stressed, are well-informed about the costs of treatments like Hizentra or Privigen and are highly motivated but face practical barriers to donation.
    - **Rich Collins** suggested that opportunities were being missed by not embedding prompts within widely used digital tools like the NHS app, which could nudge patients' post-treatment to consider donation.

➢ *How well equipped is the UK's infrastructure to scale up processes?*

- **Dr Satarupa Choudhuri**, national specialty lead for haematology at NIHR, noted that while 15 non-commercial trials are currently underway in this space, many face delays due to fragmented funding and inadequate cost-attribution processes.
  - She explained that, unlike commercial trials, which benefit from the streamlined NCVR (Non-Contract Value Review) process, non-commercial studies rely on a slower and more opaque system (SOCAT) that calculates costs on paper across broad categories: research, NHS support and treatment costs. This lack of granularity, she argued, causes delays in setup, poor cost recovery and limits scalability. She proposed the development of something similar to "NCVR Lite" a parallel, light-touch review process tailored to non-commercial studies, to speed up approvals and enable more efficient trial delivery (of around 3-4 trials in 6-9 months). With new research funding models due in 2026, she suggested piloting this approach through a small number of transfusion-focused trials.
  - To move this forward, she called on Parliamentarians to offer formal endorsement, which would help convene key stakeholders, including NHSBT, NIHR, UKRI, Innovate UK, BTA etc. She stressed that with political will and coordination, a practical solution to a systemic bottleneck was within reach.

Panel 2

Resilience and Security: Blood Infrastructure in a Changing Strategic Landscape

Panel 2 reframed the UK's blood supply as a national security issue, shifting focus from clinical operations to broader challenges of resilience, logistics, innovation and defence preparedness. Despite long-standing aims for self-sufficiency, the UK still meets less than 30% of its plasma needs domestically, with 38% of Europe's supply imported from the US, creating a significant vulnerability as geopolitical tensions rise and the US prioritises its own health security. Panellists warned that NHS blood services are not equipped to meet the surge in demand that would arise in a conflict, even if donations were to increase. They stressed that safeguarding blood supply must be recognised not only as a healthcare priority, but as a critical component of the UK's national resilience strategy.

System vulnerability: how ready is the UK blood infrastructure for a national emergency?

Gerry Gogarty, Director of Blood Supply, NHS Blood and Transplant (NHSBT)

Opening the second panel, Gerry Gogarty outlined NHSBT's national infrastructure, which supports both routine and emergency care. He described its extensive footprint comprised of donor centres, mobile teams, plasma centres, manufacturing hubs and testing site. In addition to blood and plasma, NHSBT also oversees services for organ donation, tissue banking and apheresis, with around 1.4 million units of red cells, 256,000 platelets and 217,000 plasma components issued annually.

He noted that the organisation now supplies plasma for medicines, a relatively new area, and is on track to deliver over 240,000 litres by 2025–26. However, to meet overall demand, NHSBT needs around 5,000 blood donations every day and must recruit nearly 140,000 new donors annually, including 8,000 of Black heritage and 14,000 with priority blood types like O negative. To achieve this, he introduced the recent launch of a new donor resilience programme focused on boosting engagement in Black and ethnically diverse communities.

Gogarty also highlighted NHSBT's strong track record in crisis response describing how NHSBT maintains continuity through flexible staffing, stock buffers (of up to six days) and regional redistribution of supply.

To further strengthen national resilience, he noted that NHSBT and the MoD are expanding their strategic partnership across research, training, operational readiness, and international coordination. NHSBT will also take on an enhanced advisory role in surge planning, Chemical, Biological, Radiological and Nuclear preparedness and NATO-aligned resilience efforts. Like many other speakers, Gogarty stressed the need to reduce reliance on fragile global supply chains, noting that while the UK has reached 22% self-sufficiency in immunoglobulin and 80% in albumin, this remains a starting point.

However, he also pointed to emerging vulnerabilities, from geopolitical tensions and shipping disruptions around the Suez Canal to evolving cyber threats. While the current system is designed to meet everyday demand, Gogarty acknowledged that further investment and coordination, particularly with MOD, DHSC and NHS England, would be needed to build additional capacity for conflict scenarios or future crises.

He concluded by reaffirming that NHSBT remains committed to strengthening its operational readiness and engaging with partners to address the evolving risk landscape, further reiterating the point that blood should be seen as a critical infrastructure.

Lessons from Ukraine: why blood logistics is the critical 0.1% for UK defence resilience in a future European land war

Dr Ronald Ti, Affiliate Lecturer Defence Studies Department, KCL, UK Defence Academy, Shrivenham

Speaking virtually from Australia, Dr Ronald Ti drew on his experience as a military medical logistician to examine blood as a critical logistic item.

Dr Ti described blood as the critical 0.1%, a small proportion of logistic items with disproportionate impact on survival and national readiness. He highlighted that redundancy and surge capacity depend wholly on donation rates and efficient processing, noting that automation could improve throughput but not replace the need for donors.

Drawing on NATO modelling and lessons from the war in Ukraine, he outlined how modern conflict has made traditional medical evacuation models untenable. The former "10-1-2" metric, 10 minutes to haemorrhage control, 1 hour to resuscitation, 2 hours to surgery, is no longer feasible in contested environments where medical units are targeted and air evacuation is often impossible. Ukrainian casualties, he said, are now held at forward

facilities for up to 15 hours rather than two, with fatal consequences. Even the finest surgery cannot save a patient without blood, he remarked.

He warned that a NATO-scale conflict could generate 1,000 casualties a week, 20% requiring transfusion, each needing around 8 units, roughly 10,000 units weekly. A British Role 2 Forward surgical unit, by contrast, carries only 40–80 units, underscoring the scale of the gap.

Dr Ti stressed that the NHS is the ultimate source of all blood for the UK Armed Forces, linking domestic resilience directly to military capability, the "factory-to-foxhole" chain. His research on NATO civil–military logistics in Estonia showed that competing civilian and military demands could quickly strain supplies during crisis.

He highlighted the legal and logistical complexity of cross-border blood movement in NATO operations, noting that once the British Army is deployed in Europe, it must navigate overlapping national and EU regulatory frameworks. Many blood banks in allied countries are in fixed civilian facilities, creating strategic vulnerabilities if targeted during conflict. Drawing on lessons from Ukraine, he warned that such infrastructure would likely be at risk in any future NATO engagement.

In closing, Dr Ti emphasised the need for enhanced NHS–MoD integration, particularly in planning for surge capacity and developing more resilient systems such as freeze-dried and frozen plasma. He argued that blood logistics, though a small part of overall military supply, are disproportionately consequential.

Leveraging Civil–Military Preparedness to Secure Blood Supplies

Major Surgeon General (Ret.) Professor Tim Hodgetts, former NATO Medical Chief and Chair, NATO Committee of Medical Chiefs

Professor Tim Hodgetts, former Chair of NATO's Committee of Medical Chiefs and architect of the NATO Medical Manifesto and Action Plan, delivered a strategic civil-military perspective on blood resilience. He highlighted that blood supply is now officially one of NATO's top five medical capability risks, endorsed at the 2024 and 2025 NATO Summits.

He echoed earlier speakers in outlining projected demand: in a moderate-scale conflict, around 1,000 casualties per week could require transfusion, with 20% needing an average of eight units each, equating to 10,000 units per week.

Meeting this need requires layered planning: stockpiling dried plasma and frozen red cells, expanding emergency donor panels and walking blood banks, and rebuilding UK plasma fractionation capacity.

A key component is the proposition for a joint civil military funded initiative between the Medical Research Council and MOD, where the eligibility criteria for the research projects stipulates, they must take account of the military need. This initiative will concentrate on opportunities to extend the current limited life of fresh products and improve universal administration. In parallel, he stated that the Defence and Security Accelerator (DASA) will be launched to industry and academia in December this year and that will be focused on

supporting technology to enable the forward provision of blood, such as point of care tests for grouping and blood borne virus screening

Looking ahead, Hodgetts pointed to international research in synthetic blood and "smart" red blood cells, including DARPA's Smart RBCs programme and the revival of haemoglobin-based oxygen carriers (HBOCs), such as the erythema prototype. These innovations could eventually reduce reliance on human donors and improve battlefield care.

However, he stressed that science alone cannot solve the problem. Regulatory barriers, particularly within Europe, remain unresolved. There is no clear framework for mutual recognition of blood products across NATO or legal clarity on using one nation's blood in another's patients. SOFA Article 9's applicability to blood use in wartime is also uncertain. He expressed the need for parliamentarian support in the free passage and use of blood products and drugs across the EU, if we are fighting in Europe.

Q&A Session

➢ What is the role of innovation and automation in blood processing?

- **Dr Millan** shared insights from her region's transition to automated whole blood processing. She described it as transformative for traceability, product quality, staff satisfaction and overall system scalability. "If you want to scale, you have to automate," she concluded. This prompted a question from moderator on whether the UK was truly ready to scale up blood supply infrastructure.

We are joined by multiple new MPs and have revisited the question from panel 1.

➢ How well equipped is the UK's infrastructure to scale up processes?

- **Bell Riberio Addy MP** responded by emphasising that while some progress had been made, more must be done, particularly in improving donor recruitment and tackling low participation rates in Black and ethnically diverse communities. She stressed that recent initiatives were welcome, but not sufficient.
- In response, **Gerry Gogarty** (NHSBT) noted that a new donor resilience programme had been launched just the day before the roundtable. It is designed specifically to improve engagement with Black and ethnically diverse donors through targeted local outreach, revised collection site planning, and expanded marketing. Two phases of funding have been secured for this work.
    - Questions were also raised about mobile donation services and coverage in both urban minority communities and rural areas. Gogarty clarified that NHSBT collections already rely on mobile units but acknowledged the need to refine where and how these are deployed.
- In that context, **Major Dan Willis** from the Centre for Defence Pathology proposed that Defence engagement teams could partner with NHSBT to boost donor outreach in diverse communities, a collaboration that could help expand the pool for both peacetime needs and emergency surge scenarios. The suggestion was positively received.
- **Dr Satarupa Choudhuri** highlighted the limitations of early lab-grown red cells, noting that the RESTORE trial had promising clinical results but required £100,000

per bioreactor run for just millilitres of usable product. Ongoing work aims to reduce cost and scale production, but progress is slow. They called for a clear "translation pathway" to bring novel products (such as synthetic blood or polymerised haemoglobin) more rapidly from lab to clinical use, with support from regulatory bodies like the MHRA and NHSBT.

- **Prof Hodgetts** responded that while no formal pathway currently exists, conflict could dramatically accelerate approval processes, just as it did for COVID-19 vaccines.
- **Freddie van Mierlo MP**, closed the roundtable by highlighting the need for greater UK-led innovation in the blood space, noting that much of the current progress appears to be happening in the US. He emphasised the strength of the UK's universities and industry, which are well placed to lead in this area, but underutilised.
    - He called for improvements in regulatory pathways, particularly through MHRA and NICE, to accelerate market access and suggested that greater alignment on regulations like SOHO could support closer collaboration with Europe. He also pointed to the need to address access gaps for treatments in severe blood disorders such as sickle cell disease and beta thalassemia, which could help ease pressure on blood product supply.

Policy Recommendations

As the final session wrapped up, a shared message emerged: the UK's blood and plasma systems, though clinically sound, remain strategically underprepared for future shocks, from rising NHS demand to wartime surge scenarios. Throughout the roundtable, participants reinforced that blood is not simply a medical commodity, but a matter of national resilience and preparedness.

1. **Blood and blood components supply should be treated as a critical national infrastructure:** The UK should formally recognise blood supply as critical national infrastructure and prioritise resilience planning, protect essential funding, and strengthen preparedness against emergencies and supply chain disruptions in a changing geopolitical environment.

2. **Need for a sustainable donor strategy:** The UK should adopt a long-term, sustainable donor strategy that is more diverse and resilient. Increased plasma collection and greater domestic processing capacity are needed to reduce reliance on overseas supply and meet growing clinical demand around new treatments for rare diseases, such as plasma derived therapies.

3. **Better integration between NHSBT and MoD:** The UK should strengthen collaboration between NHSBT and the MoD across shared resources, coordinated stockpiles, and Defence-supported outreach would enhance national readiness and improve donor recruitment, particularly in underrepresented communities.

4. **Addressing legal and regulatory barriers:** The UK should reduce legal and regulatory barriers to create clearer, more agile frameworks that would accelerate innovation, enable safe testing and adoption of new technologies, and improve interoperability with international partners.