

European Maritime
Safety Report

The Japan Association of
Marine Safety

London Research Office

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ISAR 2026: Conference Report

– Capability Integration: What Next-Generation SAR Requires –

In July 2026, a representative of the London Research Office attended the 12th International Search & Rescue Conference & Exhibition 2026 (ISAR 2026) in Kuala Lumpur, Malaysia, to examine the use of emerging technologies and international approaches to search and rescue.

A key observation from the conference was the importance of “capability integration”: moving beyond the introduction of new technologies to integrate them with existing vessels, aircraft and rescue coordination centres (RCCs), human judgement and accountability, and cooperation among relevant agencies. This is how technological advances can be translated into operational SAR capability.

An integrated approach that enables technology, people and organisations to work together is therefore likely to become increasingly important in SAR.

Key Points

1. Event Overview

- Held in Kuala Lumpur, Malaysia, in July 2026
- An international conference and exhibition on search and rescue
- Participants from more than 20 countries, including military organisations, coastguard agencies, RCCs and businesses

2. Main Discussions

- Enhancing SAR capabilities through artificial intelligence (AI), unmanned aerial vehicles (UAVs), digital tools and other technologies
- Applications including AI-assisted drift prediction and search planning, and UAV-based searches and delivery of supplies
- The importance of human judgement and accountability, alongside technological advances and inter-agency cooperation

3. Key Takeaways

- Introducing new technologies does not, by itself, make them operationally effective in SAR
- Turning new technologies into operational SAR capability requires three forms of integration:
 - ✓ Integration with existing assets and systems
 - ✓ Integration with human judgement and accountability
 - ✓ Integration of capabilities across relevant agencies

Full Report

1. Introduction

The 12th International Search & Rescue Conference & Exhibition 2026 (ISAR 2026) took place in Kuala Lumpur, Malaysia, from 28 to 30 July 2026. It brought together representatives of military organisations, coastguard agencies, rescue coordination centres (RCCs), research institutions and private companies from more than 20 countries. The London Research Office was also represented at the event.

This report outlines the conference, summarises the main discussions and presents observations arising from the proceedings.

The event's theme was "Next-Gen SAR: Adapting to the Challenges of a Changing World". Topics ranged from maritime and aeronautical SAR, submarine rescue and mass rescue operations to the application of emerging technologies, including artificial intelligence (AI) and unmanned aerial vehicles (UAVs).



Conference session (left) and exhibition hall (right)

Digitalisation is advancing across the maritime sector, including vessel operations, navigational safety, maritime surveillance, ports and coastguard activities. Emerging technologies such as AI, unmanned systems, satellite communications and sensors are also beginning to be deployed in operational settings.

SAR is no exception. Rather than focusing solely on new technologies, a recurring question at the conference was how to incorporate them into existing SAR arrangements and translate their potential into operational rescue capability.

The operating environment for SAR is also changing. Extreme weather, major disasters and the expansion of maritime traffic and offshore activities are increasing the demands placed on rescue services. Piracy, smuggling, attacks on merchant vessels and interference with navigation and communications further complicate operations, making the boundaries between maritime security, unlawful activity and rescue less distinct. Against this background, the vessels and aircraft of any single agency may be insufficient. It is increasingly important to bring together, as circumstances require, the capabilities of the military, coastguards, police, fire and rescue services, aviation and maritime authorities, ports, medical and disaster management services, and private operators.

2. Main Discussions

(1) Expanding SAR Capabilities through New Technologies

Speakers described a range of initiatives to strengthen SAR operations through AI, unmanned systems such as UAVs, satellite communications, sensors and digital tools.

Capt. Jerzy Kiszczak of the Polish Maritime Search and Rescue Service discussed applications of AI in drift prediction, search planning, the allocation of rescue assets and the integration of information from multiple sources. These applications can support SAR coordinators by bringing together and analysing radar and Automatic Identification System (AIS) data, meteorological and sea conditions, maritime situational information, communications and the status of rescue units. The aim is to improve situational awareness and support decision-making.

Capt. Wei Shuo of the China Rescue and Salvage Bureau, Ministry of Transport, described the use of UAVs to deliver lifejackets, thermal protective aids and medical supplies before rescue units arrive, conduct night-time searches using infrared sensors, and transmit video and other information via satellite communications. He also outlined a future approach combining fixed-wing aircraft, helicopters and rescue vessels with technologies such as LiDAR and AI-based image recognition.

Comde. Anil Jai Singh (Retd.), a former Indian Navy officer who is now Vice President of the Indian Maritime Foundation, addressed submarine rescue. He described underwater search using side-scan sonar, synthetic aperture sonar, remotely operated vehicles (ROVs) and autonomous underwater vehicles (AUVs), alongside the potential of robotics and AI to improve situational awareness and rescue planning.

Together, these examples illustrated how emerging technologies could extend existing SAR capabilities in information processing, wide-area and night-time searches, and underwater search operations.

(2) Human Judgement and Responsibility in Technology-Enabled SAR

Several speakers emphasised that emerging technologies should support, rather than replace, human judgement and responsibility.

Capt. Kiszczak cautioned that, although AI can assist with drift prediction, search planning and asset allocation, incomplete or inaccurate input data may lead to erroneous recommendations. In his view, SAR coordinators must therefore assess the reliability of AI-generated outputs, with final decisions remaining a human responsibility.

Similarly, Global SAR Hub presented digital tools, including “Clear 406”, “SAR Chat”, “SAR Drift” and “SAR Manager”, as aids to coordinators’ decisions, not systems that independently determine whether rescue assets should be deployed.

The opening address by the Maritime Institute of Malaysia (MIMA) likewise stressed that AI, unmanned systems, satellite imagery and predictive models are intended to support professional judgement, not replace human accountability or ultimate responsibility.

Across these presentations, a consistent message emerged: human operators must assess the information provided by technology and retain responsibility for final decisions.

(3) Integrating New Technologies with Existing Assets and Systems

Another recurring issue was how new technologies could be incorporated into established SAR assets and systems.

Capt. Wei Shuo discussed fitting helicopters and rescue boats with LiDAR and other sensors to enhance search capabilities. He also referred to developing an information platform that combines AIS data and information from multiple sensors to support search and rescue operations.

Hong Kong's Government Flying Service (GFS) noted that UAVs and helicopters operating on the same mission require careful coordination to maintain flight safety.

During the question-and-answer session following the Global SAR Hub presentation, participants raised the issue of integrating new software with existing RCC information systems. The view expressed was that these tools should enhance existing systems rather than replace the established arrangements wholesale.

The central implementation challenge is therefore not simply to operate new technologies independently, but to integrate them effectively with existing vessels, aircraft, RCCs, and communications and information systems.

3. Observations: From Technology Adoption to Capability Integration

(1) Turning New Technologies into Operational SAR Capability

Taken together, the discussions suggest that the priority for next-generation SAR is not simply to introduce technologies such as AI and UAVs, but to make them effective components of real-world rescue operations.

Three forms of integration stand out.

First, new technologies must be integrated with existing assets and systems. UAVs, AI, sensors and digital tools need to work alongside vessels, aircraft, RCCs, and communications and information systems as part of a coherent operational arrangement.

Second, technology must be integrated with human judgement and accountability. AI and other tools can assist with information processing and analysis, but people must validate the results, make decisions in context and take ultimate responsibility. Effective SAR therefore depends on an appropriate division of roles between technology and its operators.

Third, the capabilities of relevant agencies must be integrated. A single agency may be unable to manage a large-scale SAR incident or an operation in remote waters. Effective response may require the coordinated deployment of vessels, aircraft, UAVs, satellite and sensor capabilities, together with the personnel and expertise of domestic and international RCCs, military and coastguard organisations, aviation and maritime authorities, medical services and private operators.

These three forms of integration are needed to turn technological potential into operational SAR capability. The priority is not technology adoption in isolation, but capability integration: combining new tools with established assets and systems, human judgement and accountability, and inter-agency cooperation so that they contribute to a single, effective rescue response.

(2) The Role of RCCs in Integrating SAR Capabilities

RCCs have a central role in bringing these capabilities together.

Beyond dispatching individual assets, RCCs must coordinate vessels, aircraft, UAVs, satellites, sensors, communications systems, personnel and domestic or overseas agencies in response to the circumstances of each incident. The nearest available asset is not necessarily the most suitable. Coordinators must consider each asset's strengths and limitations, response time, operating range and ability to operate at night or in adverse weather when selecting the most effective combination.

The presentation on submarine rescue was particularly instructive in this respect. Even where advanced rescue equipment is available, deploying it requires a chain of logistical activities, potentially including air and road transport, delivery to a port, crane loading, installation on a suitable vessel and transit to the incident site. The presentation indicated that, even under ideal conditions, a rescue system could take approximately 72 hours to reach the scene.

The availability of advanced equipment is therefore not the same as the ability to use it in an operation. Plans for receiving assistance from other countries and agencies, standard operating procedures (SOPs), communications arrangements and joint exercises need to be established in advance. Such preparations enable agencies to combine and deploy their capabilities when required.

(3) Cooperation across Organisations and Disciplines

Capability integration cannot be achieved by a single organisation or discipline acting alone.

Developers of AI and unmanned systems need to understand the operational requirements of SAR practitioners; practitioners, in turn, need to understand the capabilities and limitations of emerging technologies. Implementation also raises questions of law and regulation, air and maritime traffic, communications, cybersecurity, training, procurement and the allocation of responsibilities. Progress therefore depends on collaboration across technical, operational, regulatory and professional boundaries, drawing on the knowledge and experience of all involved.

One example was a long-range maritime rescue operation presented by Hong Kong's Government Flying Service (GFS). It involved coordination among the Hong Kong Maritime Rescue Coordination Centre (MRCC), air traffic control, several RCCs and rescue organisations on the Chinese mainland, and private offshore facilities. The case underscored the value of prior agreements, standardised communications, handover procedures, regular joint exercises and mutual trust between personnel.

ISAR was valuable not only as a showcase for emerging technologies, but also as a forum in which different disciplines and organisations could share experience and consider how their capabilities might be combined.

(4) Participation in International Discussions

The scale or location of a SAR incident may place it beyond the resources of any one country, making international cooperation essential. Countries and agencies therefore need to understand one another's capabilities, lines of communication, procedures for requesting and

accepting assistance, and command arrangements before an incident occurs. Sharing operational experience is equally important.

Japan has substantial practical experience in maritime and aeronautical SAR and in responding to major disasters, and can contribute this expertise to international discussions. ISAR 2026 also highlighted initiatives from other countries and organisations, including the involvement of civilian rescue bodies, coordination between RCCs, digital tools, AI and UAV applications, SAR personnel development and the standardisation of competencies.

Participation in international forums creates opportunities both to share Japanese experience and to apply lessons from overseas to domestic policy and operations. This two-way exchange of knowledge is a central benefit of attending conferences such as ISAR.

4. Conclusion

ISAR 2026 illustrated the potential of AI, UAVs and AUVs, satellite communications, sensors and digital tools to enhance information gathering, search, analysis, situational awareness and decision support in SAR operations.

However, the adoption of new technology does not automatically improve SAR performance. New capabilities must be connected to existing vessels, aircraft, RCCs, and communications and information systems. Technology-assisted information processing and analysis must also be combined with human judgement and accountability. Equally important are arrangements that allow domestic and international agencies to coordinate their personnel, vessels, aircraft and other resources as required.

The conference reinforced the importance of “capability integration”: embedding new technologies within existing assets and systems, human decision-making and accountability, and cooperation among relevant agencies so that they become effective operational SAR capabilities.

It is important to continue participating in international, cross-disciplinary forums such as ISAR, sharing Japan’s experience and expertise while bringing lessons from other countries back into domestic SAR systems and operations.

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London and the River Thames, viewed from Horizon 22