

# Insights from the APAN59 NREN Leaders Forum: Enabling Innovation in a Connected Asia-Pacific

The APAN59 NREN Leaders Forum, held in Yokohama, Japan, brought together leaders from National Research and Education Networks (NRENs), technology providers, and academic institutions to explore emerging opportunities and challenges in research networking across the Asia-Pacific region. Convened by Prof. Roshan Ragel, CEO of LEARN, originally at APAN56 in Colombo, Sri Lanka, the forum has continuously grown into a regular gathering that enables NREN leaders to freely exchange ideas, address common challenges, and pursue shared opportunities.

The APAN59 edition featured strategic discussions on Arctic connectivity, AI and High-Performance Computing (HPC), and digital assessment technologies, highlighting collaborative models to future-proof infrastructure and advance regional innovation. From NORDUnet's Polar Connect project and SINET's supportive stance, to Inspera's call for proactive industry partnerships and coordinated efforts in AI/HPC capacity building—the forum served as a platform for dialogue, shared insights, and the formation of multi-stakeholder pathways that aim to empower the research and Higher Education community in the APAC region.

## Polar Connect: NORDUnet's Vision for Resilient Arctic Connectivity

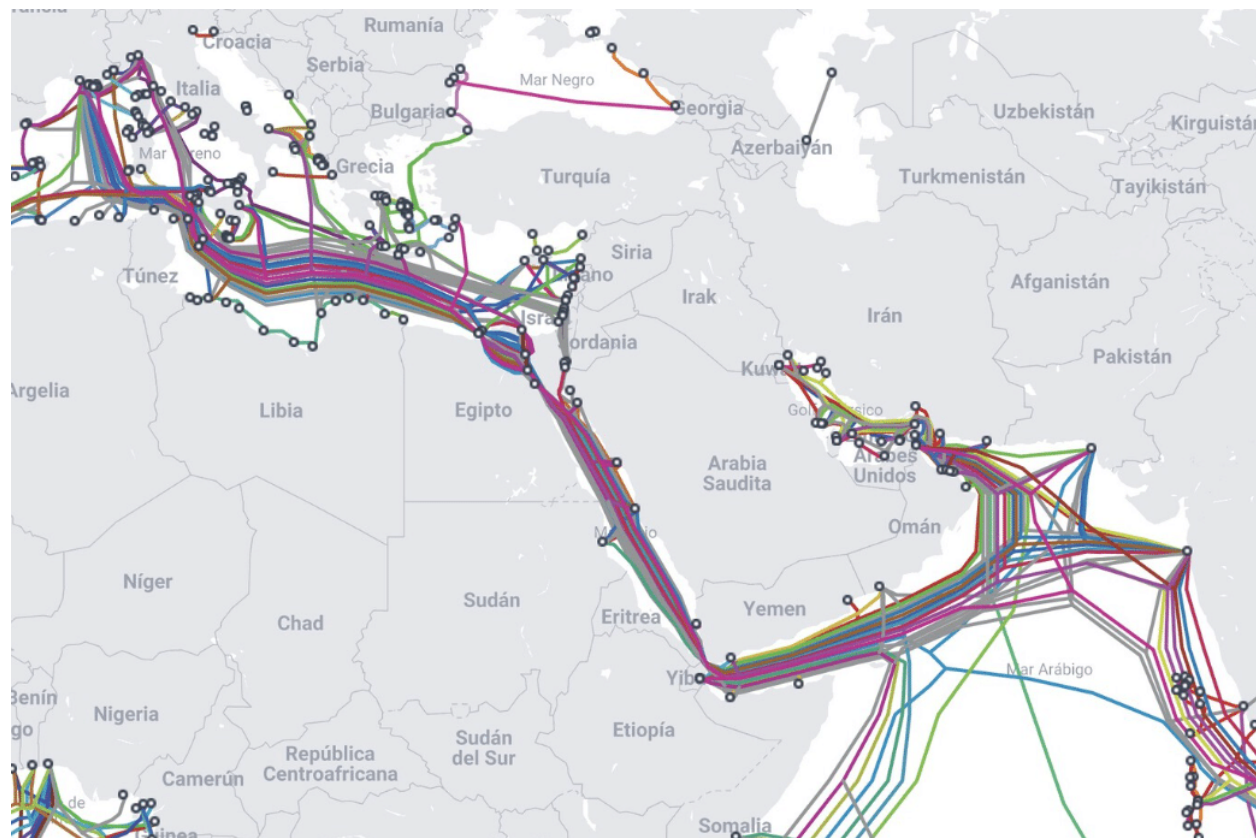


*Valter Nordh - CEO of NORDUnet, presenting the Polar Connect Project at the NREN Leaders Forum held at APAN59  
(Image credits: APAN59 LoC)*

The first segment of the APAN59 NREN Leaders Forum featured Valter Nordh, CEO of NORDUnet, whose presence underscored the Forum's growing recognition as a platform for international collaboration and cross-regional dialogue. His session introduced Polar Connect—an Arctic submarine cable project that seeks to strengthen global digital connectivity. Designed to serve both data communications and advanced research applications, Polar Connect is envisioned as the first intercontinental cable to traverse the Arctic Ocean, linking Europe, Asia, and North America through the shortest route possible.

Currently under planning for deployment between 2028 and 2030, the project forms part of NORDUnet's broader Vision 2030, which seeks to establish at least two Arctic routes to enhance resilience, reduce latency, and strengthen digital autonomy of participating economies. The route will pass through the Exclusive Economic Zones (EEZs) of allied economies, and the infrastructure will support smart cable technologies for scientific research in addition to conventional data traffic.

## Strategic Importance of Arctic Connectivity



*Today 90% of internet traffic between Asia and Europe travels through the Suez Canal. (Image credits: Click Oil and Gas)*

Nordh underscored the growing need for alternative, stable, and high-capacity intercontinental connectivity. Today, nearly 90% of Internet traffic between Asia and Europe travels through the Suez Canal, making it a critical but vulnerable chokepoint. Recent incidents—such as a sunken vessel that damaged undersea cables and remains unrepaired due to security concerns—highlight the urgent need for resilient alternatives.

Polar Connect directly addresses these concerns by offering a route of approximately 10,000 km, compared to the 20,000–30,000 km length of existing options via the Suez or North America. This shorter route significantly reduces latency and creates a new digital transport corridor between Europe and Asia. During his session Nordh noted, this isn't just about speed—it's about digital sovereignty, stability, and future-readiness.

## Geopolitical and Economic Implications



*Two proposed Polar Connect routes as part of NORDUnet's Vision 2030. (Image Credits: NORDUnet)*

During his session, Nordh also highlighted that arctic connectivity has emerged as a topic of high geopolitical relevance, with increasing dialogue between European and Japanese policymakers around building digital partnerships. As Nordh shared, connectivity has become a core focus in national strategies, driven by questions like: “What happens if we lose connectivity?”

Economically, the impact is expected to be substantial. A report commissioned by NORDUnet and the five Nordic NRENS, titled *The Economic Value of Submarine Cables in the Arctic*, estimates that fully utilising an Arctic route—such as one connecting Europe to Japan—could boost GDP in the Nordic region by over €1 billion annually. It would also unlock regional job opportunities and drive local innovation. For these reasons, the Hokkaido Prefectural Government of Japan has also expressed interest in the Polar Connect project, seeking to capitalise on the economic opportunities for the benefit of Japan's Northern regions.

## Deployment Challenges and Engineering Innovations



*While the Arctic region shows great promise, laying cables in this region presents unique challenges. This includes the need for dedicated icebreaker ships. (Image credits: Swedish Polar Research Secretariat)*

Despite its promise, laying cables in the Arctic presents unique challenges. Harsh environmental conditions, multiyear ice caps (harder than concrete), and extreme seasonal weather limit installation windows and vessel capabilities. Nordh detailed the three-vessel strategy employed in recent experiments:

1. An icebreaker to clear paths through the ice,
2. A second icebreaker to break large remaining blocks,
3. And a specialised cable-laying ship.

Each segment of cable must be custom-manufactured for its route, with deep-sea portions left unshielded and near-shore sections reinforced for protection. Sweden, which is investing heavily in Arctic research, is also building a new icebreaker vessel equipped with year-round cable repair capabilities, further enhancing feasibility. Environmental regulations, international permitting, and financial risk-sharing also remain critical challenges. To reduce risk to private investors, government support will be essential, particularly in securing the research and education segments of the infrastructure.

## Research Potential and Smart Cable Technologies

Polar Connect is not just a commercial infrastructure project—it's a platform for scientific discovery. Nordh introduced the idea of integrating SMART technologies (e.g., Distributed Acoustic Sensing) along the cable, enabling real-time measurement of temperature, acidity, seismic activity, and water flow. These capabilities are crucial for climate and environmental research. However, as he noted, challenges remain in combining sensor infrastructure with telecom systems, particularly regarding sensor placement and ensuring uninterrupted data transmission. Nevertheless, with proper design, the cable could offer “slices” for scientific research—advancing oceanography, seismology, and climate monitoring.

## Discussion Highlights from Polar Connect Q&A Session

Dr. Francis Lee Bu Sung from SingAREN emphasised that government initiative is essential for projects like Polar Connect to succeed. He noted that hyperscalers and private-sector players are unlikely to take on such high-risk investments without public backing. In response, Nordh agreed, stating that Polar Connect is not intended to be a fully commercial project. He shared that the European Union has already contributed funding, and that Sweden has taken concrete steps, such as commissioning an icebreaker vessel that will support Arctic cable operations. While acknowledging the project's high financial demands, Nordh asserted that the costs become more manageable when distributed across multiple stakeholders, especially when viewed through the lens of digital sovereignty and long-term strategic value.

Another attendee raised concerns about sovereignty and security, particularly in light of recent cable cuts in Europe caused by ship anchors and deliberate sabotage. The discussion acknowledged the vulnerability of global subsea cables, with incidents including unauthorised individuals entering landing stations and damaging cables using tools like chainsaws. Nordh stressed that while cable security is a global concern, the Arctic environment offers unique natural protections. The thickness of multiyear Arctic ice makes the cable significantly less accessible, thereby acting as a powerful deterrent to both accidental and intentional damage. However, he added that true security lies in building resilience. This resilience comes via deploying additional cables for redundancy and leveraging new technologies to monitor cables and detect potential threats.

## SINET's Perspective on the Polar Connect Vision



*At the NREN Leaders Forum, it was highlighted that Japanese stakeholders also view the Polar Connect project as a promising opportunity. (Image credits: Hokkaido Economic Affairs Bureau Industrial Promotion Division Location Promotion Section)*

Science Information NETWORK (SINET) is an NREN operated by the National Institute of Informatics (NII). It serves as the digital backbone for universities and research institutions across Japan, enabling advanced academic and scientific collaboration. With four major international connections, SINET supports global research in high-bandwidth fields such as high-energy physics and nuclear fusion. Its infrastructure plays a key role in maintaining resilient international connectivity, including backup routes via Singapore, Tokyo, and onward to the US and Europe.

At the NREN Leaders forum, Prof. Shigeo Urushidani, Vice Director-General - Information Systems Architecture Science Research Division at NII, expressed strong support for the Polar Connect initiative. They see it as a valuable opportunity to improve network performance and enable deeper collaboration between Nordic and Japanese institutions. [He reiterated there is also growing interest from the Hokkaido Prefectural Government, which in recent times has been working towards expanding its digital industry by](#)

[inviting data center operators to enjoy the benefits of its naturally cool climate](#). Hence, it views the project as a driver for both research and business development in the Northern regions of Japan.

With Polar Connect, SINET envisions being able to scale its bandwidth offerings across the ASEAN region and further strengthen the digital resilience of its network.

## Inspira: Rethinking Industry Partnerships for Digital Assessment



The next session at APAN59 REN Leaders Forum featured Kim James Waldgrave, Head of Asia at Inspira, presented the company's suite of digital assessment tools and outlined a new vision for working with National Research and Education Networks (NRENs). Inspira's platform includes three integrated applications: Assessment, Proctoring, and Originality Checking, offering a holistic solution for secure, scalable, and accessible academic assessments.

While Inspira engages with several NRENs across the world, Waldgrave observed several industry partnerships are often in a reactive, vendor-based capacity. He went on to note that this approach—often driven by procurement requirements or tenders—limits deeper collaboration. Instead, he proposed a more proactive, partnership-driven model that prioritises the needs of higher education institutions. To that end, he proposed a future vision, which includes:

- Proactive industry partnerships to understand the real needs of the Higher Education sector. Thereby, enabling NRENs to better serve their member institutions
- Vendors and NRENs opening or participating in working groups on relevant topics.
- Vendors collaborating on projects directly with NRENs and their members.
- Organising regular workshops and webinars with NREN member institutions.

This approach seeks to move beyond transactional relationships. Instead, fostering an ecosystem of sustainable commercial partnerships based on economies of scale. Thereby, allowing educational technology vendors and NRENs to co-create meaningful solutions that make innovative technologies more accessible to global Higher Education.

## Discussion Highlights from Inspira Q&A Session

During the Q&A session, Waldgrave addressed questions about the current challenges in educational assessments, particularly in the context of rapid technological change. A major concern raised was the use and misuse of Generative AI (GenAI) in assessments. He stressed that while GenAI offers exciting possibilities, the focus must be on its responsible use to maintain academic integrity. Waldgrave also noted that, despite the evolution of digital tools, assessments have remained largely unchanged—often still mirroring traditional tests delivered on a device. As such, there's a growing need to rethink assessment models in line with emerging technologies. For now, the priority lies in leveraging AI to enable secure remote testing, ensuring fairness and integrity while embracing innovation.

## AI/HPC at APAN: Advancing Regional Innovation through Collaboration



*Dr. Asitha Bandaranayake - Chair of the APAN AI/HPC Working Group speaking at the NREN Leaders Forum (Image credits: APAN LoC)*

The final session of the NREN Leaders Forum titled “AI/HPC at APAN” was presented by Dr. Asitha Bandaranayake, CTO of LEARN and Chair of the APAN AI/HPC Working Group. He provided an overview of the group’s current focus areas and outlined a roadmap for enabling advanced AI and High-Performance Computing (HPC) adoption across the Asia-Pacific region.

### Key Focus Areas of the Working Group

#### *1. Capacity Building*

The Working Group is prioritising the launch of HPC-AI training programs, summer schools, and certification courses. Plans are also in place to expand hackathons and competitions to attract students and professionals alike. A core aim is to strengthen university curricula by bridging the skills gap between academia and industry.

#### *2. Regional Infrastructure & Data Sharing*

Dr. Bandaranayake stressed the importance of developing a shared HPC resource pool to enable multi-country access to supercomputers—resources which, he noted, are already available in several countries. He also emphasised the need to enhance connectivity through Science DMZ deployments and high-speed research networks, and to establish a unified data-sharing framework that can facilitate secure cross-border AI research—particularly important due to the involvement of multiple governments and stakeholders.

### 3. Policy & Governance

The Working Group advocates for alignment of national HPC-AI strategies with regional policies, including the creation of AI ethics and data privacy standards. Additionally, it calls for industry incentives, such as tax benefits and public-private co-funding, to boost innovation in the HPC-AI domain.

## Call to Action: Stakeholder Roles

Dr. Bandaranayake issued a structured call to action for various stakeholders:

- Work alongside **governments and policy makers** to encourage:
  - **Invest:** Increase HPC/AI R&D budgets and incentivise cross-sector partnerships.
  - **Simplify:** Remove barriers to cross-border collaboration, such as visa processes and data-sharing regulations.
  - **Legislation:** Adopt region-wide ethical frameworks and data protection guidelines.
- Initiate discussions with **industry partners** to:
  - **Collaborate:** Sponsor training programs, hackathons, and provide access to HPC resources.
  - **Mentor:** Pair industry experts with academic teams to co-develop real-world solutions.
  - **Invest:** Support HPC centres or joint HPC-AI labs through grants or discounted cloud credits.
- Meanwhile enabling **researchers** to:
  - **Partner:** Form multi-country research teams to address grand challenges.
  - **Train:** Integrate HPC/AI modules into STEM education and offer continuous training for faculty.
  - **Share:** Promote open science by publishing data, code, and research outcomes.
- **NRENs** working together towards:
  - **Facilitate:** Act as national enablers by connecting researchers, institutions, and policymakers to APAN efforts.
  - **Support:** Advocate for policies that encourage cross-border data sharing and shared HPC resources.
  - **Innovate:** Deploy advanced networking solutions optimised for AI-driven research.
  - **Enable:** Provide high-speed research network infrastructure to support collaboration.
- Supporting the above, **APAN** could:
  - **Lead:** Coordinate stakeholders and provide leadership across the region.
  - **Coordinate:** Form sub-teams for collaboration, training, and infrastructure development.
  - **Engage:** Actively involve industry, academia, and government in Working Group sessions.
  - **Communicate:** Disseminate updates, opportunities, and best practices across the APAN community.

## Moving Forward and Next Steps



*At the NREN Leaders Forum, it was identified that regional collaboration can help countries share HPC resources, making advanced computing more accessible to researchers across the Asia-Pacific. (Image credits: The Inria Foundation)*

Dr. Bandaranayake concluded by emphasising that a well-executed, region-wide strategy can position the Asia-Pacific as a global leader in AI and HPC. The immediate next step is to endorse the Working Group's whitepaper and identify 3–5 priority actions. Moving forward, the group will hold biannual review meetings to monitor progress, share updates, and refine strategies based on lessons learned.

## Discussion Highlights from AI/HPC at APAN Q&A Session

Following the AI/HPC session, the forum transitioned into a dynamic discussion led by Prof. Roshan Ragel, who invited NREN leaders to propose immediate, actionable initiatives to drive regional HPC and AI adoption. He introduced the idea of a twinning programme between NRENs to foster collaboration. Amber McEwen (REANNZ) shared their approach of creating a centralised portal listing accessible HPC resources, while Dr. Francis Lee (SingAREN) highlighted their close ties with Singapore's National Supercomputing Centre, noting that AI and GPU workloads require high-speed data transfers, where NRENs play a key role.

Dr. Bandaranayake reflected on the growing accessibility of AI tools versus the limited access to HPC infrastructure. He suggested that instead of building costly individual systems, NRENs should prioritise resource sharing. The discussion also addressed strategic policy needs. Dr. Francis Lee observed that establishing national HPC capabilities requires policymakers to recognise their strategic value, beyond merely acquiring hardware. Dr. Bandaranayake added that real-world use cases are key to sustaining infrastructure, but noted a chicken-and-egg problem in developing nations, where lack of access prevents large-scale research from emerging in the first place.

During the discussion, he also stressed that HPC access must be extended to junior researchers, and not only those already experienced. Dr. Francis Lee supported this by encouraging NRENs to involve students in competitions offering HPC exposure. He noted these are often limited to local participants, and proposed making them regionally accessible with APAN support—an idea Prof. Ragel echoed, suggesting that

funding could be sourced externally. Expanding on these ideas, Dr. Bandaranayake proposed a collaborative capacity-building initiative, supported by industry funding and facilitated by NRENs. This would help train personnel in managing HPC systems, ensuring that when developing nations build their own infrastructure, they have skilled professionals ready.

The discussion concluded with Prof. Ragel encouraging NRENs to commit to these efforts by APAN60 in Hong Kong by:

- Sharing personnel for collaborative efforts.
- Identifying potential funding opportunities.

## Towards a Resilient and Collaborative Future

The APAN59 REN Leaders Forum reaffirmed the critical role that NRENs play in shaping the digital future of research and education across the Asia-Pacific. From NORDUnet's Polar Connect project addressing global connectivity resilience, to Inspira's call for proactive partnerships in education technology, each session underscored the value of collective vision. The focus on AI and High-Performance Computing (HPC)—led by LEARN and the APAN AI/HPC Working Group—laid out clear strategies for capacity building, infrastructure sharing, and policy alignment. The discussion that followed reinforced the urgency of shared access to HPC resources, inclusive training opportunities, and collaborative development tailored to the region's needs. With clear calls to action and a spirit of open cooperation, the forum set the stage for positive outcomes leading into APAN60.