JSCE STG 2026 Programme
Tour Report

International Summer Exchange Program (ISEF) and
the 28th International Summer Symposium,
JSCE Annual Meeting 2026
Sapporo, Hokkaido, Japan

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1. Introduction

1.1 Background and Motivation

I am a Lecturer in the Department of Civil Engineering at Bangladesh University of Engineering and Technology (BUET). Under the supervision of Professor A.F.M. Saiful Amin, I have conducted research on rehabilitating aging reinforced concrete bridge deck slabs using a lightweight concrete (LWC) overlay with glass fiber reinforced polymer (GFRP) reinforcement. Many of the bridges in the Bangladesh national inventory are now approaching or exceeding their design service life. Full replacement of every ageing structure is not possible on the timescale that the network needs. A structural overlay that can restore stiffness and durability without adding dead load is therefore an urgent research topic in our region.

The Japan Society of Civil Engineers has, for many years, run a Study Tour Grant that invites young researchers from partner countries to visit Japan, join its annual meeting, and present a paper at the International Summer Symposium. Being selected for the STG 2026 was, for me, both a professional honour and a rare chance to see how a country with a very different climate, a very different scale of infrastructure, and a very different civic culture approaches the same questions I work on at home. This report is the record of that visit.

1.2 Programme Structure

The STG 2026 programme was held in Sapporo, Hokkaido, in September 2026. It ran for five days. The first day was reserved for arrival and rest after a long journey. The next four days were the main technical tour. The tour visited the Civil Engineering Research Institute for Cold Region (CERI), the Otaru Port Museum, the Ishikari River Disaster Prevention Museum, and a set of infrastructure sites in and around Sapporo. The main attraction was the 28th International Summer Symposium at Hokkai-Gakuen University, where each STG delegate presented a paper. The programme was designed so that the field visits, the symposium, and the annual meeting reinforce each other. A young researcher sees the practical work of Japanese engineers on the ground, presents his or her own work to that same community, and then sits in the audience of the largest civil engineering meeting in Japan. The three parts together turn a technical trip into a genuine exchange.

1.3 Participants

The 2026 cohort of STG delegates was small and international. Delegates came from Bangladesh, the Philippines, Mongolia, Turkey, and Myanmar. The Japanese hosts, drawn from JSCE senior members and university faculty, treated us as colleagues from the first day. This was a real conference cohort, not a student tour, and the technical discussions on the bus and at the dinner table were as valuable as the scheduled sessions.

1.4 Objectives

My personal objectives for the tour were three. First, to present my ongoing research on lightweight concrete deck-slab rehabilitation before an international audience with a strong tradition in bridge engineering, and to learn from their questions. Second, to see how Japan builds and maintains infrastructure in a cold, seismic, and typhoon-prone environment. Third,

to observe the working culture of Japanese civil engineering practice, which I had read about but never seen in person.

1.5 Scope of this Report

This is a personal report of a professional tour. I have written it in the first person, as I saw and heard the events, because a tour report that hides the observer behind the passive voice loses the very thing it is meant to preserve.

2. Main Tour

2.1 Arrival in Sapporo

We arrived in Sapporo on a mild summer evening. The New Chitose Airport transfer was smooth. Signage in English, quiet buses, and a queue that moved without anyone being told to move. Within an hour of landing, I understood why people talk about Japanese public transport. Our hosts from JSCE received us at the hotel with a short briefing and a printed schedule. Every session, every visit, every meal was listed with time and address.

On the first evening I walked around the city by myself. Sapporo is a young city by Japanese standards, only about a hundred and fifty years old, but its street grid is as disciplined as any older city I have seen. Streets are wide. Bicycles are parked in neat rows. Green corridors run through the middle of downtown blocks. There is no litter on the pavements. I made a small note to myself that first night. Watch how they build, but also watch how they behave. Both are worth learning.

The next morning, we met the full JSCE hosting team. The senior host explained the schedule and reminded us that questions were welcome at every stop.

2.2 Visit to CERI, Civil Engineering Research Institute for Cold Region

Our first technical visit was to the Civil Engineering Research Institute for Cold Region, known as CERI. CERI is one of the institutes of the Public Works Research Institute (PWRI) of Japan, specialized in the civil engineering problems that arise from cold. Snow, ice, permafrost, freeze-thaw damage, coastal ice loading, drift snow on roads, and winter road safety are all in their portfolio. The site sits on the edge of Sapporo and is arranged as a working research campus with outdoor test facilities as well as laboratories.

Before the facility tour began, we were welcomed into a briefing room where a CERI researcher gave an overview of the institute's ongoing research programs. The session introduced us to the breadth of cold-region civil engineering challenges in Japan. It was a focused, well-organized introduction, and the researchers were generous with their time in answering questions from the group. **(Figure 1)**

CERI operates an instrumented road survey vehicle used to monitor pavement conditions across Hokkaido's road network. The vehicle is equipped with sensors and measurement cameras mounted on a custom front-bumper frame, allowing it to collect pavement roughness, cracking, and surface distress data at traffic speed. Seeing this in person was a reminder of how systematically Japan approaches infrastructure maintenance. Data-driven inspection at scale is

something we aspire to replicate in countries like Bangladesh, where road deterioration is rapid and maintenance resources are limited. **(Figure 2)**



Figure 1. Briefing Session at CERI (31 Aug)



Figure 2. Road Survey Vehicle and Pavement Monitoring at CERI (31 Aug)

Inside the main laboratory building, we observed an active hydraulic flume facility generating controlled water waves. The basin is used to study riverbank erosion, sediment transport, and flood flow behavior, which are all critical concerns given Hokkaido's river systems and seasonal snowmelt events. The scale of the facility was impressive: a large enclosed hall with reinforced concrete channels,

overhead gantry frames, and precision wave-generation equipment. Watching the waves move across that basin, I could appreciate how physical hydraulic modeling remains irreplaceable even in an era of computational simulation. **(Figure 3)**

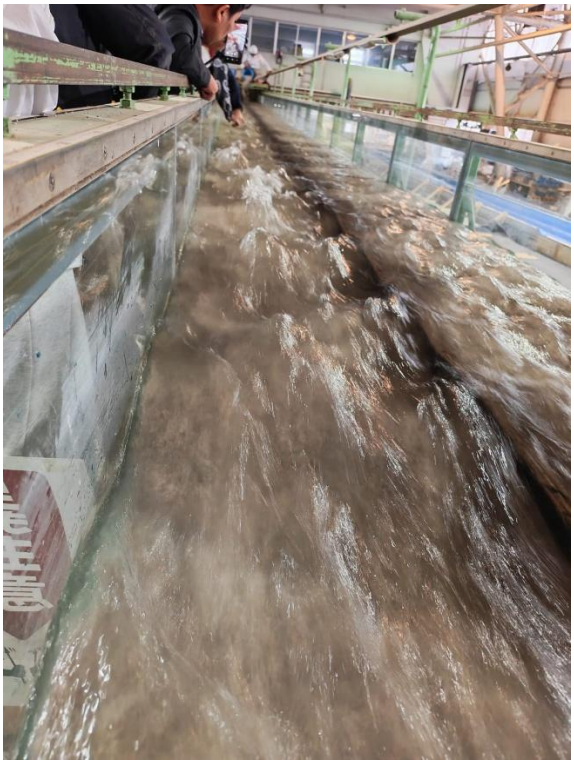


Figure 3. Hydraulic Flume Laboratory (31 Aug)

2.3 Otaru Port and the Legacy of Hiroi Isamu and Ito Chozaemon

The next day we travelled to Otaru, the historic port on the western coast of Hokkaido. Otaru is a small city, but in the story of Japanese civil engineering it is a large landmark. The port here saw the first modern breakwater built in Japan, and the Otaru Port Museum tells that story in patient detail. Our host at the museum was a retired port engineer who had spent his working life in Otaru and now, in retirement, guides visitors through the archive. His account was not a lecture. It was a conversation with the drawings, notebooks, and instruments on the wall. The two names on the wall are Dr. Hiroi Isamu and Mr. Ito Chozaemon **(Figure 4)**. Hiroi was the engineer. Ito was the construction leader. Together they built the North Breakwater at Otaru between 1897 and 1908. This was the first modern rubble-mound and concrete-block breakwater in Japan. The design methods they developed here became the foundation of Japanese coastal engineering. Hiroi's formulas for wave force on vertical walls were used in Japan for many decades and are still cited in modern textbooks. The museum lays out their working notebooks, tide gauges, and the wooden models they used to study wave forces. I stood in front of Hiroi's portrait for a long time. It is humbling to see how much of modern practice traces back to one careful engineer and one dedicated builder. The partnership itself is worth studying. Hiroi was the theorist. Ito was the practitioner. Hiroi had studied engineering abroad; Ito had built harbours by hand since he was a young man. Neither could have built Otaru alone. Their working diaries, side by side in a glass case, show a daily record of drawings sent from office to site and answered by field notes from site to office. The professional respect

between them is written on every page. This is a model of collaboration between design and construction that I want my own students to see.



Figure 4. Portraits of Dr. Hiroi Isamu and Mr. Ito Chozaemon at the Otaru Port Museum. Their partnership shaped modern Japanese breakwater engineering. (1 Sep)

The museum also shows how the port keeps records of the sea floor **(Figure 5).** This is not decorative. The samples are working records that the port authority uses to plan dredging and to monitor the health of the harbour. In Bangladesh, our ports on the Bay of Bengal face sediment questions of a very different scale, dominated by the delta, but the basic idea is the same. Monitor first, design second, and never lose the archive of past measurements.

Inside the Otaru Port Museum, one of the most arresting displays was a full-scale replica of a hard-hat diving suit from the Meiji era. The exhibit, titled *Divers and Diving Suits* (潜水士と潜水服), explained how underwater laborers worked during the construction of Otaru's breakwater and port structures. Air was supplied through a hose connected to the helmet, and divers manually placed rubble stones weighing 30 to 300 kg each on the seabed. The physical danger and the sheer effort involved are difficult to imagine standing in a warm museum hall. Yet without that labor, the breakwater that still protects Otaru's harbor today would not exist. It was a sobering reminder of what civil engineering has always depended on: human courage alongside technical knowledge. **(Figure 6)**.

One of the most visually fascinating displays in the museum was a systematic collection of scale models of wave-dissipating concrete blocks such as tetrapods, tribars, dolos, hollow cubes, and interlocking mats. Japan has developed and refined these block types over decades, adapting geometry and mass to specific wave conditions and seabed profiles. Looking at the full collection side by side, I was struck by how much engineering creativity goes into something most people walk past without a second thought. Every unusual shape exists for a

reason: to absorb wave energy, interlock under pressure, and resist being swept away. **(Figure 7)**



Figure 5. Environmental sediment display at the Otaru Port Museum showing the port's ecological baseline. (1 Sep)



Figure 6. The Diving Suit Exhibit in Otaru Port Museum. (1 Sep)



Figure 7. The Coastal Block Collection. (1 Sep)

After the museum, we walked along the Otaru Canal. The old warehouses have been restored as shops and cafes **(Figure 8)**. The canal dates from the early twentieth century, when Otaru was one of Hokkaido's most important commercial ports. The old stone warehouses that line the eastern bank have been preserved and converted into shops and galleries, and on a clear afternoon the water mirrors the sky almost perfectly. It is a quiet, unhurried place. People sit on benches along the promenade. Nobody is in a rush. Otaru reminded me that a city does not have to sacrifice its character to grow — it just has to decide what it wants to keep. **(Figure 9)**.



Figure 8. A traditional shop near the Otaru Canal, restored to keep the working character of the port town. (1 Sep)



Figure 9. The Otaru Canal (1 Sep)

On the walk back to the hotel I noted, again, that the streets were as clean at ten in the evening as they had been at noon.

2.4 Ishikari River Disaster Prevention Museum

The next major visit was to the Ishikari River Disaster Prevention Museum. The Ishikari is the largest river system in Hokkaido and one of the largest in Japan. The museum tells the story of how the river was tamed, how floods were controlled, and how the river now serves the city and the farms of central Hokkaido. It sits on the banks of the river itself, so that the exhibits inside and the working infrastructure outside are always in view of each other. The display begins with a 1 to 320,000 basin map **(Figure 10)**. Standing in front of it, you can trace every tributary, every levee, every floodway, and every dam. It is a working map, not a poster. The scale forces you to think about the river as a system, not a single line. Small labels along the tributaries mark the design flood at each control point. This kind of quantitative labelling is what turns a map into an engineering document.

We walked one of the levee roads after the museum visit **(Figure 11)**. The levee is planted with grass, has an inspection track on the crown, and has small drainage channels on the landward side. It is the sort of unglamorous infrastructure that saves lives every summer during the typhoon season. My colleagues from South Asia all remarked on the same thing. The levee is not spectacular, but it is complete. Every element has a job. The mown grass keeps the surface visible for inspection. The crown track allows a small vehicle to reach any point after a storm. The drainage channel keeps the landward toe dry so that seepage failure does not start there. Nothing on the levee is ornamental.



Figure 10. Large 1 to 320,000 basin map of the Ishikari River system (2 Sep)



Figure 11. Levee road along the Ishikari River, part of the modern flood-defence corridor. (2 Sep)

The museum keeps the original surveying instruments used in the first river surveys **(Figure 12)**. A brass theodolite and a Y-level sit in a glass case. These are the tools that produced the maps we now handle in GIS. It is a good reminder that data comes from people who go out in the field and stand in the rain. In an age of satellite imagery, it is easy to forget how much every basemap owes to a surveyor who once carried a wooden tripod up a muddy bank.



Figure 12. Historic surveying instruments, a brass theodolite and a Y-level, used in the first Ishikari River surveys. (2 Sep)

One wall of the museum is dedicated to the many ways the river is used. Irrigation, drinking water, industry, fisheries, hydropower, transport, and recreation are all shown on the same wall **(Figure 13)**. The message is that a river is a shared resource. If one user takes too much, everyone loses. This is a message we need to hear more often in our own basins back home, where the same river is often treated as a private supply by whoever reaches it first.



Figure 13. River utilization photo wall showing agricultural, industrial, and recreational uses of the Ishikari basin. (2 Sep)

The final rooms of the museum are on flood history. Every major flood is recorded with high-water marks, damage figures, and the design revisions that followed. This kind of institutional memory is exactly what a delta country needs. A flood is not simply a disaster to survive. It is a data point that the next generation of engineers must be able to read. The Ishikari archive turns each flood into a lesson written into the design of the next levee. We also got to witness a kamuikotan stone **(Figure 14)**.



Figure 14. Commemorative Kamuikotan stone at Ishikari District Museum. (2 Sep)

2.5 A Reflection on the Ishikari Museum

Walking out of the Ishikari Museum in the late afternoon, I sat for a while on a bench by the river. The Ishikari runs slow and wide at that point, brown with the summer silt. I thought of the Padma at home, which has the same slow, wide, silt-loaded feel in the monsoon. Bangladesh is a delta country. Everything we build lives with a river. If we could bring even a small share of the Ishikari discipline to the Padma, the Jamuna, and the Meghna, our infrastructure would age more gracefully than it does now. The lesson is not to imitate Japanese detailing on a Bangladeshi bank. The lesson is to imitate the seriousness with which Japan treats its rivers as engineered systems.

2.6 Sapporo City and Everyday Japan

Between visits, we spent time in Sapporo itself. Walking the city is an education. Traffic obeys the signals. Drivers wait patiently at red lights even on empty roads at midnight. Bicycles have their own lanes and use them. In restaurants, the staff greet you at the door and thank you at the exit. Convenience stores are open all night, always tidy, always staffed by two calm people who know where every item is. The streets are clean because the city has clear rules and everyone follows them. There are almost no public bins, yet there is no litter. People carry their rubbish home.

The transport system runs to the minute. Buses arrive when the printed timetable says they will. Trains stop at a chalk mark on the platform where the doors will open. Passengers queue behind that mark before the train arrives. When the doors open, people leaving the train go first, and people boarding wait. There is no shouting, no shoving, no announcement asking anyone to behave. The system works because everyone knows it works and does not want to be the one who breaks it.

The politeness in daily life is more than manners. It is a form of infrastructure. A driver who stops early for a pedestrian keeps traffic flowing without a signal. A shopkeeper who packs a bag properly saves the customer from dropping it on the street. A commuter who lets others off the train first shortens the dwell time and keeps the timetable. Each small act of courtesy is also a small piece of engineering. Together they add up to a city that runs on trust as much as on concrete.

These are small things, and yet they are everything. They are what makes a city work. In our own cities, we build good roads and then lose them to disorder. Japan has shown me that infrastructure without civic behaviour is only half a project. If we want our cities to feel like this, we need to invest in both. The concrete is the easy part. The culture is the harder part, and it is the part we should start on now, at home, in our own families and in our own classrooms. If a country of a hundred and thirty million people can queue calmly for a train, so can a country of a hundred and seventy million.

One evening we visited a covered market in the north of the city. Even in a busy market, the ground was swept, the drains ran clear, and the stallholders spoke quietly.

Public washrooms in Japan deserve a separate note. In every station, every park, and every rest stop we visited, the washroom was clean, stocked, and free of charge. It is easy to laugh at this observation, but the state of public washrooms is one of the truest indicators of how a society treats those who cannot pay for private comfort. Japan chooses to invest in this basic service, and the return on that investment is a public realm that does not humiliate the poor. This is a design choice as much as a cultural one, and the design choice is worth studying.

The taxi drivers wore white gloves. The bus drivers bowed to the passengers at the end of every run. The queue at the ATM did not need a rope. The pedestrian crossing counted down the seconds so that no one had to sprint. Every small courtesy was also a design decision. The city was designed to be courteous, and the people used it courteously. Neither would have worked without the other. This is the deeper lesson of Sapporo, and it is a lesson that no engineering textbook alone can teach.

3. The 28th International Summer Symposium

3.1 Venue and Session

The 28th International Summer Symposium was held at Hokkai-Gakuen University in central Sapporo **(Figure 15)**. Hokkai-Gakuen has a strong engineering faculty and a modern conference block that is well suited to a research symposium of this scale. My paper was scheduled in Session CS2, Structural Engineering, on the second morning of the symposium. The room was a standard university lecture room with about eighty seats, a projector, and a

small podium at the front. Session bells were set for six, seven, and ten minutes, marking the presentation, the warning, and the close.



Figure 15. Delivering my paper at Session CS2, Structural Engineering, 28th International Summer Symposium, Hokkai-Gakuen University. (4 Sep)

3.2 Session Format

The Structural Engineering track was arranged in three parallel rooms across two mornings, with the papers grouped by topic. Session CS2, in which I presented, brought together papers on concrete rehabilitation, prestressed concrete, and hybrid steel-concrete systems. Each speaker had ten minutes for the presentation and five minutes for questions. The chair enforced these times strictly. The bells at six and seven minutes were not decorative. They were part of the design of a symposium in which every young researcher gets a fair hearing.

3.3 Paper Title and Motivation

The title of my paper is "Rehabilitation of deteriorated bridge deck slabs using lightweight concrete and GFRP bars: a nonlinear finite element investigation". The work was carried out at BUET as part of my research on ageing deck slabs.

I presented the motivation first. Many of our bridge decks are near the end of their service life. Full replacement is expensive and disruptive to a national road network that runs close to capacity. A structural overlay is a good option, but a normal-weight concrete overlay adds dead load. That extra dead load can push the bridge beyond its original design envelope, requiring strengthening of the girders and bearings as well as the deck. Every additional intervention adds cost and downtime. My proposal is a lightweight concrete (LWC) overlay reinforced with glass fibre reinforced polymer (GFRP) bars. The equal-dead-load rule means that the overlay is designed so the total slab weight after rehabilitation equals the original design weight. This lets us restore stiffness and strength without overloading the girders and bearings.

3.4 Key Results

The key result is that all LWC-GFRP configurations reached peak resistance within 4 percent of the NWC-steel baseline. Load-deformation curves for the four cases were shown on the projector, with the LWC-28 MPa configuration closest to the baseline. The equal-dead-load rule was preserved throughout, so no additional strengthening of the girders would be required.

3.6 Question and Answer

The question and answer that followed was the most useful part of the session. The room asked two questions on the same theme. Both were about stiffness. Lightweight concrete has a lower elastic modulus than normal-weight concrete of the same strength. So how did the LWC overlay maintain the stiffness of the rehabilitated slab? My answer was simple. I compensated for the lower modulus with increased overlay thickness. The equal-dead-load rule still holds because LWC is lighter per unit volume, so we can afford a thicker overlay for the same mass. That extra thickness returns the flexural stiffness to the baseline value. The load-deformation slope in the pre-cracking region is within 4 percent of the NWC-steel case for that reason.

The second questioner followed up on long-term serviceability. I noted that GFRP bars do not corrode, which is a serviceability gain in coastal or de-icing environments. I also noted that shrinkage of LWC needs curing control on site, and that the fatigue performance of GFRP-reinforced overlays under repeated truck loading is a topic for continuing research. The chair thanked me and closed the session.

3.7 Group Photograph and Networking

After the sessions, the JSCE hosts gathered every presenter for a group photograph on the university staircase **(Figure 16)**. It is a small tradition, but it stands for something bigger. The symposium is not only a series of papers. It is a network of young engineers that JSCE nurtures year after year. Standing in that photo, I felt part of something larger than my own project. Many of the young researchers in the photograph will be the senior engineers of the next generation across a dozen countries.

During the coffee breaks, I spoke at length with delegates from different countries. This kind of horizontal exchange between young researchers in different countries is a quiet strength of the STG programme.

3.8 JSCE Annual Meeting 2026

The JSCE Annual Meeting 2026 was held at the Sapporo Education and Culture Hall. The scale of the meeting is impressive. Hundreds of parallel sessions cover the full breadth of civil engineering practice in Japan, from tunnel construction to disaster resilience, from bridge maintenance to coastal defence, from concrete durability to smart infrastructure. As STG delegates, we sat in on a mix of sessions on structural engineering, geotechnics, and disaster management. The technical level of the presentations was very high, and the discussion after each paper was direct, disciplined, and courteous.

In the evening, the Annual Banquet brought everyone together **(Figure 17)**. Delegates from Mongolia, the Philippines, Iran, Bangladesh, and several African countries stood on the same

floor with senior JSCE members. The red ribbon on every guest is a small mark of welcome that stays with you.



Figure 16. Group photograph of the 28th ISS presenters, session chairs, and JSCE hosts on the staircase of Hokkai-Gakuen University. (4 Sep)



Figure 17. International participants at the JSCE Annual Meeting 2026 banquet, Sapporo Education and Culture Hall. (3 Sep)

4. Conclusion and Acknowledgments

4.1 Reflections

The JSCE STG 2026 tour was the most complete professional experience of my early career. I return to BUET with new collaborators, a deeper feel for cold-region engineering, and a clearer vision for my own research on lightweight concrete rehabilitation. Every visit added something concrete to my thinking. CERI taught me the value of long observation. The Otaru Port Museum taught me the value of partnership between design and construction, and the value of an honest historical archive. The Ishikari Museum taught me to see a river as a system, not a line. Sapporo itself taught me that infrastructure and civic behaviour are one project, not two.

Japan is not perfect; no country is. The country has its own challenges of ageing population, rural depopulation, and the constant pressure of seismic and typhoon risk. But the discipline, the cleanliness, the courtesy on the road, the honesty in restoration, and the patience of long-term monitoring are lessons I want to carry into my teaching and my research back home. To my students at BUET, I will say this. Watch how a country builds, but also watch how it behaves. Both are engineering. Learn to design a good bridge, and also learn to stop at a red light on an empty road at midnight. The two are the same discipline in different clothes.

4.2 Acknowledgments

I am grateful to the Japan Society of Civil Engineers (JSCE) for the Study Tour Grant and for hosting the 28th International Summer Symposium and the JSCE Annual Meeting 2026 in Sapporo. My particular thanks go to Professor A.F.M. Saiful Amin, Department of Civil Engineering, BUET, who serves as the STG Ambassador and who nominated me for this programme. His steady mentorship over the years opened this door, and his standards continue to shape my work.

I thank Okuda-san, our JSCE tour coordinator, for planning every detail of the visit with unfailing care. I thank Ms. Mika Ashida-san for her kind and patient host role with the international delegates. I thank Mori-san and the teams at CERI, the Otaru Port Museum, and the Ishikari River Disaster Prevention Museum for their generous technical hosting and their willingness to answer every question that we asked. I thank the presenters and chairs of Session CS2 at the 28th International Summer Symposium for a thoughtful and challenging discussion of my paper.

I thank my co-authors and colleagues at BUET, in particular my collaborators on the deck-slab rehabilitation project, for the joint work that made the presentation possible. I thank the Head of the Department of Civil Engineering at BUET for approval of my leave for the duration of the tour, and I thank my teaching colleagues who covered my classes while I was away.

Finally, I thank my family for their support during the trip. Any errors or omissions in this report are my own.



We came to learn. We left, perhaps, a little changed. STG 2026, Sapporo.