



The aim of the Hokkaido Hitachi Laboratory is to revitalize the local region by solving social issues, such as the declining birth rate, and ageing and shrinking population.

# LISTENING TO LOCALS IS KEY TO BUILDING SOCIETY 5.0

A successful long-term partnership between Hokkaido University and Hitachi has recently yielded a study that helped to significantly reduce the number of underweight births in the city of Iwamizawa, Japan. We spoke to Professor Kiyohiro Houkin, President of Hokkaido University, Dr Norihiro Suzuki, Chief Technology Officer at Hitachi, and Dr Hideaki Koizumi, Emeritus Fellow of Hitachi, about innovations with global impact, and how **THEY MUST FIRST BE ABLE TO TRANSFORM THE LIVES OF LOCAL CITIZENS.**

**Q: The idea is that in Society 5.0, IoT and AI, among other digital tools, will help advance economic and social agendas. How will we create this future?**

**Hideaki Koizumi:** If projects do not solve problems at the community level, they won't do so on a global scale. In a large project with the city of Iwamizawa in Hokkaido, for example, locally tailored health advice was able to

almost halve the number of underweight births between 2014 and 2019. That project clearly illustrated how a focus on local relationships and real-life problems can lead to success.

**Kiyohiro Houkin:** I agree, I believe that projects that do not position citizens as the main stakeholder are destined to fail. Digital solutions must create something that citizens are satisfied with and are willing

to use. The Iwamizawa case is unique in that it involves ongoing and close collaboration between Hitachi, Hokkaido University and the city's residents, which supported the practical knowledge sharing and local behaviour-change that led to potentially life-changing outcomes.

**Norihiro Suzuki:** I think the Iwamizawa study is a great example of a Society 5.0

initiative, as it's both inclusive and enabling. At Hitachi we promote inclusiveness in project design using an original co-creation approach called 'NEXPERIENCE.' The approach includes a tool that allows us to simulate, in cyberspace, the outcomes of different approaches that a community might take – a digital proof of concept, if you will. This allows us to assess and verify the value of a project in advance, and

therefore focus our resources on achieving the desired impact. NEXPERIENCE is powered by Lumada, an important IoT platform developed by Hitachi to help create and deliver digital solutions for Society 5.0.

Hokkaido is a region that is already experiencing some of the issues that the whole of Japan will face within the next ten years. These include a decrease in population, stress on the healthcare system, a changing climate and a decreasing birth rate. Insights from Hokkaido will therefore soon be applicable to the rest of the nation. To address these challenges, we established the Hitachi Hokkaido University Laboratory in 2016. In future, projects could use NEXPERIENCE and the lab's work to identify and assess innovations that could help revitalize many communities.

The partnership between Hitachi and Hokkaido University had previously focused very successfully on technology development. Our work on advanced proton beam cancer therapy produced a system that can target tumours in moving patients with pencil-thin proton beams.

**Q: The Iwamizawa study examined the association between the diet, lifestyle, and social capital of pregnant women. What went right in Iwamizawa to reduce underweight births?**

**Kiyohiro Houkin:** Small municipalities in Japan tend to be quite conservative and

reluctant to act, but they are also key partners in creating change in a community. While there has always been pressure at universities to change with the times, for local innovations to work, small municipalities need to be willing to change as well; Iwamizawa has been a great example by being extremely open and agile.

**Norihiro Suzuki:** Engaging with the people who will benefit from a solution is key to producing real outcomes. Until now, academics have tended to focus on sharing their insights through scholarly publications, while industry has tended to focus on technology commercialization and marketing. It was only after the team at the Hokkaido University Center of Innovation (COI) took off their respective academic and corporate hats and involved citizens that the project began to run more smoothly. Bringing on board the beneficiaries maximizes the data quality outcome, which enhances the technology and insights that can be developed. To keep the community informed, the COI hosts forums every year to which we invite experts from Hokkaido to share visions of how we might resolve challenges.

**Q: What role will ethics play in the future?**

**Hideaki Koizumi:** Ethics in engineering will continue to be incredibly important; it is a field that often has huge impacts on the planet.



Norihiro Suzuki is the Chief Technology Officer at Hitachi.



Kiyohiro Houkin is President of Hokkaido University.



Hideaki Koizumi is an Emeritus Fellow of Hitachi.

**Kiyohiro Houkin:** I believe academia should also be taking the lead to show that society will not progress further without some deep thinking on how to agree on ethics for the new age, particularly for data. I would advocate for a sort of 'G7' for scientists to discuss data ethics.

**Q: Data governance is becoming increasingly important in today's innovation landscape. How has Hitachi responded?**

**Norihiro Suzuki:** Hitachi is closely involved in a proposal for 'Data Free Flow with Trust,' a concept introduced by the former Prime Minister of Japan, Shinzo Abe, at the 2019 World Economic Forum Annual Meeting. In his statement he said that data should not be controlled by a select few, be it entities or countries, including Japan, but that it should be available to flow across borders within a trust governance framework. Abe noted that solid foundations were required for the secure transfer of data. It will require a delicate balance between technology and trade policy, as well as regulatory and business practice.

This is also applicable on a local level. The more data we have, the more we are able to look at trends and optimize services that might help people live better lives. Of course, while free data flow accelerates innovation and creates new value, it also raises concerns in relation to data privacy, fraudulent access

and unauthorized use. The Data Free Flow with Trust programme aims to create technologies and policies that balance protection and enabling technologies. Hitachi has contributed both expertise and technology to promote the concept, including collaborating with the World Economic Forum's Center for the Fourth Industrial Revolution Network to publish a white paper on the issue in May 2020.

**ITS ABOUT BRINGING PEOPLE TOGETHER, SUPPORTED BY ETHICAL TECHNOLOGY**

I also see Data Free Flow with Trust as part of a wider discussion on technology governance, especially as it relates to AI and ethics. Hitachi recently announced a set of principles to guide the ethical use of AI, particularly from the viewpoint of a corporation working on societal infrastructure. Some of the challenges we foresee are how to maintain public trust in a world that is increasingly transformed by their data, and how to form social agreements on data governance. Hitachi intends to continue leading and playing a prominent role in this conversation.

**Q: How do industry leaders move beyond the most destructive aspects of capitalism?**

**Hideaki Koizumi:** Human conflict has historically occurred primarily between groups of people. We have, reached a point, however, where the most significant conflicts are ones that humanity faces together, such as climate change. Our concerns are gravitating away from national security to human security. While the simple definition of Society 5.0 is a future where the cyber and physical spaces are intertwined, ultimately, I see it as being about bringing people together to create solutions for society, supported by ethical technology.

**Kiyohiro Houkin:** Humans maintained an unsustainable growth model for some time, expanding their presence into frontiers that arguably weren't meant to be. We are being forced to learn that a kind of capitalism that only pursues expansion will not create a good future.

**Norihiro Suzuki:** Social innovation is vital. The focus of our collaboration with Hokkaido University has already shifted towards social innovation, while Hitachi has refocused its core transformation projects towards sustainable environments and resilience projects. We recently became a principal partner of the COP26 and announced our commitment to becoming a climate change innovator.

**Q: Dr Suzuki helped create a successful transdisciplinary**

**quantum physics lab within the Cambridge cluster, the largest technology cluster in Europe. What has Hitachi learned from three decades of transdisciplinary work?**

**Norihiro Suzuki:** The Hitachi Cambridge Laboratory is based in one of the largest technology clusters in Europe, centred around the University of Cambridge. Working with leading research institutes in Europe, the lab has been elucidating quantum phenomena, as well as demonstrating cutting-edge technology for quantum devices. Although it is very different to the fields involved in the Hokkaido University projects, our activities in the UK have shown us how crucial it is to create local bases and opportunities to develop science hand-in-hand with customers. This thinking contributed to the launch in 2019 of an open innovation initiative we call, *Kyōsō-no-Mori*, or 'Forest of co-creation', which is based at our research hub in the city of Kokubunji in greater Tokyo. In addition to hosting forums and hackathons open to the public, *Kyōsō-no-Mori* manages an ongoing project to encourage local consumption, in which Kokubunji farmers are matched to local restaurants looking to use their vegetables through a smartphone app.

**Q: What does Society 5.0 mean for the future of industry-academia collaboration?**



Japan has one of the highest low birth-weight percentages in the OECD, which is a challenge that Hokkaido University and Hitachi hope to tackle.

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As President of Hokkaido University, Kiyohiro Houkin has been closely involved in a partnership with Hitachi run through the university's Center of Innovation (COI).

**Kiyohiro Houkin:** I believe collaborations should be mission-oriented. So far, industry-academia-government collaborations have worked very well with the support of a grant system. But we can be more flexible and proactive by involving, for example, private

investors and the general public in collaboration schemes. That could expand our horizons and open up new possibilities in Society 5.0.

**Hideaki Koizumi:** Society 5.0 is about building a new kind of society, but it is helpful to look

back at history and remember that early humans were able to establish societies based on rules formed around empathy. If we are to create significant changes, we need to inject empathy and understanding into technological solutions moving forward. ■

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