

# News Release

FOR IMMEDIATE RELEASE

## **Hitachi and Cambridge renew 30 year research partnership**

*To collaborate in the realization of a practical quantum computer*



**London, 18 November 2019** -- The University of Cambridge (“the University”) and Hitachi, Ltd. (TSE: 6501, "Hitachi"), today announced that they have signed a new agreement to continue and grow their long-standing relationship through the Hitachi Cambridge Laboratory (HCL), part of the European R&D Centre of Hitachi Europe Ltd., a wholly owned subsidiary of Hitachi. The relationship will build on the 30 year partnership established with the University through the Cavendish Laboratory, home of the University’s Department of Physics, and will pursue deep science leading to the development of cutting-edge technology to realize a practical quantum computer.

The collaborative activity between HCL and the Cavendish Laboratory which began in 1989 to create new concept advanced electronic and optoelectronic devices, has resulted in many significant technology milestones such as the demonstration of the world’s first single-electron memory device (1993), the first single-electron logic device (1995), measurement of the Spin-Hall effect and one of the first silicon qubit devices (2005), the Spin-injection Hall effect (2009) and a prototype Spin-Hall effect transistor (2010). A part of such works led to the development of major activity on quantum computation. Today, the development of an ecosystem in this area, covering activities across the University, as well as companies in the Cambridge cluster – the largest technology cluster in Europe – is a central priority for HCL. Under the terms of the new agreement, HCL will now carry out next-generation computing research with the Cavendish Laboratory in addition to ongoing fundamental research, and the partnership will continue at the Ray Dolby Centre, the new home of the Cavendish Laboratory, due to open in 2022.

University researchers pursue world-leading research ranging from new devices to algorithms for next-generation computers such as quantum computers, which are exponentially faster than classical computers, revolutionising fields as diverse as cryptography and drug discovery.

The Cavendish Laboratory is currently constructing a state-of-the-art new building, the Ray Dolby Centre, thanks to the generous support of the Dolby family and a major grant from the UK Government. The new home of the Cavendish will operate as a National Facility for the UK physics community and its industrial partners. Hitachi and the University have agreed that the Ray Dolby Centre will be the ideal home for HCL.

Professor Andy Parker, Head of the Cavendish Laboratory said: “HCL and the Cavendish have operated as partners for three decades, producing world-leading results and enabling great new products to be developed. We are proud that Hitachi have chosen to continue our partnership in our new facility and look forward to many more years of outstanding results.”

Dr. Masakatsu Mori, CTO of Hitachi Europe Ltd., said: “Working with the Cavendish Laboratory and research partners, we have made significant advances in Si-based quantum devices over the last few years. The next step towards a practical quantum computer based on this technology will be to extend the research beyond the device to Computer Science, to include architecture and systems consideration. We are excited to be moving forward together with the University of Cambridge in this new endeavour.”

Professor David Cardwell, Pro-Vice Chancellor for Strategy and Planning, signed the MoU on behalf of the University, and commented: “HCL and the Department of Physics at the University of Cambridge have built a strong and successful collaboration over the past 30 years. This new phase of the collaboration creates an important opportunity for HCL to expand and extend its network throughout the University and its many collaborators that support our joint vision for the future. The Cavendish III development aims to be the best research centre for Physics in the world and this ambitious project represents an excellent opportunity for HCL to continue its substantial collaboration with the University of Cambridge.”

Dr. Norihiro Suzuki, Vice President and Executive Officer, and CTO of Hitachi, added that: “We are proud of the relationship that has grown over the last 30 years with the University of Cambridge. By building on this valuable partnership, the best minds in academia and industry will become part of an innovation ecosystem ensuring that the fruits of the research have true value and contribute to a better society.”

The Ray Dolby Centre is named in recognition of an £85 million gift<sup>(1)</sup> from the estate of sound pioneer Ray Dolby – the largest philanthropic donation ever made to UK science.

(1) £ 85 million gift from the Dolby family to transform Cambridge science

<https://www.cam.ac.uk/research/news/ps85-million-gift-from-the-dolby-family-to-transform-cambridge-science>

In addition to the Dolby gift, the new Cavendish Laboratory is being made possible by £75 million of funding from the Engineering and Physical Sciences Research Council (EPSRC), part of UK Research and Innovation (UKRI). The

project, which is expected to be completed in 2022, will help strengthen the University's position as a leading site for physics research and will provide a top-class facility for the nation, with much of the research equipment made available to other institutions.

### **About the University of Cambridge**

The mission of the University of Cambridge is to contribute to society through the pursuit of education, learning and research at the highest international levels of excellence. To date, 109 affiliates of the University have won the Nobel Prize.

Founded in 1209, the University comprises 31 autonomous Colleges, which admit undergraduates and provide small-group tuition, and 150 departments, faculties and institutions. Cambridge is a global university. Its 19,000 student body includes 3,700 international students from 120 countries. Cambridge researchers collaborate with colleagues worldwide, and the University has established larger-scale partnerships in Asia, Africa and America.

The University sits at the heart of the 'Cambridge cluster', which employs 60,000 people and has in excess of £12 billion in turnover generated annually by the 4,700 knowledge-intensive firms in and around the city. The city publishes 341 patents per 100,000 residents.

<https://www.cam.ac.uk/>

### **About Hitachi Europe Ltd.**

Hitachi Europe Ltd., a subsidiary of Hitachi, Ltd., is headquartered in Maidenhead, UK. The company is focused on its Social Innovation Business - delivering innovations that answer society's challenges. Hitachi Europe and its subsidiary companies offers a broad range of information & telecommunication systems; rail systems, power and industrial systems; industrial components & equipment; automotive systems, digital media & consumer products and others with operations and research & development Laboratories across EMEA. For more information, visit <http://www.hitachi.eu>.

### **About Hitachi, Ltd.**

Hitachi, Ltd. (TSE: 6501), headquartered in Tokyo, Japan, is focusing on Social Innovation Business combining its operational technology, information technology and products. The company's consolidated revenues for fiscal 2018 (ended March 31, 2019) totaled 9,480.6 billion yen (\$85.4 billion), and the company has approximately 296,000 employees worldwide. Hitachi delivers digital solutions utilizing Lumada in five sectors including Mobility, Smart Life, Industry, Energy and IT, to increase our customer's social, environmental and economic value. For more information on Hitachi, please visit the company's website at <https://www.hitachi.com>.

###