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## Internet in Its True Sense and Electronics

Ryogo Kubo

What does the term “Internet” mean? As “inter” stands for “between,” it naturally means a network that connects multiple networks. In this context, “networks” refer to information and communication networks. And what we call “IoT” (Internet of Things) is a world where all things are connected to each other via the Internet. Now some may say “It’s nothing new” and wonder why I talk about it anew. My point is that the currently

accepted idea of “Internet = information and communication network” is a false or misleading concept in the era of IoT.

Numerous “networks” can be found at work in this world – information and communication network, electric power network, city gas network, water and sewage network, transportation network, social network, and whatnot. In a smart infrastructure system of the future, all these networks of different kinds are expected to work together to create new forms of service formerly unavailable. In other words, networks of different kinds will collaborate with each other to form one huge network. This is the way the true Internet should be.

Should an existing power network fail due to a disaster, for example, it will be possible to charge electric vehicle (EV) batteries and

transmit the power using a transportation network. There may also be cases where it is faster to use a transportation network to deliver a hard disc of enormous data volume than forwarding the disc via an information and communication network.

Anyway, in order to realize a smart infrastructure system, we need to connect people and things to some kind of network and conduct cross-disciplinary information gathering and control. In this sense, electronics deserves to be called the fundamental discipline vitally needed to structure a smart infrastructure system as it deals with far-reaching areas of ICT and control. I sincerely hope an increasing number of students will learn electronics with an enthusiasm for supporting the coming IoT era.

## Science and Technology Information

### Keio Faculty of Science and Technology becomes the only “IBM Q Network Hub” in Japan

In March 2017, IBM Corporation initiated “IBM Q,” an initiative to create a general-purpose quantum computing system. Keio University Faculty of Science and Technology was chosen as the only IBM Q network hub in Japan in December 2017. Tasked with the promotion of research, education and industry-wide collaboration in quantum science and technology, it is one of the five regional hubs encompassing four continents of the world. In addition to Keio University, the IBM Q network hubs were established at IBM Research, Oak Ridge National Laboratory in the United States, University of Oxford in

the United Kingdom and the University of Melbourne in Australia.

The quantum computer has the potential to offer solutions to highly complex route search problems much more speedily and efficiently than conventional computers. Expectations are high that it will be applied to the financial industry intent on transaction strategies and portfolio optimization, as well as to automobile, chemistry and various other industries.

It has become possible for industries and research organizations from a wide range of fields to participate in this hub for joint



research into quantum computing, using the IBM Q system online. As a quantum computer boasting the world’s highest performance, IBM Q will enable researchers to pursue the most advanced quantum computing studies. Keio University Faculty of Science and Technology is currently preparing for establishing an environment for accessing the IBM Q.



Source: IBM

#### Editor’s postscript

The term “IoT” often reaches our ears recently. Using a smartphone for video recording and switching an air-conditioner ON from remote locations is now commonplace. Despite the many benefits of IoT we are receiving today, we actually know nothing about its structure and have taken such increasing conveniences for granted.

The example of the intersection cited in Dr. Kubo’s article must have given you a clear image of what’s going on in the world of IoT. His broad perspective, as represented by his statement “Things connected to the Internet via IoT also include people” overlaps his image as a percussionist playing timpani while overlooking the audience from the rear of the stage. (Izumi Hagiwara)

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