New Collaboration between Ubiquitous Computing and Big Data

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About ten years ago, the word “ubiquitous” was in vogue in Japan’s ICT world. It represented the concept of creating ubiquitous connections that link not just people, but all things in the real world. The goal was to provide optimal services anytime, anywhere, in response to real-world conditions, including those of people, objects, and the surrounding environment. At the time, Japan led the world in mobile Internet services, as exemplified by 3G mobile phones and DOCOMO’s i-mode service. It sought to lead the world as a trailblazing, advanced mobile technology country.

Research and field trials were conducted with enthusiasm. However, there were still not enough devices that could be connected to real-world objects, and the wireless environment could not bear the weight of demands placed on it. Computational infrastructure that could carry out processes economically was not in place. As a result, services could not get a viable commercial foothold. Technologies labeled “ubiquitous” and policy discussions about ubiquitous computing became things of the past.

Meanwhile, when we look at the rest of the world, we see that changes in information technology during the past ten years have been dramatic. The U.S., which leads the IT field, has made great strides in the area of mobile devices. U.S. companies are making use of computing clouds to economically process massive amounts of data. Silicon Valley entrepreneurs are launching context-aware mobile services, based on the understanding of people and conditions (time and place), one after another. Lightweight, energy-efficient communication systems that connect devices in the real world, called the “Internet of Things” and “M2M (machine-to-machine),” are closing the distance between the information space and the real world. The creation of value in the real world, imagined a decade ago by researchers and engineers in Japan under the rubric of “ubiquitous,” is actually now being demonstrated.

While Japan had been preoccupied with building devices and networks as “limbs” and “nerves,” the rest of the world took the approach of processing the real world’s big data, which represent the “brain,” and claimed one success after another. Japan has outstanding wireless and device technologies that support ubiquitous computing. We also have experience in understanding diverse technological and commercialization challenges. The word “ubiquitous” is no longer trendy. However, the now-or-never chance to reclaim Japan’s innovative power has come, even though we have been late. We will do this by offering new value through the total linkage of devices and networks. We must actively advance open research activities by joining forces with industry and by involving users.