The Necessity of Social Innovations

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Three-dimensional printers, which use lasers to shape layers of materials such as resin, have recently received a great deal of attention in the mass media. They can easily produce real-world 3D objects from CAD/CG data. Due to their diverse applications, including rapid prototyping in the manufacturing industry, they are used in fields ranging from architecture to education. In medicine, bones from different parts of the body can be custom-made to meet the needs of patients. Patients have begun to use medical implants produced by these tools, an indication of the great impact that 3D printers are making on society.

Meanwhile, 3D models existing in cyberspace allow anyone to easily obtain real-world objects. This leads to the possibility that objects connected with criminal activities may be produced. Actually, in the U.S., not only are there videos on video-sharing sites showing handguns produced by 3D printers being fired, their 3D models are also available for download. It has been reported that these models have been downloaded by people in different countries around the world. Such a phenomenon raises the question of how social ethics is to be involved in the development of technology.

In general, even if a technology exists and one wishes to use it to create a service, it may not be possible due to questions raised by society, for example legal questions. A company that provides a service contrary to moral values also runs the high risk of losing social trust. Thus, to embed a technology into society – in other words, for a technology to be recognized as a service by society – what are necessary are social innovations and transformations of social frameworks such as ethics and the legal system to keep pace with the technology. In addition, for a technology to become embedded in society, the technology may also need to be modified. This conformity of technology to society is called technology-shaping [1].

Social innovations are required in the case of 3D printing discussed above. That is, an ethical stance that does not permit easy production of law-violating objects must be formed. New laws may be needed. For technology-shaping, filtering technology that prohib- its 3D printers from forming objects that infringe on the law may need to be developed.

The history of mobile communication shows these two forces, social innovation and technology-shaping, being repeated over and over as mobile communication advances. International standardization and radio frequency allocation are quintessential examples of social innovations. Furthermore, Electro-Magnetic Compatibility (EMC), which presents easy-to-understand information to customers on the safety of radio waves to the human body, is a technology that promotes social innovations. Representative examples of technology-shaping include the miniaturization of mobile phones, the development of safe batteries, and the development of high-capacity radio access to support the diversification of services.

At the Research Laboratories, we have been advancing the research and development of mobile spatial statistics. Using operational data needed to provide mobile phone services on communication networks to customers, this technology creates human population statistics 24 hours a day, 365 days a year [2]. Such data are needed by government, industry and university researchers in a variety of fields. Mobile spatial statistics only determines the number of people in a group. It is safe information that cannot identify individuals. However, because it is a cutting-edge example of big data, researchers in this area of research have grappled with social innovations so that mobile spatial statistics can take root in society. For example, we organized an external research group composed of experts in areas such as statistics and privacy protection. These participants studied the effectiveness of mobile spatial statistics and its technological, legal and social aspects [3]. We published a report to express our view that the creation of mobile spatial statistics from operational data do not normally pose a problem to privacy protection and personal information protection, and should be carried out taking customer concerns into account. Our views conform to the conclusions reached by a study group of the Ministry of Internal Affairs and Communications [4]. We have released guidelines on voluntary rules concerning the creation, provision and use of mobile spatial statistics [3]. To actively provide information on the effectiveness and safety of mobile spatial statistics, we have also been using mobile spatial statistics in community-building and disaster prevention planning and issuing press releases about these efforts.

We live in a time when social innovations are needed to bring new technologies as services into the world. In fact, the more groundbreaking the technology, the more we need social innovations. In the future, we must be aware of social innovations from an early stage as we create technologies to provide services to the world. To produce services that our customers will use safely with peace of mind – innovative services that will become partners with their smart lives – we are carrying out R&D activities with a full awareness of social innovations.

References

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