Applying Secret Sharing for Backup Exchange

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My name is Kenta Kusuda, I’m from Kochi University of technology. In my university, 2nd Grade student join laboratory tour to decide their laboratory smoothly. When I did it, I encountered an amazing study in a laboratory, and then I wanted to introduce this study. So, I chose this topic.

　The Shizugawa hospital was seriously damaged by Great East Japan Earthquake. Not only the hospital but also a lot of medical institutions were damaged. Because of this, medical data such as electronic medical records were lost. The hospital staffs could not practice medicine smoothly.

Today, hospital information systems are spreading rapidly along with the growth of ICT. They are efficient and reliable, but they also have risks. Hospitals cannot provide advanced medical services without the information system.

Now, they should prepare remote backups in case their medical data is destroyed during a disaster. The backups make it possible for hospitals to restore the information and continue the medical services.

Next, security comes up as another topic. The hospital information system need to back up a large quantity of data every day, and must keep high security for the safety of medical data. The cost has become a bottleneck for hospitals.

Currently, most hospitals back up the data at a location that is not far away from the medical institution. In this case, it is difficult to regain the original function of the medical institution at the time of large-scale disaster. In addition, if you save to another hospital as a storage, it becomes a complex responsibility issue when the information leakage happened.

To solve the data back and security problems, I would like to introduce Secret Sharing Schemes (SSS). The Secret Sharing Schemes is a method to divide secret information into several distributed information piece called “share”. By connecting shares, SSS restores the original data. In addition, SSS is safe. When the part of data is stolen, it is impossible to restore the original data, but hospital can restore the data.

SSS also promotes cooperation and collaboration among hospitals. Usually things become very complex when an accident happens. Medical institutions can exchange, and save the backup data each other. SSS can build a mutual benefit model.

Victims of Great East Japan Earthquake are still suffering. But natural disasters never wait for us. In these days, Kumamoto Earthquake happened. After that, Mt. Aso exploded there. Hospitals should restart as soon as possible for their patient. I believe SSS will help people’s lives all over the worlds.