

Aggregate/analyze the results of dialogue at local governments, etc

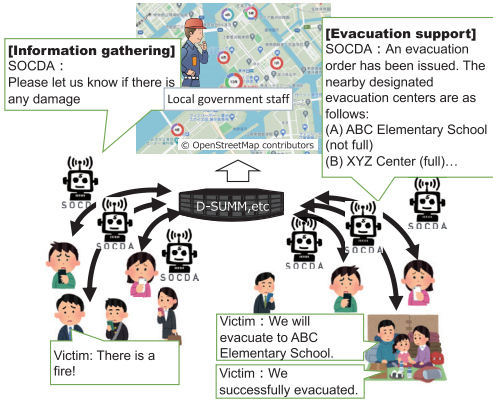


Figure 1 Outline of SOCCA

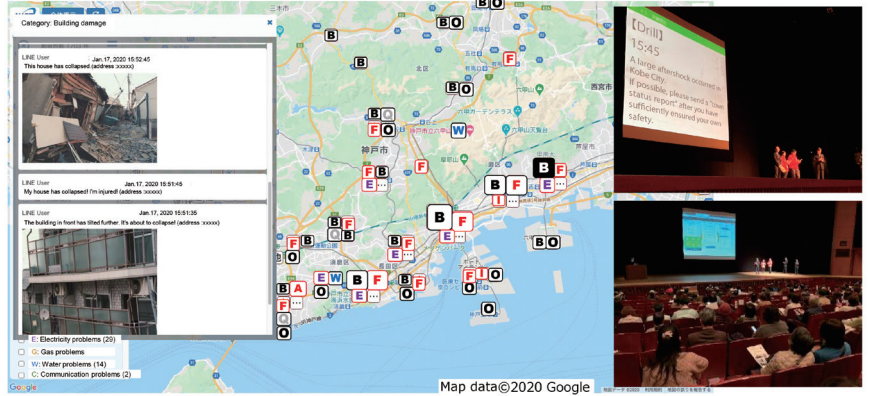


Figure 2

### The D-SUMM system for summarizing disaster situations

Research and development on the capability to compactly summarize information, which was suggested during interviews in the disaster-hit areas, was performed under the Cabinet Office's "Cross-ministerial Strategic Innovation Promotion Program," which was launched in 2014. After making it possible to compactly summarize and organize similar expressions, we collected and enhanced AI learning data that automatically extracts disaster-related information, implemented a variety of capabilities such as summarizing data by area and category and displaying the summarized results on a map, and then in October 2016, we began a trial release of D-SUMM.

After the trial release of these systems, DISAANA was used for the Kumamoto earthquake in April 2016, and DISAANA and D-SUMM were used for the torrential rains in the northern Kyushu region in July 2017. They have also been used in disaster prevention drills by local governments, and we have made repeated improvements based on the valuable opinions we received from users, etc.

Additionally, in FY2017, the "IoT/BD/AI Information Communication Platform," a project commissioned by the Ministry of Internal Affairs and Communications to promote research and development for an advanced natural language processing platform, was started. The social implementation of the project was promoted through research and development of a platform with DISAANA/D-SUMM technology as its core, and, since July 2020, a service utilizing both technologies was started by a private company (NEC).

### The SOCCA chatbot for disaster management

Even though we confirmed the effectiveness of DISAANA/D-SUMM through their use in disaster management drills and actual disasters, we also became very aware of the limits of handling information that is voluntarily posted on Twitter. Resources on the side of those carrying out disaster responses, such as the disaster response headquarters of a local government, are limited. As such, by having the systems collect comprehensive information and provide detailed information to those who need it, we thought that we could support disaster responses in terms of both collecting and providing information, so we began to consider an AI that could do these tasks. In January 2017, we proposed the concept of a disaster management chatbot to realize this, and, through the 2nd Cabinet Office SIP that started in FY2018 and with the cooperation of LINE Corporation, research and development of the SOCCA disaster management chatbot was started by the National Research Institute for Earth Science and Disaster Resilience (NIED), Weathernews Inc., and NICT.

SOCDA engages in two-way communication with users, but, because it is necessary to communicate with a majority of people during a disaster, we are proceeding with research and development by designing it for lightweight and reliable operation. Damage reports collected by SOCCA are analyzed using D-SUMM technology, and then visualized on a map to enable prompt information sharing (Figure 1).

We were able to carry out SOCCA demonstration experiments immediately after the start of research and development on the project. We quickly realized the infor-

mation-collecting capability, proceeded to verify it, and, in the lead-up to its social implementation, we have repeatedly had discussions about problems/issues with local governments, etc., that are cooperating with the experiment. In January 2020, a large-scale demonstration experiment with 10,000 people was conducted in Kobe City (Figure 2), and a similar experiment was also conducted in January 2021 with 13,000 people. Additionally, some local governments began paid commercial trials during FY2020, so we are making steady progress from the social implementation perspective. In addition to collecting information, in FY2020, we also implemented capabilities to provide appropriate information to support evacuation, based on the user's position, as an information-providing capability, and a demonstration experiment was conducted in Kanagawa Prefecture on February 26, 2021.

### Future prospects

Through social media utilization, it is becoming possible to collect information by regarding people as intelligent sensors, and, by providing appropriate information in the event of a disaster, it is possible to promote evacuations and support people's social activities. Even though we have shown the technology's potential, in order for these systems to be widely accepted and utilized in the world, we recognize that it is not just about the technical systems themselves, but that there are also numerous problems to be addressed, such as usage methods and system design. Going forward, we will continue to take on these challenges and will proceed with research and development to ensure that these technologies can reduce damage during a disaster.