



reconfirm their positioning instead of being merely faithful to government policy or the set research theme or responding to a request from the field.

The right side of Figure 1 is an example of the “Technical Standard for Setting Bumpers and Creating Narrowed or Bent Parts” issued as a notification from the Director-General of the Road Bureau in March 2016. This standard is designed to specify the shape of the facilities to reduce driving speed as a measure against traffic accidents on roads in residential areas. However, speed reduction is not the only method. More measures can be taken on-site if it is combined with such approaches where only a very limited number of cars are allowed on the roads in residential areas, and the areas that need measures are easily identified on a scientific basis. The standard was mapped out, while sorting out the options of other measures and research items shown in the upper right of Figure 1 and paying clear attention to their positioning.

3) Clarifying the target you should focus on

It might be ideal if you could verify everything. However, you have a physical limit. By appropriately narrowing the targets you focus on, you may produce results efficiently. Knowing and understanding previous research studies, the actual conditions of the site and cases in other nations are meaningful from the viewpoint of productivity.

Figure 2 is an example of tabulation where the above items of the technical standard are compiled. By extracting the areas that cannot be explained or verified by the existing data and putting energy into them in the course of research, we could reach a conclusion in a short period of time. Sorting out and making clear the provisions and points of view must be a starting point of research and is also extremely important.

4) Obtaining external support and considering how to obtain it

We have been promoting a liaison with outsiders in such forms as joint research or outsourcing research studies. In recent years, however, it has become very difficult to cover all related technologies only within the scope of knowledge we have. As a countermeasure, new processes, such as accepting and trying technical

proposals from private sectors, social experiments, and study groups with academia, started in the field of Intelligent Transport Systems (ITS). It is necessary to consider and improve how we liaise to keep up with new technologies, while securing fairness and transparency.

5) Considering the role as a national research institute

New technologies are proposed in a wide variety of fields. However, it is not verified in many cases whether they have a real possibility of being effective at an actual worksite. Disaster detection technologies are also in the same condition. NILIM is sorting such facts as responses on the site and obtained information and promoted research in a technology that supports more rapid and accurate responses (Figure 3).

This approach has two key areas. One is sorting out and making clear the needs and requirements for the information based on reality (time required, accuracy, covered areas, and constraint like weather) as the strength of the Ministry of Land, Infrastructure, Transport and Tourism is Regional Development Bureaus and researchers who know the real site. The other is to improve the evaluation criterion instead of evaluating individual technology one by one. This is a trial to consider the characteristics of the NILIM and allocate the research resources to them efficiently.

4. Conclusion - Capturing Essence and Utilizing Discussion

So far, I have discussed a method to improve productivity in research and development. I would be grateful if the method were helpful to people outside of NILIM as well.

However, I would like you to avoid merely copying a style. Be sure that you understand the essence, arrange it depending on the characteristics of research, and spend time and energy on thinking by yourself. Note that discussions and coordination with persons concerned are also important ways to improve productivity. Be aware that opinions from people who have different knowledge, experience, specialties, and values may include wisdom you cannot obtain by yourself and a hint to resolve a bottleneck.

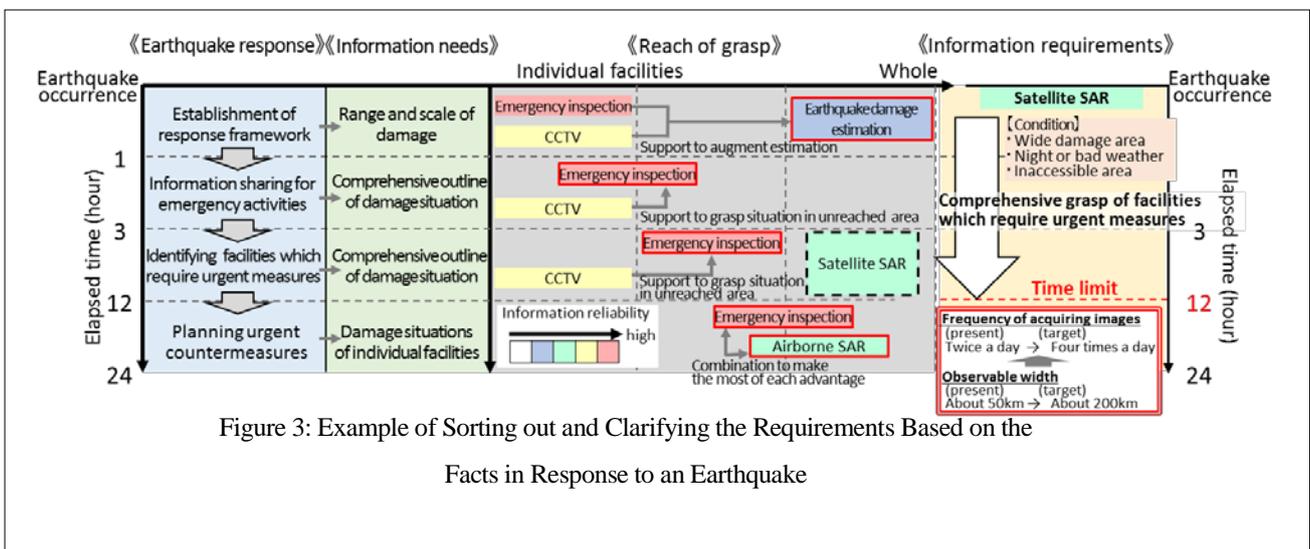


Figure 3: Example of Sorting out and Clarifying the Requirements Based on the Facts in Response to an Earthquake