

## Development of Distributed Channel Information Management System

# Shigeki Nakagawa[1]; Hiroshi Tsuruoka[2]; Kiyoshi Takano[3]; Shin'ichi Sakai[4]

[1] ERI, the Univ. of Tokyo; [2] ERI; [3] ERI, Univ. of Tokyo; [4] E.R.I., Univ. of Tokyo

The WIN format [Urabe, 1994] is the national standard format of the seismic waveform data in Japan. The specification of this format is the waveform data and their channel information (i.e. channel ids, sensor types, components, data resolutions, sensor sensitivities, sensor locations, etc.) are separated. This format is useful to exchange waveform data among seismic observatories and stations because the data size is smaller than other format. When using the waveform data, the channel information must be required. In other words, the correct management of channel information is very important. We developed the Channel Information Management System (CIMS), which treats the unified channel information using the database system [Nakagawa *et al.*, 2006]. The user of this system accesses the database by web, and updates or browses the channel information which is requested by user.

The seismic waveform data are exchanged between the seismic observatories of the Japanese universities, Japan Meteorological Agency, and National Institute for Earthquake Prediction and Disaster Prevention in real time. On the other hand, the channel information corresponding to the waveform data are also exchanged by e-mail. The disadvantages of this e-mail based method are 1) the delay of updating channel information, and 2) the possibility of incorrectly-input of update data. In this study, we develop the distributed database system which automatically negotiates the CIMS servers and keeps the latest channel information.

This system is easy to use, and the current channel information is shared with all users at the same time. The administrators of the seismic stations input the new channel information just into their own CIMS server. Then, these information are automatically notified other observatories' CIMS servers and update the CIMS database. This system adopts the server-client model. We prepare three commands inquiring from the client to the server, which are to notify the information belonging to the server, to notify the information belonging to all servers except the client, and to notify all information. The combination of these commands executes the data exchange.

The most important security issue on managing channel information is the treatment of the closed or private channels. This system has opened and closed/private classes and closed/private class separates three categories, which are 1) information used in closed members, 2) channel ID number only used and other items are masked, and 3) information used in private and never notified.

This system is not only the distributed database system but also the mirror database system. So, the impact by the network failure or the hardware trouble is minimized. We install this system in universities and enhance the reliability and stability.