

## New features of seismic waveform data collecting application using web service technology

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We present new features of seismological data collecting application using web service technology (GDSClient) presented in previous meeting. (<http://www.jamstec.go.jp/pacific21/gds>)

Broadband seismic observation waveform data is distributed by various data centers in the world (e.g. IFREE, OHP, IRIS, ORFEUS and so on). And these data are distributed by each data center's web user interface (e.g. NINJA, WilberII, WebRequest, and so on). Such user interface has functions to search data, sending request and receiving data. When a user want to achieve various data centers' data, a user have to access each data center's web interface one by one. It is not convenient for any users.

We have developed a new data collecting application (GDSClient) using web service technologies, to access each data center from an unified user interface. Our new application works on a user's PC, and the independence of each data center is not deprived.

In this abstract, "service" means the functions for searching, requesting and receiving seismic waveform data which are provided by each data center's web interface (access is executed using HTTP, not SOAP). And "workflow" means the sequence of services to realize some purpose.

To realize the access to various data centers which have different services and workflows, an application should have following functions:

- (1) external definition of services (including definition of arguments) and processing
- (2) external definition of workflows and its processing

To realize (1), we use WSDL (Web Service Description Language) to define services which are provided in each data center, and XSLT (eXtensible Stylesheet Language Translation). By setting these files on each data center's server, GDSClient can access the services (which is provided by web user interface). These files are written in XML (eXtended Markup Language), so it is highly extensible and universal.

To realize (2), we use BPEL (Business Process Execution Language), which is a specification based on XML. BPEL has originally wide and various functions, but in this research, we create limited BPEL engine which is implemented only two functions (sequence and while) and describe workflow of data providing services. Usually the BPEL engine is set on the server-side, but in this application, we use limited BPEL engine on the client-side and processes external BPEL files on the server-side.

To access "services" which is provided on the web interface from GDSClient, the following files are needed to be set up;

- (1) WSDL and XSLT files to describe services and arguments translation
- (2) BPEL file for describe workflow

These files can be created by the engineer who is well-informed about XML. By setting up these files on the server, the services can be accessible by GDSClient.

New version of GDSClient has also two additional features:

1. CUI (Character User Interface) by using text file as an input. The format is like Breqfast (data request files for e-mail, which is used by IRIS).
2. GUI (Graphical User Interface) features for improving usability (Sorting of the list, improvement of the procedure for multiple event achieving)

The GDSClient can access IFREE, OHP, IRIS, ORFEUS DCs' web interfaces (NINJA, WilberII, WebRequest). You can freely download GDSClient and use the software from <http://www.jamstec.go.jp/pacific21/gds/>.

In the presentation, we will present the details of new features of GDSClient and the usage of this application.