Incorporating Multilingual Translation into a Web-Based Help Desk System

Schubert Foo, Hui Siu Cheung, Leong Peng Chor and Liu Shigong
School of Applied Science, Nanyang Technological University, Singapore

The advances of Internet technology has made it possible to deliver help desk support over the World Wide Web so that it can reach a world-wide customer base. In collaboration with Matsushita Technology(s) Pte. Ltd. (MASTEC) of Singapore, a Web-based help desk system, WebHotline, that provides Web support for its service support engineers and customers to access a customer service (or knowledge) database has been developed. The database contains customer service records that serve as records of problems encountered as well as to provide 'knowledge' to tackling similar problems. The Web-based help desk approach for customer services is currently gaining acceptability. Many international companies such as Compaq and NEC have adopted a similar approach. Using this approach, a better and faster response time to a customer's problem can be achieved so that the company can serve its customers in a timely manner. It also relieves the need of experienced service engineers from handling time-consuming customer phone calls for routine problems.

Currently, the WebHotline system is used to provide customer service support for its Asian customers. As the service records are recorded in English, they are retrieved and displayed in English only. This can form an obstacle to customers in many countries whose mother tongue is not English. Therefore, in order to support its customer base from such countries like Japan, China, Taiwan and Korea, it is desirable to provide multilingual support to carry out online translation of service records from English to other languages without having the need to create additional language-based customer service databases.

Service reports or records are currently defined and stored in English in the customer service database to keep track of all reported problems and remedial actions. Each service record contains the customer account information and service details. Service details are stored in two fields: fault-condition and checkpoint. The fault-condition field contains a description of the reported fault while the checkpoint field indicates the suggested actions/services to be carried out to rectify the fault. As customer account information is static and easy to understand in its English form, only the service details of the fault-condition and checkpoint fields needs to be translated.
The translation process consists of two main steps: Record Analysis and Online Translation. The first step involves analyzing existing customer service records, and in particular the fault-condition and checkpoint fields, to generate common syntactic structures that can be applied to all existing fault-conditions and checkpoints. The syntactic structures (that are basically key-word structures) can then be used subsequently by future fault-conditions and checkpoints. Subsequently, translation tables of each component of the common structures will be created which will map the English component to the corresponding language counterparts.

During online translation, customer service records are retrieved based on the customer's input. The corresponding fault-conditions and checkpoints will be parsed to the common structures identified by the report analysis process. Translation tables will then be used to generate the language (e.g. Chinese) counterparts of the retrieved fault-conditions and checkpoints. Finally, the customer service records will be displayed in the selected language through a multilingual display software such as TwinBridge or WinMass on the Web browser.

![Multilingual Test](image)

**Figure 1. English Display**
Figures 1 and 2 shows the interface in English and the translated Chinese equivalent. Such an approach to carry out multilingual translation is effective since it does not require a deep-level understanding of syntax and semantics between different languages. In addition, the approach can also be extendible to any number of languages with the creation of additional corresponding translation tables.