DEVELOPMENT OF VIETNAMESE VERSION OF GRASS GIS

Susumu Nonogaki [1], Tran Van Anh [1], Shinji Masumoto [1]
Venkatesh Raghavan [2], Tatsuya Nemoto [1]
Toru Mori [3], Makoto Niwa [3], Akira Hagiwara [3] and Norihiro Hattori [4]

[1]Department of Geosciences, Osaka City University,

3-3-138 Sugimoto, Sumiyoshi-ku, Osaka 558-8585, Japan.

Email: nonogaki@sci.osaka-cu.ac.jp

[2]Media Center, Osaka City University

3-3-138 Sugimoto, Sumiyoshi-ku, Osaka 558-8585, Japan.

[3]Orkney Inc., Japan., 1-2 Kaigandori, Naka-ku, Yokohama 231-0002, Japan.

[4]E-Solution Service Inc., Japan., 1-13-14 Minamisenba, Chuo-ku, Osaka 542-0081, Japan.

ABSTRACT

In recent years, internationalization (i18n) of GRASS GIS has been advancing. It enables to use in various languages and to display their character strings on the graphical user interface (GUI) depending on a locale setting of user's computer, by using message files that including both original character strings written in English and the other language. However, it is necessary to localize the i18n version in order to use in the other language. In this study, Vietnamese version of GRASS GIS was developed from the i18n version by creating message files and modifying contents of several files. Furthermore, the sample data for Hanoi was also created for the purpose of creation of a tutorial. It includes various raster, vector, and sites data, which are imported from SRTM data etc. The result of these works, display of Vietnamese character strings on GUI and graphic monitor of GRASS GIS was realized.

1. INTRODUCTION

At present, there are many GIS available, but most of them provide extensive support for English language users. This situation binds the users to use GIS in English and severely restricts development and use of GIS in the other native languages. On the other hand, i18n is one of the methods to make software created in a certain language adapted to support many languages. Generally, the numbers of software users will increase if appropriate multi-lingual support and services are provided, and this is not exception about GIS. Thus, i18n may be one of the most effective methods to popularize GIS to the non-English language users.

GRASS GIS is one of the Free Open Source Software and used in all over the world. The characteristics of GRASS GIS are the ability to import other format data as the raster, vector, or sites data and to export as various data format. The i18n of GRASS GIS has already started. The i18n version of GRASS GIS can be downloaded from the Web site now (Venkatesh *et al.*, 2004). In order to use it in the other languages, however, it is more necessary to apply the i18n version to target language because internationalized software becomes useful only after localizing to the other languages. Localization of the i18n version has also started, by present, Japanese version has been developed (Masumoto *et al.*, 2004;Nonogaki *et al.*, 2004).

In this study, we developed Vietnamese version of GRASS GIS from the i18n version. In this paper, the development process is shown. Thereby, the users can use Vietnamese version only by following a process shown here. By the same way, the users wishing to localize to the other languages can refer to methods described here. In here, some examples of the sample data are also shown.

2 DEVELOPMENT PROCESSES

Development process is roughly divided into following three steps.
(1) Set up computer environment.
(2) Create message files written in target language.
(3) Set up fonts to be used in GRASS GIS.
All techniques in each step are very simple, and the details are as follow. In addition, to use Vietnamese version, the first step is only required.

2.1 Set up computer environment

To develop Vietnamese version, it is necessary to prepare the computer which can use and display Vietnamese. Mandrake Linux 9.2 was selected as operating system for this work because it can specify Vietnamese as the default language of computer at the time of installation and it is comparatively easy to add or remove rpm libraries after installation. Furthermore, the version of tcl/tk included is 8.4, which is required to use implement compliant GUI tools.

Among the libraries required for the i18n version, some libraries are not installed automatically. In the case of Mandrake Linux 9.2, *xterm* and fonts libraries were added. *Xterm* is required to operate GRASS graphic monitor, to run some GRASS commands from tcltkgrass that is one of the GUI tools of GRASS GIS and to display short helps of GRASS command. In original setting of the i18n version, *mlterm* is used. However, since *mlterm* cannot display Vietnamese correctly, the i18n version has been appropriately modified to use *xterm* by default. At the same time, fonts library were added to display Vietnamese character strings on GUI and GRASS graphic monitor without garbage. Table 1 is the detail about added libraries.

It is also necessary for localization to set up the locale and character encoding by modifying contents of i18n file, which exists in a system configure directory and specifies the language environment. The locale of Vietnam is only vi_VN. On the other hand, in Mandrake Linux 9.2, there are four available Vietnamese encodes: TCVN, TCVN-5712, UTF-8 and VISCII. In this case, UTF-8 was selected for character encoding. The example of comparison of i18n files is shown in Fig. 1.

Table 1. Added libraries after installation

Library name	Explanation
unicode-ttfonts-1.0-1.noarch.rpm	True Type fonts correspond to Vietnamese
xterm-179-1mdk.i586.rpm	Terminal used for GRASS graphic monitor etc.

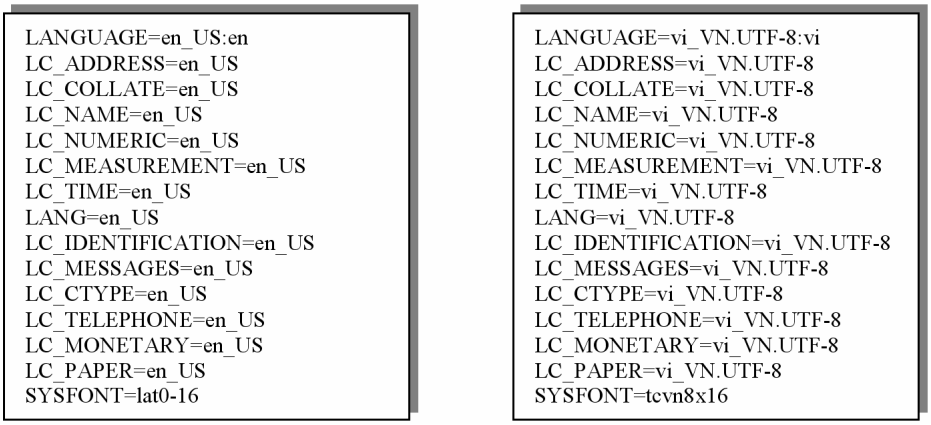

Figure 1. Comparison of i18n files of Mandrake Linux 9.2 (left; English setting, right; Vietnamese setting)

2.2 Creation of message files

The i18n version uses message files for selected languages. Message files that were created in this study include the pair of character strings written in both English and Vietnamese. English parts are the same as original character strings displayed on GUI and Vietnamese parts are translations. This version displays Vietnamese on GUI by converting English into Vietnamese through these files. All message files were written in UTF-8 and they are mainly divided into two kinds by their name. The detail about each message file is explained below.

First one is vi.msg file. This file is used for tcltkgrass and two other functions of GRASS GIS, d.dm (display manager) command and visualization tool Nviz that are operated from tcltkgrass or command line. Each vi.msg file is created by translating en.msg file and saving it into the same directory. Another message file is po file which has the name "command name + .po" (e.g. d.text.po). This file is used for short helps of GRASS command. There are about two hundred po files that were created from templates, pot file included in source package of the i18n version. These templates have English character strings only, therefore, in order to enable short helps, it is necessary to translate them and compile as mo file which has the name "command name + .mo" (e.g. d.text.mo). In these files, all character strings related to GUI is closed by double quotation mark " ". Fig. 2 shows the example of vi.msg file and po file. In vi.msg, the word vi written before character strings means Vietnamese (in the case of English, this part will be set to en). In addition, the header part of po file was removed in here. Table 2 is a list of created message files and relationship to GRASS functions.

Table 2. Created message files

File name	GRASS functions related to message file
command name + .po (.mo)	Short help of Grass commands
vi.msg	tcltkgrass-i18n, d.dm (Display Manager), Nviz

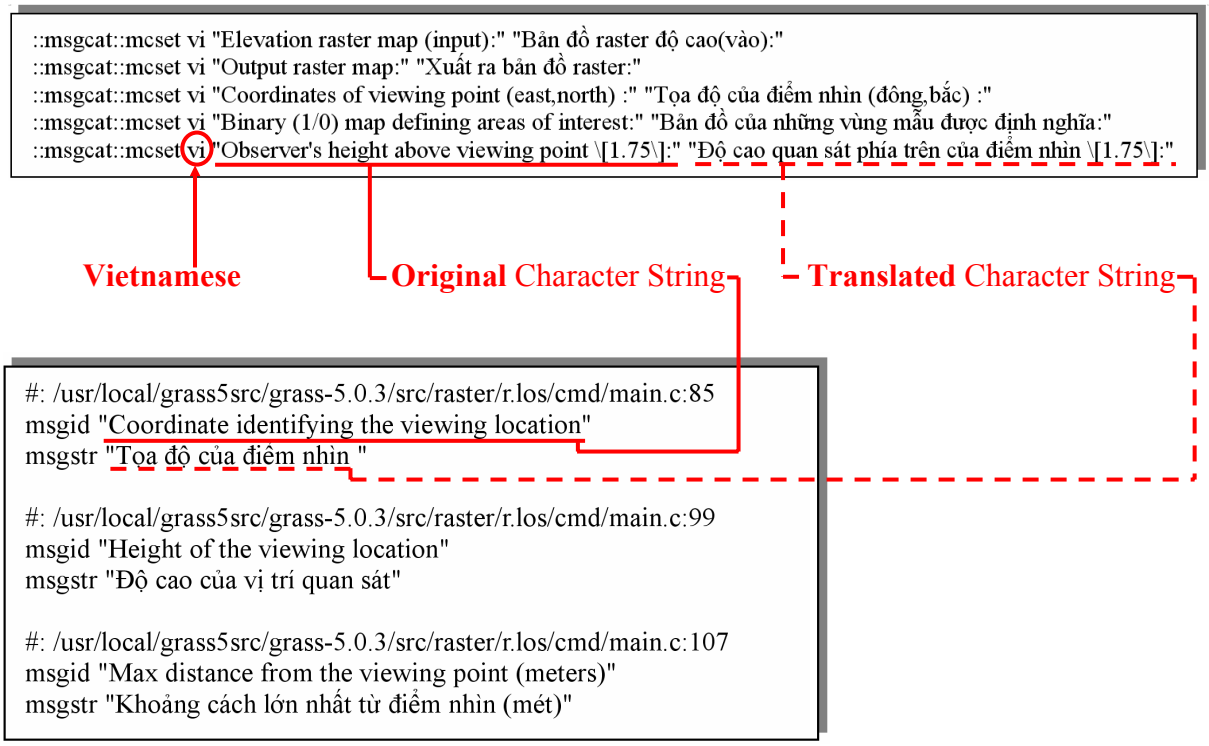

Figure 2. Example of message files (upper; vi.msg, lower; r.los.po)

2.3 Set up fonts

Default font used in the i18n version is *Helvetica* but Vietnamese is not correctly displayed on GUI. For this reason, it is necessary to modify the file related to each GUI. There are five such files in Vietnamese version. Some of them originally have the lines that specify the default font for GUI, but some do not. Therefore, the former are modified to specify new default font and in the later, two lines are added to specify the default font. In this case, *Tahoma* font was selected as default among the fonts installed

3 VIETNAMESE VERSION

According to development process, the Vietnamese version has been developed. Fig. 3 shows the comparison of menu bar of tcltkgrass that is displayed when the locale of computer is set up as English and Vietnamese. Fig. 4 shows the initial screen of Vietnamese version in operating it by tcltkgrass in which the database is selected. Fig. 5 shows the Display Manager. Fig.6 and Fig. 7 are command dialog and short help dialog respectively. Fig. 8 shows the top screen of Nviz. Character strings on these GUI have been displayed by using Vietnamese message files shown in Fig. 2. Fig. 9 is the result of running d.site.labels and d.legend command using sample data created for this study. These figures show that Vietnamese character strings can be used also in graphic monitor. Fig. 10 is some sample data. In here, ASTER image for Hanoi and Digital Elevation Model created by SRTM data are shown.

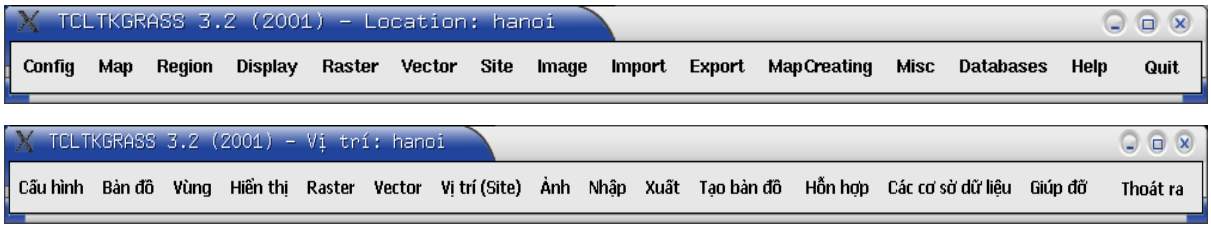

Figure 3. Comparison of menu bar (upper; English, lower; Vietnamese)

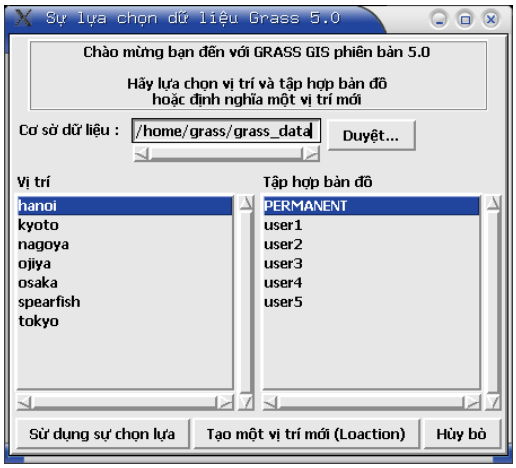

Figure 4. Set up screen of database

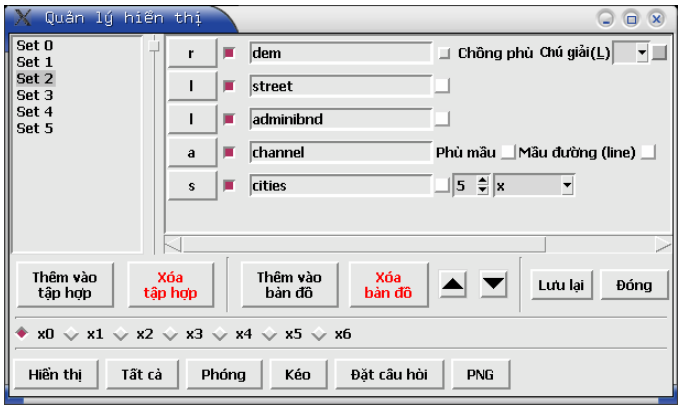

Figure 5. Display manager

Figure 6. Command dialog

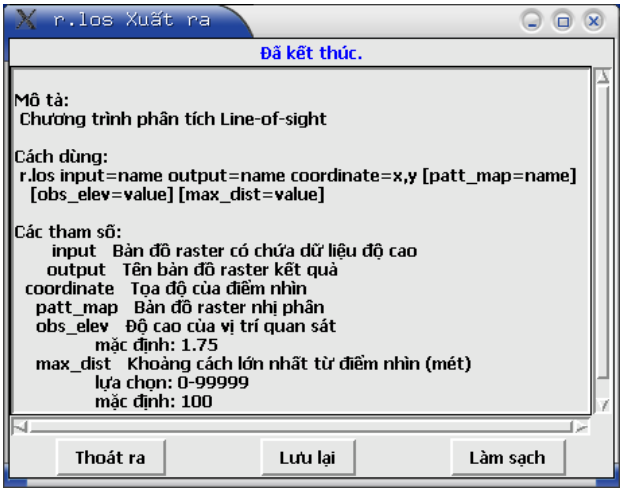

Figure 7. Command help dialog

4 CONCLUSIONS

Original GRASS GIS does not support Vietnamese although the i18n version have already been developed. In this study, Vietnamese version of GRASS GIS have been developed by creating message files for Vietnamese and by modifying some files of the i18n version. At the same time, we created sample data for Hanoi that includes various data such as ASTER image and SRTM data. By this work, it is expected that GRASS GIS will become popular among Vietnamese users.

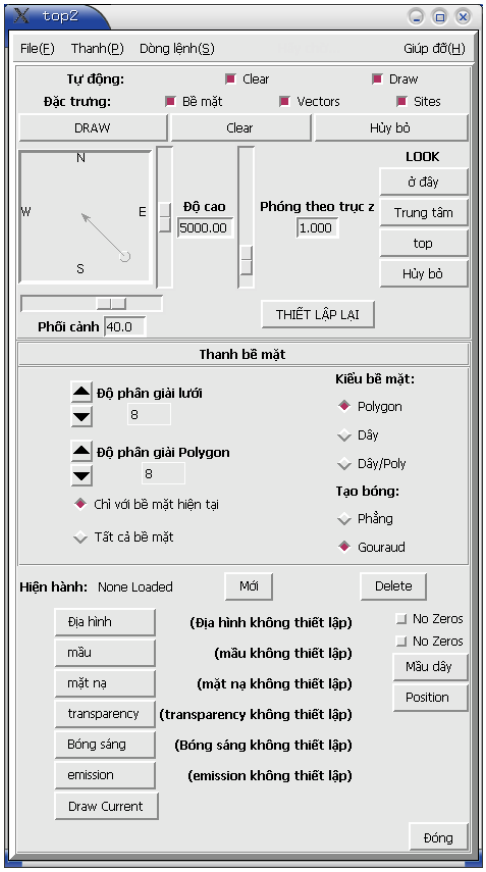

Figure 8. Visualization tool Nviz

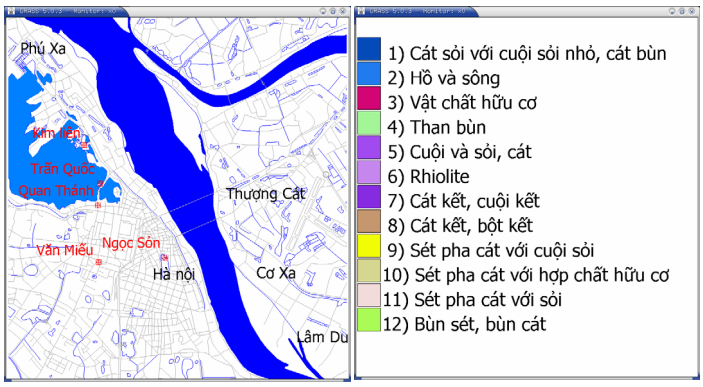

Figure 9. Text on GRASS graphic monitor (left; site label, right; legend)

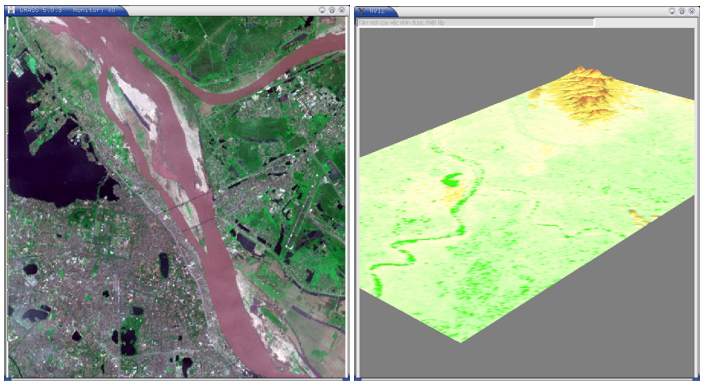

Figure 10. Sample data (left; ASTER image, right; SRTM data)

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