

LOCALIZATION OF E-LEARNING MODULES

Mohammad Ashraf Anam
Institute of Information and Communication Technology
Bangladesh University of Engineering and Technology
Dhaka, Bangladesh
Email: mashrafulanam@iict.buet.ac.bd

ABSTRACT

A learning tools or learning aid is most effective when it delivers its content in local language. This paper proposes a scheme where content and presentation of learning object will be separate enabling localization to be possible by changing the content file. The project is ongoing and enhancements and more localization options will be added in future.

Keywords: E-learning, Localization.

1. INTRODUCTION

E-learning has taken a significant position in educational system. It is the best means to deliver learning content and material easily and cheaply. Although the best approach in students' perspective may seem to develop a new product entirely for each country, location, language or culture [1], it is rarely feasible. A more practical approach would be to design the content with multilingual social impact in mind and to separate the content with presentation. The content must be designed in a structured way so it is easy to translate to another language. This can be achieved through proper interface design, effective presentation mechanism and localization of content based on lingual and social perspective.

2. DESIGN GOALS

The goal of the project is to provide easy mechanism of language localization keeping the previously mentioned aspects in mind. It is also noticed that most Asian languages require a larger font size to show properly on the screen. Ample space must be kept during presentation design so that it is able to accommodate the content. It is best to design all text output with scrollbars enabling them to expand based on content without overflowing the screen. System must also allow changing the font size depending on the language. Because each society may put emphasis on different aspects of a learning goal, it is very difficult to design a learning system that fits all social perspective [2]. For instance the mathematic calculation of a division is universal but each society may use different symbols to represent a division or its products. So whenever possible universally acceptable methods and symbols should be used. Any image or symbol should be avoided when text symbols can be used.

3. SELECTION OF TECHNOLOGY

The development tools used to create these must be Unicode compliant and must support reading of external structured Unicode files as we will separate content from presentation. To represent the content we have chosen XML and for creating the presentation we chose Macromedia Flash. Flash has built in Unicode support and also has rich XML support.



```
- <Settings>
  <DefaultLang>English</DefaultLang>
  - <Language>
    <Name>en</Name>
    <Path>lg</Path>
    <Title>t-sub</Title>
  - <Content>
    - <Section1>
      <Code size="14">omy t-rece</Code>
      <Output size="14">om t-rece</Output>
      <Memory size="14">om t-rece</Memory>
      <Explanation size="14">om t-rece</Explanation>
      <Feedback size="14">omy t-rece</Feedback>
      <Label1 size="14">om t-rece</Label1>
    </Section1>
    + <Section2></Section2>
    <Content>
  - <ImageReplacements>
    - <Image>
      <Replace>Y</Replace>
      <Original>loop1.gif</Original>
      <Replacement>loopar.gif</Replacement>
      <Comment>This is the image that illustrates the first loop</Comment>
    </Image>
    + <Image></Image>
  </ImageReplacements>
  + <SoundReplacements></SoundReplacements>
  </Language>
- <Language>
  <Name>English</Name>
```

4. STRUCTURE OF LEARNING MATERIALS

As previously stated, the structure of the system is divided into two sections: “Content” and “Presentation”. The following guidelines were developed for these two sections so that proper localization is possible:

4.1 Content (XML) File:

1. All content text information will be saved in an UTF-8 encoded XML file (Fig. 1)
2. Every text element will have size information associated with it so that text size can be changed as may be required for different languages
3. Different language content can be saved in the same file
4. Path to additional file used as content like images and sound files if needed must also be provided here.

4.2 Presentation (Flash) File:

1. Presentation will parse XML document and select and display content depending on language chosen
2. Images used will be in layered PNG format with text and image at different layers
3. All cast names of learning object will be the file name so that it is possible to identify and change them through the XML file
4. Every text area and frame must be able to expand to accommodate the content.

The structure of the XML was designed so that it is self explanatory and it is easy to add new language and change not only text but also any image present in the learning module to suit localization need. When localization information is present any image within the <ImageReplacements> tag will be replaced with the replacement image. The system will look for these images using the <Path> tag. <DefaultLang> tag selects the default language used.

5. USE AND BENEFIT

The goal of this project is not to accommodate a complete localization of content but rather make it easy to translate content to another language with very little effort. In the XML file, language can be both edited and additional language added. When additional language is available the system will be able to provide a language selection menu.

The advantages of this simple approach are:

- It will allow content translation with minimum effort
- It will allow to add multiple languages to any single learning object
- It will allow teachers and content developers more time to produce new learning objects
- It will allow a language to display properly by changing font size as different language is presented properly at different size on screen

6. CONCLUSION

E-learning has become a great teaching tool in this current technological society. As more and more contents are developed they will become more effective with proper multilingual support. The structure proposed in this paper can be an effective guideline when developing these new contents.

REFERENCES

- [1] Developing Localization Friendly E-Learning, Kieran McBrien, <http://www.learningcircuits.org/>
- [2] Leveraging Learning Technologies in Management Education, Dr. Lee Schlenker, Towards a Learning Society, E-learning Conference, Brussels, 2005.