
AIMMS User's Guide - Localization and Unicode Support

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Chapter 21

Localization Support

When you are creating an end-user interface around your modeling application, you will most likely create the end-user interface in either your native language or in a common language like English. Which language you choose most probably depends on the intended user group of your application. In the case that you are requested to distribute your application to end-users who are not fluent in the language in which you originally developed the end-user interface, AIMMS offers a localization procedure which automatically separates all static texts used in the end-user interface of your application. This allows you to provide a relatively smooth translation path of your application to the native language(s) of your end-users.

*Interface
localization*

This chapter illustrates how to use the automated localization procedure built into AIMMS, and explains how you can use it to create a foreign version of an end-user application.

This chapter

21.1 Localization of end-user interfaces

Conceptually, localization of an end-user application consists of a number of basic steps. These basic steps are to

Basic concepts

- find all the strings that are used in the pages and menus of your end-user interface of your application,
- store these strings separate from the other interface components, and
- provide translations in different languages of these separately stored strings.

Through the **Tools-Localization** menu, AIMMS offers an integrated localization tool which can perform the first two steps for you automatically. The result is a list of strings, each with a description of its origin, which can be easily translated to other languages. This section will explain the use of the localization tool built into AIMMS step by step.

If your application consist of multiple library projects (see also Chapter 3), developed and maintained by different modelers, each of these libraries can have its own **Localization** section and identifiers to store its localization strings. When performing the localization conversion on a library project, all localized pages and menus in a library project will refer to the library-specific localization identifiers. This allows a developer of a library project to introduce localization into his library, independently of all other libraries and/or the main project.

Localization and libraries

Before you can start the final localization conversion of your AIMMS application, AIMMS needs to

Setting up localization support

- add a **Localization** section to the main model or library module which contains a default setup for working with a localized end-user interface of either the main project or library project, and
- register the names of the identifiers and procedures which are necessary for storing, loading and saving the strings used in the end-user interface of your application or library.

You can perform these steps through the **Tools-Localization-Setup** menu. As a result, AIMMS will add the (default) **Localization** section to your model or library if such a section has not already been added before. Secondly, through the dialog box presented in Figure 21.1, AIMMS will request the names of the

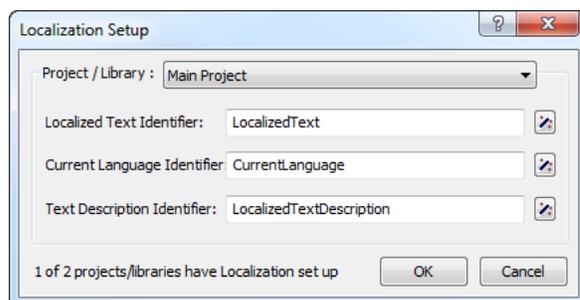


Figure 21.1: Setting up localization support

identifiers to be used further on in the localization process to store the strings used in the end-user interface of the main project or library. By default, AIMMS proposes the identifiers added for this purpose to the (newly added) **Localization** section. If you change the names of these identifiers, or want to use completely different identifiers, you can execute the **Tools- Localization-Setup** menu again to specify the modified names.

If you are adding localization support to a library project, AIMMS lets you choose whether the language to be used within the library project should follow the global language selection of the entire application, or whether you want the language selection for the end-user interface of your library to be library-specific.

Selecting the language

After the localization setup has been executed for the first time, your model or library module has been extended with a new section called **Localization**. The contents of this model section is illustrated in Figure 21.2. The declaration

Localization section

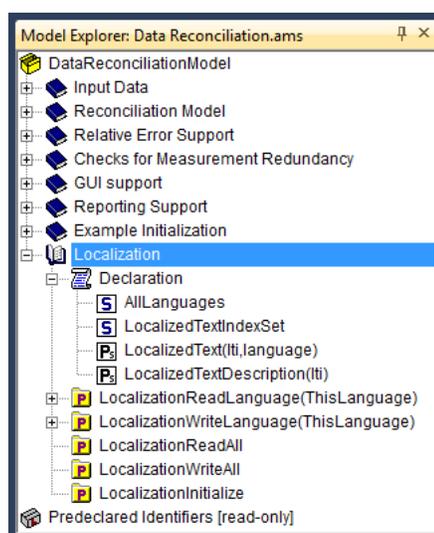


Figure 21.2: Localization section in the model tree

section contained in it declares the default set and string parameters used for storing all localization information.

- The set `AllLanguages` contains the names of all languages to which you want to localize your application. You can add as many languages to its definition as necessary. *However, you should make sure that, at any time, the first element in the set is your development language:* during the conversion process described below, AIMMS will associate all strings in the end-user interface with the first language from the set `AllLanguages`.
- Associated with the set `AllLanguages` is an element parameter `CurrentLanguage`, through which you (or your end-users) can select the language in which all texts in the end-user interface are to be displayed.
- The set `LocalizedTextIndexSet` is a subset of the predefined set `Integers`, and is used to number all strings within your end-user interface that are replaced by AIMMS during the conversion process.
- The string parameter `LocalizedText` contains the actual texts for all string objects in your end-user interface for one or more languages. During the

localization conversion process, AIMMS will fill this parameter with the texts of your development language.

- The string parameter `LocalizedTextDescription` contains a short description of the origin of all converted string objects, and is filled by AIMMS during the localization conversion.

Through the **Tools-Localization-Setup** menu, you can modify the localization parameters which AIMMS will use during any subsequent conversion process. If you choose to select different identifiers, you should make sure that:

Using other localization identifiers

- the identifier selected for the **Localized Text Identifier** is a 2-dimensional string parameter, the identifier selected for the **Current Language Identifier** is a scalar element parameter, and the identifier selected for the **Text Description Identifier** is a 1-dimensional string parameter.
- the second index set of the **Localized Text Identifier** and the range set of the **Current Language Identifier** coincide. AIMMS will interpret the resulting set as the set of all languages.
- the first index set of the **Localized Text Identifier** and the first index set of the **Text Description Identifier** coincide and is a subset of the predefined set `Integers`. AIMMS will use this set to number all string objects during the conversion process.

In addition to the sets and string parameters discussed above, the **Localization** section also contains a number of procedures added for your convenience to perform tasks such as:

Localization procedures

- loading and saving the localized text for a single language,
- loading and saving the localized texts for all languages, and
- to initialize support for a localized end-user interface.

The statements within these procedures refer to the default localization identifiers created by AIMMS. If you have chosen different identifiers, or want to store the localization data in a nondefault manner, you can modify the contents of these procedures at your will. You must be aware, however, that the facilities within AIMMS to view and modify the localized text entries do not use these procedures, and will, therefore, always use the default storage scheme for localized data (explained later in this section).

The localization procedure `LocalizationInitialize` added to the **Localization** section of your model will read the localized text for a single language. If the element parameter `CurrentLanguage` has been set before the call to `LocalizationInitialize`, AIMMS will read the localized strings for the language selected through `CurrentLanguage`. If `CurrentLanguage` has no value, the procedure will read the localized strings for the first language (i.e. your development language).

The initialization procedure

If your model contains the (default) procedure `MainInitialization` (see also Section 4.2), a call to the procedure `LocalizationInitialize` will be added to the end of the body of `MainInitialization` during the first call to the **Tools-Localization-Setup** menu. This makes sure that the localized strings on pages and in end-user menus of a converted end-user interface contain the proper (original or localized) texts when the project is opened.

Added to Main-Initialization

Through the **Tools-Localization-Convert** menu you can instruct AIMMS to replace all static string occurrences in your (end-user and print) pages, templates and end-user menus by references to the localization identifiers selected during the localization setup. During the conversion, AIMMS

Performing the localization conversion

- scans all pages, templates and menus for static strings,
- creates a new localized entry in the **Localized Text Identifier** for each such string, and
- in the interface component where the static string was found, replaces it by the corresponding reference to the **Localized Text Identifier**. If a localization setup is defined per library, AIMMS will use the library-specific **Localized Text Identifier**.

In addition, AIMMS will, for each localized string, create a description in the **Localized Text Description Identifier**, initialized with the name of the page or menu plus the object in which the corresponding string was found. This may help you to link localization texts to specific objects and pages.

String description

During the localization conversion, AIMMS will warn for any duplicate string it encounters. For such duplicate strings, you have the opportunity to create a new entry in the **Localized Text Identifier** or to re-use an existing entry. Re-using existing entries can be convenient for common strings such as “Open” or “Close” that occur on many pages.

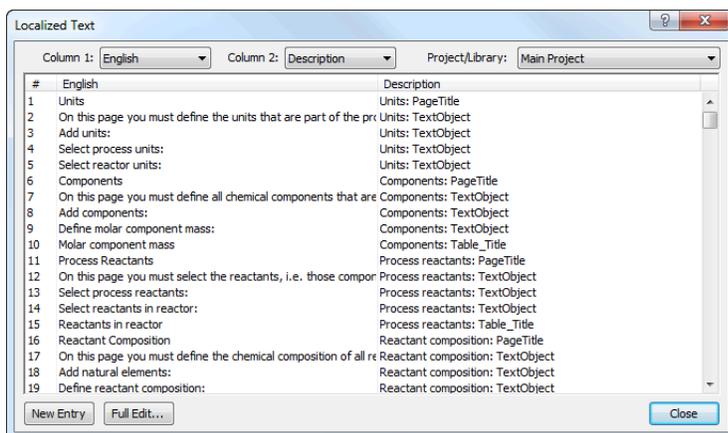
Duplicate occurrences

Once you have performed the localization conversion, you can view all localized strings through the **Tools-Localization-Show Strings** menu, which will open the dialog box illustrated in Figure 21.3. In this dialog box, AIMMS displays a numbered list of all localized strings, along with the description of the origin of each string. The string numbers exactly correspond to the elements of the set `LocalizedTextIndexSet` discussed above.

Editing localized strings

Through the drop down lists at the top of the **Localized Text** dialog box of Figure 21.3, you can select the contents of the first and second string columns, respectively. For each column, you can select whether to display the localized text for any language defined in the set `AllLanguages`, or the description associated with each string. By viewing the localized strings for two languages alongside, you can easily provide the translation of all localized strings for a

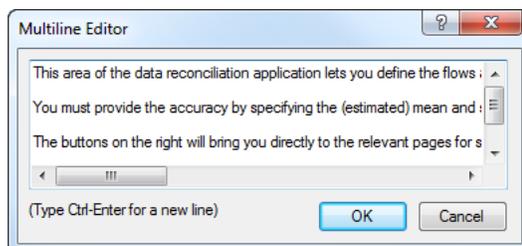
Modifying dialog box contents

Figure 21.3: The **Localized Text** dialog box

new language on the basis of the localized strings of, for example, your development language.

If a localized string consists of multiple lines, you can invoke a multiline editor dialog box to edit that string through the **Full Edit** button at the bottom of the **Localized Text** dialog box, as illustrate Figure 21.4. To invoke this multi-

*Modifying
multiline strings*

Figure 21.4: The **Multiline Editor** dialog box

line editor for the string corresponding to a particular language, click on the localized text for that language, and press the **Full Edit** button. The multiline editor will now be opened with the exact string that you selected in the **Localized Text** dialog box.

If you have added new pages, page objects, or end-user menus to your project after running the localization conversion procedure for the first time, you have two options to localize such new interface components. More specifically, you can

*Localizing new
texts*

- localize every new component separately through the **Localized Text** wizard present at all text properties of the object, or

- run the localization conversion procedure again.

Whenever a string is associated with a property of a page, page object or menu item, the wizard button  of such a property in the **Properties** dialog box provides access to the **Localized Text** wizard, as illustrated in Figure 21.5. Invoking this wizard will open the **Localized Text** dialog box illustrated in

The Localized Text wizard

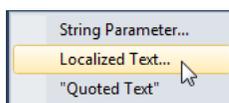


Figure 21.5: The **Localized Text** wizard

Figure 21.3, in which you can either select an existing localized string, or create a new entry through the **New Entry** button. Notice that the **Localized Text** wizard only shows the localization strings for the main or library project you are currently editing, and any of the included library projects which have the localization identifiers in their public interface. After closing the dialog box, AIMMS will add a reference to the localized text identifier in the edit field of the property for which you invoked the wizard, corresponding to the particular string selected in the **Localized Text** dialog box.

If you have added several new interface components without worrying about localization aspects, your safest option is to simply run the localization conversion procedure again. As a result, AIMMS will re-scan all pages, templates and menus for strings that are not yet localized, and add such strings to the list of already localized texts as stored in the localization identifiers associated with your project. Obviously, you still have to manually provide the proper translations to all available languages for all newly added strings.

Performing the conversion procedure again

By default, AIMMS stores the localization data as *project user files* containing standard AIMMS data statements within the project file (see also Section 2.5.1). The localized strings for every language, as well as the string descriptions are stored in separate user project files, as illustrated in Figure 21.6. The read and write statements in the bodies of the localization procedures added to the **Localization** section of your model, assume this structure of project user files for localization support.

Localized text storage

Whenever you use the **Localized Text** dialog box of Figure 21.3, either through the **Tools-Localization-Show Strings** menu or by invoking the **Localized Text** wizard, AIMMS will make sure that the contents of appropriate localization data files are read in before displaying the localization data for a particular language. Likewise, AIMMS will make sure that the contents of the appropriate project user files are updated when you close the **Localized Text** dialog box.

Automatically updated

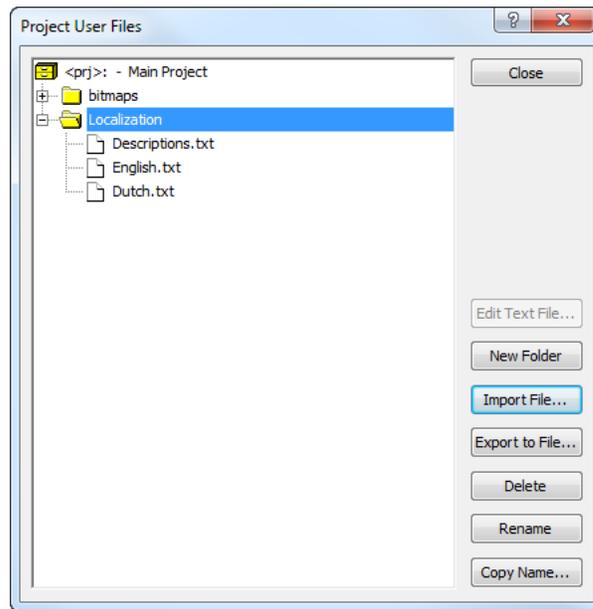


Figure 21.6: Default of localization data as user project files

By using the import and export facilities for project user files (see also Section 2.5.1), you can also edit the data files containing the localized strings outside of AIMMS. This can be a convenient option if you hire an external translator to provide the localized texts for a particular language, who has no access to an AIMMS system. Obviously, you have to make sure that you do not make changes to these files through the **Localized Text** dialog box, while they are exported. In that case, importing that file again will undo any additions or changes made to the current contents of the project user file.

Manual edits

Besides the static strings in the end-user interface of your AIMMS application, the model itself may also contain references to static strings or to sets whose elements are defined within the model itself. Such strings and set elements are left untouched by AIMMS' localization procedure. If your model contains such string or set element references, you still have the task to replace them by references to a number of appropriate localized string and element parameters.

Static strings in the model