
Operation of internationalization

Summary:

This document is dedicated to the internationalization of *Code_Aster*, i.e. the whole of the tools, practices, the organization which makes it possible the code to manage messages and postings in various languages as well as the translation of documentation.

The principal condition to obtain a translation of quality of the messages (when well even it is not automatic but human) is to have comprehensible original messages, written well in French. For this reason one also details the checking made on the original messages.

1 Translation of the messages

1.1 Operation

The assumption of responsibility of the messages in several languages is pressed on the standard tools of `gettext`.

One gives here the broad outlines of the operation of `gettext`. One will refer to the documentation of this product for more precise details.

The error messages are gathered in catalogues (confer [D4.06.01]).

The module `i18n.py` (package `Execution`) is in charge of the choice of the language of posting and "the installation" of the function of conversion of the messages (it is the function "`_`").

The selected language by default is function of the environment of execution: variables of environment `LANG`, `Language`, etc (to refer to the documentation of `gettext` for the set of priorities and the various variables). The same variable is used to determine the manner of displaying characters not-ASCII, accentuated in particular. It is the encoding `utf-8` or `iso-8859-1`.

The user can force the choice of the language in the order `BEGINNING` (confer [U4.11.01]).

It is this module which defines it *field* `gettext` and thus the name of the file in which the translated messages will be sought. One uses `aster_` + the name of the version, is for example: `aster_stable` for the version of exploitation, `aster_testing` for the stabilized version of development.

Tools of `gettext` (`pygettext` in fact) allow to extract the messages from the source files of the code in order to produce a file POT, for example: `aster_unstable.pot`.

For each language, one creates a copy of this file supplemented of the translations of the messages, named files PO, for example: `aster_unstable.en.po`.

These files PO "are compiled" in order to produce the files known as MO which contain the messages, their translations and a table of hashage to reach it. These are the files MO which are used during an execution of *Code_Aster*. They are installed in `$ASTER_ROOT/share/locale/`, in a sub-directory dedicated to each language, that is to say for example: `en/LC_MESSAGES/aster_unstable.mo`.

At ends of tests primarily, one can choose another repertoire by defining the variable of environment `ASTER_LOCALEDIR` instead of `$ASTER_ROOT/share/locale/`.

In the course of execution, when one must display a message, the function "`_`" is called with in argument the chain of the original message (that is which writes in the source code, in the catalogue of messages in general). If this message is present **with the identical one** in the file MO, then the function "`_`" turns over the message such as it was translated (in the mechanism of impression of the messages, this text then is formatted, supplemented variables if necessary before being displayed).

If the file MO is not found or if the message is not found, it is the original message which is displayed some is the selected language (thus in French).

If a message is modified in the source code, even just a character, it is necessary that the files PO and MO are regenerated if not the translation will not be displayed.

1.2 Organization

The files PO cannot be managed in phase with the source code. There is inevitably a shift between the restitution of the French message and the update of the translation (at least as long as one does not require with the developers simultaneously to translate their messages in all the supported languages). *Moreover in the free projects, they are often different teams which manage the translations.*

A deposit of source was created with the address https://bitbucket.org/code_aster/codeaster-i18n.

It makes it possible to diffuse the last versions available of the files POT and PO (for English initially).

Today, the deposit is managed by the person in charge of this functionality. It could tomorrow be transferred to an external team which will want to invest itself there. The contributors can *to clone* this deposit, then to propose to the administrator of the principal deposit to recover and to include their contributions (*sweater request*).

The objective is to propose translations as complete as possible for the versions `stable` and `testing`, in order to provide them and install them in the packages of `Code_Aster`, with each stabilization.

Translation of the version `unstable` is by nature continuously in building site because of great volatility of the messages each week.

2 Checking of the messages

The checking of the messages is carried out by a CAS-test dedicated to that: `supv002`.

The goal is to ensure itself:

- that the messages provided in the catalogues have the good format: they must be in *unicode* to be able to manage characters not-ASCII;
- that they could be formatted correctly, in particular that the variables which they contain have a coherent type;
- how the messages are written in French!

For this last point, one carries out a systematic checking of the text of the messages using the inspector of orthography `aspell`. This one is pressed on its own dictionary to which one adds the jargon suitable for `Code_Aster`. I.e.:

- a dictionary containing the list of all the keywords of the catalogue of orders,
- a dictionary adding a certain number of words in complement of the basic French dictionary (of the proper names like *Newton*, words English but adopted in our jargon like *level-set*, etc).

One will take care to limit to the strict minimum the dictionary staff for `Code_Aster`.

Notice

aspell takes into account only one dictionary staff. During the checking, one concatene automatically our two dictionaries to form one of them.

The dictionaries are arranged in `$ASTER_ROOT/share/codeaster` respectively under the names `code_aster_cata.aspell.per` and `code_aster_dict.aspell.per`. Attention to preserve the correct encoding of these files.

2.1 Dictionary of the keywords of the catalogue

One builds this dictionary in the simplest way which is (one can from time to time update it according to the appearance of new keywords): one takes all the keywords in capital letters `cata.py`.

`aspell` do not accept the “_” in medium of word, nor the words containing the figures. One can produce the dictionary as follows:

```
importation bone
importation Re
catastrophes=open ('cata.py', 'R') .read ()
exp = re.compile ('([A-Z] [A-Z] +)', Re. M)
kw = list (set (exp.findall (catastrophes)))
kw.sort ()
kw.insert (0, 'personal_ws-1.1 Fr 0 utf-8')
open ('dict.aspell.per', 'W') .write (os.linesep.join (kw))
```

3 Translation of documentation

The translation of documentation is made in an automatic way via the Systran software.

A perpetual licence of Systran Undertaken Server was acquired. The software is installed on the waiter lodging various services of the software forging mill (claut681.der.edf.fr). It is version 7.3. A version 7.4 is expected, it should improve returned translation and correct some anomalies (not obstructing the comprehension of the English version).

The scripts, saved in a Mercurial base, ensure the translation of all the documents each night. They are associated with scripts allowing the publication of the documents. The various stages are the following ones (encapsulated in *docaster_master.py*):

- Extraction of all the French documents to the OpenOffice format;
- Translation of the documents: decompression of the odt, sending of the file content.xml to the waiter, recompression of the odt with the translation (*systran_translator.py*) ;
- Conversion of the French and English documents to format pdf;
- Checking of the keys and the titles;
- Setting on line on the www.code-aster.org site.

These stages are ensured for the version of development (*unstable*) and the version of exploitation (*stable*).

English documentation is accessible since the mitre Documentation by using the switch from language. A warning is given concerning nonthe commitment on the result of the translation (*Warning: The translation process used on this website has "Machine Translation". It may undetermined Be and inaccurate in whole gold in share and is provided ace has convenience*). This warning is reproduced on the page of access to the documents and is systematically taken again on each footer.