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A person's hands are shown typing on a laptop keyboard. The image is overlaid with several semi-transparent icons representing business and technology concepts: a lightbulb, a magnifying glass, a bar chart with an upward-trending line, a person icon, three interlocking gears, a computer monitor with gears, and a document with a checkmark.

Localization Process Automation Tool (LPAT)

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Abstract

Localization is the process of taking content, labels, navigation items and other display items in an application and having them appear in another language or locale.

Project managers are spending most of their time on repetitive tasks such as sending and receiving documents, converting file formats, and receiving and transiting specific requirements from clients to translators. And if the overlapped manual parts of the localization process can be replaced with automation by means of technology, it will be another effective solution in computer-aided translation technology.

LPAT does the exact same task of automating the localization process of the software from start to finish.

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Tool Overview

Software Localization (also referred to as i10n) is the process of adapting or translating software to a specific locale language and culture. Effectively localized software allows users to connect with the software in a language and format native to them.

The first step of localization is internationalization (also referred to as i18n). Internationalization is the process of designing a localizable user interface and abstracting all localizable elements (user-visible strings; locale-specific data like date, time, currency formats, etc.) out of the application source code and into resource files that can be made available for translation.

Data is introduced into the resource files by developers. The process of sending the localizable elements to translators and placing the translations back in the respective resource files can be automated using the Localization Process Automation Tool (LPAT).

The typical sequence flow of the internationalization process can be seen in the sequence diagram below:

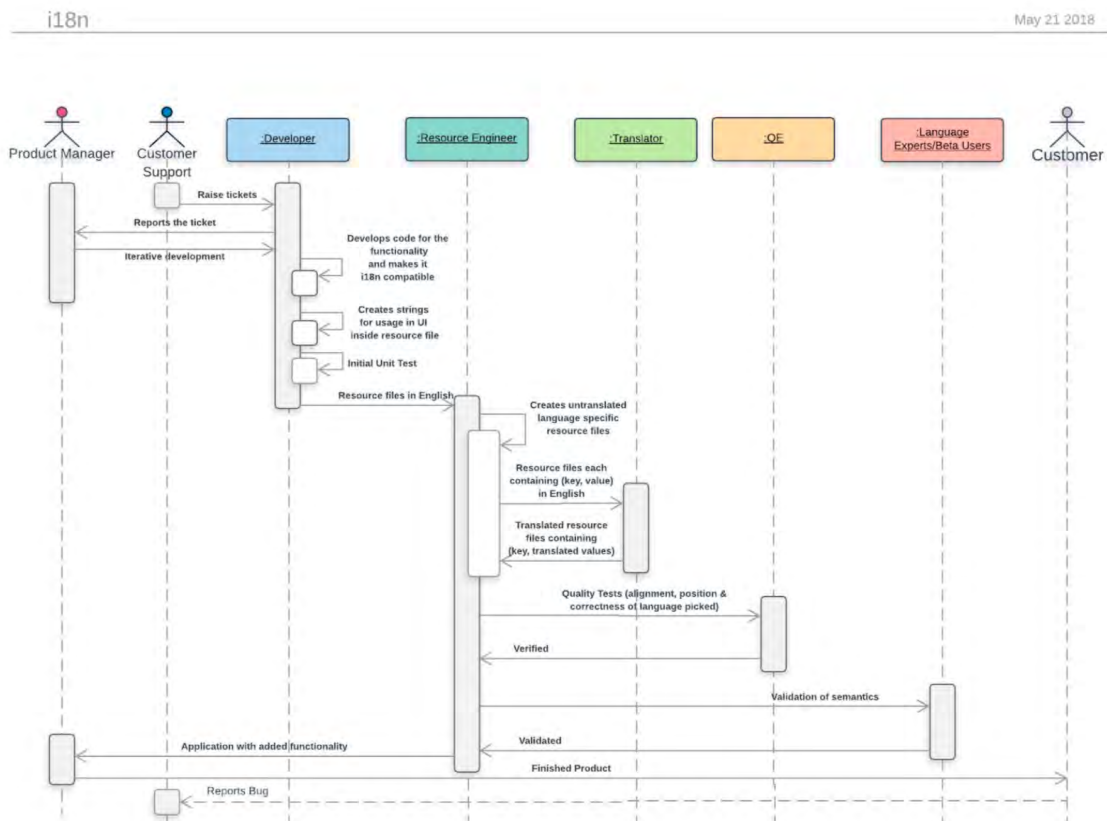


Fig.1 Internationalization Sequence Diagram

LPAT Stages

The Localization Process Automation Tool is divided into two stages:

- Pre-Translation Tool
- Post-Translation Tool

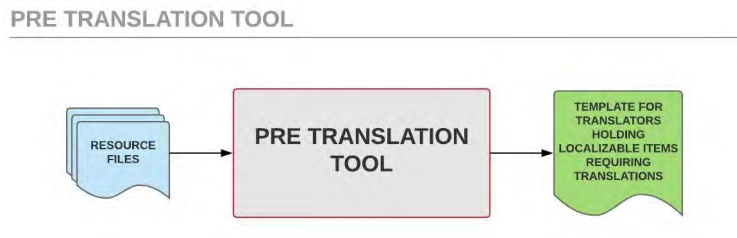


Fig.2 Pre-Translation Tool

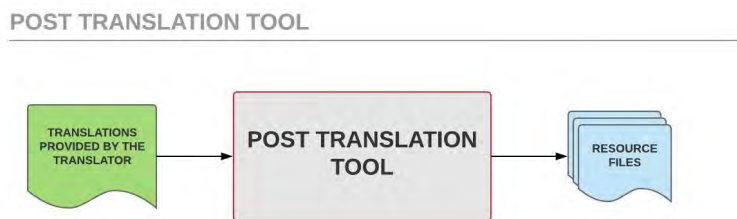


Fig.3 Post-Translation Tool

Changes to the resource files are tracked by the tool during the first stage, and translatable strings are extracted to be sent to the translator. Based on the requirement, the tool can create a translation template for the translator to work with. The tool also searches for existing translations from an internal Translation Memory (TM) so that redundant data is not sent for translation. Translation Memory (TM) is a linguistic database that stores all the translations related to a particular project.

Once the translations are available, stage two is initiated where the strings are searched in the resource files and replaced with their corresponding translations. The Translation Memory is populated with the newly added data or updates existing data automatically for future operational references.

Features

- LPAT can support resource files in various formats.
- Tracks and identifies changes made to resource files.
- Extracts localizable items to be forwarded to the translators.
- Checks Translation Memory to remove strings for which translations are already present locally in order to cut down the cost.
- The translations facilitated by the translators are formatted and placed in the required positions in their respective resource files.
- The translations are also stored in the Translation Memory in order to facilitate future in-house translations.

Architecture

The resource files hold the localizable items in a (key, value) pair. For each localizable item, the key (English key) is the same across all locales, and the value changes as per the language of the resource files.

The Translation Memory can be managed by any database (Elasticsearch, SQL, etc.) The translators are external vendors who facilitate the translations.

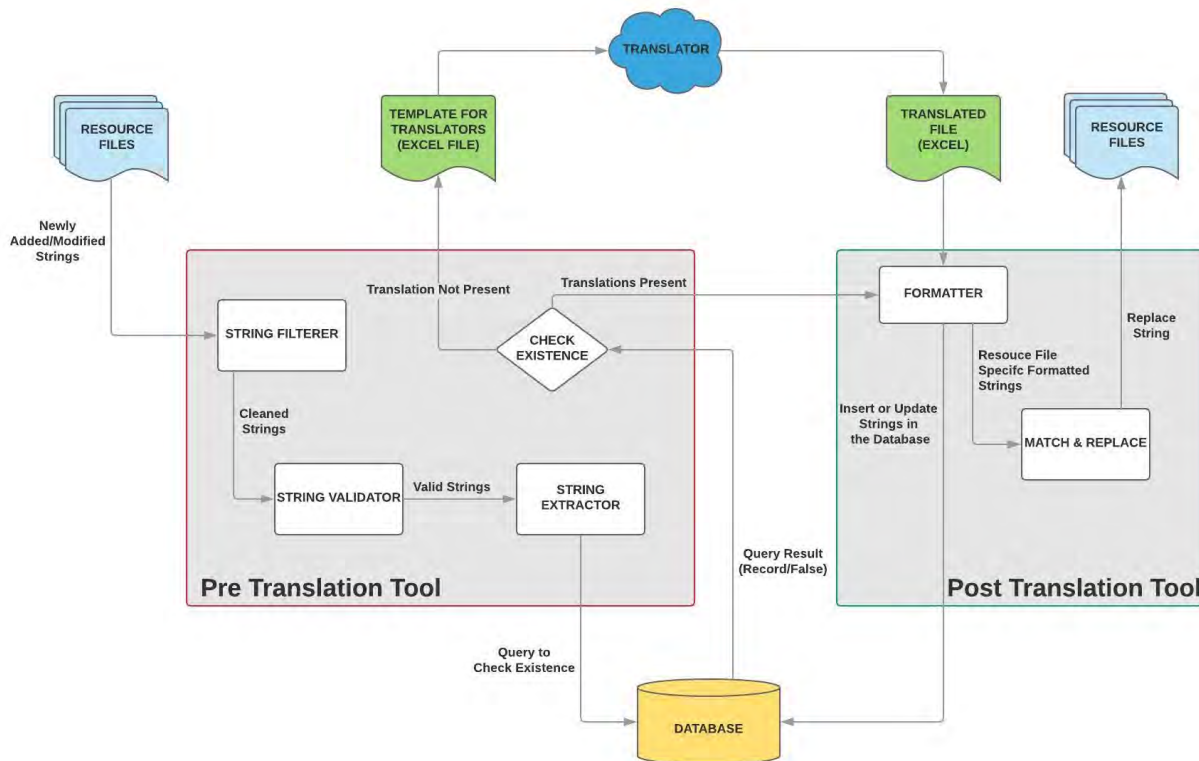


Fig.4 Post-Translation Tool

Pre-Translation Tool

The Pre-Translation Tool is responsible for tracking any additions/modifications of strings made in the resource files. Once the strings are identified and preprocessed, the following operations take place:

- Pre-Translation Tool recognizes the strings that have translations present in Translation Memory.
- For strings with translations already present, the translations will be retrieved and forwarded to Post-Translation Tool for processing.
- Strings that do not have translations in the Translation Memory will be sent to the translator.

Components of Pre-Translation Tool

String Filter

All the changes made to a resource file can be tracked by the filter and sent to the string validator for further processing.

String Validator

The validator identifies and validates the strings that contain (key, value) pairs and separates them from extraneous data.

String Extraction

Raw strings are extracted and formatted to represent (key, value) pairs so the pairs can be sent for translation.

Internal Translation Memory

The Pre-Translation Tool checks if the extracted string has translations present in the Translation Memory. If the translation exists, the Pre-Translation Tool forwards the translation records to the Post-Translation Tool. Untranslated strings are sent for translation.

Post-Translation Tool

The Post-Translation Tool will take translations of the localizable items provided by the translators and perform the following three operations:

- Updating the corresponding resource files by replacing the localizable items (strings) with the translated ones.
- Adding these strings to the Translation Memory (if translations of these strings are not present in the database).
- Updating the translation records in the Translation Memory (if translations of these strings were present in the database but are incorrect or require an update).

Components of Post-Translation Tool

String Formatter

The string formatter will transform the translated strings based on the resource file it belongs to, making it resource file compatible.

Match & Replace

This component finds the English values in the resource files and replaces the English value with the translated value (in different locales).

Insert into Translation Memory

All the newly translated words/strings given by the translators are populated in the Translation Memory in order to facilitate future in-house translations.

Update in Translation Memory

If the words/strings were present in the Translation Memory, it is probably a required amendment. The corresponding record/document in the Translation Memory will be updated with newer translations.

Conclusion

As more and more organizations expand into international markets, localization becomes an increasingly important step. By introducing automation change detection for localization using the Localization Process Automation Tool, one can eliminate error-prone, manual processes and save hours of engineering time.

About the Author

Muhammad Hamzah, Senior Software Engineer, GlobalLogic Bangalore
Hamzah has niche expertise in Artificial Intelligence and Data Science. As a member of the Innovations team of GlobalLogic, he has delivered exceptional POCs and shown strong competency in research & development work.

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