

Today's Talk

Software Localization - Underlying Concepts, Processes, Issues and Challenges

Most of us do know about Software Engineering.

But do we know what is Software Localization?

In the next hour, I will be giving you a walkthrough of Software Localization.

Software Localization

- Some Terminologies
- Definitions
- Scope
- Motivation and Needs
- Key Concepts
- The Process
- Team Composition
- Localization issues
- Localizing Products for a New Language - Linguistic To-Dos
- Localizing Products for a New Language - Technical To-Dos
- Localization Projects by Google
- Localization Projects by Microsoft
- Top Localization Vendors
- Opportunities for Computer Scientists in the Localization World
- Summing Up

Some Terminologies



Definitions

- **Internationalization (i18n)**: Designing a software application in such a way that it can potentially be adapted to various languages and regions without engineering changes.
- **Localization (l10n)**: Adapting internationalized software for a specific region or language by adding locale-specific components and translating it.
- **Globalization** or **Glocalization**: Combines the two concepts – Internationalization and Localization.

Scope

- As per the Localization Industry Standards Association (LISA), software localization essentially needs to address:
 - Linguistic issues(translation of a product's user interface and documentation).
 - Content and cultural issues – design and development of a specific software as per the local norms and preferences.
 - Technical issues – handling bi-directional texts, text rendering, storage and encoding issues etc.

Motivation and Needs

- ~ 196 countries and potentially many languages within a country.
- 60 - 70% of online users are non-English speakers.
- Bridging the Digital Divide caused by the language barrier.
- Expanding the scope and frontier of your businesses globally.
- Large businesses increasingly focusing on enabling multilingual content (Google Translate now in 102 languages).



Question about Software Localization

So is it just translating the Software User Interface?

Of course not. It has got to do much more than that.

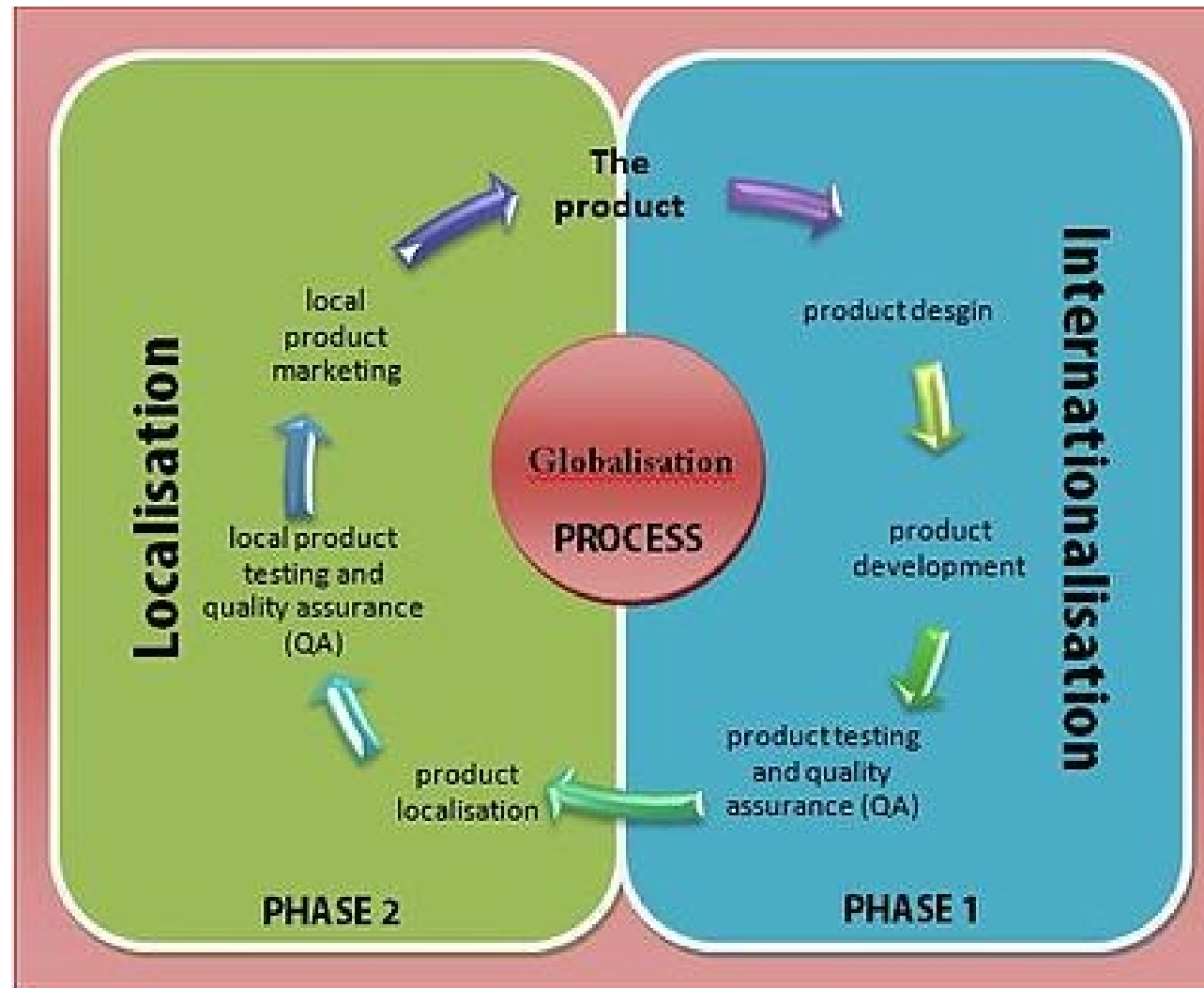
Key Concepts

- Standardization (e.g., standard glossary, standard keyboard layout, standard collation sequence order for sorting and data processing etc.)
- Character sets and encodings
- SingleByte and MultiByte Encodings
- Different Encoding Systems
- Encodings and Localization
- Fonts and Output Methods

Key Concepts...

- Characters and Glyphs (Graphical Representation of Characters)
- Fonts
- Input Methods → Character Set → Input Scheme → Keyboard Layout
- Output Methods – General Procedures for Displaying text on Output Devices
- Locale – date, time, currency and other information specific to a language

The Process



The Internationalization and the Localization Process

Source:

Team Composition

- Translators
- Reviewers
- Localizers/Language Engineers
- Testing and Quality Assurance Team
- Language Product Management Team
- Product Marketing Team

Localization Issues

- Time and Date Formatting
 - 02/03/04 ??
 - 3 February 2004
 - 2 March 2004
 - 4 March 2002
- International Gregorian Calendar Standard
 - YYYY-MM-DD
- International Standard for Time Notation
 - hh:mm:ss

Localization Issues...

- Measurements
 - Temperature in degree Celsius or Fahrenheit
- Address Formats
 - In China, for example,
 - Country
 - Province City
 - Address
 - Last Name First Name Honorific

Localization Issues...

- Numeric formats
 - Whether a comma, period or blank space is used to separate thousands and higher numbers and whether a decimal or a comma is used to separate the decimal part of the number.
- Language
 - Translation ratio of words and sentences not one-to-one.
 - English-to-French: Length increases by 15 to 20%.
 - English to Nepali/Hindi: Length increases by up to 80%.
 - Menus, boxes, logos and graphics containing embedded words should be self-sizing.
 - Some technology terms might not exist in some languages.
 - Punctuation marks
 - A question mark in English versus a mark like an English semicolon in Greek at the end of interrogatory sentences.

Localization Issues...

- Color

- In western countries:

- Red – alarm, White – pure, Black – somber, Green – growth or money.

- In Asia:

- Red – joy, White – mourning, Black – lurky color.

- In Arab countries:

- Green is a holy color.

Localization - Costs

- eTranslate, a web based service bureau charges US\$50 per page for European languages and US\$60 per page for Asian languages for translation of content only.
- Microsoft spends more than \$300 million per year on localization of their products into 46 languages.
- Estimates to fully localize a software product for one additional language - \$50,000 to \$100,000 (Berlitz Translation Services), \$300,000 (Microsoft).
- Localizing a new web site adds 10 to 60% of the original development cost.
- Internet sites typically change twice a year, so localized web sites also have significant, ongoing maintenance costs.

Localizing Products for a New Language – Linguistic To-Dos

- Glossary of terms
 - Standards
 - Adequacy
 - Customization
- Translation guidelines
 - Translation versus Transliteration versus Transcreation
 - When to leave as it is in English
 - Consistent versus contextual translation
- Spelling variations

Localizing Products for a New Language – Linguistic Issues To-DoS...

- Word order and sentence structure
- Character limits and space constraints
- Abbreviations
- Issues with hotkeys
- Issues with honorifics

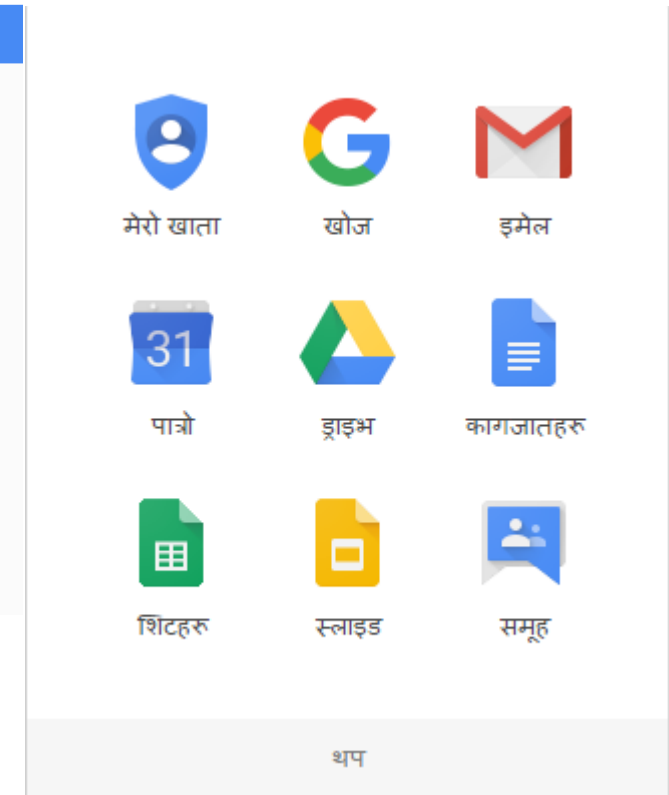
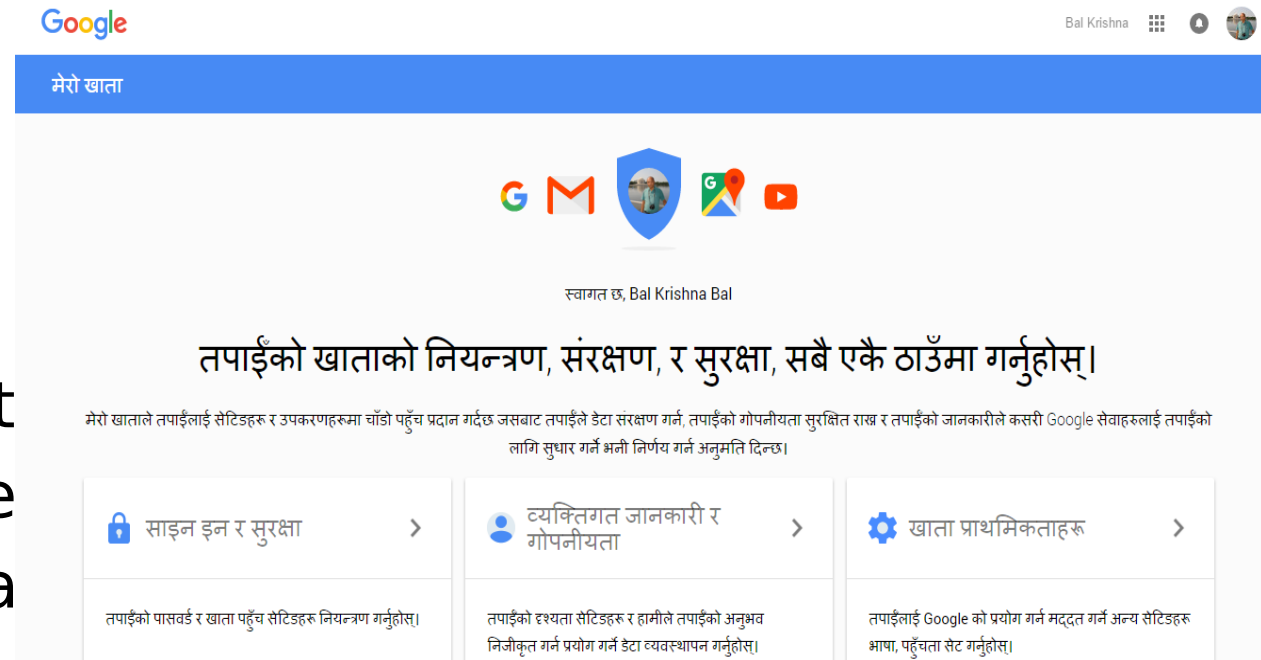
Localizing Products for a New Language – Technical To-Dos

- Choosing a suitable distribution to localize.
- Designing keyboard layouts.
- Developing fonts for your language.
- Text rendering issues in across machines platforms.
- Development of locales for your language.
- Maintaining translation versions and bug fixes.

Localization Projects by Google

- Google Products (> 80 languages)

- Gmail
- Search
- Drive
- Maps
- Account
- YouTube
- Calenda



Localization Projects by Microsoft

- Windows Operating System
- Office Applications
- Bing (Provides Translation for 52 languages)

Top Localization Vendors

- WeLocalize, <http://welocalize.com>
- Moravia, <http://moravia.com>
- SDL, <http://sdl.com>
- LionBridge, <http://lionbridge.com>
- The BigWord, <http://thebigword.com>
- VistaTEC, <http://vistatec.ie>
- Translated.net, <http://translated.net>

Opportunities for Computer Scientists in Software Localization

- Localization Engineer
- Quality Assurance Engineer
- Build Engineer
- Web Developer
- Software Engineer
- Data Scientist/Machine Learning Engineer
- Software Design Engineer
- Software Test Engineer
- Systems Analyst

Summing up

- Software Localization – an interesting and challenging endeavor.
- Requires a collaborative effort between translators/linguists, language specialists/experts, language engineers, testers, language product managers, marketing specialists and managers etc.
- Despite a costly endeavor, it is being undertaken by software giants like Google and Microsoft.
- A means that not only help bridge the digital divide caused by the language barrier but also helps expand the scope and frontier of one's business.

Queries??
Thank You!!!