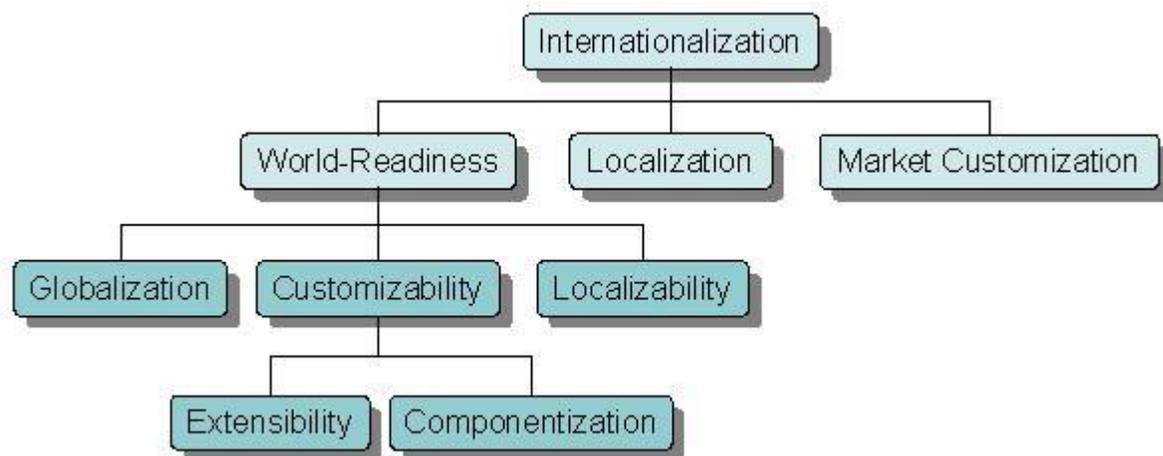


# Understanding Internationalization

By Russ Rolfe, Microsoft, Corp.

Developing internationalized products is a continuous balancing act. Developers and their managers often grossly underestimate the level of effort and attention to detail required to create either a world-ready, single-binary application ready for use in many different markets, or high-quality, foreign-language editions of a product. If you are a developer or designer, make sure your management understands what is involved. Familiarity with the kinds of problems that arise will help you make decisions at the beginning of your product cycle, saving you time and money-not to mention grief.

The process of creating internationalized software has many facets (see Figure below):



- **World-Readiness** – The attribute of a properly globalized, customizable, and localizable product
  - **Globalization** – The design and development of software for the input, display, and output of a defined set of supported language scripts and data relating to specific locales and cultures.
  - **Customizability** – The design and development of software that is componentized and extensible to allow for replacement, addition and/or subtraction of features necessary for a given market.
    - **Extensibility** - The ability to add new scenarios to the user experience without altering the core code
    - **Componentization** - The ability to add or change elements in the user experience without altering the core code
  - **Localizability** – The process of developing applications and content that can be localized without any changes to the source code.
- **Localization** – Translation or adaptation of "localizable resources" to a given target language
- **Market customization** - Changing the user experience – both functionality & content - to better suit different markets (not limited to localizable resources)

To better illustrate these concepts, let's look at how they might apply to Microsoft Money:

- The English Money user wants to be able to enter his name in a different script (for example, Russian) and display dates as "day-month-year" instead of "month-day-year". The ability to be able to do this is accomplished through **Globalization**.
- When Money is eventually translated into several languages; it should be fully localizable to keep localization costs down (e.g. removing hardcoded strings, storing localizable text in separate resources). This is **Localizability**.
- Money's menus, dialogs, help and error messages are localized into Japanese. This is **Localization**.
- **Customizability**
  - Microsoft wants to market Money in the UK where the accounting rules are different than the ones in US. The ability of replacing US accounting rules with UK accounting rules is referred to by **Componentization**.
  - Microsoft wants to market Money in French Canada where beside the Federal tax, a provincial tax system also applies. The ability of adding new taxation laws to the product by a user or third party is referred to by **Extensibility**
- The actual fact of adding UK specific accounting rules or French-Canadian taxation rules to the product is **Market Customization**