



What's Inside Your I18N Toolbox?

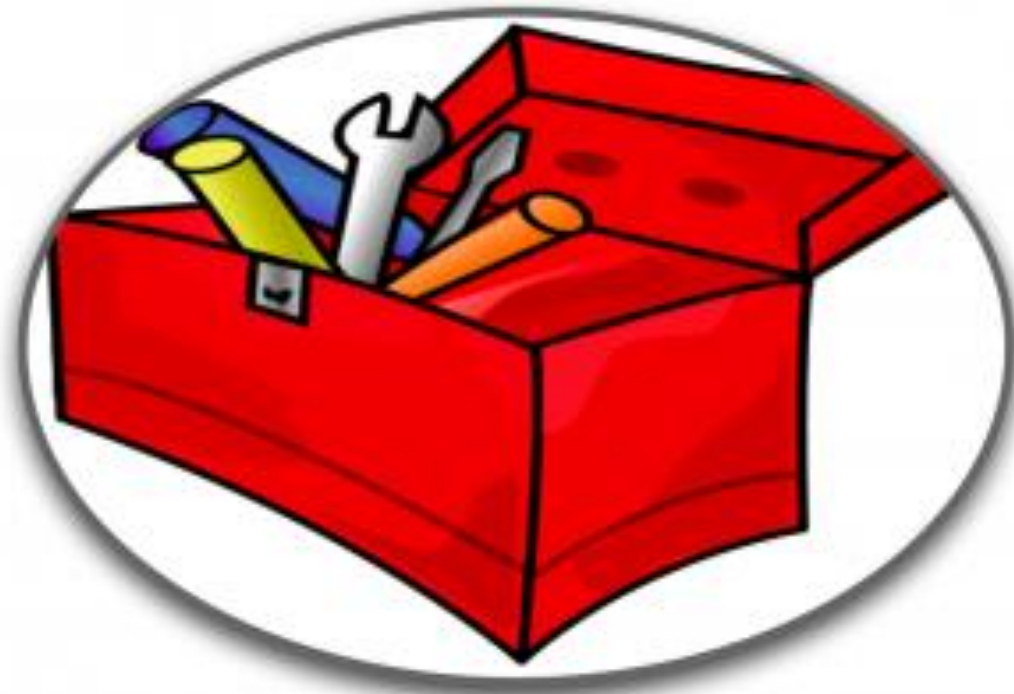
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What Should Be In Your I18N Toolbox? And Why?



Agenda

Tools

- Scanning Tools
- Automation Tools
- Parsing and Data Transformation Tools
- Carefully Designed Test Data and Test Scripts
- Various Language Versions of OS / Browsers

Processes

- I18N First, L10N second
- Pseudo-Localization

Libraries and Reference Materials

- Buy vs Build
- Reference Materials – Some of our Favorites

Tools – Scan for Everything

Scan source code for i18n Issues:

| | A | B | C | D | E |
|---|-----------|------|----------------------|--|--|
| | File name | Line | Error type | Issue | Description |
| 1 | ExtUI.cpp | 537 | HardCodedString | MessageBox("Current settings are invalid."); | Localizable strings should be in resource files. |
| 2 | ExtUI.cpp | 538 | HardCodedString | MessageBox("Connection Settings"); | Localizable strings should be in resource files. |
| 3 | cihvs.cpp | 362 | AnsiCRunTimeFunction | strlen | Avoid strxxx(). Alternatives: _tcslen, wcslen |
| 4 | cihvs.cpp | 60 | AnsiCRunTimeFunction | strlen | Avoid strxxx(). Alternatives: _tcslen, wcslen |

Spelling checkers, terminology checkers, and content style guidelines:

| Word | Count | Suggestion | Context |
|----------|-------|------------|--|
| begining | 1 | beginning | Select 1 to enable a question window at the begining of the install process |

→ avoid_please

Please wait while the download is initialized.

Tools – Automation

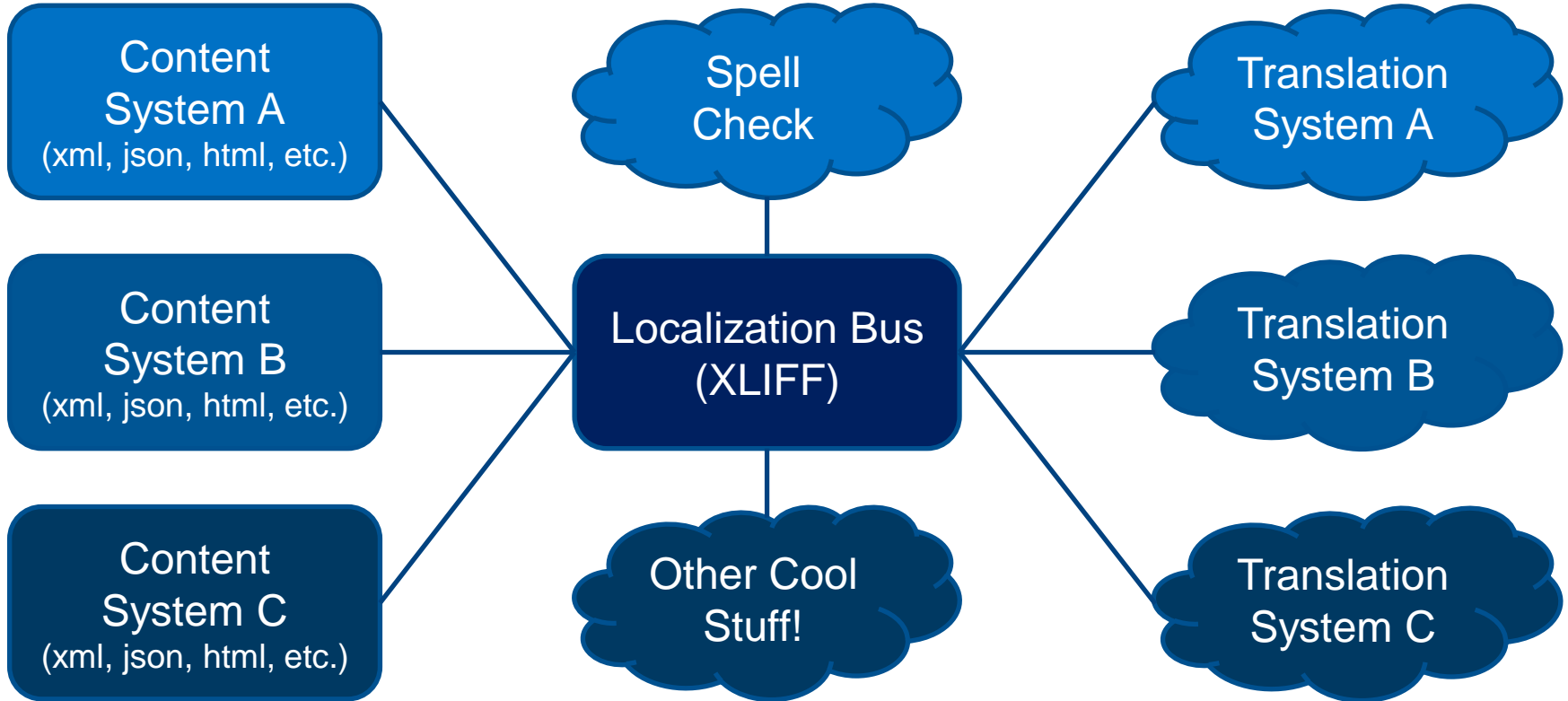
Automate Everything

- Agile Development requires a high degree of automation (esp. localization)
- Continuous Builds, Integration, Delivery: DevOps
- Capture Screenshots for both linguistic review and content delivery
- Test Automation – Automate Pseudo-Localized or non-English software

Your Mileage May Vary

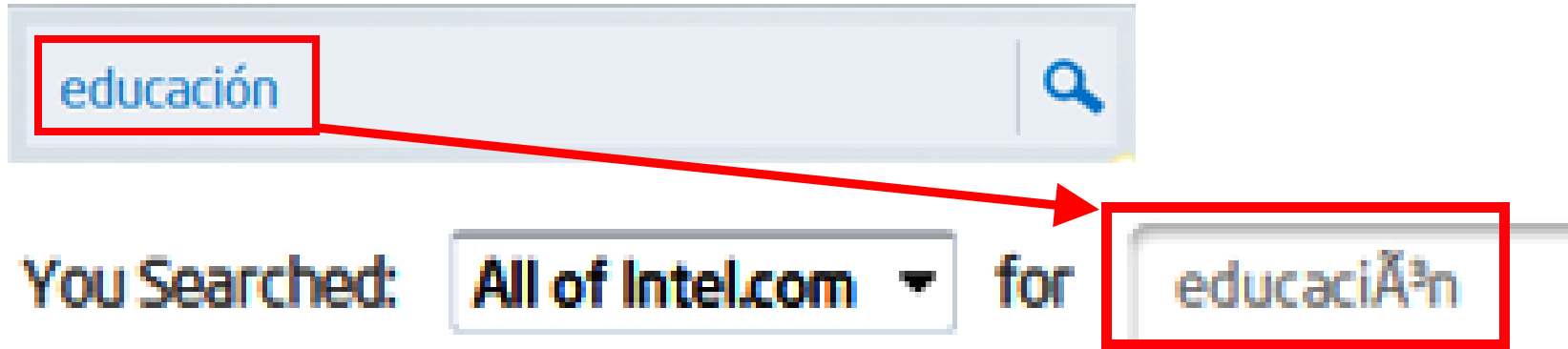
- ROI is better for larger and longer-lived software
- Not so much ROI for a single dialog, or throwaway software

Tools – Parsing, Extraction, Transformation Tools



Tools – Test Data / Test Scripts

Begin testing with non-English data, because this sucks:



Find the dirtiest, nastiest data because that's real life. Find the longest names, addresses, phone numbers, URL's, mix up languages and scripts.

Tools – World-Ready OS, Frameworks, Browsers

The World Changes Really FAST:

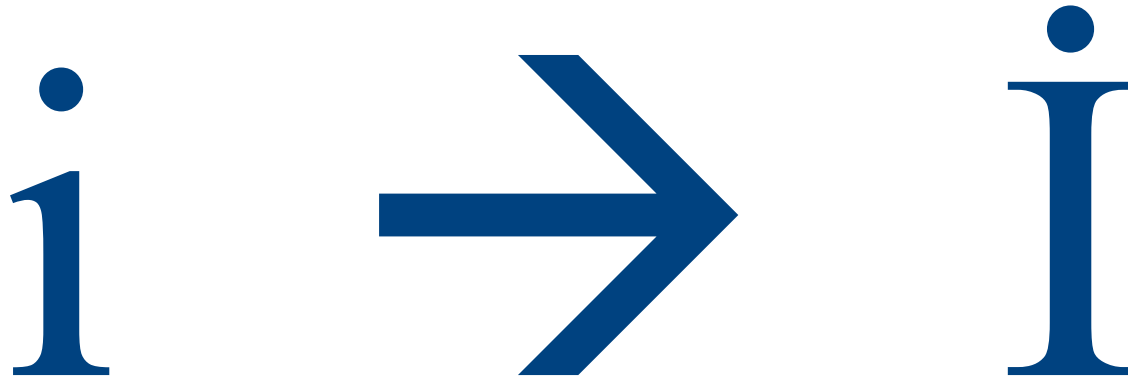
- Many laws and cultural norms change every year
 - Maps, currency symbols, time zones, dates, preferences, slang, etc.
 - Demographics of Social Media networks
- Technical changes
 - Example: Traditional Chinese Windows language tags:
 - First (CHT), then (zh-TW), then (zh-HK)
 - Example: Full-width colon and comma display issue on Windows 10

若系統在安裝程序期間需要更新韌體，您同意嗎？

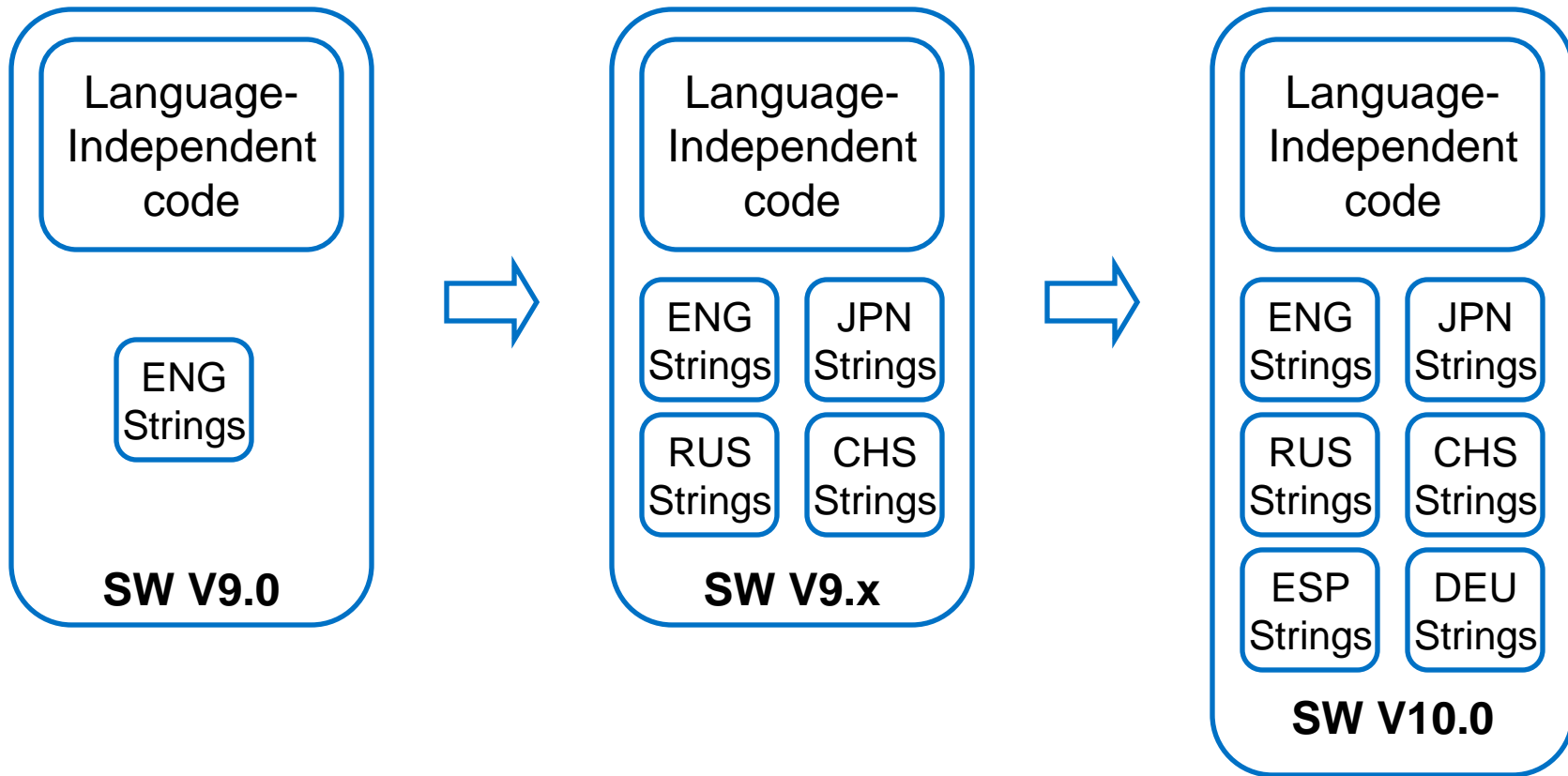
- 同意。若有需要請更新攝影機韌體。
- 不同意。請勿更新攝影機韌體。

Tools – World-Ready OS, Frameworks, Browsers

ASCII content on a Turkish system can break installs and logins, and other stuff:



Processes – I18N First, L10N Second



Processes – [Pséèèúüùdóöò-Lóöòçáääàlíiizáääàtíiíóöòñ]

- «Frý lógíñ àgàíñ Pàđđíñg Pàđđ»
«Sèlèçt thís óptíóñ tó lóg *óf* àñđ lóg bàçk íñ àgàíñ Pàđđíñg Pàđđ»
- «Sťàý lóggèđ íñ búç swítçh tó *óf*líñè móđè Pàđđíñg P:»
«Sèlèçt thís óptíóñ tó rêmàíñ lóggèđ íñ búç swítçh tó *óf*líñè çóññèçtíóñ móđè Pàđđíñg Pàđđíñg Pàđđ»

Cancel

Libraries – Are Awesome!

Strategy: (1) Buy if product meets 80% of requirements (2) Reuse (3) Build

- DIY if functionality doesn't exist yet
- DIY if you can't buy the functionality
- DIY if the functionality is your business core competency



**Avoid
Do-It-Yourself
Failure!**

Reference Materials – Some of Our Favorites

- [Unicode FAQ](#)
- [CLDR – Unicode Common Locale Data Repository](#)
- [ICU – International Components for Unicode](#)
- [Collation Algorithm \(Unicode® Technical Standard #10\)](#)
- [BiDi Algorithm \(Unicode® Standard Annex #9\)](#)
- [Unicode Security Considerations \(Unicode® Technical Report #36\)](#)
- [Plural Forms](#) - CLDR
- [I18nguy: Character Sets And Code Pages At The Push Of A Button](#)
- [Sorting It All Out](#) – Michael Kaplan’s Blog
- [UniView](#) – by Richard Ishida
- [w3c developer tools](#)

Always Handy: Duct Tape and Crazy Glue

At the end of the day, you need good people to keep everything together

- Promote the right technical behaviors
 - Run code scans to identify large number of issues efficiently
 - Make pseudo-localization part of default build and test process
 - First use non-English test data
- Keep Learning, Influence and Train
 - Grow an enthusiastic and passionate core globalization team
 - Collect, organize, and share knowledge during the development process

THANK YOU

Any Questions?