



# PROJECT ]open[

Multilingual Software Architecture

2005-11-06

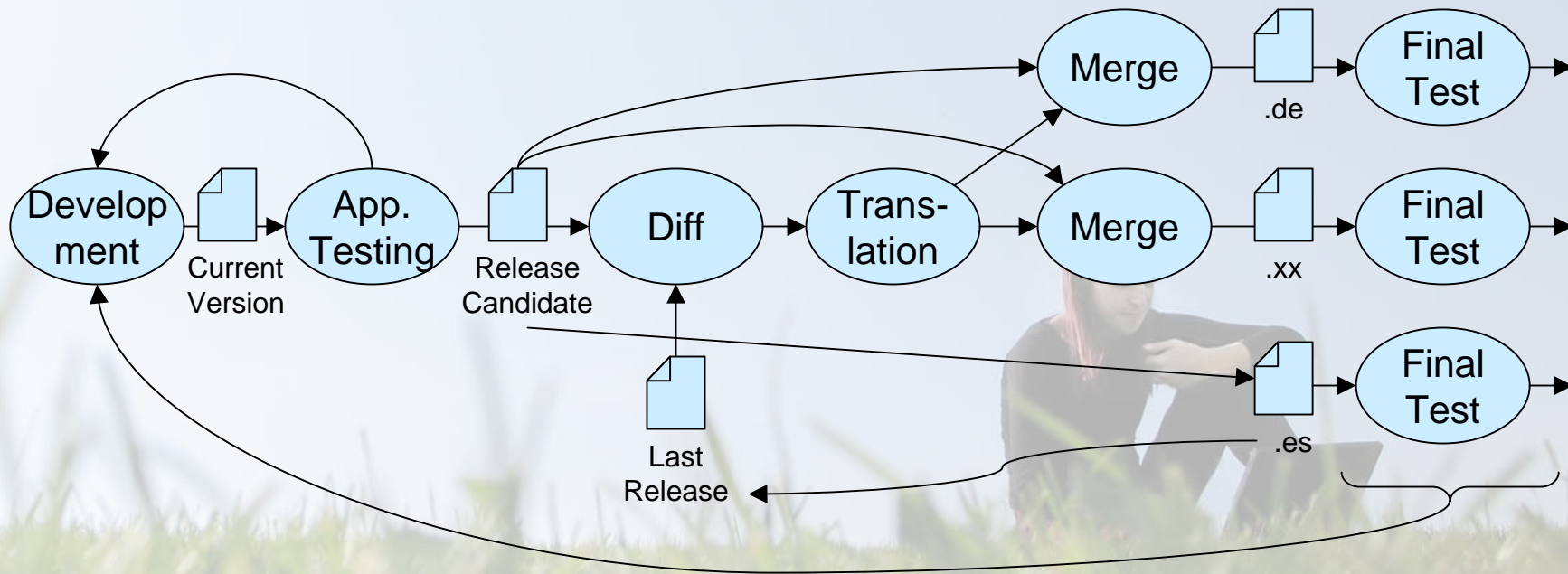
[frank.bergmann@project-open.com](mailto:frank.bergmann@project-open.com)

- Multilingual Software Development
  - M10I Dev. Overview
  - Development
  - Diff
  - Merge
  - Testing
  - Critical Points
  - Automatization
  - Communication
  - Testing

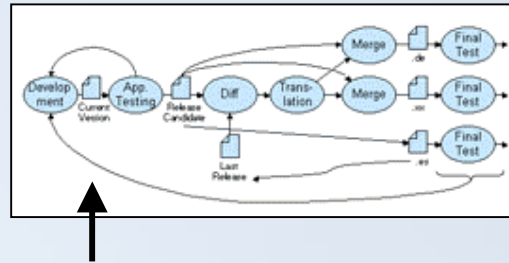




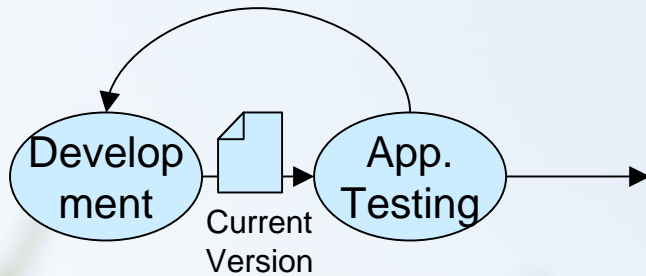
# M12I Software Development



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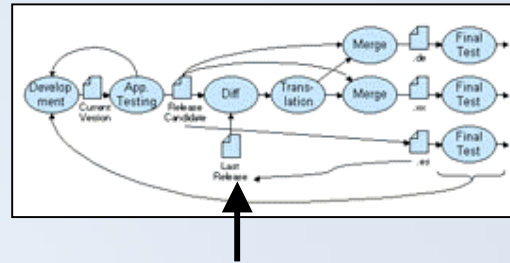
Development



Development of new versions

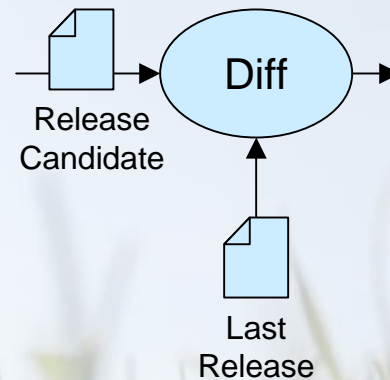
- Precautions with text field sizes
- Country specific functionality (Accounting, ...)

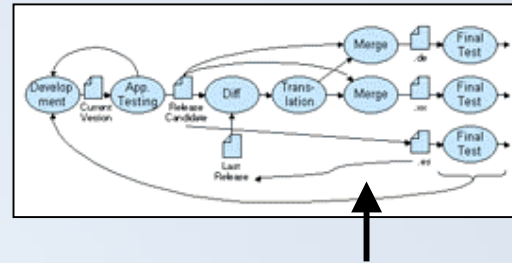




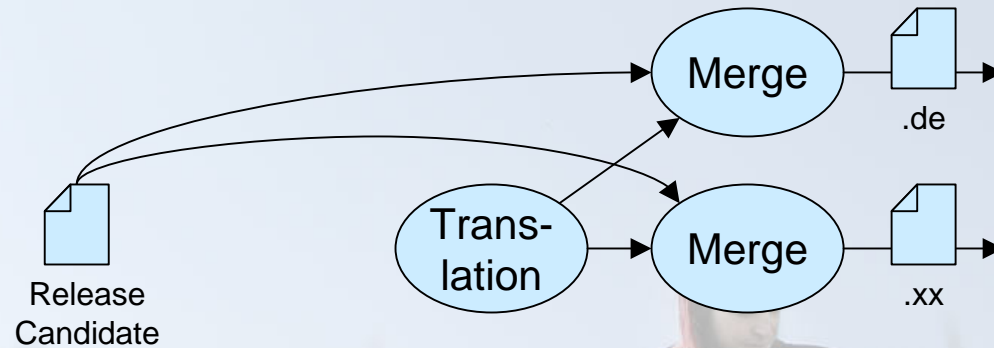
Identification of changed translatable items

- Automatic
- Presentation towards the translators in a suitable format (RTF or DOC)





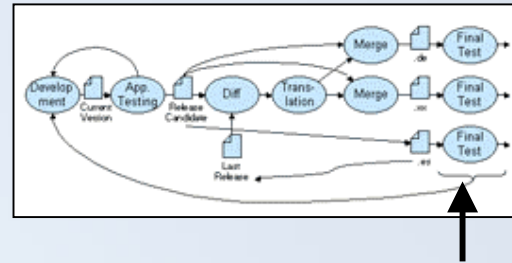
Merge



## Integrate diff into the version tree

- Automatic
- Include sanity checks
- Handle translation errors (broken tags, ...)

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Testing

## Linguistic

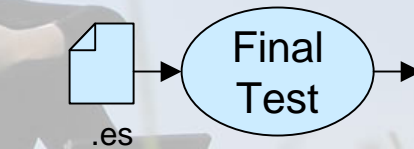
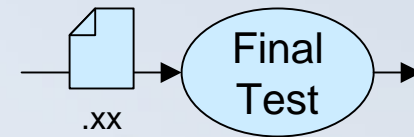
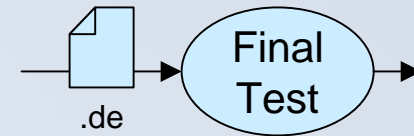
- Punctuation rules
- Display and Printing

## Cosmetic

- Sizes of fields, menus and printouts
- Menu- & hot keys uniqueness
- Test with several screen resolutions

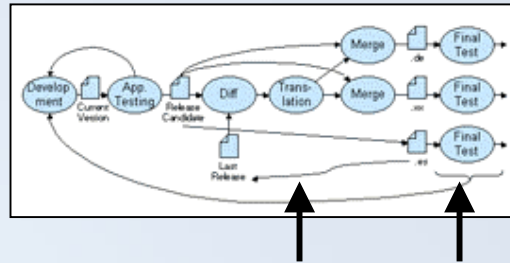
## Functionality

- Problems introduced during the translation process
- Database and document interoperability
- HTML links to localized contents

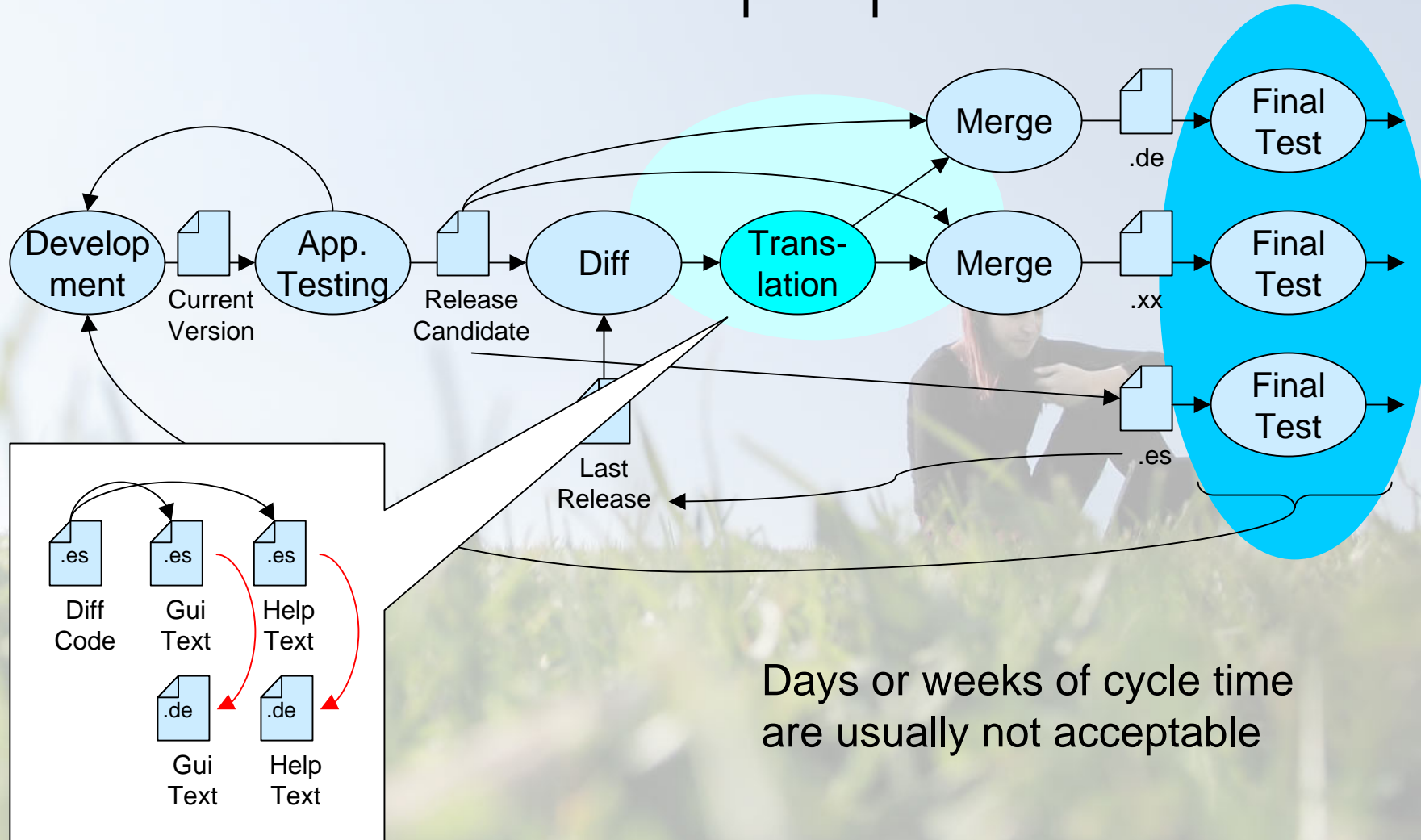




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## Critical Points

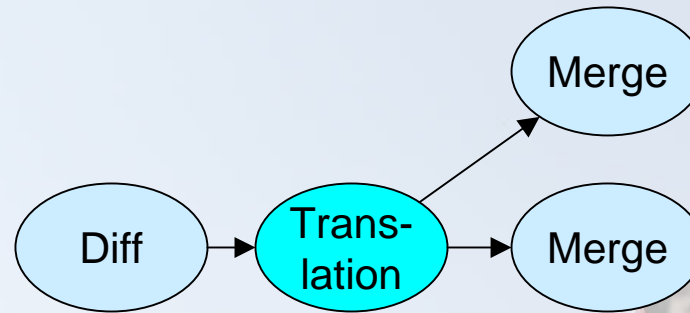
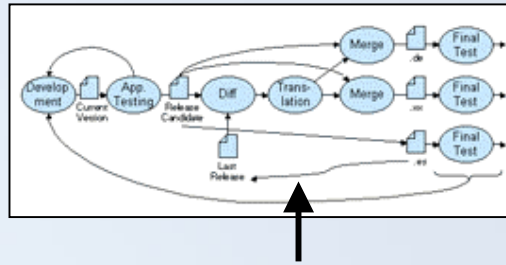


Days or weeks of cycle time  
are usually not acceptable

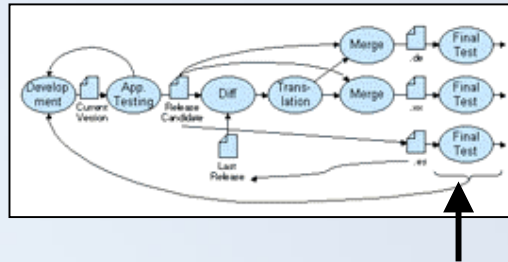


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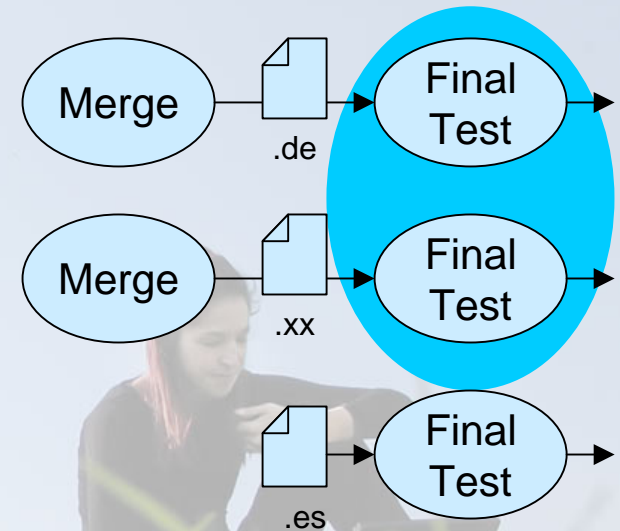
## Communication



- Manual Email communication for small volume
- Translation Workflow for more complex projects



- Establish a testing team
  - Subcontractors
  - Distributors
- Prepare instructions for the testers (test scripts)
- Setup and maintain testing environment (OS version, Printers, Network, etc.)
- Email communication by default
- More sophisticated solutions necessary? => Translation PM



- Localization Test
  - Linguistic
  - Cosmetic
- Functionality Test

- GUI String
- Error Messages
- Constants in the database
- Number & Currency
- Time, Date & Timezone
- Hot Keys
- Sort order of lists
- GIF/JPEG Images that include text
- Paper Sizes
- Tax, Accounting Frames
- Names (1st+2nd, 1st+2nd+3rd, 2nd+1st, ...)
- ...



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L10n  
Architecture

- System architecture:
  - Resource File Format:
  - Translation Context:
  - Translation Lookup:
  - Fallback:
  - Templates:
  - Extracting:
  - Merging:
  - "Diff"-ing:
  - Ref: <http://www.microsoft.com/globaldev/handson/dev/muiapp.mspx>
- Win32
  - Proprietary
  - -
  - Res. files compiled
  - -
  - -
  - - (manually)
  - - (manually)
  - -



- System architecture:
  - Resource File Format:
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  - Extracting:
  - Merging:
  - "Diff"-ing:
  - Ref: [http://msdn2.microsoft.com/en-us/library/1021kkz0\(en-US,VS.80\).aspx](http://msdn2.microsoft.com/en-us/library/1021kkz0(en-US,VS.80).aspx)
- .Net
  - Proprietary
  - -
  - Compiled
  - ll\_cc -> ll -> default
  - -
  - - (manually)
  - - (manually)
  - -



- System architecture:
  - Resource File Format:
  - Translation Context:
  - Translation Lookup:
  - Fallback:
  - Templates:
  - Extracting:
  - Merging:
  - "Diff"-ing:
  - Ref: <http://www.gnu.org/software/gettext/manual/gettext.html>
- C or C++ programs
  - .po
  - -
  - Res. files compiled
  - -
  - -
  - xgettext
  - Static Linker
  - -



- System architecture:
- Resource File Format:
- Translation Context:
- Translation Lookup:
- Fallback:
- Templates:
- Extracting:
- Merging:
- "Diff"-ing:
- Ref: <http://openacs.org/doc/openacs-5-1/i18n.html>
- TCL / OpenACS
- XML, Database
- In-GUI editing
- Cached DB access
- ll\_cc -> ll -> english
- .ADP page templates
- Tool -> DB
- Static Linker
- -

- System architecture:
  - Resource File Format:
  - Translation Context:
  - Translation Lookup:
  - Fallback:
  - Templates:
  - Extracting:
  - Merging:
  - "Diff"-ing:
  - Ref: <http://www.project-open.com/whitepapers/localization/>
- Java
  - Proprietary (.CSV)
  - -
  - .CVS load at startup
  - ll\_cc -> ll -> english
  - -
  - - (manually)
  - - (compiled)
  - -

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End

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[www.project-open.com](http://www.project-open.com)