

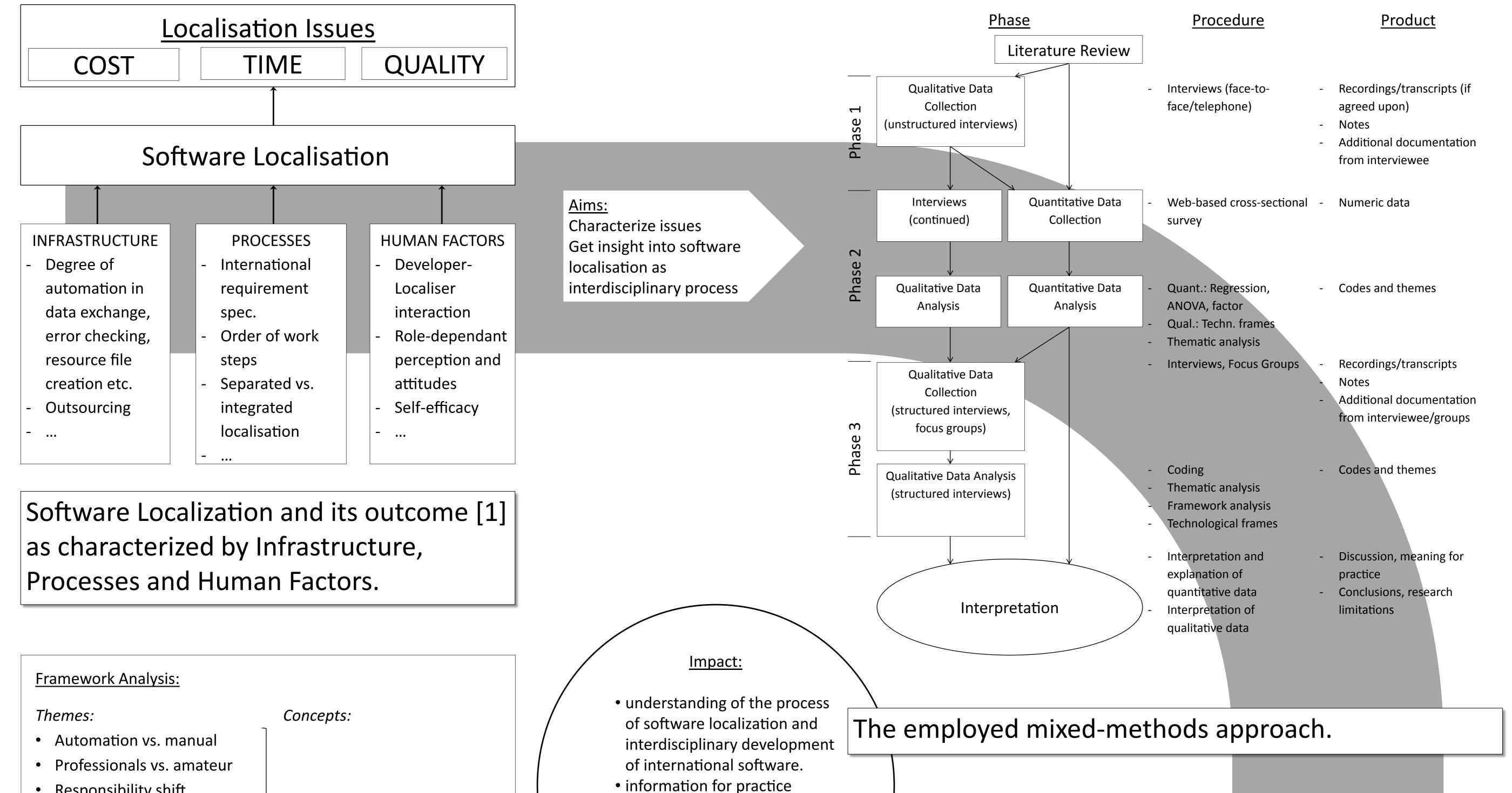
# **Empirically Researching Development** of International Software

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Software localization is an important process for international acceptance of software products. This empirical software engineering research examines the interplay of software development and software localization by gathering and analyzing qualitative and quantitative data from professionals to characterize issues and inform practice.



- Responsibility shift
- Localisation forced into development framework
- Considering localisation in purely technical terms
- Missing knowledge
- Communication breakdowns

**Technological Frames:** 

Developers

#### Goals:

- Feature-rich software Problems:
- Product complexity
- Loss of control Interpretative elements:
- Introduce abstraction Practical elements:
- Little disruption of development work

Integrated vs. afterthought

Competence mismatch

Localisers

- Optimal cultural experience
- Missing influence
- Distance to project
- Information gain
- Eliminate redundancy
- Tie-in with localisation work

### communication breakdown example:

SW Dev.:	I need a translation for "year".
Translator:	"Year" in Spanish is "Año".
SW Dev.:	The 15-element display can't display a tilde (~).
- I.	

about involved roles, eg. developers, project managers and translators to facilitate development of international software and mitigate localization issues.

#### Qualitative data:

- Interviews Type A, unstructured (exploratory)
  - Based on literature review
  - Ca. 30-45 minutes (sometimes ~90 minutes)
  - n = 15
- Interviews Type B, semi-structured
  - Based on interviews type A, survey
  - Ca. 30-60 minutes —
  - n = 20+

#### Quantitative data:

- Online survey
- Ca. 15 20 minutes
- Piloted (n = 10), target n = 120 200 +
- 36 questions, 74 items
- Five sections
  - 5 items, biographical data \_\_\_\_
  - 29 items, Attitude towards localisation, Self-efficacy in localisation [2]
  - 20 items, Cultural Intelligence Survey (CQS) [3] —

Translator: For gods sake, display the tilde!

Preliminary results from framework analysis, technological frames analysis, and an example of interdisciplinary communication breakdown.

- 13 items, about last international software project
- 6 items, additional biographical data

The mixed methods approach uses qualitative data from interviews and quantitative data from surveys.

## **References:**

[1] L. Ryan, Anastasiou, Cleary, Using Content Development Guidelines to Reduce the Cost of Localising Digital Content, Loc. Focus, 8, 2009. [2] Kinzie, M. A. B. Delcourt, and S. M. Powers, Computer technologies: Attitudes and self-efficacy across undergraduate disciplines, Research in Higher Education, 35, 1994.

Analysis:

Statistics

Thematic analysis

Framework analysis

Technological frames

[3] Ang et al., Cultural Intelligence: Its Measurement and Effects on Cultural Judgment and Decision Making, Cultural Adaptation and Task Performance, Management and Organization Review, 3, 2007.