Usability and ergonomics interacting with translation technology: a corpus-based software case study

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Summary

- The context;
- Problem;
- Objective;
- Method;
- Results;
- Conclusions & expectations.

The context

- This presentation is part of my Master's research carried out at UFSC with COPA-TRAD Corpus Analysis System.

- This software was developed at Universidade Federal de Santa Catarina (UFSC).

Usability & Ergonomics

- **Usability** is the capacity in which a product can be used by specific users to achieve specific goals with effectiveness, efficiency and satisfaction in a specific context of use (ISO 9241-11, 2002, p.3).

- **Ergonomics** is the study of how humans interact with manmade objects. The goal of ergonomics is to ensure that systems and devices are well-suited to user's physical needs. In that way, Ergonomics provides usability (CYBIS, 2010).

Motivation

The continuous development of translation technologies has fundamentally changed the way users of this area interact with computers.

The need for understanding and measuring how a vast number of resources and software applications can impact users had led to recommendations related to human-computer interaction (HCI) presented as guidelines and best practices, such as the works of Massey & Ehrensberger-Dow (2011), O'Brien (2012), Ehrensberger-Dow & Massey (2014a, 2014b), Suojanen *et al.* (2015) etc.

Problem

Unfortunately, when developing translation tools limited attention is still paid to usability and ergonomics, be it during the design, implementation or deployment phase.

Meanwhile, the level of complexity of corpus-based translation tools has increased in difficulties and diversity, however, this evolution does not take into consideration HCI recommendations yet (CUNHA SILVA, Forthcoming).

Objective

The goal of this study is to bridge the gap between corpus-based tools, ergonomics, and usability, by presenting the results of a user-oriented methodology (CUNHA SILVA, Forthcoming).

Method

A corpus analysis software, called COPA-TRAD (FERNANDES & SILVA, 2014), was used as the basis for applying some existing methods within usability and ergonomics area.

The proposed study was composed of three main stages: (i) usability questionnaire (GRESSE VON WANGENHEIM *et al.*, 2014) – administered to participants of this knowledge area;

(ii) heuristics analysis (NIELSEN, 1994) – performed by usability experts;

(iii) ergonomics checklist inspection (ERGOLIST, 2011), to analyze general elements.

Method

- Heuristic evaluation is based on the methodology proposed by Nielsen *et al.* (1990; NIELSEN, 1994) to validate system characteristics according to ergonomics and usability concepts.
- Heuristics are usability principles, composed of general rules, or more specifically, ten criteria responsible for validating the features presented on interfaces, for instance:
  - System status visibility;
  - Error prevention;
  - Help and documentation, etc.

Results

The results indicated that despite the concern of providing a “user-friendly” interface (FERNANDES & SILVA, 2014), the analyzed system had not made use of known usability and ergonomics methods, just guidelines of the third-party software used as part of COPA-TRAD (i.e., Bootstrap, Agile methodologies etc.).

Usability questionnaire

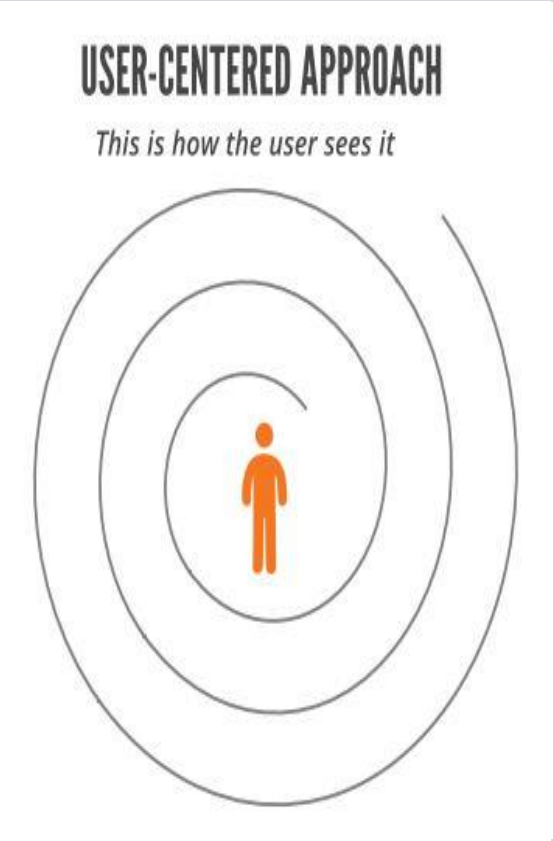

Image 1 – User-centered approach (ARRIZZA, 2014)

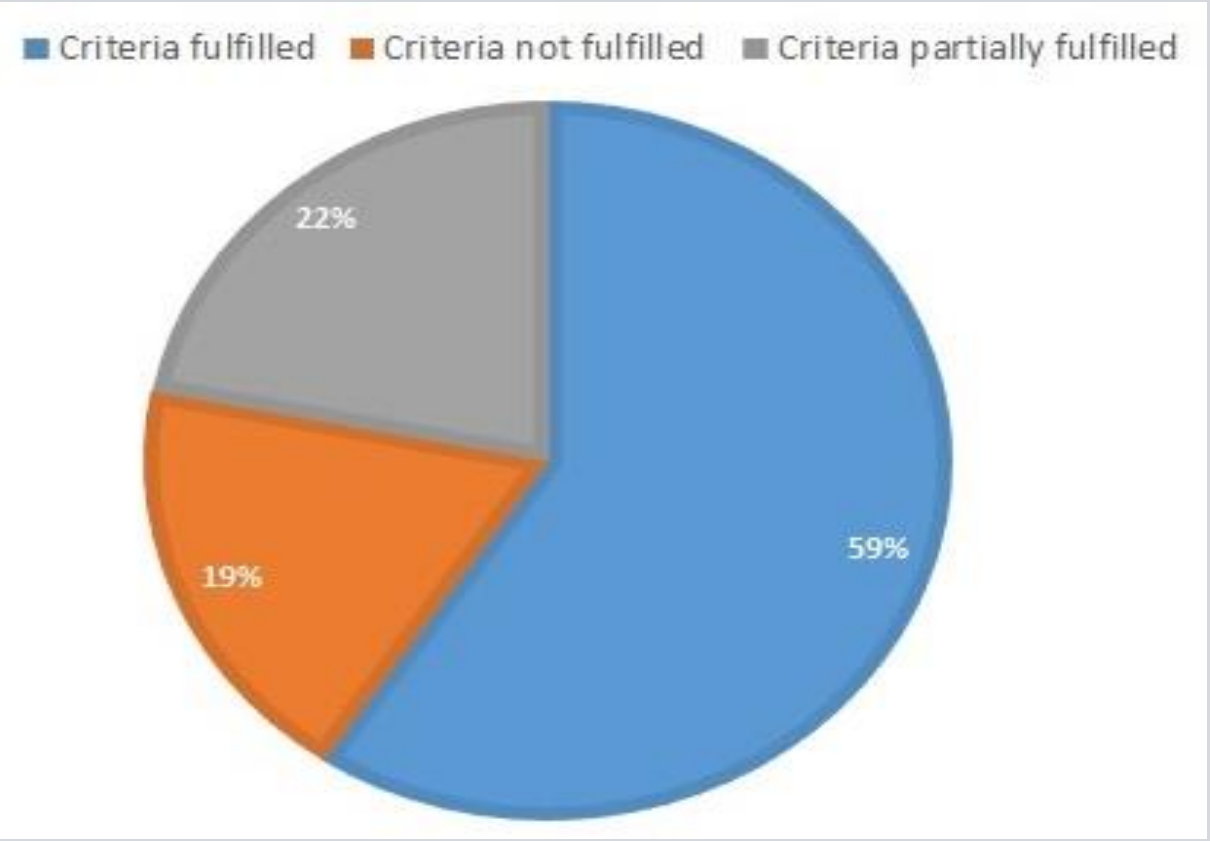

Image 2 – Questionnaire results.

Heuristics Analysis

Image 3 – Heuristics evaluation results – Adapted from Arrizza (2014).

Ergonomics Inspection Checklist

Main criteria	Elementary criteria	Fulfilled (%)	Not fulfilled (%)	Not applicable (%)	Results
Guidance	Prompting	59	29	19	⚠
	Grouping/Distinction by location	55	36	9	⚠
	Grouping/Distinction by format	70	18	12	✓
	Immediate feedback	50	42	8	⚠
	Legibility	48	33	19	⚠
Workload	Concision	28	36	28	✗
	Minimal actions	20	80	0	✗
	Information density	56	33	11	⚠
Explicit control	Explicit user action	75	0	25	✓
	User control	100	0	0	✓
Adaptability	Flexibility	100	0	0	✓
	User experience	67	16	17	✓
Error management	Error protection	57	29	14	⚠
	Quality of error message	78	11	11	✓
	Error correction	40	0	60	✓
Consistency		73	18	9	✓
Significance of codes		100	0	0	✓
Compatibility		62	9	29	✓

Image 4 – ErgoList (2011) results.

Conclusions and expectations

The study points out directions on which a corpus-based tool can be adapted to user needs and further indicate some important criteria that require improvement.

We believe translation technology should also include the concern with building adequate interfaces, allowing humans to interact effectively with tools data and facilitating the process of retrieving information.

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Thanks!

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