On Exploiting End-User Feedback in Requirements Engineering

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Outline

1. - Introduction
   Context & Problem

2. - Research Methodology

3. - Related Work
   End-user Feedback in RE
   Vs. Multidisciplinary perspective

4. - Progress & Conclusion
What is feedback?

Primary results of introducing the implemented software system into the real world. There is an immediate response to the system. [Madhavji06]

Information about reactions to a person's performance of a task, etc., used as a basis for improvement. [Oxford American Dictionary]
• End-user feedback
  Meaningsful information with the **purpose** of suggesting “___” to software applications.

• Unstructured feedback organised by topics.
• Semi-structured feedback by product, component, version, summary.
Problem of managing end-user feedback

Heterogeneity of abstractions levels

Huge amount of feedback and discussions

Mismatching of the purpose

We believe that end-user feedback can be a valuable source of requirements knowledge contained in discussion forums of open-source software.
Research objective

- Define a systematic approach for acquiring end-user feedback and deriving requirements knowledge from it
  
  - **RQ1.** What is the appropriate conceptualisation of end-user feedback?
  
  - **RQ2.** Which are the suitable techniques to collect explicit, direct and indirect, end-user feedback?
  
  - **RQ3.** How can analysts derive requirements knowledge from it?
Research Methodology

- Definition of the problem
  - Reading of the state of the art
  - Observation of the problem
- Reading related work
  - Software evolution
  - Gathering of feedback
- Definition of end-user feedback
  - Revisiting the definition
  - Conceptual model

RQ1. Conceptualisation of feedback
Motivation of the research
Research Methodology

Research

• Selection of case study
  – Defining the motivation
  – Establishing fine-grained problems
  – Investigating current end-user feedback

• Design of experiments
  – Sampling data
  – Revealing hidden structure of feedback
  – Analysing current discussion

RQ1. Conceptualisation of feedback
RQ3. Discovering RE knowledge

RQ1
RQ2. Techniques to collect feedback
RQ3
Related works

End-User feedback

- Mobile devices
  - iRequire [Seyff et al. '10]
  - ConTexter [Schneider ‘11]

- Dashboards
  - IdeaScale
  - User voice

- Discussion forums
  - HabboHotel
  - LiquidFeedback

- Bug reporting
  - Mozilla bugzilla
  - OpenOffice bugzilla

Semi-structured feedback, filtered by sensed entities, votes, forms with fields to fill in.
Proposed approach
Multidisciplinary perspective

Feedback structured by system’s behaviour

Giorgini et al. 2010
Tropos methodology

RE techniques

Requirements modelling

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Proposed approach
Multidisciplinary perspective

HCI principles

Conceptualisation of feedback *purpose*

Emoticons

Mohammad 2011
Colourful language
Proposed approach
Multidisciplinary perspective

NL techniques

Directive and Expressive acts VS Noise

Written speech acts

Searle 1975
Speech acts
Progress so far…

- **RQ1.** What is the appropriate *conceptualisation* of end-user feedback?
  - Case study: Apache OpenOffice
  - Looking at the textual component

- **RQ3.** How can analysts derive *requirements knowledge* from it?
Progress so far... End-user feedback meta-model

- Conceptualisation centred on the **purpose** of the feedback.

```plaintext
Progress so far...

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End-user feedback meta-model

- Conceptualisation centred on the **purpose** of the feedback.

```
Progress so far…
End-user feedback patterns

• Identification of patterns by revealing written speech acts.
Conclusion

• Context: software evolution driven by end-user feedback

• Problem: acquiring feedback and deriving requirements knowledge

• Methodology: steps followed towards the research objective

• Progress:
  – Selected case study in the context of open-source software
  – Patterns and conceptualisation

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Conclusion

• Expected impact
  – Helping analysts in managing feedback
  – Avoiding missing feedback which is relevant for requirements (not simply for bug-fixing)

• Future work
  – Investigation of argumentation-based platforms
  – Compare text processing techniques (natural language vs. structured feedback)
Thank you for your attention!
Questions?
References