Enriching Requirements Specifications with Videos

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Introduction

Requirements communication

Customer

Video

Req. Engineer

Specification & Video

Developer

Requirements Engineering Goals

1. Shared understanding
   - Successful requirements communication

2. Specification quality
   - Appropriate documentation options

Fricker et al., “Requirements Engineering: Best Practice”, 2015
Specification and Video

• Specification
  – Unstructured natural language (79%)
  – Potential for misinterpretation

• Knowledge visualization in RE
  1. Diagrams
  2. Graphical objects
  3. Interactive presentations
  4. Images / sketches

• Video
  ✪ Comprehensive information
  ✪ Appreciated for communication
  ✤ Production
  ✤ Modification

Use of Videos in Requirements Engineering

• Several approaches produce videos of a product vision

Pham et al.

Karras et al.

Creighton et al.

Question
Can requirements communication benefit from such videos by using them beyond their original purpose to supplement a specification?

Pham et al., “Interactive Multimedia Storyboard for Facilitating Stakeholder Interaction”, 2012;
Karras et al., “Video as a By-Product of Digital Prototyping: Capturing the Dynamic Aspect of Interaction”, 2017;
Vision Video

Definition

A vision video shows how a future system may work in its envisioned target environment even though the system does not exist yet.

- **Basis**
  - Opportunities for using videos in RE (Op. 1)

- **Production**
  - Actors
    - Development team
  - Low-effort
    - Smartphone & simple video processing tools
  - Short duration
    - 2-minute video

Brill et al., “Video vs. Use Cases: Can Videos Capture More Requirements under Time Pressure?”, 2010

- **Vision**
  - Important for project success
  - Low specification level
  - Less frequent changes
Pre-Study – Selection of Vision Videos

- Matching between vision video and use cases
  - 12 vision videos
  - 2 independent raters
- Goal
  - Find the best matching materials
- Selection criterion
  - Number of contained use cases based on shared agreement

Karras et al. – Enriching Requirements Specifications with Videos
Evaluation – Design

Can developers understand a specification faster and better with a supplementary video of the product vision?

\( H_{10} \): No speed difference in extracting information
\( H_{20} \): No difference in the number of correct answers
\( H_{i1} \): Specification supplemented by a video leads to better results than only a specification, \( i \in \{1,2\} \)

- **Task**
  - Extraction of information from material to answer questionnaire
    - Process time
    - Number of correct answers
Evaluation – Results

• Process time
  - 100% of group S&V faster than 50% of group S
  - \( t(7) = 2.77, p = 0.008 < 0.05 \)
    - S&V shortens time to extract information

• Number of correct answers
  - 100% of group S&V more correct than 50% of group S
  - \( t(7) = 3.13, p = 0.004 < 0.05 \)
    - S&V increase number of correct answers
Evaluation – Finding

• Evaluation results
  1. Process time to extract information
     ➢ Reduction of **24.67%** by specification & video
  2. Number of correct answers
     ➢ Improvement of **20.59%** by specification & video

Finding

Developers understood a specification faster and better with a supplementary video of the product vision.

1. Improved understanding due to imagination of overall goals
2. Simplifies and enhance comprehension of textual concepts
3. Watching a 2-minute video is faster than reading 18 pages
Conclusion

- Requirements communication
  - Paper worst documentation option
  - Video best documentation option
- Several approaches use videos
  - Benefit by using them beyond original purpose

**Enriching Requirements Specifications with Videos**

1. Supports understanding of developers
2. Contributes to shared understanding and specification quality
3. Can help to accomplish need for support of knowledge visualization in RE, especially requirements communication
Survey – Call for Participation

• Exploring researchers’ and practitioners’

Attitudes Towards the Medium Video
in requirements engineering and software development

• Survey topics
  – Demographics
  – Attitude towards the medium video including advantages, disadvantages, potentials and concerns
  – Application of video including creation and usage

http://survey.se.uni-hannover.de/index.php/759661?lang=en

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