

Multimedia Requirements Engineering (MeRE'06)—Beyond MeRE Descriptions

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1. Introduction

Most requirements development and management efforts focus on the production of accessible and validated descriptions. Several methods and tools are in use today that aid the requirements engineer in writing, revising, and communicating requirements as text. This approach has several disadvantages. First, text constitutes a language barrier, particularly a challenge for global companies with distributed product teams. Second, text is an abstract form of communication and as such requires the audience to interpret what is written. This interpretation is always based on past experience, preconceptions, and digestibility of the text (style, amount, intended audience). Third, without apposite use of supporting tools, even the most carefully crafted requirements text may quickly become outdated, inconsistent, or overwhelmingly long.

This workshop explores the possibility to base the requirements development and management effort on multimedia representations, limiting the use of text to areas where it belongs: Rather than making the textual description and its structure the starting point of analysis, the audiovisual depiction now serves as the big picture of and framework for requirements analysis. Text as just another medium may still be employed for detailed, technical requirements or for legal concerns.

A particularly well-suited use of multimedia technology seems the capture of stakeholders' requests during requirements development. Approaches that integrate novel uses of portable devices for this task are of special concern for this effort. They may alleviate the common concern that the effort commanded by handling multimedia might outweigh the gained benefits. The general theme of the workshop is communication and modeling of requirements that are expressed in media other than text.

1.1. Topics

The workshop invites experience papers, formal methods, emerging technologies, best practices, research proposals, evaluations and comparisons that focus on multimedia use in requirements development/analysis. Invited topics of interest include, but are not limited to:

- Media languages/techniques for requirements development/analysis
- Metadata annotation and harvesting technologies
- Use of portable devices for realtime media capture and annotation
- Semiological modeling
- Multimedia techniques and tools to facilitate evolution of representations

1.2. Goals

The workshop aims to provide a collaborative session in which ideas related to multimedia use for requirements engineering are shared, reviewed and debated. The controversy surrounding the practicality of emerging requirements engineering techniques is also discussed. The workshop is used to identify future work, issues, problems and priorities, and to propose recommendations around these dimensions for multimedia requirements research.

2. Contributions

The contributions are organized along the phases of a typical requirements engineering (RE) process: Rabiser et.

al. present support for requirements capture with a mobile tool for scenarios. Steele et. al. describe an automatic speech recognition technique for capturing non-functional requirements of stakeholders in meetings or interviews. Gall et. al. propose a framework that uses video to record and extract stakeholder statements. Gotel et. al. discuss a theoretical framework to help engineers make informed decisions about media choices, combinations, and transformations. Rashid et. al. present an approach that enables end-users to participate in RE visually, by annotating their ideas directly on screen. Richter et. al. close the process cycle with a suggestion of a traceability framework that allows to connect requirements and their origins.

2.1. Capturing Multimedia Requirements Descriptions with Mobile RE Tools pp. 4–8

Rick Rabiser, Norbert Seyff, Paul Grünbacher, and Neil Maiden

As tools for RE become available on mobile devices using their multimedia capabilities to capture requirements descriptions is an obvious opportunity. This paper reports on two different approaches enabling mobile analysts and end-users to add multimedia descriptions to requirements. Based on our mobile tool for scenario-based RE we compare a solution based on the COTS package Microsoft Pocket Word with a novel plug-in solution providing more flexibility for tool users.

2.2. Speech Detection of Stakeholders' Non-Functional Requirements.....pp. 9–16

Adam Steele, Jason Arnold, and Jane Cleland-Huang

This paper describes an automatic speech recognition technique for capturing the non-functional requirements spoken by stakeholders at open meetings and interviews during the requirements elicitation process. As statements related to system qualities such as security, performance, and portability are often scattered throughout statements of functional need, the ability to “listen in” on a conversation and correctly capture these statements into a single view is very helpful. The approach is intended to enhance and not replace existing elicitation methods in which stakeholders are more directly asked to describe their needs. Training a speech detection tool to recognize individual users is time consuming while speech detection for un-enrolled users is notoriously difficult. Our approach uses a context-free grammar to boost recognition accuracy, segment the stakeholders' utterances and finally to classify the recognized statements by quality type. This paper describes the preliminary results from experiments with different subjects and then discusses methods for optimizing the recognition

and capture of non-functional requirements and contextual domain terms.

2.3. Towards a Framework for Real-Time Requirements Elicitation.....pp. 17–23

Mark Gall, Bernd Bruegge, and Brian Berenbach

Eliciting complete and correct requirements is a major challenge in software engineering and incorrect requirements are a constant source of defects. It often happens that requirements are either recorded only partially or not at all. Also, commonly, the rationale behind the requirements is not recorded or may be recorded, but is not accessible for the developers who need this information to support the decision making process when requirements change or need clarification.

Our proposed framework is designed to solve those problems by using video to record the requirements elicitation meetings and automatically extract important stakeholder statements. Those statements are made available to the project members as video clips by using an RE database to access the statements and/or by the integration with the Sysphus system.

2.4. Crafting the Requirements Record with the Informed Use of Media.....pp. 24–27

Olly C. Z. Gotel and S. J. Morris

This paper highlights some of the issues that need to be considered when communicating and modelling requirements expressed in media other than text. It proposes to marry practical work in the area of requirements traceability with theoretical work on the differentiation of media types to provide a framework to help engineers make informed decisions about media choices, combinations and transformations when crafting a representative requirements record.

2.5. Visual Requirement Specification in End-User Participation pp. 28–32

Asarnusch Rashid, David Meder, Jan Wiesenberger, and Astrid Behm

End-user participation in RE is important, but not frequently used at the moment. Reasons are the large expenditure of time for organizing and carrying out surveys as well as the time it takes to understand the users' requirements and to formulate them textually. But even textually formulated requirements are not sufficient, as users are no experts, do not have enough time beside their job to model complex requirements and describe their requirements properly. It is therefore necessary to formulate the requirements visually. Current methods are too complex and inefficient, because

they need training and can't be integrated into the day-to-day business of end-users.

Thus, users should be able to annotate their ideas directly on their screen and submit them to a web based collaboration platform. The main goal is to obtain complete requirements and, simultaneously, to save the time of all stakeholders in the whole development process.

2.6. Incorporating Multimedia Source Materials into a Traceability Framework pp. 33–37

Heather Richter, Robin Gandhi, Lei Liu, and Seok-Won Lee

Requirements engineers generate domain models and requirements specifications from a variety of rich, informal sources. Yet much of this informal information is not preserved to maintain the traceability of requirements back to their origins. In this paper we describe TRECRe, a traceability framework for preserving and providing access to a variety of multimedia source materials.

3. Summary

Research into multimedia requirements engineering is still somewhat in its infancy. This first international workshop brings together leading experts to set up a research agenda of this subject. An important outcome is the definition of a common vision for requirements engineering that goes beyond mere descriptions: An appropriate use of various media, supported by proper tools, can mitigate some of the challenges requirements engineers are presently facing when describing complex systems. Increasing volumes of requirements texts, often cross-linked for traceability reasons, become a burden to create, manage, and understand. Instead of considering development and management of requirements as the foremost subject of requirements engineering, we wish to stress the understanding and evolution of requirements. Based on the way humans can process information to create and exchange knowledge, a more humane approach towards this goal could be to employ multimedia to describe requirements.

4. Program Committee

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