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The Study of Various Requirements Elicitation Method

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Abstract

In requirements elicitation is the practice of colleting the requirements of a system from users, customers and others stakeholders. The practice is also sometimes referred to as "requirement gathering". The term elicitation is used in books and research to raise the fact that good requirements cannot just be collected from the customer, as would be indicated by the name requirements gathering .Many software project fail because they overlook stakeholders or involve the wrong representatives of significant groups. This paper proposes StakeRare, a novel method that uses social networks and collaborative filtering to identify and prioritise. Requirement elicitation is a process difficult to scale to large software projects with many stakeholders which involves identifying and prioritizing requirements. A StakeSource2.0, a web-based tool that uses social networks and collaborative filtering, a "crowd sourcing" approach, to identify and prioritise stakeholders and their requirements.

Keywords:

Requirements Elicitation, Stakeholder Analysis, Social Networks, Requirements Prioritisation, Elicitation Methods, Requirements Specifications, Collaborative Filtering.

I.Introduction

Requirements elicitation is non-trivial because you can never be sure you get all requirements from the user and

Customer by just asking them what the system should do OR NOT do (for Safety and Reliability)[2]. Requirements elicitation practices include interview, questionnaires, user observation, workshops, use cases, role requirements can be analyzed, model or specified they must be gathered through an elicitation process. Requirements elicitation is a part of the requirements engineering process, usually followed by analysis and specification of the requirements[1]. Commonly used elicitation processes are the stakeholder meeting or interviews. For example, an important first meeting could be between software engineers and customers where they discuss their perspective of the requirements. Stakeholder analysis is the process of identifying stakeholder management stakeholders-individuals or groups that can influence, or be influenced by a software project and prioritising them based on their influence in the project. Software systems are growing. StakeRare is a method to identify and prioritise requirements using social networks and collaborative filtering. Stakeholder identification plays a key role in the stakeholder management analysis. As a result, elicitation and prioritisation is based the perspective of these stakeholders, and critical requirements may by omitted or wrongly prioritised[3].

II.Software Engineering

Identify "domain constraints" characteristics of the business environment specific to the application domain that limit the functionality or performance of the system or product to be built. Define one or more requirements elicitation method (eg), interview, focus group, team meeting[6].

III.Various Requirements Elicitation Of Methods:

A. StakeNet Methods
B. StakeSource2.0 Methods
C. StakeRare Methods
D. StakeRatreet methods[1]

A. Stakenet Methods:

The idea behind StakeNet is to be open and inclusive, so that each stakeholder participates in the stakeholder analysis process. As stakeholders are socially related to one another, we can identify and prioritise them using their relations. StakeNet does not so in 6steps and relies on the concepts in table.

Concepts	Definition
Scope	The work required for completing the project successfully.
Stakeholder	An individual or a group who can influence or be influenced by the success or failure of a project.
Stakeholder role	A part the stakeholder plays in the project.
Stake	An interest, investment, share, or involvement in the project, as hope of gain.
Salience	The level of influence a stakeholder has on the project. Stakeholder with high salience are crucial to low project success stakeholders with low salience have marginal impack.

Table 1

Evaluation:

The goal of Stake Net is to identify and prioritise stakeholders and their roles. Our research questions ask how well Stake Net identifies and prioritise stakeholders and their roles, whether the combination, whether of social network measures produce better prioritisation, whether different methods for collecting recommendations affect the results, how well Stake Net performs against individual stakeholders, and whether stakeholders are motivated to make recommendations. To evaluate Stake Net, we apply it to the RALIC(Replacement Access, Library and ID Card) project.

Applying StakeNet to Ralic:

A stakeholder can be someone who(1) finances the system,(2) makes decision about the development of the system ,(3) develops the system,

Item	Description
1	Replace magnetic swipe card readers with proximity readers
2	Source and install access card printers
3	Decide on card design and categories
4	Define user group and default access rights
5	Interface the access control system with the library, human resource, student, and visitor community
6	Issue new cards to the UCL community
7	Replace the library access control system
8	Use new cards at the UCL fitness centre

Table2

Existing methods:

We classify existing approaches into four types:

- Semi -structure
- Checklist-based
- Interviews
- Search for related work

Semi-Structure:

Semi-structure approaches by Cockburn, Gause and Weinberg largely form the basis of existing practice. They identify stakeholders by considering categories such as those who interact directly with the systems.

Checklist-Based:

Checklist-based approaches by Alexander and Robertson map generic stakeholder role to project-specific stakeholder roles.

InterViews:

Interviews by Poulouidi Whitley consist of three steps:

Step1: Identify generic stakeholder roles and the stakeholder. For example the sonsor is alice the director of estates.

Step2: Interview the stakeholder to learn about other stakeholders or stakeholder roles. For example alice suggests the corporate communications division.

Step3: Add the newly identified stakeholders and their roles to the stakeholder list, and repeat step2 to interview them.

Search For Related Work:

The search method by Sharp al has two steps

*Step1:*Identify initial stakeholder roles from users, de v elopers, legislators, and decision-makers.

*Step2:*For each stakeholder role R, identify other roles who interact with R, and repeat step2 for the newly identified roles.

B. STAKESOURCE2.0 METHOD:

StakeSource2.0 providers the following features to identify and prioritise requirements.

1.Identify Requirements

2.Prioritise Requirements

3.Recommend Requirements of Interest

4.Highlight Stakeholder in Conflict

Implementation:

The tool should be widely available and easy to use to encourage a sufficient number of stakeholders to contribute their requirements and ratings. The analysis should be able to interact with the UI to explore the list of stakeholders and their requirements. The collaborative filtering algorithm should incorporate new ratings of requirements dynamically.

Web-based:

StakeSource2.0 was implements as a widely accessible web application using standard web technologies: HTML, CSS, XHTML,PHP, and JavaScript, MySQL

Standard interface and help:

The rating from was implement using standard survey interface from the Smarty Template Engine, Tool tips and pop-up help were supplied to assist stakeholders.

Well-established software components:

The slope one collaborative filtering algorithm was used as it meets the real-time recommendations requirement.

C. STAKERARE METHODS:

Background

Large-Scale Software Project:

In this work, the definition of large-scale software project is derived from the existing measures of project size and definitions of large-scale software project. There are a number of existing measures to size a project, leading to different views on what constitutes large-scale. These measures are more suitable for development and less so are Elicitation.

Requirements Elicitation Techniques:

In requirements elicitation, traditional techniques, such as interviews and focus groups, from the basis of existing practice. More advanced elicitation techniques improve the completeness and variety of the identified requirements by catalysing discussions and exploring the stakeholder's needs.

Prioritisation Techniques:

Project often has more requirements than time, resource, and budget allow for. As such, requirements should be prioritised and managed so that those that are critical and most likely to achieve customer satisfaction can be selected for implementation.

Social Network Analysis:

A Social network analysis is the application of methods to understand the relationships among actors, and on the patterns and implications of the relationships. In social network analysis, actors are discrete individuals, corporate, or collective social units, such as employees within a department, departments within a corporation, and private companies in a city. Social network analysis is the application of methods to understand the relationship among actors, and the patterns and implications of the relationships. A social network is a structure that consists of actors and relations defined on them. It is often depicted as a graph in which the actors are represented as nodes and the relationships among the pairs of actors are represented by lines linking the corresponding nodes.

Collaborative filtering:

Collaborative filtering is a technique to filter large set of data for information and patterns. This technique is used in recommender system to forecast a user's preference on an item by collecting preference information from many users. In requirements engineering, castor-her rerate uses collaborative filtering to facilitate online discussions for requirements identification. Collaborative filtering is a technique to filter large sets of data for information and patterns. This technique is used in recommender systems to forecast a user's preference on an item by collecting preference information from many users. In requirements engineering, Castro-Herrera et al. Uses collaborative filtering to facilitate online discussions for requirements identification. OPCI uses collaborative filtering to recommend forums of interest to stakeholders.

StakeRare concepts:

Large project tend to be beset by three problems: Information overload, inadequate stakeholder input, and biased prioritisation of requirements. StakeRare is a method that uses social networks and collaborative filtering to elicit uses requirements inn larger projects.

CONCEPTS	DEFINITION
Salience	The level of influence a stakeholder has on the project.
Scope	The work required for completing the project successfully.
Stakeholder	An individual or a group who can influence or be influenced by the success or failure of a project.
	The stakeholder position or customary function in the project
Requirement	The real-word goals for, functions of, and constraints on software systems.
Rating	Numerical importance of a requirements to the stakeholders.

Profile	The set of requirements and their ratings providered by a stakeholder.

Table3

Evaluation:

StakeRare was evaluated by applying it to a real-world large-scale software project. The stakeholders were surveyed for their requirements. The resulting lists of requirements were empirically evaluated in terms of quality of the requirements and accuracy of the prioritisation, by comparing them with the ground truth the actual complete and prioritised lists of requirements in the project. Finally, the stakeholder were interviewed and surveyed on the level of difficulty and effort in using StakeRare.

Applying stakerare to Ralic:

StakeRare Steps:

1.Identify and prioritise stakeholders.

2.Survey stakeholders to collect profile.

3.Predict requirements.

4.Prioritise requirements.

Existing method list:

The existing method list of requirements is an un prioritised list of requirements identified by the project team at the start of the project using existing methods. The project team used traditional elicitation techniques, which included meetings and interviews with key stakeholder.

D.Stakeratreet Method

Motivation:

Software systems are growing daily. The increase in size extends mere lines of code or number of modules in the software systems. In an ideal world, large software systems would always function as intended-users needs would be meeting and customers would get value for their money.

Existing system:

In large scale software projects there will be lot of clients who we can't able to meet often because they may be present in somewhere around in the country.

Information overload:

Information overload is a huge problem in big software projects. These projects will always have many stakeholders and a lot of requirements.

Biased prioritisation of requirements:

Occurs because current prioritisation techniques depend on individual stakeholder who may not have a major part in large projects.

Inadequate stakeholder input:

Inadequate stakeholder input caused by selection of insufficient stakeholder neglecting stakeholders is one of the common mistakes in requirements elicitation.

Compare the b/w StakeNet, StakeRare, StakeRatreet and StakeSource2.0:

A StakeNet is a using social network to analysis the stakeholders of large scale software project. A StakeRare is a method to identify and prioritise requirement using social networks and collaborative filtering. A StakeRatreet is a requirement elicitation is a process difficult to scale to large software project with many stakeholders which involves identify and prioritizing requirements. A StakeSource is a tool that identifier and prioritises stakeholders and their requirements using social networks and collaborative filtering. A StakeNet uncovers a critical stakeholder role overlooked in the project whose omission significantly project. Inevitably stakeholders are omitted and their requirements overlooked. Various approach this risk of this approaches is that it may be two broad resulting in overlooking of some stakeholders (or) It is easy to overlooked stakeholders. As a result elicitation and prioritisation is biased towards the perspective of those stakeholders and critical requirements may be omitted or wrongly prioritised.

Collaborative filtering:

Collaborative filtering is a technique to filter large set of data for information and patterns. This techniques is used in recommender system to forecast a user's preference on an item by collecting preference information from many users. In requirements engineering, castro-herreraet al Uses collaborative filtering to facilitate online discussions for requirements identification.

IV.Problem

- Problem of scope
- Problem of understanding
- Problem of volatility

1. Problem of Scope:

The boundary of the system is all defined or the customers/users specify unnecessary technical details that may conferee, rather than clarify, overall system objectives.

2.Problem of understanding:

The customers/users not complete sure of what is needed, have a poor understanding of the capabilities and limitation of their computing environments, don't have a fully understanding of the problem domain have trouble communicating needs to the system engineers omit information that is believed to “OBVIOUS” specify requirements that are ambiguous stakeholder untreatable.

3. Problem of Volatility

The requirements change over time. The rate of change is sometimes referred to as levels of requirements volatility.

V. Solution

Access the business and technical feasibility for proposed system. Identify the people who will help specify requirements and understand their organizational bias. Define the

technical environments (eg) computing architectures, operating system, telecommunication needs into which system or product will be placed

Identify "Domain Constraints" ie, characteristics of the business environments specific to the application domain that limit the functionality or performance of the system or product to be built.

Define one or more requirements elicitation methods (eg) interview, focus groups, team meeting

Solicit participation from many people so that are defined from different points of new, be secure identify to related for each requirements that or regards

Identify ambiguous requirements as candidates for prototyping creating usage scenarios or cases to help customers/users better identify key requirements

VI. Related Works

A software engineering is a person who applies the principles of software engineering to the design, development, maintenance, testing and evaluation of the software and system that make computing or anything containing software work. Computing programmers or software developing regardless of call themselves software developer and programmer, because most widely agree. what there terms mean, while software engineering is still being debated. The terms programmers has often been used as projective them to refer to there without the tools still, education, or ethics to write good quality software

- Software engineering
- Bachelor of science information technology
- Bachelor of software engineering
- Consulting software engineering
- Software engineering demographically
- Software engineering institute

The quality of the requirements identified by stakerare may depend on the initial set of requirements, especially in projects where stakeholder are aware of their requirements. The quality of the requirements depend on the stakeholders response. StakeRare assumes that stakeholder provider recommendations and ratings honestly. Requirements that stakeholders actively do not want are related with an x. Stakeholder have different influence across different issues, such as funding, development and usage. A stakeholder's influence in a project may change overtime.

VII.Conclusion

StakeNet uses social networks to identify and prioritise software project stakeholder and their roles. In large software project, requirements elicitation tends to be beset by three problems: information overload, inadequate stakeholder input, and biased prioritisation of requirements. The main contribution of the work is the development of the stakerar methods, which supports requirements elicitation in large software projects. StakeRatreet uses social networks to identify and prioritise software project stakeholders and their roles.StakeSource2.0 is simple but has proven in early trials to be a powerful and useful tool.

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