Towards Acceptance of Socio-technical Systems – An Emphasis on the Requirements Phase

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Abstract. This paper is not a technical research paper, but discusses some essential reasons why socio-technical systems do not get the acceptance by end-users that is typically needed for a successful usage of the systems. One major prerequisite to achieve sufficient acceptance is to ensure a specific treatment of end-users, and stakeholders in general during the requirements engineering phase. Reasons for resulting low acceptance of socio-technical systems in the requirements phase are discussed both, from an industry as well as from an academic perspective.

Keywords: Socio-technical Systems, Acceptance, Requirements Engineering

1 Extended Abstract

In the development of socio-technical systems, the requirements engineering phase is essential for the later acceptance of the systems by its stakeholders. Important, especially non-technical aspects of the system such as ethical, legal, as well as cultural aspects can be identified in this phase and serve as an important requirements basis for the further system development. Furthermore, they serve as the basis for quality assurance, i.e., are the baseline to evaluate a socio-technical product before it is released to its end-users.

The discipline of Requirements Engineering as sub-discipline of Software Engineering is established in academia since about 20 years [IE93]. Nevertheless, we can find a multitude of socio-technical systems in our society that find no or only low acceptance at its end-users. The reasons for this are discussed in the following by taking the perspective of industry-related reasons as well as academia-related reasons.

Although we can see an increasing usage of requirements engineering methods, techniques and tools in the recent years, there is still a low spread of requirements engineering techniques and methods in industry. Additionally, if requirements engineering is performed in industry, it is often treated with a rather technical perspective. This means that only few approaches in industry make use of methods that have a strong emphasis on stakeholder analysis, or integrate with user centered design

[MA99]. Rarely, a structured stakeholder analysis is used. A third reason for low acceptance is the low spread of end-user centricity in general throughout the software development lifecycle. E.g., the usage of personas [PG03] during all stages of software development in the offices of software engineers can help to propagate the paradigm of end-user centric development.

In academia, we can find few approaches that combine user centered design approaches with traditional requirements engineering approaches. Even though the disciplines of requirements engineering and usability engineering have many activities, principles and even produced artifacts in common, one can rarely spot scientific papers that integrate both worlds such as [Ad09, La02, Do07]. A second reason that leads to systems of low acceptance is the fact that the field of user experience is still in its infancy and needs to advance faster to provide more methodological guidance to the software engineering communities. Finally, we see a lot of socio-technical systems that basically have a large subset of members of our society as end-users, but only few of them are involved into the system development. Those "representative end-users" are then identified and involved in the requirements engineering during product development. All others do typically not have any possibility to influence the software development. With the advent of social media, new approaches such as the usage of crowd-sourcing in requirements engineering and enabling the end-users to provide direct requirements [SGM10] should be researched more intensively.The presentation and full paper will provide more details why industry and academia face challenges in this area as well as first steps how these challenges can be overcome.

2 References

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