Understanding Social and Environmental Requirements in China

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Requirements engineering faces new challenges due to changes of requirements.
1. We need not only requirements for functionality, but also requirements on the ability of adaptation to environmental needs.
2. For secure, trustworthy software services, we need to analyze the intentions and capability of attackers and potential system abusers.
3. When it comes to offshoring and outsourcing, simple-minded localization may not do the job; culture, social differences need to be taken into account.

Rapid changes in the social and technical environment bring about many new challenges to system requirements engineering, amongst which out-sourcing or off-shoring of certain design tasks to countries with more human resources and broader markets becomes promising business leverage. Here we report some of the results from an ongoing research project on the survey of requirements practices in China. It is interesting to understand the current status of industrial practices after years' research efforts, especially in a rapid developing country such as the China. We perform a web-based survey of requirements engineering practices in China, focusing on the requirement elicitation techniques and requirement presentation techniques. Our study has collected data from 150+ participants from 50+ Chinese companies and education institutes. We also analyze the impact of Chinese culture on requirement engineering practices. In this report, we present the main survey results and point out their implications. We hope our results are useful for industrial practitioners and academic researchers wishing to improve current practices, and for foreign software companies wishing to better understand their Chinese customers.

Based on the data from the survey, this study shows that the status of requirements engineering practice in China varies from organization to organization. The status of requirements engineering practice is determined by the maturity level of the organization's system engineering practice rather than national culture. The level of technical knowledge determines efficiency of the requirements engineering activities. Cultural and environmental context have great influence to customer's preferences in the design of interface, workflow, and non-functional requirements. Requirements elicitation techniques that are considered effective in Chinese environment include: focus group meeting, prototyping, document analysis, interview, and team building. Social and political measures are necessary and used in many situations.

In order to better facilitate communications of all involved parties, we need to use specification techniques that are accessible to all people involved in the communication. We need also consider the expressiveness of the specification language. For instance, the general partial order is written is less than oral, textual is less than graphical, and graphical is less than media, and media is less than a live system, etc. we need to consider the communication effectives and the memorable

level. For the applicability of requirements tools, it always depends on the accessibility of the tool to the person who uses it, and how well it is integrated the daily working environment of that person.

In conclusion, culture related requirements are not easy to be operationalized within design. Understand cultural requirements can help generate better design that fit for the purpose of the design. In ideal cases, there should be a product line in place, where both the needs of sophisticated users who are eager to experience the latest technologies, to drive the system to the extreme, and the needs of simple users who just want their daily work done can be addressed. In this new era, due to the constant changing of requirements engineering economics, we should explore for new models, methods, and techniques to better fit the real world needs of the customer and developer, in our case, the Chinese customers and developers.