Questionnaire

1 Start page

Dear survey participant,

thank you very much for sparing approx. 15 minutes of your valuable time by filling in this questionnaire!

This survey is conducted by the Technical University of Munich. Our goal is to obtain a better understanding of how requirements are handled in industry.

Scope of the survey

We are interested in your personal experiences to understand whether non-functional requirements (NFRs) and functional requirements (FRs) are handled differently in practice. With NFRs, we refer to those requirements that address quality characteristics of a product or system (like availability or performance).

Structure of the survey

This survey is structured into 4 parts:

- 1. Demographics: In this part, we will ask questions about your company in general and about your role in your company.
- 2. Handling of NFRs and FRs: In this part, we are interested in the way you handle NFRs and FRs in your project environments.
- 3. Problems and benefits of the way NFRs and FRs are handled: In this part, we openly ask you to state problems and benefits that result from the way you handle NFRs and FRs.
- 4. General statements: In this part, we list a set of statements about NFRs in general and ask you to express your degree of agreement on those statements.

Confidentiality

At the end of the survey, you will be asked to enter your email address in case you would like us to provide you with an overview of the survey results. In any case, please be assured that the survey follows a high academic standard and is conducted anonymously. We will not associate your email address with your answers and exclusively use the addresses for providing you with the survey results.

Consent to participate in research

You are asked to participate in a research study conducted by Jonas Eckhardt, Dr. Andreas Vogelsang, Dr. habil. Daniel Méndez from the Informatics Department at the Technical University of Munich. You will not be paid for participating in this study. You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, please contact Jonas Eckhardt (eckharjo@in.tum.de).

By clicking "Continue" at the bottom of this page, you give your consent to voluntarily participate in this research and for us to use the anonymized data provided in your answers to the survey questions.

Demographics

Part 1: Demographics

| What is your role in project | ts of your company? |
|------------------------------|------------------------------------------------------------------------------------------------|
| Which role(s) describes best | what you generally do in projects of your company (e.g., "requirements engineer" or "architect |
| For how many years are ye | ou dealing with requirements? |
| <pre>< 1 year</pre> | |
| 1-3 years | |
| > 3 years | |
| Counting all locations whe | ere your employer operates, what is the total number of persons who work there? |
| O 1-249 | |
| 250-1999 | |
| > 2000 | |

| Ho | w many people are usually involved in a regular project at your company? |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 0 | 1-10 |
| 0 | 11-50 |
| 0 | 51 or more |
| 0 | Don't know |
| Hov | w is your project team usually geographically distributed? |
| Plea | ase select the answer that fits best. |
| 0 | All members in one location |
| 0 | Members distributed over multiple locations in one country |
| 0 | Members distributed over multiple locations in more than one country |
| Sof typ | tware processes are often termed as "agile" or "plan-driven". How would you classify the software process ically used in your projects? |
| \circ | Agile |
| 0 | Rather agile |
| 0 | Mixed |
| 0 | Rather plan-driven |
| 0 | Plan-driven |
| 0 | Don't know |
| For | which industrial sector do you usually develop systems (e.g., telecommunication, automotive, insurances)? |
| If y | ou work in several industrial sectors, please write down only one sector and focus on this for the remaining questions. |
| | |
| Wh | ich type of systems do you usually develop in your projects? |
| Plea | ase select the answer that fits best and consider this type of systems for the remaining questions. |
| 0 | Embedded Systems (e.g, software on microcontroller) |
| 0 | Business Information Systems (e.g., CRM systems) |
| 0 | Consumer Software (e.g., Ebay) |
| 0 | Hybrid Systems (mixture of any of the others) |
| 0 | Don't know |
| Red | quirements specifications are artifacts, we usually |
| 0 | create and use for in-house development. |
| 0 | create and an external company is responsible for the development. |
| 0 | use as a subcontractor for e.g. development or testing. |
| 0 | don't use. |
| 0 | Don't know |
| 3 | NFR importance and explaination |

Please note:

In the following questions, with **non-functional requirements (NFRs)** we refer to those requirements that address quality characteristics of the product or system and exclude process requirements. These kinds of NFRs are also often called **quality requirements (QRs)** or **quality characteristics** (as for example in the ISO/IEC 25010).

How important do you consider the following types of NFRs for your typical projects?

Very Moderately Slightly Not

| | Important | Important | Important | Important | Important | Don't know |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|---------------|-------------------|----------------|----------------|
| Functional suitability (i.e. functional completeness, functional correctness, and functional appropriateness) | 0 | 0 | 0 | 0 | 0 | 0 |
| Performance / Efficiency (i.e. time behavior, resource utilization, and capacity) | 0 | 0 | 0 | 0 | 0 | 0 |
| Compatibility (i.e. co-existence and interoperability) | 0 | 0 | 0 | 0 | 0 | 0 |
| Usability (i.e. appropriateness, recognizability, learnability, operability, user error protection, user interface aesthetics, and accessibility) | 0 | 0 | 0 | 0 | 0 | 0 |
| Reliability (i.e. maturity, availability, fault tolerance, and recoverability) | 0 | 0 | 0 | 0 | 0 | 0 |
| Security (i.e. confidentiality, integrity, non-repudiation, accountability, and authenticity) | 0 | 0 | 0 | 0 | 0 | 0 |
| Maintainability (i.e. modularity, reusability, analyzability, modifiability, and testability) | 0 | 0 | 0 | 0 | 0 | 0 |
| Portability (i.e. adaptability, installability, replaceability) | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 NFR documentation | | | | | | |
| Are NFRs documented in your typical p Yes No Don't know | rojects? | | | | | |
| 5 RQ1 | | | | | | |
| Part 2: Handling of NFRs and FRs | | | | | | |
| In the documentation (e.g. in a require With "distinguish" we mean that requirem | - | | _ | | | |
| With "distinguish" we mean that requirements are labeled differently (e.g. some requirements are labeled as "performance", "maintainability",) or documented in different sections (e.g. special sections for "performance", "maintainability",). | | | | | | |
| Yes, we distinguish between NFRs and FRs in the documentation | | | | | | |
| No, we do not distinguish between NFRs and FRs in the documentation | | | | | | |
| Are there specific reasons why you do (or do not) distinguish between NFRs and FRs in the documentation? | | | | | | |
| Considering the following phases, how FRs? | much do the | activies for l | nandling NFF | Rs differ from t | the activities | for handling |
| | Differs stron | alv Diffe | rs slightly | Does not differ a | tall Don | 't know |
| Requirements Engineering | | 3·1 Dille | O Signary | | | |
| Architecture/Design | 0 | | 0 | 0 | | 0 |
| Implementation | 0 | | 0 | 0 | | 0 |
| Testing | 0 | | 0 | 0 | | 0 |
| Considering your work, for what activity why. | ties does it m | ake a differe | nce if you co | nsider an NFR | s vs. an FR? | Please explain |

Please be as detailed as possible here.

| | la de | |
|----------|----------------------------------------------------------------------------------|--------------------------------------------------------------|
| 6 | 6 RQ2 | |
| | | |
| Pa | Part 3: Problems and benefits of the way NFRs and FRs ar | e handled |
| In | In the earlier questions, you answered that you distinguish bet | ween NFRs and FRs in the documentation. |
| Pa | Part 3: Problems and benefits of the way NFRs and FRs ar | e handled |
| | In the earlier questions, you answered that you do not distingu | |
| | Do you experience negative consequences in your curre in the documentation? | nt work that result from distinguishing between NFRs and FRs |
| If | If yes, please explain why. | |
| | | |
| D: in | Do you experience positive consequences in your currer in the documentation? | t work that result from distinguishing between NFRs and FRs |
| If | If yes, please explain why. | |
| | | |
| D(| Do you experience negative consequences in your curre FRs in the documentation? | nt work that result from not distinguishing between NFRs and |
| If | If yes, please explain why. | |
| | | |
| De FF | Do you experience positive consequences in your currer FRs in the documentation? | t work that result from not distinguishing between NFRs and |
| If | If yes, please explain why. | |
| | | |
| | | |
| | | |
| | Li Li | |
| Pa | Part 3: Problems and benefits of the way NFRs and FRs ar | e handled |
| In t | In the earlier questions, you answered that you do not document NFRs. | |
| D | Do you experience negative consequences in your curre | nt work that result from not documenting NFRs? |
| If | If yes, please explain why. | |
| | | |
| | | |
| | | |
| | | |

| If yes, please explain why. | | | | | | |
|---------------------------------------------------------------------------------------|-------------------------|-------------|------------------------------------|----------------|--------------------|------------|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| 7 Hypotheses | | | | | | |
| | | | | | | |
| Part 4: General statements | | | | | | |
| In the following, we list a set of statements a | | _ | | | | |
| Please consider your experiences: To w | hich degree Strongly | do you agre | ee with the follo Neither agree | wing staten | nents? Strongly | |
| | agree | Agree | or disagree | Disagree | disagree | Don't know |
| Many NFRs describe functional aspects of a system. | 0 | 0 | 0 | 0 | 0 | 0 |
| Functional requirements are often labelled as NFRs. | 0 | 0 | 0 | 0 | 0 | 0 |
| NFRs are often specified by referencing a standard or a legislative text. | 0 | 0 | 0 | 0 | 0 | 0 |
| Only few NFRs deal with architectural aspects. | 0 | 0 | 0 | 0 | 0 | 0 |
| The application domain strongly influences the relevance of individual types of NFRs. | 0 | 0 | 0 | 0 | 0 | 0 |
| In requirements elicitation, the focus is on FRs, not on NFRs. | 0 | 0 | 0 | 0 | 0 | 0 |
| NFRs are often described in too vague terms. | 0 | 0 | 0 | 0 | 0 | 0 |
| NFRs are often not sufficiently prioritized. | 0 | 0 | 0 | 0 | 0 | 0 |
| NFRs are sometimes ignored. | 0 | 0 | 0 | 0 | 0 | 0 |
| Most NFR types are difficult to test properly. | 0 | 0 | 0 | 0 | 0 | 0 |
| Testing NFRs is time consuming. | 0 | 0 | 0 | 0 | 0 | 0 |
| Testing NFRs is impossible. | 0 | 0 | 0 | 0 | 0 | 0 |
| Many NFRs remain undiscovered. Architects do not share a common | 0 | 0 | 0 | 0 | 0 | 0 |
| terminology for types of NFRs. | | 0 | 0 | 0 | 0 | 0 |
| NFRs are mainly elicited by architects. NFRs are often not documented. | 0 | 0 | 0 | 0 | 0 | 0 |
| The documentation of NFRs is not always precise. | 0 | 0 | 0 | 0 | 0 | 0 |
| The documentation of NFRs usually becomes desynchronized. | 0 | 0 | 0 | 0 | 0 | 0 |
| NFRs are satisfied at the end of the project. | 0 | 0 | 0 | 0 | 0 | 0 |
| Software architects do not use a specific tool for NFR management. | 0 | 0 | 0 | 0 | 0 | 0 |
| Only few types of NFRs are validated at the end of the project. | 0 | 0 | 0 | 0 | 0 | 0 |
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| In case you are interested in the survey | results ent | er vour e-m | nail address her | e. | | |
| Jase you are interested in the survey | . 224.03, 2110 | , | | - - | | |

In case you agree to post your email address, we will provide you with an overview of the survey results after an inital analysis. In any case, please be assured that the survey follows a high academic standard and is conducted anonymously. We will not associate your email address with your answers and exclusively use the adresses for the purpose of providing you with the survey results!

Do you experience positive consequences in your current work that result from not documenting NFRs?

| Would you like to participate in an interview, if we have further questions concerning this topic? |
|----------------------------------------------------------------------------------------------------|
| If you say yes here, please provide your e-mail address in the previous question. |
| Yes, I would like to participate in an interview |
| □ No |
| |
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| Thank you very much for taking part in this questionnaire. |
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