

## 6<sup>th</sup> PPgSI's Dissertations Workshop 2019

### Analysis of requirements elicitation techniques in management control software development

Author:	Naiara Crislaine Alflen			
Advisor:	Edmir Parada Vasques Prado			
Co-advisor:				
Research lines:	<input checked="" type="checkbox"/> Systems Development and Management		<input type="checkbox"/> Systems Intelligence	
Research areas:	<input type="checkbox"/> Database <input checked="" type="checkbox"/> Software engineering		<input type="checkbox"/> Artificial intelligence <input type="checkbox"/> Graphics processing	
	<input type="checkbox"/> Information technology management <input type="checkbox"/> Human-Computer Interaction		<input type="checkbox"/> Pattern recognition <input type="checkbox"/> Optimization	
Application areas:	<input checked="" type="checkbox"/> Enterprise environments / Business processes <input type="checkbox"/> Bioinformatics <input type="checkbox"/> Biometrics <input type="checkbox"/> Mobile devices <input type="checkbox"/> Economy <input type="checkbox"/> Education / Distance learning <input type="checkbox"/> E-government <input type="checkbox"/> Internet / Social Networks <input type="checkbox"/> Games / Serious games <input type="checkbox"/> Linguistics / Natural Language <input type="checkbox"/> Cheminformatics <input type="checkbox"/> Robotics <input type="checkbox"/> Health <input type="checkbox"/> Other Which? _____ <input type="checkbox"/> General*			
Period in the program (at the workshop date):	<input type="checkbox"/> 2 <sup>nd</sup> semester	<input checked="" type="checkbox"/> 3 <sup>rd</sup> semester	<input type="checkbox"/> 4 <sup>th</sup> semester	<input type="checkbox"/> 5 <sup>th</sup> semester
Qualifying:	<input type="checkbox"/> Qualifying held in:		<input checked="" type="checkbox"/> Plan for qualifying in: 30/08/2019	
Defense:	Deadline for deposit: 01/02/2021		Plan for defending in: 10/08/2020	
Publications associated with the master's project:	<b>No publications to date.</b>			

<b>The research project summary</b>
<p><b>Context:</b>            The quality of the requirements is influenced by the techniques used in elicitation, as it is a time for learning and communication with users (HICKEY; DAVIS, 2019). In the literature there are several techniques for requirements elicitation. Authors present that the combination of techniques can help in extracting high quality user requirements and better understanding of the problem (Mishra et al., 2018; ALVERTIS et al., 2016).</p>
<p><b>Research problem:</b>            The use of only one technique for requirements elicitation may result in improper specification that affects the quality of the requirements (SAAD; DAWSON, 2018). The techniques depend on the context of the application, an elicitation technique may not work in all software contexts (HICKEY; DAVIS, 2019).</p>
<p><b>Research objective:</b>            Analyze the effectiveness of the requirements elicitation techniques in software development, most cited in the literature.</p>
<p><b>Characteristics of the proposed solution:</b>            The purpose of this research is to compare the techniques for requirements elicitation. The comparison is made through experimental research in the development of a software project in an Information Systems undergraduate class at USP. The techniques applied for data collection, analysis and interpretation have qualitative and quantitative approaches. The quantitative approach is performed with the survey technique for data collection. The qualitative approach is performed by monitoring the activities of the experiment, with interviews, observation and diaries of meetings with the teams (BAPTISTA; CAMPOS, 2018).</p>
<p><b>Theoretical foundations:</b>            List the theories that form the basis for building your solution.</p>
<p><b>Correlated works:</b>            Three related works are highlighted: (i) <i>State of practice in requirements engineering: contemporary data</i> (KASSAB; NEILL; LAPLANTE, 2014) presents the techniques for eliciting requirements most applied in the business context. (ii) <i>How cloud providers elicit consumer requirements: An exploratory study of nineteen companies</i> (TODORAN; SEYFF; GLINZ, 2013) an exploratory study with nineteen companies from ten countries to understand the elicitation of requirements in the cloud context. (iii) <i>Requirement elicitation techniques for an improved case based lesson planning system</i> (SAAD; DAWSON, 2018) presents that the use of only one technique for requirements elicitation may result in improper specification that affects the quality of the requirements.</p>
<p><b>Validation</b>            The results of the groups will be evaluated through a survey and subsequently compared. The comparison between the groups aims to validate the hypotheses: H1 - The combination of specific techniques improves the requirements elicitation process. H2 - Combining techniques with direct user involvement improves the process of eliciting usability requirements. H3 - Combining techniques with direct user involvement improves the process of eliciting security requirements.</p>
<p><b>Limitations, risks, and threats:</b>            The project will be validated in the educational environment with a small sample of participants. The best scenario for research validation would be in the actual software development environment.</p>
<p><b>Scientific contribution:</b>            Systematic review with techniques for elicitation in the context of software development. Comparison study of techniques for requirements elicitation</p>
<p><b>Technical contribution (if pertinent):</b>            Study of the effectiveness of technical groups for requirements elicitation.</p>

<b>The research method</b>			
Genre (choose ONE)	<input type="checkbox"/> Theoretical research	<input checked="" type="checkbox"/> Practical research	<input type="checkbox"/> Empirical research <input type="checkbox"/> Methodological research
Nature (choose ONE)	<input type="checkbox"/> Basic research <input checked="" type="checkbox"/> Applied research		
Approach (choose ONE)	<input type="checkbox"/> Quantitative research	<input type="checkbox"/> Qualitative research	<input checked="" type="checkbox"/> Quali-quantitative research
Literature review* (you can choose more than one)	<input type="checkbox"/> Narrative review <input checked="" type="checkbox"/> Descriptive review <input type="checkbox"/> Scoping review	<input type="checkbox"/> Meta-analysis <input checked="" type="checkbox"/> Qualitative systematic review <input type="checkbox"/> Umbrella review	<input type="checkbox"/> Theoretical review <input type="checkbox"/> Realistic review <input type="checkbox"/> Critical review
Main technical procedure (choose ONE)	<input checked="" type="checkbox"/> Experimental research <input type="checkbox"/> Bibliographic research <input type="checkbox"/> Documental research <input type="checkbox"/> <i>Ex-post-facto</i> research	<input type="checkbox"/> <i>Survey</i> <input type="checkbox"/> Case study <input type="checkbox"/> Participatory research <input type="checkbox"/> Research-action	<input type="checkbox"/> Ethnographic research <input type="checkbox"/> Grounded theory <input type="checkbox"/> Design science <input type="checkbox"/> Other Which? _____
Data analysis (you can choose more than one)	<input checked="" type="checkbox"/> Descriptive statistics <input type="checkbox"/> Inferential statistics	<input type="checkbox"/> Statistical test <input checked="" type="checkbox"/> Content analysis	<input type="checkbox"/> Discourse analysis <input type="checkbox"/> Others: _____

\* Definition of types of literature reviews established by Paré, G., Trudel M-C., Jaana M., Kitsiou, S. Synthesizing Information systems knowledge: A typology of literature reviews. In: Information & Management 52, p. 183-199, 2015. DOI: 10.1016/j.im.2014.08.008

<b>Next steps:</b>					
Task	aug-oct/2019	nov-jan/2020	feb-apr/2020	may-jul/2020	aug/2020
Qualifying Deposit	x				
Experiment application	x	x			
Analysis of collected data		x	x		
Partial publication of results	x				
Dissertation Writing	x	x	x	x	x
Dissertation Deposit					x