Evaluation of the Ontoagile through a focal group

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Introduction

Once a first full version of the ontology for the agile development of software - OntoAgile was defined, a focus group was carried out with experts in the area of software processes and agile approaches following the parameters established in [1] and [2]. The objective of the focus group was to know their opinion about a series of quality criteria that were adapted from the criteria for evaluation of ontologies proposed in [3].

According to [1], the focus group is a quick and cost-effective empirical method for obtaining qualitative information and comments from a group of 3 to 12 participants. This method is adequate to perform the initial assessment of potential solutions based on the opinions of the participants or potential users. In addition, the focus group allows compiling recommendations of lessons learned or generating new ideas.

1. Focus group objectives

- To obtain feedback from participants on accuracy, adaptability, clarity, completeness, conciseness and consistency of OntoAgile.

2. Research Objectives

- Conduct the initial evaluation of OntoAgile as a potential ontology for agile software development.
- Collect recommendations and new ideas from experts in software processes and agile approaches.

3. Design of discussion groups

For the selection of the focus group participants (4 in total), the following criteria have been defined:

- People with theoretical/practical knowledge in agile software development.
- People with experience in the Software Industry.
- People with theoretical/practical knowledge in software processes.

4. Analysis of results

During the session, the proposed ontology was presented to the participants focusing on the following aspects:

- ✓ Ontology purpose
- ✓ Competency questions
- ✓ Ontology graphic representation using UML
- ✓ Glossary of concepts in the Ontoagile

- ✓ Implementation of the ontology using OWL
- ✓ SPARQL queries to the ontology

Once the session was finished, the questionnaires completed by each one of the participants and the contributions made during the development of the activity were analyzed. The Table 1 presents the questions asked and the response count. The participants of the focus group answered according to the following scale based on their level of compliance: totally in agreement (TA), largely agree (LA), partially agree (PA), little agreement (LTA) and disagree (D).

Table 1 Results of the questions performed in focus group. Source: The authors

Id.	Quality criteria type	Questions	Results				
			TA	LA	PA	LTA	D
Q1	Accuracy	Does the ontology capture and represent correctly aspects of the agile development processes?	1	2	1	0	0
Q2	Adaptability	Can the ontology be extended and specialized without the need to remove axioms?	0	4	0	0	0
Q3	Clarity	Does the ontology communicate effectively the intended meaning of the defined terms?	0	1	3	0	0
Q4	Completeness	Is the domain of agile processes appropriately covered?	0	2	2	0	0
Q5	Completeness	Are competence questions defined and the ontology can answer them?	3	1	0	0	0
Q6	Conciseness	Does the ontology specify the weakest possible theory and define only the essential terms?	2	2	0	0	0
Q7	Consistency	Are the axioms free of contradictions?	3	1	0	0	0
Q8	Consistency	Are formal and informal descriptions of the ontology consistent?	1	3	0	0	0

Figure 1 graphically presents the results previously presented in Table 1. It is possible to observe that the participants positively scored most of the quality criteria evaluated during the session. However, in Figure 1 it is also possible to observe that there are some aspects that are not considered favorable (Q1, Q3, Q4), so it was decided to carry out improvement actions in the ontology. Table 2 summarizes the improvement actions carried out.

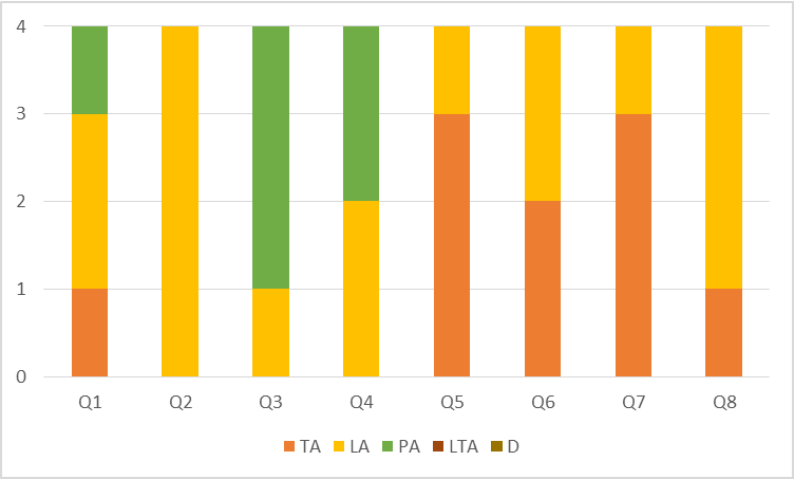

Figure 1 Focus group consolidated results. Source: The authors.

5. Improvement actions

Based on the analysis of the results and the comments obtained in the discussion session, improvement actions were carried out on the ontology (see Table 2), thus obtaining a final version, which is available at http://bit.ly/owl-ontoagile.

Table 2 OntoAgile improvement actions

#	Improvement action
1	The concept "process reference model" was replaced by the concept "Software development life cycle". This last concept represents more clearly the reference model that describes software processes and determines the activities, roles and tools that will be used.
2	The concept "Hybrid approach" was added due to its importance in the current software development industry where organizations employ practices of agile approaches maintaining practices of traditional approaches that have been useful to them.
3	The concept "Agility indicator" was replaced by the concept "Indicator" which is more generic and is part of the Software Measurement Ontology - SMO (already integrated with OntoAgile). In addition, other software measurement concepts that are part of the SMO ontology were added, such as: Measure, Scale, Measurement Approach, Decision Criteria and Analysis model. These concepts are important to represent the process of measuring the agility of software processes.

References

[1] M. Mendoza, C. González, and F. J. Pino, "Focus Group Como Proceso En Ingeniería De Software: Una Experiencia Desde La Práctica.," *DYNA*, vol. 80, no. 1, pp. 51–60, 2013.

[2] S. Juan and A. Roussos, "El focus group como técnica de investigación cualitativa," *Doc. Trab. Nº 256*, vol. 9, pp. 1–12, 2010.

[3] S. Staab and R. Studer, *Handbook on Ontologies*, 2nd ed. Springer-Verlag Berlin Heidelberg, 2009.