State of the Art: Software Engineering Standard (ISO/IEC29110)

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Abstract— **Software Engineering Standards are guidelines in developing a system. Systems that are developed without implementing certain standards will cause many problems after the system is implemented. The quality of software developed by applying a standardization of course produces reliable and efficient software.**

This article aims to discuss the implementation of ISO/IEC29110 standardization. There are 4 journals that will be reviewed in the State of Art Review table. This article is the author's point of view on the journals listed in the Software Engineering Standards which may have different opinions.

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Keywords— **Software Engineering Standard, State of the Art**

I. INTRODUCTION

Recently, the ISO/IEC 29110 systems and software engineering standard aimed at improving life cycle processes in Very Small Entities (VSEs) has been developed and started to be implemented worldwide, mainly in Canada, Mexico and Thailand. Experience gained from the pilot projects and ISO/IEC 29110 standard implementations has been concluded and published showing that the implementation has been predominantly successful, however with certain issues arising. Lessons learned from a review of 9 case studies of ISO/IEC 29110 implementations in a Canadian context pointed out the issues connected with a customization of the standard to agile practices used in VSEs, which was also stated in. Further, an issue of customization of the standard terminology to a terminology used by VSEs was identified along with the need for a support of the transition from ad-hoc processes to defined processes. The implementation of the ISO/IEC 29110 standard in an IT startup in Peru described in emphasized the challenges connected with the translation of deployment packages that support the implementation of the standard to Spanish and the need of the identification of relationships between work products and objectives they contribute to achieve. Further requirements for a ISO/IEC 29110 standard improvement were stated in, as for example (1) provide detailed guidelines and assistance; (2) align with existing company business and development processes; (3) align with other specific software technical standards and processes.

The above mentioned issues are connected with the fact that software and system development is a complex activity, which is highly sensitive to human interaction and team work. The contribution of this paper lies in compared of implementing ISO/IEC 29110 from various studies. Lastly, overall contribution and concluding remarks are stated.

II. METHOD

Mirna Muñoz, Jezreel Mejia, Adriana Peña, Graciela Lara, Claude Y. Laporte mapping between MoProSoft and ISO/IEC base profiles 29110. According to the results obtained in this paper, we can conclude that SDCs at universities should start implementing the Basic profile of ISO/IEC 29110 to reinforce the practices that should be carried out to perform a project. This provides better technical proven practices regarding activities such as requirements management, architectural and detailed design, coding and testing. It also provides new knowledge to reinforce the management activities in the same way it provides basic management practices on how a team should perform in the development of a project. Once they adopt ISO/IEC 29110, they can start to implement the requirements of MoProSoft to cover other needs regarding organizational management and business management.

Luis Castillo-Salinas, Sandra Sanchez-Gordon, Jorge Villarroel-Ramos evaluated the implementation of the ISO/IEC 29110 Software subset of the implementation process in four teams of Ecuadorian undergraduate students. In addition to doing ArchiMate modeling, this research also conducted

interviews to evaluate the application of the ArchiMate model.

Alena Buchalcevova also using ArchiMate to model ISO/IEC 29110 standard for very small entities, and Xabier Larrucea, Borja Fernandez-Gauna mapping study about the standard ISO/IEC29110.

III. RESULT

State of the Art aims to explain from the topic and purpose of each research, the methods, findings, advantages and disadvantages of each article in implementing Software engineeting Standards simply as follows:

IV. CONCLUSION

Each reviewed journal has its own advantages and disadvantages. for each existing journal has its own uniqueness in describing the Software Engineering Standard (ISO/IEC 29110) system it makes. Each journal has the needs of each appropriate description to explain the standardization that will be made. for this article is an assessment of each journal from the author so that there may be different opinions with readers. This article might be developed further to become a better article.

REFERENCES

[1] Mirna, Jezreel, Adriana, Graciela, Claude. Transitioning international software engineering standards to academia: Analyzing the results of the adoption of ISO/IEC 29110 in four Mexican universities. 2019.

[2] Luis, Sandra, Jorge. Evaluation of the implementation of a subset of ISO/IEC 29110 Software Implementation process in four teams of undergraduate students of Ecuador. An empirical software engineering experiment. 2020.

[3] Xabier, Borja. A mapping study about the standard ISO/IEC29110. 2019.

[4] Alena. Using ArchiMate to model ISO/IEC 29110 standard for very small entities. 2019

[5] Setyawan Widyarto(2022). Rancangan Perangkat Lunak. International Community Forum (ICF).

Table 1. SOTA Software Engineering Standard

Source Information	Mirna Muñoz, Jezreel Mejia, Adriana Peña, Graciela Lara, Claude Y. Laporte	Luis Castillo-Salinas, Sandra Sanchez-Gordon, Jorge Villarroel-Ramos	Xabier Larrucea, Borja Fernandez-Gauna	Alena Buchalcevova
Research topic/question	Transitioning international software engineering standards to academia: Analyzing the results of the adoption of ISO/IEC 29110 in four Mexican universities	Evaluation of the implementation of a subset of ISO/IEC 29110 Software Implementation process in four teams of undergraduate students of Ecuador. An empirical software engineering experiment	A mapping study about the standard ISO/IEC29110	Using ArchiMate to model ISO/IEC 29110 standard for very small entities
Methodology	quant	Survey : quant & qual	quant	Survey : quant & qual
Findings	the processes of the Basic profile of ISO/IEC 29110 are better covered by the universities curricula than MoProSoft	Implementing a software process (ISO/IEC TR 29110–5–1–2) of better quality than without the guide	The results of this mapping reveal that ISO/IEC 29110 has been used in a broad range of small contexts, and the main contributions are basically from research experiences during the recent last ten years	defining specific mapping between the ISO/IEC 29110 Basic Profile and ArchiMate, which enabled to develop the ISO/IEC 29110 Basic Profile ArchiMate Model aimed at improving Basic Profile implementation in Very Small Entities
Limitations	Focuse on universities curricula	four teams of undergraduate students of a university of Ecuador	184 papers were retrieved from the literature and selected as primary studies	this research is thus to use the ArchiMate modeling language to express the content of the ISO/IEC

				29110 Basic Profile and this way to facilitate its implementation in Very Small Entities.
Areas for future research	Implementing the requirements of MoProSoft to cover other needs regarding organizational management and business management.	Important factors such as the level of satisfaction of the team members as well as their soft skills and previous experience should be considered in the experiment design	More research and experimental outcomes are needed in order to observe how VSEs behave under specific circumstances.	modeling of other aspects of the ISO/IEC 29110 standard in the ArchiMate language should be considered, especially other Motivation elements could be used, as well as Strategy and Implementation and Migration elements.