An Overview of ISO 29119

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Abstract: This paper tries to look into in depth of new software testing standarad i.e ISO 29119. This new standard is mandatory and has been divided into five parts. The various parts of the Standard provides not only the definitions and conceptual framework. Further it provides the process, the models and templates used by this Standard. Finally, it tells about keyword driven testing which is at the core of this Standard. The main focus of ISO 29119 is on that software testing should focus on providing information about a software product and finding as many defects as possible, as early as possible, in the development process under given constraints of cost and schedule.

Keywords: ISO, 29119, keyword driven testing

1. INTRODUCTION

Standards are basic guidelines which are of help to number of stakeholders like manufacturers and consumers. ISO says that guidelines are basically guidelines to serve as a tool to fall back upon where some reference is needed in order to arrive at consensus. They ensure that certain kind of professional discipline is maintained. Whenever change occurs in the industrial environment there is a need for some new or revision of Standards. This paper specifically looks into ISO 29119 of software testing.

2. OBJECTIVES OF THE PAPER

- To have an in-depth discussion on ISO 29119

- To look into its historical perspective

- To conclude on the pros and cons of ISO 29119

3. HISTORICAL BACKGROUND

Earlier the International Organization for standardisation was not having any Working Group with software testing experience. It all commenced in 2007 and ISO created WG26 which developed this standard which had only four sections having

- Conceptual framework and definitions

- Test processes

- Test documentation

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- Test techniques

A fifth part concerning process assessment was considered for addition, and it was named as ISO/IEC 33063:2015. The actual fifth part is of relatively new origin which came into publication in November 2016 and revolves around the concept of keyword –driven testing.

4. DISCUSSION

The software industry provides number of standards. We have plethora of standards namely from ISO and IEEE etc. to further the list, we have a new ISO standard just for software testing and is named as ISO/IEC/IEEE/29119. IEEE prescribes that these new software testing standards are to be used in software development life cycle (SDLC) or in any organization involved in software development and testing.

Usage of such a standard will be beneficial for organisations in number of ways, one it is following the standard prescribed which mandated and other benefit is is having quality in software testing. Once an organisation uses standards it is having uniform practices which help in having homogeneity across organisations. This new standard has five parts which are discussed below:
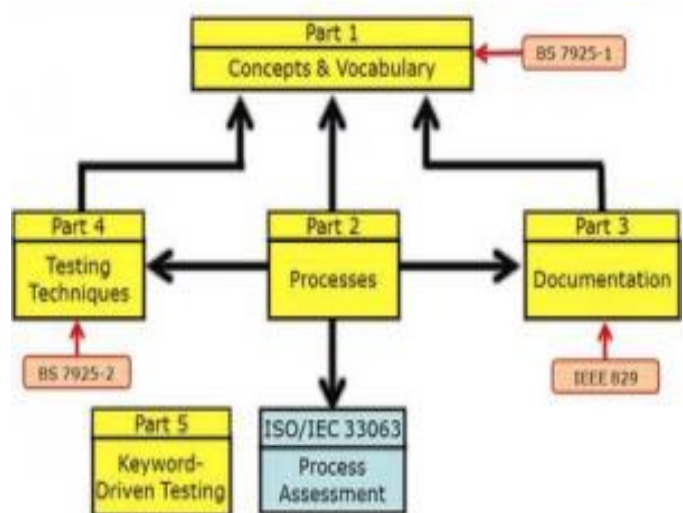

Fig. 1. Structure of ISO 29119

Source: https://xbosoft.com/blog/iso-29119-useful/

ISO/IEC/IEEE 29119-1

The first part of the new Standard provides concepts and definitions. The first part is the primary part of the standard which will help the users to understand and actually use this new standard under this new series. The first part provides with descriptions of the concepts and different ways to apply processes, documents and techniques. Thus we can say, it lays down the foundations of software testing standard.

ISO/IEC/IEEE 29119-2

The second part deals with the process model for testing of software. This model can be used in the life cycle of software development. The major aim of this process model is to tell how software testing is going to be implemented and effectively managed and governed in any organisation. This part also discerns about mitigation of risks in implementation of such process. This part two of the standard prioritizes software testing. It has its focus on features and other attributes related to quality of system under testing.

ISO/IEC/IEEE 29119-3

The next part of the Standard gives the users templates unbelievably for the whole of the life cycle of the software. The templates which help users as a guide are tailor made for every organisation. This is the best thing about the standard that it provides specific solutions to the organisations using them. This standard will displace the existing 829 standard.

ISO/IEC/IEEE 29119-4

This part focuses on software test design techniques for organisations and SDLC models. Again, the part four of the standard is going to drift away the BS- 7925. This document centres on how to derive test conditions, test coverage items and test cases.

ISO/IEC/IEEE 29119-5

ISO/IEC/IEEE 29119-5 is considered as part five of the software testing standards. The 29119-5 standard emphasises on keyword driven testing. The standard covers the following topics:

- The main aim of this part is to give an introduction about Keyword driven testing. This elaborates on the advantages of such testing. It also explains how these keywords can be organized into several layers, common keywords and how these keywords are associated with data.

- It further tells how to identify keywords. It suggests the points which need to be taken care of in maintenance of

defined sets of keywords. It tells anout how keywords are used to create test cases. And also throws light on how Keyword-Driven Testing and data driven testing are related.

- This type of keyword driven testing has frameworks which has software tools, individual scripts and documentation. This part provides insights on how to develop suitable keyword driven test framework. It tells about its various properties.

- This part of keyword driven testing elaborates on data interchange too. Data interchange is basically the type of data required for tools of keyword driven testing and describes data format too.

- This part also tells uses and various issues related to keyword driven testing and how to get started with this testing.

- Various roles in keyword driven testing which can be allocated to different team members are explained related to vis a vis their qualification.

- Finally, it tells certain basic keywords.

- This standard is applicable to all those who want to create keyword-driven test specifications, create corresponding frameworks, or build test automation based on keywords. Along with the above mentioned ISO/IEC/IEEE 29119 software testing standards, there is an addendum to part 2, which is the ISO/ IEC 33063 – Process Assessment Model for software testing. This process model contains a set of indicators to be considered while interpreting the intent of a process reference model. The process reference model 29119-2 forms the basis for the 33063 process assessment model for software testing.

With the introduction of ISO/IEC/IEEE 29119 standards, some of the existing standards will be replaced. These are:

- IEEE 829 Test Documentation

- IEEE 1008 Unit Testing

- BS 7925-1 Vocabulary of Terms in Software Testing

- BS 7935-2 Software Component Testing Standard (will be replaced)

5. CONCLUSION

The main focus of ISO 29119 is on that software testing should focus on providing information about a software product and finding as many defects as possible, as early as possible, in the development process under given constraints of cost and schedule. The major aim of this new standard is to describe generic testing processes. ISO 29119 has a controversial aspect to it at the same time. People against it

argue that the standard defines in great detail the process and the documents for testing, but fails to clarify the purpose of testing, the outcomes that stakeholders expect. ISO 29119 is vague about the ends towards which we are working, but tries to be precise about the means of getting there. But, the paper can be concluded saying the ISO/IEC/IEEE 29119 intended to cover testing of any software system. It provides a common language and process for testing software systems, including a categorization of conventional testing techniques.

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