Read Me: How to use the material provided

This online toolbox provides various open educational resources for an application of FMEA in open source product development (OSPD).[1]

What is it about:
The Failure Mode and Effects Analysis (FMEA) is a qualitative reliability and risk analysis method for preventive quality assurance. In a systematic team-based approach, the FMEA aims to identify all possible kind of failure modes, their causes and the effects that can occur. The following risk analysis leads to a comprehensive list of prioritized risks. Through the definition of corrective actions and the control of an effective implementation, FMEA increases functionality and reliability of products and processes.[2]

The following material is provided:

FMEA introduction - Presentation that introduces FMEA and outlines the advantages and procedure for OSPD. The presentation addresses legal aspects, possibly relevant norms and includes references for further information about a thorough implementation.

FMEA guide - The step-by-step guide provides an in-depth look into FMEA and demonstrates its procedure by the example of a butane lighter.

FMEA empty template - Empty template that can be used for own application.

COSI Measure FMEA – FMEA example on COSI Measure

COSI Measure structure tree – Structure for the mechanical subsystem of COSI Measure.[3]

The files are provided in form of an *Excel* template and as well as in form of the alternatively open business applications *Calc*. The spread sheet application *Calc* is published as free software by the open source software community LibreOffice.[4] By using freely accessible software in the toolbox the author aims to further simplify the use of FMEA.

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[1] See Open Educational Resources: URL https://en.unesco.org/themes/building-knowledge-societies/oer, accessed June 13, 2019
[2] Jochem, R., & Kohl, D. (2011, S. 182). Six Sigma leicht gemacht: Ein Lehrbuch mit Musterprojekt für den Praxiserfolg (1. Aufl.). Düsseldorf: Symposion Publishing.
3 See URL https://github.com/opensourceimaging/cosi-measure/tree/master/Mechanical%20System, accessed June 13, 2019
4 See URL https://www.libreoffice.org/about-us/who-are-we/, accessed June 13, 2019

Sources:

The author conducted an ethnographic study of community members of Open Source Imaging (OSI) – an initiative that collaboratively builds open source medical equipment.[5] The fieldwork lasted seven months and had the purpose to apply a FMEA for the first time to an open source developed product. Individuals of the community worked together with the researcher to implement a FMEA for the three-axis robot COSI Measure.[6] The resulted FMEA is presented above. All other files have been elaborated by the researcher and were tested during the study. Other sources used are referenced in each particular file.

[5] See URL https://www.opensourceimaging.org/2016/05/01/about/, accessed June 13, 2019
[6] See URL https://www.opensourceimaging.org/project/cosi-measure/ accessed June 13, 2019