

Bachelor Thesis

Adaptation and Implementation of an Advanced Product Quality Planning (APQP) Concept into the Product Development Process of X-Ray Systems

Abstract

Advanced Product Quality Planning (APQP) is a quality management approach used to improve product quality by planning quality during the design and development phase into the product. The evaluation, improvement and implementation of APQP concepts for the development process of X-ray systems at Philips DXR Hamburg is one of the major aims of this thesis.

Firstly, APQP approaches in the existing DXR development process are presented and evaluated on the basis of already running pilot projects with involvement of suppliers. Within these projects, a plan called *Production Part Quality Assurance Plan* (PPQAP) is used. As conclusion of the pilot project experience as identified by interviews, the APQP deliverables submitted as documents were not always corresponding to real processes and products and they are not considered in the overall development project.

These data are used to validate and to improve the final APQP concept and its implementation at Philips DXR Hamburg: The PPQAP deliverables are defined as mandatory for milestone reviews in the development project and the review is not only document-based but takes place on site to ensure the effectiveness of APQP. Furthermore, a common understanding of PPQAP should be established by creating training material explaining both, the APQP method and related quality tools.

Secondly, *Product Development, Launch and Maintenance* (PDLM) is currently rolled out and implemented as Philips Healthcare-wide process including a further, APQP-derived concept. This APQP concept is represented by the *Part Submission Warrant* (PSW) template.

Within a next step of this thesis, the PPQAP concept and the PSW concept are analyzed and compared with each other. Strengths and weaknesses of the concepts and the estimated applicability at DXR Hamburg include the differing interpretation of the APQP phases. The PPQAP concept does not take the phase *Feedback and Improvement* into account whereas the PSW does not include the first phase, *Plan and Define*. A key finding of the analysis is the resemblance of the PSW concept to the *Production Part Approval Process* (PPAP).

Finally, tools and methods for effective implementation of the APQP concept with special focus on change management and training activities are developed within the frame of this thesis.

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Datum der Abgabe: 26.10.2017