

Towards a Quality Framework for Enterprise Architecture Models

Simon Hacks¹ and Felix Timm²

Keywords: Enterprise Architecture, model quality, quality framework, EA modeling

Enterprise Architecture Management (EAM) addresses inter alia effective and efficient Business-IT-alignment [Ahl12]. One central artefact of EAM is the enterprise architecture (EA) model. It provides a holistic view on the enterprise with respect to its elements and dependencies that are required for value creation. In general, the EAM discipline is an extensively discussed research field [Sim13]. Nevertheless, to our knowledge no widely accepted approach exists, that enables stakeholders of EA to completely assess the EA model's quality. As we found out during our research, only a few articles address this research gap with the specification of EA quality attributes, but without providing a holistic framework how to actually use them in an EAM context. Therefore, we solely focus on the EA model and define the following research question (RQ): What aspects does a framework for assessing the quality of EA models have to contain?

To answer this research question, we created a first artifact following the means of design science research [Pef07] in [Tim17]. Therefore, we conducted a systematic literature using the combination of the terms “enterprise architecture”, “model” and “quality” in abstracts of articles on the Scopus and AISeL databases from 2007 to the present and ended up with seven different articles relevant to our research. Those seven articles serve as input for our framework, which is based on the six principles for proper modelling of [Bec12].

Figure 1 depicts the Enterprise Architecture Model Quality Framework (EAQF). It is structured by three dimensions: (i) EA purpose, objective, stakeholders, (ii) EA model as a whole, and (iii) certain EA model views. Statements should be made regarding these dimensions. Thus, for each of these dimensions we identify quality attributes that can be related to the six principles from [Bec12] and provide measures how to assess these attributes based on the related literature.

We demonstrate and evaluate our framework by applying the proposed means to a single case study. This case study showed that EAQF supports a better EA development and helps uncovering quality flaws. This is grounded by the fact that it can be facilitated as a setting to guide through the development.

¹ RWTH Aachen University, Research Group Software Construction, Ahornstr. 55, 52074 Aachen, simon.hacks@swc.rwth-aachen.de

² University of Rostock, Chair of Business Information Systems, Albert-Einstein-Straße 22, 18059 Rostock, felix.timm@uni-rostock.de

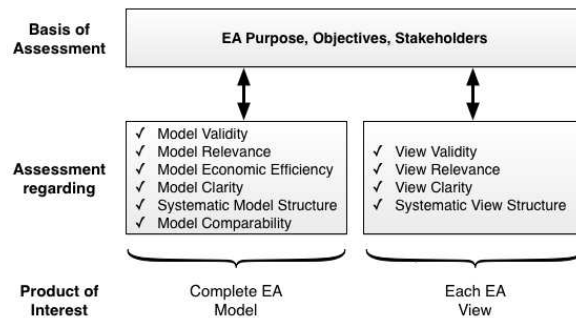


Fig. 1: The Enterprise Architecture Model Quality Framework (EAQF)

Our research still offers different improvement potentials. First, our conducted SLR covers limited number of search terms. Second, the external validity of EAQF needs further investigations. Third, a case study does not ensure that the quality attributes are sound and complete. Fourth, the maturity grade of the EAM unit may be an important point, since for organizations with a low grade other quality attributes can be interesting compared to those with a higher grade. Fifth, the framework should be configurationally as every organization has special demands towards EAM. Last, executing EAQF has shown that questions are interrelated with each other. Though, these relations are not made explicit. This should be explored in future work, since this can reduce the needed effort to execute EAQF significantly.

Bibliography

- [Ahl12] Ahlemann, F.; Stettiner, E.; Messerschmidt, M.: Strategic Enterprise Architecture Management. Challenges, Best Practices, and Future Developments. Springer, Berlin Heidelberg, 2012.
- [Bec12] Becker, J.; Probandt, W.; Vering, O.: Grundsätze ordnungsmäßiger Modellierung. Konzeption und Praxisbeispiel für ein effizientes Prozessmanagement. Springer, Berlin Heidelberg, 2012.
- [Pef07] Peffers, K. et al.: A Design Science Research Methodology for Information Systems Research. In Journal of Management Information Systems, 2007, 24; pp. 45–77.
- [Sim13] Simon, D.; Fischbach, K.; Schoder, D.: An exploration of enterprise architecture research. In Communications of the Association for Information Systems, 2013, 32; pp. 1–71.
- [Tim17] Timm, F. et al.: Towards a Quality Framework for Enterprise Architecture Models. In (Lichter, H.; Anwar, T.; Sunetnanta, T. Eds.): Proceedings of the 5th International Workshop on Quantitative Approaches to Software Quality (QuASoQ 2017) co-located with APSEC 2017. CEUR-WS.org, 2017; pp. 10–17.