

Towards a Reference Compliance Organization in the Financial Sector

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Abstract. After the global financial crisis ten years ago, European directives in the financial sector demanded from financial organizations fast and complex adaptation regarding their organizational structure and compliance-related internal processes. Since then, these organizations primarily implemented isolated solutions to comply with the plethora of regulatory requirements. Still, no holistic approach is provided by neither research nor practice. In this paper we represent a reference model that uses enterprise architecture management (EAM) concepts to develop a reference compliance organization (R-CO) in a design science research approach. We contribute to practice by providing an approach for holistic regulatory compliance management. Further, we provide insights to reference model research by utilizing methods to the EAM domain.

Keywords: Reference Compliance Organization, Reference Enterprise Architecture, Regulatory Compliance Management, Compliance Management

1 Introduction

After the global financial crisis in 2007 the G20 nations agreed to reform the global financial markets. Five years later the Financial Times described the reactions to this agreement in the financial sector as a ‘tsunami’ of regulations [1]. Regulators of the European Union responded to G20’s agreements by a plethora of regulations addressing financial institutions. This included European Directives like Capital Requirements Directive IV (CRD IV), European Market Infrastructure Regulation (EMIR), Markets Abuse Directive II (MAD II), Markets in Financial Instruments Directive II (MiFID II) or the Fourth EU Directive for preventing Money Laundering IV. The latter, for instance, dictates what financial institutions are obliged to do in order to combat money launderers in their customer bases, by addressing means like hazard analysis, customer identification, further customer due diligences, prevention mechanisms and reporting duties [2].

Due to the increased number of regulations on national, European and international level especially for the financial sector, banks and other financial organizations are forced to implement a coherent Governance, Risk and Compliance (GRC) program [3]. Racz et al. define GRC as “*integrated, holistic approach [...] ensuring that an organization acts ethically correct and in accordance with its risk appetite, internal*

policies and external regulations through the alignment of strategy, processes, technology and people [...]” [4]. The compliance function of an organization herein has the objective to identify relevant regulatory requirements and to facilitate adherence to these obligations [5]. This is done by regulatory compliance management (RCM). Kharbili defines RCM as “...*the problem of ensuring that enterprises (data, processes, organization, etc.) are structured and behave in accordance with the regulations that apply, i.e., with the guidelines specified in the regulations*” [6].

Research and practitioners agree that financial organizations currently do not approach RCM issues in a holistic manner and rather implement isolated compliance solutions due to the plethora of short-term implementation deadlines [7, 8]. Such compliance solutions typically consist of organizational structures and processes supported by information systems and IT-based instruments [8]. A potential way for moving towards more integrated or holistic compliance solutions is to provide a reference model for the financial industry as a normative guide. Experiences from other industrial areas show that reference models can provide an accepted guideline which also helps in adaptation to future regulation changes.

Research results reported in this paper originate from a project sponsored by 9 member organizations of BITKOM, the German digital industry association, with the objective to develop such a reference model. The ambition is not to start “top-down” from existing regulations and their “translation” into actable compliance solutions but to analyze established practices in financial institutions and a “bottom-up” distillation of a reference from these practices. Such a “bottom-up” approach leads to numerous challenges including the method for developing the reference organization, the kind and quantity of financial institutions to include, the approach for capturing relevant practices, how to document the actual reference, etc. In this paper, the focus is on the motivation for the reference model, the process of development and the structure and evaluation of the first version. In the application domain, the reference is considered as reference compliance organization (R-CO); technically this has to be a reference enterprise architecture because business, application, information and technology architecture have to be tackled including their inter-dependencies (see section 4.2).

The paper is structured as follows: Section 2 describes the research design which is based on the design science paradigm. Section 3 report on a literature study about challenges in financial service compliance. Section 4 discusses the R-CO’s overall approach, its current structure and the development process applied. Section 5 summarizes the work and gives an outlook on future research.

2 Research Design

The main objective of this research is to design a reference model for IT-based compliance in financial industries that supports organizational and technological implementation of regulatory compliance and fulfils industry needs. The objective was decomposed into research questions (RQ) as a means to structure and guide the research activities required:

- RQ1. What are the current problems in regulatory compliance for institutions in financial industries and the requirements to a potentially solution? (Section 3)
- RQ2. Which methods are available for reference modelling? (Section 4.1)
- RQ3. How should a stable and standardized R-CO be shaped? (Section 4.2)
- RQ4. What benefits and drawbacks are to the R.CO? (Section 5)

The research work addressing the above RQ is structured in terms of the design science research (DSR) methodology proposed by [9] since it aims at designing a complex new artefact (i.e. the R-CO) and at acquiring new knowledge (e.g. discovering established practices in financial industries as a basis for such a reference architecture, demonstrating the use of the architecture to assess its strengths and limitations). Peffers et al. propose a process for DSR projects consisting of five activities which in our research work were performed as follows:

The first activity is *problem identification and motivation*. We performed a literature study to investigate the existing body of knowledge in the field of compliance in financial industries (see section 3). The results of this study indicated the need for a reference compliance organization spanning organizational and technological aspects, such as a reference enterprise architecture (REA). The business relevance was confirmed in the interview study performed as part of identifying objectives (activity 2) and designing the R-CO (activity 3). Activity 2 is to *define the objectives for a solution*. Objectives for the design of the R-CO originated in our case from using two instruments: focus group and interview study. Our research was funded by a group of 9 companies organized in a committee of the German IT-association BITKOM. The companies' representatives are experienced in the field of IT-based compliance and contributed objectives of the solution which were captured in a focus group-like setting (not discussed in this paper for brevity reasons). The interview study consisted so far of 71 phone interviews (each interview between 60 and 110 minutes) with compliance officers and other experts of financial institutions about their practices and their view on missing elements in IT-based compliance. The "missing elements" are input to the objectives; practices are a basis for activity 3 of the DSR process, the *design and development* of the actual artefact (see Section 4.2).

The fourth activity is *demonstration* that the artifact actually solves the problem. We performed expert interviews with consultants from enterprises providing IT-based compliance solutions (see Section 5). Activity 5, *evaluation*, has the intention to observe and measure how well the artifact supports the solution to the given problem. This is an ongoing activity in our project which includes validation workshops with the industrial partners funding the project and with financial institutions interested in applying the R-CO. This activity is only partly covered in Section 5.

3 Challenges in Financial Service Compliance

As stated in section 1, GRC and RCM in particular should aim to comply with complex regulatory obligations from a holistic perspective. Volonino et al. highlight that holistic compliance has to be considered enterprise-wide and, in contrast to simply complying to certain rules, it is about developing an integrated approach by identifying

both all relevant organizational elements and the relationships among them [10]. In reality financial institutions tend to implement insulated compliance solutions due to short-term deadlines set by regulators [7]. The question arises, how the above stated holistic and enterprise-wide RCM can be realized. In the context of the Sarbanes-Oxley-Act Wagner and Dittmar observed that a thorough implementation of RCM achieved side-benefits like process standardization or consolidation [11]. Further, Gozman and Currie understand a mature GRC as a new value-adding capability since it can be offered to third parties as a consulting service [7]. In the following we discuss IS research in compliance management in and beyond the financial domain. Based on this, we then motivate the need for our R-CO for financial organizations.

3.1 IS Research in Regulatory Compliance Domain

There exist numerous systematic literature reviews and meta-analyses in this field. Akgigbe et al. conduct a meta-analysis on the results of fourteen literature reviews, that focus on RCM of business processes [12]. As a result, they require future IS research to focus on real-life regulatory compliance scenarios and compliance enactment tasks (i.e. mechanisms to dynamically react to violation occurrences to re-establish compliance). Cleven and Winter focus on a broader and more aggregated perspective by including articles beyond business process management. Using the concept of EAM for their theoretical framework, they map the identified articles to the several EA layers [8]. Their work reveals that there exists no holistic approach covering all EA layers. Abdullah et al. identify gaps between industry challenges and research solutions in RCM by dint of expert interviews and a literature review [3]. They derive the need for benchmark studies, reference models and knowledge of appropriate IT support.

One topic of interest of IS research in RCM is compliance modeling, where legal requirements are identified [6]. Boella et al. understand methods from the discipline of requirements engineering as appropriate in this field. They think research lacks mechanisms for understanding legal reasoning and demand a dialogue among legal and industry experts [13]. Further, Ghanavati et al. provide a method that enables the extraction of legal requirements from regulations and articulates them in a “Legal GRL” (goal-oriented requirements engineering language), which can be used for compliant software development [14].

There are also contributions that focus on the regulatory impact on organizational and operational structures. Boella et al. identify the need to map legal interpretations with business rules and processes and introduce a web-based knowledge management system called Eunomos [15]. On Eunomos, legal researchers and practitioners map different interpretations to processes and rules. The authors define a procedure for financial institutes to use it and provide an example with the MiFID directive. Kahrbili introduces a conceptual framework for RCM in the domain of business process management [6]. Becker et al. discuss how reference model methods can be used by financial organizations to meet prior defined legal requirements [16]. Still, they only provide a methodical sketch for the compliance reporting domain. Timm et al. go one step further and develop a reference process model for customer identification in the context of anti-money laundering directives [17]. The reference model defines essential

steps a financial organization should perform in order to be compliant with current laws and also states the process data necessary to do so. The authors focus on internal behavior of organization in RCM, but since using an deductive approach their reference model is based on statements from legal texts or literature and may differ from actual real-life behavior of organizations as demanded by [12]. Another reference model is presented by Schlosser et al. [18]. Their functional reference model for business rules management can be used for better Business-IT alignment by defining requirements for rule-based IS solution in the regulatory context. On a more global perspective Foorthuis and Bos provide a strategical framework for implementing compliance means in an organization [19]. Unfortunately, the high-level approach lacks concrete means of implementations. Further, Gozman and Currie emphasize the importance of means like early engagements between software vendors and compliance managers or holistic data management [20]. By Conducting a long-term study with several financial institutions they derive eight IS capabilities they identified to be necessary to implement a holistic GRC initiative [7]. Their capability framework agrees with the holistic approach for RCM. Likewise, it emphasizes the vital role of information technology (IT) in the context of RCM.

3.2 Need for a Reference Compliance Organization in the Financial Domain

This section motivates the need for a reference compliance organization, which we provide with this work. We extract some requirements for IS research discipline in the RCM domain from the earlier discussed literature reviews: (i) *to consider more real-life scenarios and actual organizational behavior in a regulatory environment* (see [3, 12]), (ii) *the need for reference models* (see [8, 12]), (iii) *a more holistic approach for RCM realization* (see [8]) and (iv) *more transparency on sufficient IT support in RCM scenarios* (see [3]).

In order to meet these requirements, we suggest a reference compliance organization model (R-CO). As the financial industry is the most regulated industry (see [3]), we apply the R-CO for this sector. By developing a reference model based on organizational knowledge in the financial compliance domain we address requirements (i) and (ii). Thereby we rather focus on how financial organizations can comply to their regulative environment than solely taking legal texts as a knowledge fundament. According to Thomas, we understand a reference model as a model that can be reused for the construction of another model by a certain group of reference model users [21]. Abdullah et al. state, that reference models in RCM “*significantly lessen the cost of compliance management in organizations*” [3]. Reference Models can be composed of different model structures [22]. From the work of Cleven and Winter we can draw the conclusion that EAM is an appropriate means to develop a holistic approach [8]. Thus, the R-CO will be based on EA model structures. In general, EAM aims to maintain flexibility, cost efficiency and transparency within an enterprise and addresses effective and efficient Business-IT-alignment [23]. An EA model provides a holistic view on an organization capturing business related elements, information structures as well as the IT landscape and the relations among these concepts [24]. Thus, applying EAM concepts to the R-CO aims to address the requirements (iii) and (iv) stated above. It

also captures the different dimensions of Gozman and Currie's IS capabilities, e.g. the alignment among business, regulation and IT, data management, IT sourcing management [7], which are in line with EAM's objectives [23, 24].

Since research frequently asks for a holistic approach to RCM, we want to clarify that we interpret the holism from two perspectives in the context of financial RCM. From the first perspective, we propose a R-CO that holistically captures all relevant aspects of the financial organization affected by regulation. This is the point where we apply EAM to consider elements of strategy, business behavior, information and application landscape. From the second perspective, we see requirements towards the R-CO to capture the whole regulatory context that is relevant for the defined user group of the financial industry. By capturing both perspectives we think financial organizations can successfully implement RCM since it allows them to evolve from a state of isolated implementation of single regulations to a more stable state, where RCM is realized as an integrated discipline and can efficiently and effectively react in dynamic regulatory environment. While our aim is to capture both perspectives of holism in the R-CO, this work presents the R-CO with an extract from the regulatory landscape, i.e. focuses on the first perspectives.

4 Reference Compliance Organization

This section presents the current version of the R-CO by discussing its structure and explains it by concentrating on a certain segment of the model (section 4.2). In order to provide a better understanding of the development process of the R-CO, we put our work into the context of reference modeling methods we applied (section 4.1).

4.1 Reference Model Development of the R-CO

From a user-oriented perspective, Thomas understands a reference model as a model used to support the construction of another model [21]. In general, reference models are information models developed for a certain problem in a certain application domain. The purpose of their development is to be reused in a concrete application case in the addressed domain. The reuse of a reference model is intended to increase both efficiency and effectivity of an enterprise's information systems and their change management [25]. This argues in line with our intention to develop a reference model (i.e. the R-CO) for the financial industry, where we address the problem that financial institutes implement isolated solutions to comply with complex and short-term regulations (see section 3). We intend the R-CO to be reused by these organizations in order to implement a holistic RCM approach while reducing costs of its realization.

The life cycle of reference models can be distinguished between the phase of construction and the phase of application [22]. Schütte defines a cyclic procedure model for reference model construction [26], which comprises of the phases problem definition, model frame construction, model structure construction, model completion and application. Research discusses two generic strategies for reference model construction. While the deductive reference modeling derives reference models from

generally accepted knowledge, the inductive approach abstracts from individual models to agree on a common understanding within the reference model [27]. Recently, IS research shows growing interest towards inductive methods as they tend to have a higher degree of detail and seem to be more accepted when it comes to reference model application [28]. Fettke provides a procedure model for inductive development, where he addresses collection, pre-processing and the reference abstraction of individual models [27].

This work focuses on the construction phase of the R-CO and the model itself. The R-CO was defined to develop a stable and standardized reference model, that represents how financial organizations should implement a holistic RCM. As discussed in section 3.2 the model follows the structure of EA models. Therefore, we followed the widely-accepted EAM framework TOGAF, which differentiate between business, data, application layers [29]. For the actual modeling we use ArchiMate in version 3.0 since it is developed for TOGAF [30]. The R-CO model structure is defined by the following aspects: regulatory matter, EA layer and ArchiMate viewpoints therein while several levels of detail are provided. The structure is presented in the next section 4.2.

For the development of the R-CO we used both deductive and inductive strategies for knowledge elicitation. The foundation for this approach is based on a method for reference enterprise architecture development [31]. First, we deductively constructed a model frame for the R-CO by consulting domain-related literature and legislative texts, and conducted expert interviews with the project's IS vendors. This resulted in an initial R-CO, which contained an overview on (i) the general organizational structure of a compliance department within a financial organization, (ii) general compliance functions within this compliance department and (iii) relevant regulative topics in financial services. This built the fundament for the phase of inductive reference model development. Overall we collected qualitative data from 32 German financial organizations regarding their realization of selected regulative topic using structured phone interviews. So far, the R-CO covers (a) money laundering prevention, (b) identification of new costumers (mainly referenced as know your customer – KYC) and (c) fraud prevention. Thus, we conducted three cycles for inductive reference model development so far – one for each of (a), (b) and (c). The phone interviews and simultaneously transcribed in an online survey tool. This data was then modeled using the ArchiMate language, whereby each interview resulted in an individual model. Each individual model followed the same predefined modeling guidelines and structure by dint of prior defined ArchiMate viewpoints. From base of individual models, we derived a reference model using the minimal cost of change approach developed by Ardalani et al. [32], which we applied to EA model structures [33].

4.2 The Reference Compliance Organization Model (R-CO)

The R-CO's underlying framework is "The Open Group Architecture Framework" (TOGAF) since it is widely accepted amongst practitioners and researchers. It is thoroughly documented in [29] and comes with a detailed modeling language

specification ArchiMate (currently in version 3.0¹) [30]. TOGAF constitutes of the business layer, data layer, application layer and technology layer. For each layer, ArchiMate defines elements and specifies relations among them. Further, the language introduces the concept of architecture viewpoints, which are projections of the EA model, each considering a certain purpose by addressing different stakeholders' interests [24]. We excluded the technology layer since it focuses on services such as processing or communication required to run applications in the application layer [30] and, thus, we deem it as too dependent on the organization at hand.

The R-CO is structured as follows. Currently, the model is stored in a single repository, which holds all elements of the respective model layers and their interrelations. The R-CO mainly contains knowledge of involved business roles (e.g. compliance officer), business functions and processes (e.g. customer identification), compliance-related data objects (e.g. documents for proof of identity) or supporting compliance software solutions (e.g. transaction monitoring system) (see [30]). We use viewpoints to define projections on this model repository to address certain concerns regarding compliance issues, e.g. overview of responsibilities in the Anti-Money Laundering (AML) program (see [24]). Therefore, we defined the R-CO structure by using standard ArchiMate viewpoints. The R-CO structure is visualized in Figure 1. Each rectangle represents a certain model view, which addresses a certain concern of the R-CO. For example, the view "compliance organization" shows relevant business roles in a compliance department of a financial organization and their interrelations. Vertically read Figure 1 illustrates the different TOGAF layers. Horizontally read it shows the several regulatory domains like AML or fraud prevention. Some viewpoints address concerns related to a single TOGAF layer, while some reveal interrelations among two layers. For instance, "AML data usage" presents what tasks in AML should use what data for its realization. Further, "AML Application Usage" identifies information systems supporting certain task of the business layer. Further, the R-CO uses integrated (left side) and regulation-specific views (middle and right side). While integrated views (e.g. "compliance function overview") capture information across all compliance domains, regulation-specific views (e.g. "Anti-Money Laundering Process") consider aspects directly related to certain compliance domains. For reasons of clarity Figure 1 does not show the different levels of detail the R-CO incorporates. As an example, views in the business and data layer have up to three different layers of detail so far.

In Figure 2 one view is shown in more detail. It is a regulation-specific view focusing on business layer concerns. It illustrates how a financial organization should conduct know your customer (KYC) principles, which are required by the 4th EU Directive for Money-Laundering Prevention. In the center of the view necessary steps for KYC are grouped into the phases *customer identification*, *risk classification* and *due diligence*. It is documented that there exist different types of events that trigger the customer identification process (left side, e.g. a new client applies). In short, after identifying required documents regarding the organization and involved deputies in the first phase, the client is categorized into the pre-defined risk systems, on which it is determined

¹ <http://pubs.opengroup.org/architecture/archimate3-doc/toc.html>

whether normal, simplified or enhanced due diligence is triggered. On the top and bottom of the view, responsible business roles are defined, e.g. respective account manager is hold responsible for all activities of the financial organization.

So far, the R-CO holds organizational knowledge regarding the regulatory domains AML, KYC and Fraud Prevention in the context of the financial industry. Next to process-related knowledge it also shows, what information a financial organization has to gather and how this can be supported by certain information systems. Further, the R-CO forms a basis for a holistic RCM, since the integrated views reveal, for instance, what different regulatory domain may process the same data.

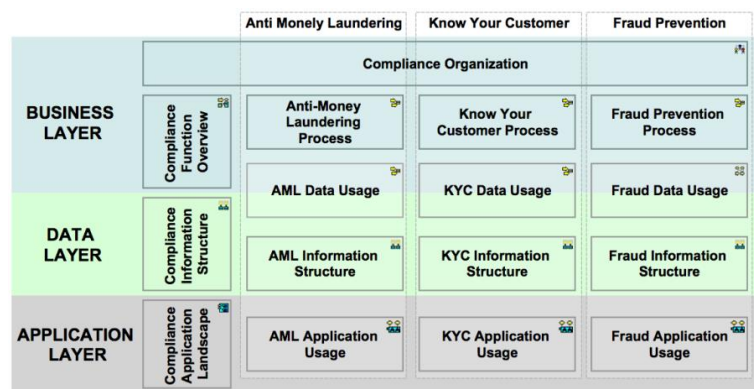


Figure 1. Overview of the R-CO Model Structure

5 Artefact Demonstration

In the demonstration and evaluation steps of the DSR process by Peffers the artefact at hand is put into practice in order to reveal its flaws or to enhance its usability to users from the problem domain [9]. So far, the R-CO run through one evaluation loop. Therefore, several experts from the financial service compliance domain were consulted during the development of the R-CO. The experts were consultants from IS vendors of financial compliance software solutions and IT consultancies and had multiple years of experience in the RCM domain in the financial sector. They were involved both during the R-CO development and after the finalization of the R-CO's first version. During the development stage they were regularly consulted to validate the initial R-CO, its structure and the three questionnaires for the interviews with the financial interviews, which we conducted in the domains of AML, KYC and Fraud Prevention. After the results of this interviews were processed into the preliminary R-CO, we conducted in summary eight validation workshops with respectively one or two of the experts. These workshops took each one day, where we went through all models to discuss the plausibility of each element and relationships. With these insights we adjusted the models to the current version of the R-CO. In these validation workshops it turned out to be very useful to directly work within the modeling environment, so that

we've been able to directly change or annotate the model views. In a next step we intend to apply the current R-CO in a bank in order to further increase its maturity and gain insights in the application process of the R-CO.

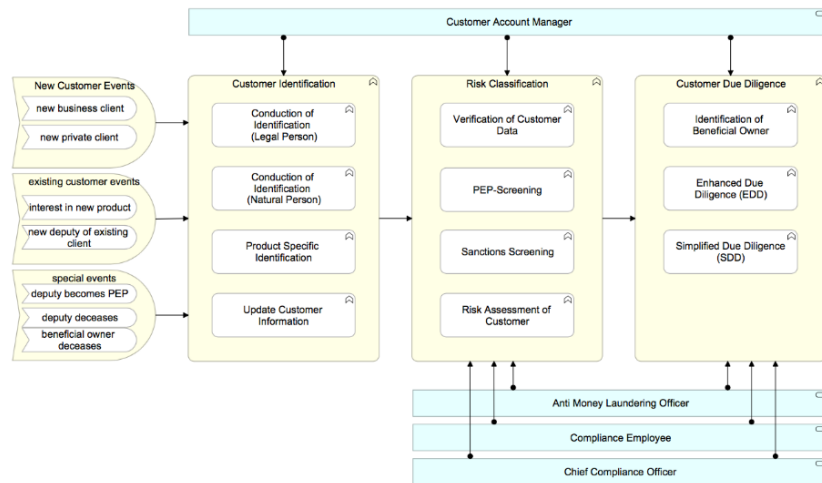


Figure 2. R-CO View: Know Your Customer Process (2nd Level of Detail)

6 Summary and Future Work

Financial organizations face the complex task to implement a stable and holistic regulatory compliance management program in order to comply with a dynamic regulatory environment [3, 5, 20]. We address the need of organizations to overcome current isolated solutions by presenting a reference compliance organization (R-CO), which we develop in the context of an industry project. We provide insight in the development process of the R-CO and presents its current structure and content. The results were validated by dint of several workshops and interviews with domain experts from IS vendors and IT consultancies. Nevertheless, the R-CO has its limitations. At the moment, it only addresses an extract of the regulatory landscape, that is anti-money laundering, know your customer principles and fraud prevention. Further, while its business and data layer were evaluated to have a solid depth, we aim to further investigate the application layer of the R-CO. Future research will further focus on the application phase of the R-CO. We therefore intend to investigate configurational aspects (currently the R-CO can be configured by organizational type) and different maturity levels of the R-CO (Does the bank at hand only want to meet regulatory requirements or implement best practices?). At the moment we are preparing to conduct workshops with concrete financial institutes, where we further validate and apply our reference model.

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