Service Identification and Design – A Hybrid Approach In Decomposed Financial Value Chains

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Abstract: Service-orientation is recognized as an important enabler for increasing efficiency and flexibility of transformation processes in business. Based upon the necessity of meeting dynamic customer needs and supporting organization concepts with numerous partners within emerging networks, flexible bundling of business processes is a key requirement. Service models derived from business and shared within a network can foster this flexibility. However, there is a lack of methodologies for combining technical-driven and business-driven service identification and clustering as well as aligning it with business network design. For this purpose this research paper discusses different techniques of service identification and design and presents two techniques and its instruments how a business driven discovery of services can enhance the financial networks design. The Swiss Banking sector serves to motivate and demonstrate the applicability of the suggested model due to the ongoing structural transformation driven by competence orientation, increased competition and business model adjustment.

Keywords: service-oriented architecture, service identification and clustering, business network redesign, service map

1 Introduction

1.1 Motivation

Following the tradition of object- and component-oriented architecture models, the service-oriented architecture (SOA) concept promises on the first hand as a technological concept the integration of heterogeneous application environments. However, SOA can also contribute to a more flexible allocation of business activities among partners in a value chain or network. This requires for adequate integration between the technological and the business world. In many contributions and discussions SOA is attributed a ‘silver bullet’ status to reach these goals. The key element and basic precondition for implementing SOA and providing the critical link to the business processes is the identification and clustering of business functions as services. For this purpose this paper will exemplify how services can be deduced and composed in a business-driven manner and verified by business as well as technical oriented design principles and criteria. Furthermore it will be outlined how the proposed techniques fit in
an engineering-oriented framework supporting business network redesign (BNR). The objective is supporting BNR by different instruments, guidelines and procedure models. This paper belongs to a multilateral, two-year research program that started in summer 2006 and investigates the management of service-oriented networks in the banking industry succeeding a completed two-year research program about bilateral sourcing. Our 18 research partners cover various institutional sizes and roles in the banking value chain (e.g. regional retail bank, international private bank, outsourcing provider, software provider). Beside specific bilateral projects, the partners contribute to the research in biannual steering committee meetings and quarterly workshops supplemented by case studies and interviews taking place throughout the research program substantiating the applicability of the envisioned approach. Within this research program this paper focuses on service identification and clustering as well as the instruments service map and service cluster and exemplifies their application in the payments process. This paper follows the argumentation of Steen et al. claiming that SOA “provides better handles for architectural alignment and business and IT alignment, in particular” [St05]. Moreover we argue that the concept of service-orientation can be used as well to foster BNR.

1.2 Research Focus

By elaborating a methodology/architecture this research adopts a design science approach [He04] and presents results which have been elaborated in this research program. This comprised four workshops with all partners and 19 bilateral semi-structured interviews. The artefact, which is designed in this paper, is a technique for identifying and clustering business-driven services and a vertical consolidation with design instruments for business network redesign. A unified methodological approach for BNR on all layers has not been reached yet even though BNR is in debate for several years. Moreover as to be shown there is a lack of methodologies for service modelling aligned with sourcing models and combined with instruments for BNR. Business transformation, currently expressed by the integration of applications and the networking among companies (business networking) is apparent in the financial industry. Contrary to other industries such as the automotive industry most European banks developed proprietary applications over the last decades. This resulted in complex, heterogeneous and monolithic application landscapes with numerous proprietary interfaces and an increased total cost of ownership [HRW04]. As stated in several interviews with bank representatives during our research, many banks therefore aim at introducing standardized application architectures which may be maintained on a modular basis from a third party. The banking industry is facing a growing need to reduce vertical integration and the necessity to tap the potential of specialization effects in business networking. The industrialization of the finance industry as well as the emergence and redesign of networks such as the three networks grouped around the service provider Finnova, Avaloq and RTC (Real-Time-Center), initiated by Swiss cantonal banks, is currently in progress and requires adequate and business aligned application architectures to manage the growing complexity [Kn06]. The Swiss and German Banking sector and especially the payments process has therefore been chosen to motivate and demonstrate the applicability of the suggested model.
The structure of the paper reflects his goals. Subsection 2.1 and 2.2 discusses methodologies and concepts for business transformation and enterprise architecture, followed by subsection 2.3 describing drivers and challenges of service-oriented architectures. Subsection 3.1 carries out existing strategies for service modelling and based upon this foundation subsection 3.2 and 3.3 elaborate the integration of SOA and service modelling in BNR as well as conceive a hybrid technique for service identification and clustering. The functionality and the applicability of the proposed approach will be exemplified in section 4 at the cases of Equens and Postbank. The paper concludes with subsection 5 and a discussion of potential weaknesses and further research.

2 Services and Business Transformation

2.1 Methodologies for Business Transformation

Based upon drivers such as globalization, innovation and an increase in market competition, business transformation towards more decomposition, disintegration and networking has been recognized in many industries. Currently it is evolving in the banking industry [GH03] especially in Swiss and German institutes, which is one reason why the two payment processing companies Equens and Postbank has been chosen as case study in this paper. While business transformation is a key theme, it has already been pursued by business process redesign (BPR) and business network redesign (BNR). E.g. Venkatraman [Ve94] conceived the redesign of (external) business networks as logically next step after the redesign of cross-functional processes inside an organization.

Following Alt [Al06], models are important instruments for reducing complexity and distinguishing various elements on several interconnected layers as part of a BNR methodology. Existing enterprise modelling approaches, such as Multi-Perspective Enterprise Modelling (MEMO), Semantic Object Model (SOM) or Architecture for Integrated Information Systems (ARIS) follow this principle. Most of these methodologies have emerged with process-orientation and conceive processes as links between business strategies and the (technological) application architecture. Approaches such as Business Engineering (BE) [Oe95] that aim at semi-formalization of procedures, roles, activities and result documents have been termed engineering-like methodologies recognizing as well the business process as main lever of change and therefore key element in shaping future business solutions and the underlying IS [Oe01]. As procedures, activities and result documents are in the focus of this research and services are conducted in a business-driven manner the ‘Business Engineering Model’ (BE) (see [Oe95]) has been chosen as foundation, simultaneously providing consistency across the three layers: strategy, process and systems.

2.2 Enterprise Architecture

Existing enterprise architecture approaches [Fo03] are focusing on processes, objectives and organizational structures and deduce business requirements for systems design
lacking in terms of cross-enterprise processes and networkability. Similarity can be recognized in approaches of organizational architecture [BSZ01, 267ff.] focusing on distribution of decision rights and incentive systems. ANSI/IEEE [Ie00] is defining enterprise architecture as organization of a system implying its components, relationships and governance structures. Enterprise architecture frameworks provide meta models, design methods, common vocabulary and reference models. As referred to in subsection 2.1 the BE has been chosen to provide structure to the approach in this paper.

2.3 Service-orientation and Business Transformation

SOA is recognized as an important concept for business transformation and is discussed from two perspectives (technological, business). Nevertheless SOA has like many ‘magic words’ numerous different definitions. For example, SOA is conceived in a technical view as a “paradigm that supports modularized exposure of existing application functionality to other applications as services” ([Na04], 41). SOA in a broader view can be defined as the “policies, practices, frameworks that enable application functionality to be provided and consumed as sets of services published at a granularity relevant to the service consumer” [SW04, 3]. Service-orientation from a business view denotes the ability of reusing tasks and processes by solving them at one location [KÖ06, 236]. Therefore SOA has been proposed as dedicated layer between processes and systems for several business transformation frameworks.

Core element of any SOA are specified services, which may be identified in general by two approaches: technical-driven service modelling (bottom-up) and business-driven service modelling (top-down). For a combination of bottom-up and top-down the term hybrid has been suggested by [KKB07]. Procedure models for all approaches will be described and distinguished in section 3. Due to the fact that a general definition of services as part of a SOA is missing (see [FS05, 756]) and the aim of the paper is providing a business-driven service approach, services will be defined as: “independent usable and extensive specified functional components, which support the value performance of process activities”.

A reduction in operating risks, time-to-market, integration costs and maintenance costs are only few benefits ascribed to SOA. Contrary higher complexity is suspected. In order to reduce complexity a classification framework for SOA and services should be provided. Based upon prior research (see [AGL05], [Sa05], [Ta05]) three service layers has been differentiated and comprises (1) process services which support activities of the core processes of a company and include some references to at least one activity of a business process such as foreign currency supply service and regulation service, (2) rule services which encapsulate business and validation rules used by process services such as product rule service and regulation rule service, and (3) entity services which encapsulate core entities and business objects, such as contract, partner or order. Infrastructure services providing services of a fine granularity to support transportation of information at data level are outside the scope of this paper.
3 Towards Architecture for Service-orientation

Based upon this foundation the following chapter will differentiate related work by comparing the derived strategies of service modelling: top-down, bottom-up and hybrid. Subsection 3.2 will disclose the integration of the instruments service map and service cluster with instruments on the process and strategy layer followed by the exemplification of hybrid service identification and clustering techniques exceeding existing approaches.

3.1 Comparison of Existing Research Approaches

As described above, service modelling based upon a top-down approach is mainly used when understanding SOA as a concept of connecting business and technology. Based upon the analysis of business processes or business events [KKB07], service candidates are identified by applying widespread design principles ([Ba05], [Fr04] and [PG03]): loose coupling, modularity, business orientation and interface orientation. Existing business processes are decomposed to achieve service candidates. However a pure top-down approach neglects addressing the underlying and existing IS applications. Though services using a top-down approach provide a proper support for modelling new business roles such as global custodian or credit factory by orchestrating services, existing IS applications and platforms need to be taken into account in order to reduce setup costs and verify technical feasibility. Contrary, core element and basis for the bottom-up approach of service modelling are existing applications. A key step within provided procedure models is the analysis of currently existing applications and there IS functionality [Na04] as foundation for systems reengineering [ZLY05]. Researchers of bottom-up service modelling such as [Na04], [KSR04] or [ZLY05] are focusing on consolidating and rationalizing access to IS functionality by using services. [Na04] e.g. argues that technology-based and application-based composition of services can provide broader benefits than business-driven service composition, as technology’s capabilities and back-end systems may be used more efficient and effective. The achievable benefit and key driver for bottom-up service modelling can therefore mainly be seen in the application integration of heterogeneous landscapes as well as in reduction of maintenance costs. Services and SOA are used to consolidate “multiple applications running on varied technologies and platforms” [Na04, 41]. However numerous application strategies besides SOA already exist and the necessary alignment of business processes and IS applications as basis for faster time-to-market and more flexible business models are not addressed in this approach. Nevertheless as top-down service modelling is focusing on existing business processes and bottom-up service modelling is based upon existing applications a third approach has emerged to capture functionality contained neither in processes nor in applications. Middle-out service modelling or goal modelling is described e.g. by [LA02], [Ar04] or [Sa05]. Business is modelled as goals and sub-goals, underlined by key performance indicators and metrics representing the quality of the so reached service candidates. Services are identified and modelled focusing on these goals. However the challenge remains to identify the cut of the business goals and to ensure the fit with the remaining enterprise architecture. To comprise the existing approaches the criteria strategy, origin and examination of the service cut are discussed as they occur in all methods. Moreover existing approaches can
be criticized lacking in terms of visualization, categorization and incorporation with instruments on process and strategy layer resulting in the next criteria shown in table 1. Simultaneously the criteria were iteratively discussed in the mentioned workshops and following the requirements of business transformation and the claim for network design within an engineering framework.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>KKB07</th>
<th>Na04</th>
<th>Ar04, LA02</th>
<th>Presented approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Origin</td>
<td>business process</td>
<td>existing application</td>
<td>business intents</td>
<td>business process, network and sourcing model</td>
</tr>
<tr>
<td>examination of the service cut</td>
<td>design principles, stakeholder</td>
<td>application functionality</td>
<td>design principles</td>
<td>design principles, sourcing models, reference processes,</td>
</tr>
<tr>
<td>visualization instruments</td>
<td>-</td>
<td>-</td>
<td>goal service graphs</td>
<td>service map, service cluster</td>
</tr>
<tr>
<td>alignment with instruments on process and strategy layer</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>reference processes, role models, reference networks</td>
</tr>
<tr>
<td>service categorization</td>
<td>process-, basic services</td>
<td>-</td>
<td>-</td>
<td>process-, rule-, entity services</td>
</tr>
<tr>
<td>service composition / clustering</td>
<td>via process services</td>
<td>-</td>
<td>via enterprise components</td>
<td>via service clusters</td>
</tr>
<tr>
<td>service specification</td>
<td>operation, input, output, consumer</td>
<td>-</td>
<td>-</td>
<td>e.g. description, input, output, service-user, business object</td>
</tr>
<tr>
<td>application of process models</td>
<td>business process</td>
<td>-</td>
<td>-</td>
<td>reference and existing business processes</td>
</tr>
<tr>
<td>application of sourcing models</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>incorporation of developed sourcing models for the deduction step</td>
</tr>
<tr>
<td>reference to network and business model design</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Incorporation of developed network and existing business models</td>
</tr>
</tbody>
</table>

Table 1: Comparison of existing service modelling strategies

Currently evolving initiatives such as the Industry Value Network of SAP try to combine the recognized lack of combining business-driven service identification and clustering with technical feasibility. However a methodology which above all is integrated in an engineering framework, linked with instruments and procedure models for business network redesign and taking sourcing models and business roles into account has not been reached yet.

3.2 Integration of Network Design and Service Modelling

As business processes are within the BE the main lever, the services within our approach are further based upon (reference) sourcing models (cf. figure 1). The so reached services are composed to service clusters which on one side provide more flexibility to disaggregated business processes providing the missing link between existing
application landscapes and business and on other side interrelate with business roles elaborated by business models and networks. Business roles, represented in a role model, can apply the service-orientation paradigm and interrelate directly with the service clusters. The business roles, representing certain business models, such as research provider, product designer, asset manager, valor data refiner or global custodian use or provide certain service clusters designed as independent from each other.

![Image](image_url)

**Fig.1: instruments for business network redesign**

As the service cut is based upon these sourcing models, business processes and business roles the incorporation of legal requirements such as customer data access increases the reusability of the specified services by enhancing the ability to support diversified business strategies (scope and scale) to the same extent. The analysis of business networks is enriched by the embodiment of used services and service clusters. The instrument of the service map affiliates the approach of reducing complexity by structuring the services clusters in two dimensions: customer proximity as well as core vs. support activity, resulting in three overlapping domains: distribution competence, execution competence and support competence (cf. figure 3). The service map contains the service clusters and its encapsulated services.

Linking sourcing models, business roles, processes and services within an engineering-oriented framework provide benefits for both sides: the challenge of the service cut is addressed as the cut last not longer solely on business processes and critics of existing BNR approaches addressing network modelling solely on high level without interdependency towards IS are prevented as service clusters and maps provide a connection to IS-models.

### 3.2 Procedure Model for Service Identification and Clustering

To avoid missing service candidates as described in the middle-out approach while simultaneously using the benefits of correlating business and IT with the hybrid approach, an engineering-based methodology covering both aspects is needed.
Enterprise architectures addressing business transformation can provide a foundation for business-driven service identification.

The proposed model extends existing approaches ([KKB07], [Ar04], [LA02]) by combining service identification and clustering, integrating it in an engineering-oriented framework and implying besides business processes, strategic aspects. Pattern such as design pattern or architectural pattern are used to structure e.g. communication elements or software systems in object-orientation [SB03] and can therefore be adapted to enhance the structure in SOA. Service clusters ensure this pattern paradigm by structuring services and visualization instruments such as service maps. The proposed techniques for service identification and clustering, shown in figure 2, consist of four phases covering preparation and initialization, analysis, verification and detailing. The differentiation of the four phases has been made on basis of the gradation of existing procedure models (e.g. [Ar04], [KKB07]) and has been verified in workshops and interviews. The cross-reference models, which are provided for the finance industry case within the methodology, are indicated in figure 2.

During the preparation phase the required models are selected and the area for service identification and clustering is identified. Besides the enterprise model, which describes all existing processes of a company on a high granularity, and the network model, the (reference) business process (in this paper the payments process) is needed for the identification of the services and the service list containing the specified services is needed for the clustering of the specified services. All three were elaborated in the mentioned research program. The network model with its described roles and therefore implicit exhibited business models is necessary in order to assess the service cut. During the analysis phase the service identification follows a top-down approach based upon the business processes and the network model either representing an as-is or to-be state. The service candidates are deducted through the fine granular activities of the process incorporating existing design principles as stated above and defined service criteria: specified service context, part of one service layer according to a specified service classification pattern, reusability level as well as defined status before and after a request. A workflow is created based upon the business processes exemplifying the activities underlined with additional determined and associated information concerning:

- the state changes of the information and business objects (e.g. create, access)
- legal requirements concerning availability and ownership of data
- interdependencies of certain tasks and business rules
- business roles and sourcing strategies using/providing the activity

The deduction of the service clusters is based upon the service map and list corresponding to the analysed area and follows therefore a bottom-up approach. Again design principles and criteria are incorporated in the analysis. The result of the analysis phase is service and cluster candidates containing domain specific knowledge as in this paper of the finance industry.

After a service or cluster candidate has been identified a functional description has to be made. The verification phase examines if the candidates fulfil the criteria and design principles, if the functionality isn’t already be provided by another service or incorporated in another cluster and if the candidate fits the business needs of the process and the role. Beside the criteria the candidates have been verified especially in terms of
technical feasibility in workshops and semi-structured interviews with business and application architects of our research partners as proposed in the Business System Planning method, also used for business component design by Albani [AI03].

Fig.2: process models for business-oriented service identification and clustering

The assignment of the *detailing phase* is to specify the service or cluster in detail. The service is allocated according to a classification scheme including the following requirements: service functionality (results), service context (business object, classification), service behaviour (pre- and post condition, service interdependencies), service interface (input an output data), service quality (expected response time, automation, error recovery) and business impact (reusability, covered business tasks). The so-reached specification is comprehensible e.g. to Albani [AI03] differentiating seven level for the specification of business components and web services such as quality, behaviour and interface. Moreover during the service identification and clustering process guidelines and best practices have to be taken into account in order to provide an efficient service cut. Table 2 exemplifies some guidelines, which were developed and verified in several workshops with practitioners.

<table>
<thead>
<tr>
<th>Guideline</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>differentiation of rules</td>
<td>institute particular and legal rules are concentrated in rule services and allocated to process services</td>
</tr>
<tr>
<td>business-orientation</td>
<td>service identification is based upon as-is or to-be business processes detailed towards activities of a specific enterprise, business network and sourcing model or to-be reference business processes, reference business networks or reference</td>
</tr>
</tbody>
</table>
sourcing models
usage of reference models domain specific reference models have to be taken into account to avoid solely as-is modelling and sequential analysis
business-object intersection data services always allude to one business object
incorporation of legal requirements legal domain related rules have to be taken into account to support different business models, roles and sourcing models
data ownership when orchestrating and re-using services, data ownership and availability has to be considered

Table 2: extracted guidelines for service design

4 Application of Methodology in the Payments Process

The following section will apply the techniques to the domain of the finance industry especially the payments process. As the payment process covers numerous activities we confine the analysis scope in subsection 4.1 upon the process step payments entry focusing the business object payments. Subsection 4.2 will exemplify service maps for two payment processing providers. The transformation of the European finance industry can be outlined by main drivers currently stressing the institutes, shown in table 3.

<table>
<thead>
<tr>
<th>Driver</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>market changes</td>
<td>increased competition based upon globalization and changes in market structures (e.g. cantonal banks overcome provincial borders) as well as market concentrations [GH03]</td>
</tr>
<tr>
<td>Regulations</td>
<td>increased regulation efforts based upon emerging international guidelines such as SEPA (single European payment area)</td>
</tr>
<tr>
<td>customer structure</td>
<td>increased customer expectations based upon internet based banking solutions such as online brokerage</td>
</tr>
<tr>
<td>product complexity</td>
<td>increased product diversity result in higher costs for product listing [Kn06]</td>
</tr>
<tr>
<td>Technology</td>
<td>former development of proprietary applications resulted in intricate serviceable, mainframe-based and monolithic application landscapes [HRW04]</td>
</tr>
<tr>
<td>Competitiveness</td>
<td>decreasing margins based upon additional cost pools result in downward cost income ratios.</td>
</tr>
</tbody>
</table>

Table 3: main drivers for business transformation in the finance industry

Summarizing, the banking sector is facing currently two main challenges: application integration and value chain reconfiguration [Ba05]. Furthermore the required business networking based upon competence orientation and diversification is inadequately supported by existing core banking platforms as they facilitate networkability only to a low extent [AS07]. According to the apparent business transformation in German and Swiss banks, the finance industry has been chosen to exemplify the applicability of the proposed techniques.

4.1 Service Specification

Following the proposed techniques and guidelines using banking-specific models (payment reference role model and business network, payment reference business process and payment reference sourcing models), 48 services and 17 clusters can be identified. Table 4 exemplifies at the payments data service how these 48 services were specified resulting in one service list. Afterwards the services and clusters were exhibited in a service map. According to the to-be business process which was used the
interdependencies between the services were examined and also incorporated in the service map. Since, the service map is used to enhance the design of different business models, represented as a business role, such as specialist execution, foreign currency trader or specialist regulations. The service clusters are used at first sight, to describe the underlying functionality (business scope). Simultaneously existing business models, such as of the Swiss private bank Vontobel acting as portfolio manager for the Raiffeisen Classic Portfolio of the Swiss association of Raiffeisenbanken (SVRB) can be easier analysed as service clusters provide the often missed link between strategy and IS.

<table>
<thead>
<tr>
<th>section</th>
<th>Subsection</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>service</td>
<td>function</td>
<td>Results</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Service provides necessary information of the customer throughout the transaction, where customer master data can’t be accessed directly due to legal requirements. Service encapsulates all data relevant for the execution of a payment and enables a one-view to one transaction including the status.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>service context</th>
<th>business object</th>
<th>single payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classification</td>
<td>data service layer</td>
<td></td>
</tr>
<tr>
<td>pre condition</td>
<td>ID available and existing</td>
<td></td>
</tr>
<tr>
<td>post condition</td>
<td>datasets are readout and returned</td>
<td></td>
</tr>
<tr>
<td>service</td>
<td>interdependencies</td>
<td>used by process services in the payment execution process</td>
</tr>
<tr>
<td>interface</td>
<td>Input</td>
<td>payment-ID</td>
</tr>
<tr>
<td></td>
<td>output data</td>
<td>account number, customer master data, instrument, execution date, currency, customer discount …</td>
</tr>
<tr>
<td>service quality</td>
<td>expected response time</td>
<td>less than 2 seconds</td>
</tr>
<tr>
<td></td>
<td>Automation</td>
<td>fully automated; STP-rate 100%</td>
</tr>
<tr>
<td></td>
<td>error recovery</td>
<td>level A; within 1hour</td>
</tr>
<tr>
<td>business</td>
<td>Reusability</td>
<td>reutilization where transactions are processed</td>
</tr>
<tr>
<td>impact</td>
<td>covered business tasks</td>
<td>throughout the business process, where transaction data is accessed</td>
</tr>
</tbody>
</table>

Table 4: extracted specification of payment data service

4.2 Application of Service Design in Two Cases

The enhancements for the design of networks on the basis of the proposed service modelling approach are illustrated by two cases: Deutsche Postbank AG (DPB) and Equens N.V. (Equens), which are major players for payment execution in Germany. Both provide sourcing models for the execution of domestic payments as well as support services for archiving, investigations and control. Furthermore the offer of DPB covers the execution of foreign country payments, regulation examination and foreign currency trade. In terms of sourcing levels, DPB offers almost full outsourcing and Equens offers a sourcing model based upon payment execution. Therefore both business models encompass the same core (payment execution) but differ in terms of scope. DPB and Equens are operating within a widespread correspondence network and cooperate with clearing institutes, national banks, distribution banks and others. Moreover payments execution is a standardized business with low margins, which results in high potentials for outsourcing. Figure 3 exemplifies the reduced service maps of both providers focusing only on the service clusters. Though the differences are minor at first sight, the implications by looking at the offered services are more fundamental. Concentrating on the payments entry cluster, which consists of 15 services, Postbank offers all services in contrary to Equens, which doesn’t offer digitalization of non-electronic payment.
instructions, supported by the recognition, digitalization and recognition rule service. The identified services can support both providers to the same extent and the proposed reference service clusters can avail the analysis of business models by detailing them via service clusters and services. Additionally the communication between IT and business department as well as between enterprises is enriched by specified and standardized service elements on different abstraction layers providing a clear link between strategy, process and systems layer.

Fig. 3: service cluster maps Postbank and Equens

5 Summary and Outlook

Swiss banks are currently facing a fundamental transformation towards more networked structures (cf. section 1 and 4). In order to reach high efficiency and flexibility the redesign of networks should be supported by an integrated methodology implying procedure model, guidelines and instruments as well as standardization efforts. Service orientation and SOA seems to be an adequate ‘silver bullet’ to support the business transformation (cf. section 2.3). Key element in implementing SOA is the identification and clustering of business functions as services (cf. section 2.3). However by linking it with strategic aspects existing approaches show shortcomings (cf. section 3.1). The paper has therefore presented an approach for business-oriented service modelling (cf. section 3.3) as a combination of business-process driven and business-object driven service identification and technical verification by design principles and service criteria supplemented by a process model for service clustering. Coinstantaneous the service-oriented architecture concept has been integrated in an engineering-oriented framework (cf. section 3.2). The instrument of the service map has been deduced as a result of the
techniques (cf. section 3.2). The case studies Postbank and Equens have been used to apply the service map (cf. section 4.2). Standardized and specified business oriented services bypass differences in terms of business model scope and business process sequence.

Further research should address a detailing of the guidelines and the formulation of the procedure model for BNR, including the presented techniques. The holistic methodology will be based upon a meta model, which is in progress and will be presented in one of the next papers. Moreover we will dare to apply the service-orientation paradigm towards the strategy layer by converging business roles and service clusters aiming at a consistently enterprise architecture. By the time we will apply the instruments to further industries in order to provide a generalized methodology. Furthermore the techniques should be enhanced by the aspects of service versioning and iteratively design and redesign of as-is and to-be services. Concurrently, we will focus on how different service maps of e.g. providers and banks can be examined and matched.

References


