

TOWARDS AN INTEGRATED ARCHITECTURE AND ASSESSMENT MODEL FOR FINANCIAL SOURCING

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Abstract

Although many banks still report strong profits, important competitive, technological and regulatory changes force these companies to reconsider their strategies and structures. Among the current developments are initiatives to increase flexibility by reducing fixed costs and to leverage activities with competitors and other partners. Contrary to manufacturing industries, financial companies have maintained a high degree of vertical integration and sourcing models are slowly emerging which focus not only on the technological infrastructure and application provisioning but also on

business functions. However, offerings for alternative sourcing models are only emerging in the marketplace and insights on generic sourcing models as well as their economic viability is still lacking. To address these challenges a two-year multilateral research project has been started which is presented in this research in progress paper. After an outline of the motivation and the research design, initial results are described in the area of payment execution.

Keywords: sourcing, financial industry, payment execution, architecture, assessment model

1 SOURCING IN THE FINANCIAL INDUSTRY

Traditionally, European banks are highly vertically integrated. For example, 96.7% of the 2.355 banks listed in Germany (2003) were universal banks covering a full spectrum of banking services. In comparison, industries such as electronics or automotive are reported to organize only 15-20% of their value creation internally, an amount that roughly correlates to the amount of outsourcing in the banking sector (Lammers & Loehndorf & Weitzel 2004). Following an analysis by Weisser (2004) the belief that banks manufacture in average 80% of their activities internally has been perpetuated unreflected in the literature. His findings are that reorganization efforts in banks undertaken in the last decade have reduced the degree of vertical integration to an average of 50-60%.¹ Still, growing deregulation and globalization as well as the diffusion of standard software packages and electronic services is driving a structural transformation in the banking industry which may be compared to the structural changes that already occurred in other industries. In their quest for improved cost-income ratios and differentiation by value adding services, banks are intensely (re)defining their core competencies and business models (Homann & Rill & Wimmer 2004). A shift towards smaller, networked banks which concentrate either on a production process (e.g. transaction institute for payment execution) or a customer process (e.g. planning of retirement) are among the future strategies (Leist & Winter 2002).

The Swiss banking sector is a good example for these developments. A study by Accenture (2004) expects Swiss banks to vertically disintegrate by 15-18% in the

next six years, whereas the findings show that big universal banks will outsource less (from an vertical integration of 88% to 73%) than private banks (from 80% to 62%). Another study from IMG (2004) analyzes the type of sourced services in more detail and shows strong vertical integration only in the business process area. Outsourcing was well accepted for application development and provisioning (73%) and 43% had outsourced activities for IT operation and maintenance. However, outsourcing of business processes was nearly inexistent (14%). These results are confirmed by a Forrester (2004) study which states that despite all the excitement about business process outsourcing (BPO) established patterns of outsourcing remain in the lead. In addition, there are many open questions about the configuration and the sustainability of BPO relationships. Reports about several failed initiatives even led to the term back sourcing which denotes vertical reintegration strategies (Hirschheim 2003).

Beside clarity regarding their core competencies, the transformation forces banks to implement suitable sourcing models for their value chain activities. For example, multi-vendor strategies would envision different service providers for capturing, authorizing, and processing orders and securities. Another solution is a close relationship with a single service provider. This paper provides an initial outline of a research project that aims to combine research on sourcing model architectures with research on the assessment of these models. To a large extent, both theoretical streams have developed independently. The research towards an integrated model has been undertaken in close cooperation with companies from the financial industry since July 2004. These partners originate from various roles in the financial value chain (in/outsourcer) and cover various institutional sizes.²

¹ Weisser (2004) challenges the comparability of studies about vertical integration due to the lack of a standardized calculation method and doubts the validity of vertical integration as a measure of a company's focussing on core competencies.

² The twelve partner companies are AIG Private Bank, Basellandschaftliche Kantonalbank, Boss Lab, Credit Suisse, CSC, DZ BANK, Migrosbank, PostFinance, RBA Service, St.Galler Kantonalbank, Swisscom IT Services and UBS.

2 APPROACHES TO SOURCING AND METHODOLOGY

Sourcing models in the financial industry are neither new in practice nor in academic research. In fact, banks have been among the pioneers in forming dedicated organizations for improving interorganizational information flows and for offering new payment instruments. Among the well known examples are SWIFT, the credit card companies and joint initiatives for application development / service providing such as AGI (Swisscom IT Services) or Telekurs in Switzerland. In general, these sourcing models were either limited to specific parts of the financial value chain (e.g. interbank and credit card transactions) or rather focused on long-term, inflexible relationships (e.g. sourcing of proprietary core banking systems). More recent developments are similar to the segmentation described by Hagel and Singer (1999), i.e. the unbundling of customer relationship, product innovation and infrastructure competencies (see Figure 1).

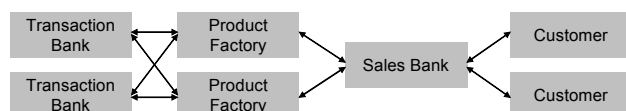


Figure 1: Vision for the Segmentation of the Value Chain

First, concentrating on customer relationships and outsourcing all other activities is considered as the extension of a bank's traditional competencies. Many universal and private banks have decided for this option. Second, banks also offer products such as funds including asset and portfolio management to other banks. For example, Swiss Raiffeisen bank outsourced the management and processing of funds to Swiss Vontobel bank. Third, other banks consider activities such as the processing of payments, securities, and credits as non-core competencies. They form or collaborate with transaction banks (e.g. etb, TXB in Germany) and financial services companies that position themselves as 'processors' (e.g. Deutsche Postbank handles all payments from Deutsche Bank and Dresdner Bank).

As mentioned above, research on designing and assessing sourcing models brings together two academic fields: On the one hand, architectures and specification methodologies for the sourcing models. On the other hand approaches for supporting the sourcing decision and determining the appropriate sourcing model.

First of all, the former include the young discipline on 'high-level' business models (e.g. Weill & Vitale 2001) as well as more formalized contributions in enterprise modeling which support the design of business solutions on multiple levels. This is important since designing architectures³ for financial sourcing requires insight on a bank's strategies, the processes which are in- or outsourced as well as the information systems (IS) supporting these relationships. The latter are recognized as key

enablers of interorganizational integration in the banking industry (e.g. Geiger & Hürzeler 2003). Some approaches to enterprise modeling are described in more detail in chapter three. However, these models are neither specific to the financial industry nor the modeling of sourcing relationships.

The second academic field referred to above is the assessment of sourcing models calling for a combination of quantitative and qualitative criteria. The former primarily originate from the financial accounting and support the calculation of make-or-buy decisions. Traditionally, these approaches focus on the investment question analyzing mainly the initial and the operating costs of the alternatives under consideration (Tayles & Drury 2001).⁴ Aspects such as quality, the opinion of stakeholders or governance issues are not within their scope. This is the field of qualitative approaches, such as transaction cost economics (TCE) (Williamson 1998). The basic idea is to assess the efficiency of alternative governance structures such as markets, hierarchies and hybrids (joint ventures or strategic alliances). Although TCE proposed various criteria such as frequency, uncertainty and asset specificity for assessing the suitability of governance structures, architectural specifications are not included. Another qualitative theory is the resource based-view (RBV) which explains a company's competitive advantage by analyzing their resources and capabilities (tangible and intangible assets). It is based on two assumptions: resource heterogeneity (resources and capabilities by competing firms may differ) and resource immobility (these differences may be long lasting) (Mata & Fuerst & Barney 1995). Compared to TCE, RBV provides a differentiated analysis of a bank's internal resources and identifies areas which are candidates for insourcing or outsourcing, respectively.

This research targets both the academic and the professional communities. Regarding the former an integrated architecture and assessment model is envisioned which allows formulating reference architectures for sourcing models. Assessment criteria are used to characterize these models and to compare them against the requirements of a sourcing process. Ultimately, integration means that metrics are defined for each architecture level. Regarding the professional community, the representatives of the participating companies agreed on four major goals: (1) a common terminology for financial sourcing, (2) a 'toolbox' for shaping and assessing sourcing models that can be tailored to a company's individual requirements, (3) a reference architecture of sourcing models and (4) a collection of 'successful' sourcing examples.

Serving both the academic and the practical world still is a major challenge for researchers. Among the proposed methodologies are action research, grounded research and design science (e.g. Avison & Lau & Myers & Nielsen 1999). According to (Hevner & March & Park & Ram 2004) design science has its roots in engineering and the sciences of the artificial. Its aim is to create innovations defining ideas, practices, technical capabilities or products

³ Following Cook (1996) architectures detail the elements of specific system as well as their interrelationships.

⁴ Despite the importance of qualitative criteria, financial adequacy remains a 'conditio sine qua non' for positive sourcing decisions.

improving any of the phases of the IS life-cycle (research goal: utility). In the style of design science our multilateral research project not only focuses on theoretical desk research but also on close collaboration with the participating companies in semi-annual steering committee meetings, quarterly workshops and individual bilateral projects.

3 ELEMENTS OF AN INTEGRATED SOURCING MODEL

In the following integration refers to overcoming the classical dichotomy of architecture and assessment models as well as the different layers / aspects within the two (see Figure 2). Since relevant research is available for both, architecture and assessment, a brief description of existing research in integrated models precedes the outline of the main ideas of the proposed framework.

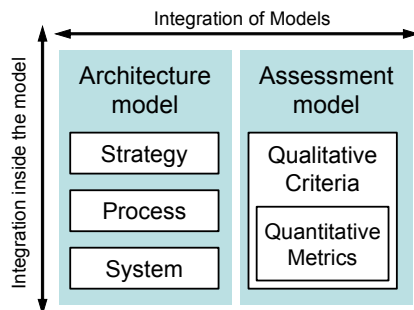


Figure 2: Dimensions of Integration

3.1 Initial structure of integrated sourcing model

Models are important instruments for reducing complexity and distinguishing various elements on several interconnected layers. The earlier mentioned enterprise modeling approaches follow this principle. For example Multi-Perspective Enterprise Modeling (MEMO) emphasizes a technique that includes internal and external actors as well as the processes and the involved IS (e.g. Frank 2002). All layers aim at a high level of formalization and show a close link to software engineering methodologies. A similar but more object-oriented idea is behind the Semantic Object Model (SOM) (e.g. Ferstl & Sinz 1997). It aims at building IS by covering aspects of an inside, an outside, and a resource-view. Relationship patterns explicitly define the interrelationships between the model layers. As MEMO and SOM, the Architecture for Integrated Information Systems (ARIS) (e.g. Scheer 2002) focuses on the business process layer and its translation into IS. Business Engineering (BE) is a less formalized technique (e.g. Österle & Fleisch & Alt 2001) which recognizes business processes as the key element in shaping future business solutions and the underlying IS. Similar to the other approaches (see Österle & Blessing 2005) BE distinguishes a strategic, process and system layer with systematic meta models and structured result documents.

As all mentioned methodologies feature similar basic building blocks and since the specification of IS was not among the research goals, the less formalized BE approach was chosen. Following the underlying process perspective two hypotheses have been developed: (1) key execution processes for payments, securities, and credit have a similar structure, and (2) sourcing models are not specific to an individual process, i.e. generic sourcing models exist. Table 1 shows the sourcing-specific elements of the architecture which were developed during the first meeting with representatives of all participating companies. In addition to the three generic BE levels (strategy, process, systems) an additional vertical layer has been introduced to represent an overall picture. The hypothesis is that this integration layer (see Figure 5) may serve valuable in initial communication of sourcing models to stakeholders.

Model layer	Sourcing-specific architecture elements
Strategy	Organizational units (internal/external), flows (information, financial), governance structure, distribution of ownership
Process	Sourcing process on various levels of abstraction, sequence of process steps, link between organizational units and process steps
Systems	Process steps and business applications, integration applications and interfaces, technological infrastructure
Integration	Key elements of sourcing layers (actors, governance, processes, applications, infrastructure)

Table 1: Elements of the architecture model

The assessment model part builds on four prior contributions. First, Lammers & Loehndorf & Weitzel (2004) propose a model consisting of TCE and RBV criteria. Both are used to assess the main sourcing activities ‘making’, ‘sharing’ and ‘buying’. The framework allows for a qualitative sourcing decision by identifying superior skill sets and governance structures. Other qualitative factors are economies of scale, loss of economies of scope by outsourcing, the influence on product / service quality and potential effects on customer behavior. Second, Gillis (2000) reports qualitative factors influencing a sourcing decision towards ‘make’ or ‘buy’. They include control (often associated with operational flexibility), dedicated support (e.g. only customer in line) or depreciation (system life-time exceeds depreciation time). Arguments favoring outsourcing are instant expertise, risk sharing or reduced fixed costs. Third, Gewald and Hinz (2004) propose a framework for classifying operational risks of outsourcing in banks. Using four risk sources (people, processes, systems and external) it allocates identified risks to measurable impact areas (costs, quality and time). Fourth, Pohland (2000) suggests a driver model consisting of six qualitative dimensions which influence an architectural option (‘driver’): business, politics, application, technology, project and costs.

Elements of these approaches were discussed with the company representatives what led to an initial compilation of elements for the assessment model (see Table 2).

	Driver	Aspects	Criteria
Strategy	Business / networking	Strategic options	Customers benefit, market opportunities, ...
		Governance	Shareholding possibility, co-determination, ...
		Complexity	Simplicity, deployment of managerial resources, ...
		Risks	Operational risks, employee motivation, ...
		Community	Balance, continuity, ...
	Politics	Legal restrictions	Data confidentiality, legal admission, ...
		Public	Acceptance, presentation in public (story-line), ...
		Stakeholder acceptance	Customer satisfaction, shareholder acceptance, ...
Process	Cost / service	Service Flow	Service level agreements, pricing model, modularity, ...
		Quantitative Metrics	One-time costs (e.g. project costs) Recurring costs (contractual fees, quality control, ...) Performance (e.g. transaction duration, exception rate, ...)
Systems	Technology	Information systems	Openness architecture, interface quality, data security, flexibility, ...
	Transformation	Project	Acceptance, feasibility, ...
		Change	Operational risks, complexity of transformation, ...

Table 2: Elements of Assessment Model

For a later meeting we prepared a group work with three concrete outsourcing options for a showcase bank. The case descriptions were designed based on the layers of the aforementioned architecture model (Figure 5 shows the instruments for the different layers on a top level) and justified by providers actually offering similar services. The aim of the group work was to validate both, architecture and assessment model. So each group – consisting of six to eight company representatives – applied the current version of the assessment model to a single sourcing option considering the background situation of the showcase bank. Figure 4 shows an extract of the assessment result for a full outsourcing scenario for the business process payment execution.

3.2 Example Payment Execution

A process-oriented approach for financial value chains reveals a variety of customer-, product- and execution-oriented processes. As most sourcing potentials are expected in upstream (or back-office) processes, the execution of payments, credits and securities was prioritized.

Although each process is highly complex in nature the hypothesis was pursued that sourcing models may be equally applicable to all three execution areas. The execution of payments was chosen as a starting point and the generalization of the findings should be falsified with the execution of credits and securities in a second step. Among the advantages of payment execution is a high degree of documentation and standardization as well as a high potential for outsourcing reported in recent studies (e.g. Accenture 2004, IMG 2004).

The first step toward the architecture model was agreeing on generic process steps in payment execution. Figure 3 includes this process on the first abstraction level which was subsequently detailed ‘down’ to the third level to cover all activities which may be part of interorganizational payment execution workflows. Starting from the process perspective the following steps were undertaken:

(1) A comprehensive functional view was identified as the basis for assessing sourcing potentials. The first area was paper-based⁵ image processing which causes disproportional high costs per transaction (e.g. Wendt 2003, p.90). Especially many small private banks still use not-standardized payment receipts and expect therefore potential savings of up to 70% by outsourcing this part. Also, in view of the large investments for new scanning infrastructures in the forthcoming years, image processing is a potential outsourcing candidate. However the expectations regarding the diffusion of electronic transactions differ. While some believe that paper-based transactions will almost disappear in the next 3-5 years, others consider paper-based transactions to be a topic for at least ten more years. There is a consensus that service providers supporting order capture could easily also cover order inspection. The second area was execution itself, i.e. order processing, order posting (interface to clearing) and adjacent processes like investigations. These activities are typically within the portfolio of transaction banks (Gärtner 2004). Some large universal banks in Germany already consider them as commodities and outsource them to external providers. Representatives from small banks are more reluctant to outsourcing this part mainly due to confidentiality of customer data and the sensibility of direct contact between the provider and the bank’s customers. Among the sub-processes which all banks agreed to keep inhouse at the moment are – besides exception handling⁶ – the adjacent processes account and customer management. An outsourcing of reporting is only considered reasonable, if done in a holistic way.⁷

⁵ Up to now also for many banks initialisation and recordal of electronic transactions causes high costs as well. The reason are high investments (e.g. in eBanking software) and a lack of ‘economies of scale’.

⁶ The reason to keep exception handling and investigations inhouse is again the sensibility of direct contact to bank customers.

⁷ By sourcing customer reporting for payment execution in an isolated way banks do not only fear to lose synergies (e.g. postal charges), they also consider it difficult to keep ‘one face to the customer’.

(2) Based on the process element analysis three sourcing models were identified for payment execution: First, outsourcing of as much activities as possible (from a perspective of business feasibility). Second, partial outsourcing of activities related to paper-based orders (e.g. the collaboration of UBS and PostFinance in Switzerland). Third, partial outsourcing of core execution activities. Figure 3 summarizes the three options. In brief, a discussion of their applicability yielded to the following order by attractiveness:

- The 'full' outsourcing has, in general, the highest potential for cost saving, also considering the decreasing volumes of paper-based transactions.
- Scanning offers a good entry point in a sourcing relation. However, from an economic perspective the scope of outsourcing should be expanded to 'full' outsourcing in the medium-term.
- Outsourcing of order processing and posting was not considered due to low saving potentials (e.g. few employees involved due to high degree of automation) and e.g. high requirements of data transmission to the provider.

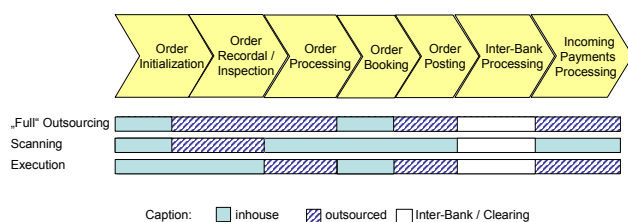


Figure 3: Basic Sourcing Models for Payment Execution

(3) Each model was then mapped to the strategy level where different business models were discussed. As shown in Figure 5 the business architecture includes all actors, the information and financial flows.

(4) After the discussion of sourcing process and business model, the technological implications and requirements were analyzed. The process steps were mapped to the application level for the 'as-is' and selected 'to-be' scenarios. Among the topics relevant to future sourcing architectures were: (1) the allocation of functionalities to applications of each partner, (2) the location of order and customer data as well as (3) the degree of standardization on pragmatic, semantic and syntactical level. The latter are covered in the IS-integration layer. For example, this layer would include the directories necessary in service-oriented architectures (Homann & Rill & Wimmer 2004).

(5) Finally, the integration view compiles an overall view on all architecture layers. This not only shows the business partners, but also the providers of application and IT-infrastructure services which are usually neglected in business modeling. At the same time the distribution of process steps, applications and infrastructure components is depicted. Due to the complete picture of involved parties the governance model (relationships between the involved players) may be fully described here.

As a result of a more open discussion of future developments in sourcing respectively general synergies in payment execution, there was a broad consensus for the vision of a European Clearinghouse that was seen realistic for the next five to ten years (connected to the development of the Single European Payment Area (SEPA)).

An international transaction processing was regarded as by far more complex due to barriers in civil and fiscal laws or country specific market practices – not to forget differences in time and currency (see also Middendorf & Göttlicher 2004). Even though first initiatives in this direction may already be observed, as the planned collaboration between the German Transaction Institute (TAI) with the Belgium partner KBC shows. At least within the EURO-zone the international consolidation of payment execution could happen earlier than expected.

4 SUMMARY AND OUTLOOK

This paper started from the imminent transformation of the financial industry. Although this industry has been using IT-solutions for decades they have not been designed for handling interorganizational transactions. Banks report a strong need for flexible sourcing models. Since these models exist only rudimentary today, a model that specifies an architecture and its fit to an organization has been described in this research. This integrated model is still in its infancy. It integrates across a broad variety of existing approaches and disciplines, especially the gap between architecture and assessment models. For example, the proposed model goes beyond existing work in business modeling by including multiple architecture layers as well as beyond traditional business cases which neglect important qualitative elements.

Metrics on each architecture level are summarized in an overall assessment model consisting of qualitative and quantitative elements. Among the research questions was to provide a framework for understanding the repeated failure and the lacking success of transaction banks for payment execution to date. Especially important were political and regulatory drivers. Examples are the aversion to share customer-identifying data with external partners (banking confidentiality), fiscal issues (mainly tax exemption of delivered services) and regulations such as the Sarbanes-Oxley Act or Basel II. The latter 'impedes' outsourcing as they impose stronger compliance checks (assessment of operational risks) on financial institutes.

Among the future steps for the present research are (1) to test the payment execution findings against other core processes of a bank, (2) to identify whether the model needs to be specific for universal, regional or private banks, (3) to back-up the workshop findings by several case studies of innovative sourcing solutions, (4) to identify / develop a suitable IT-based tool for the model's application, and (5) to verify the model's applicability in individual projects.

Business / Networking Driver - Strategy Layer					Assessment Total	Requirement Total
Strategic options					8.75	8.5
Criteria	Weight	Assessment	Requirement	Operationalisation		
Market opportunity (USP, Revenue increase)	75%	2	2	0=Loss of today's differentiation 1=marginal loss of today's differentiation 2=no potential for differentiation 3=marginal potential for differentiation 4=high potential for differentiation	1.5	1.5
Strategic importance, influence on core competencies	75%	3	2	0=negative impact on focussing core competencies 1=marginal negative impact on focussing core competencies 2=no impact on focussing core competencies 3=stronger focus on core competencies 4=focus on core competencies	2.25	1.5
Customer benefit	75%	2	2	0=direct negative impact on customer 1=negative impact on customer 2=no impact on customer 3=potential, direct benefit for customer 4=direct benefit for customer	1.5	1.5
Exit possibilities / barriers	100%	2	3	0=Lock In Situation (e.g. proprietary solution) 1=cost-intensive, medium-term exit possibilities 2=medium-term exit possibilities 3=cost-intensive, short-term exit possibilities 4=no exit barriers	2	3
Time and resource advantages	50%	3	2	0=significant rise of time and resource consumption 1=moderate rise of time and resource consumption 2=no change in of time and resource consumption 3=moderate decrease of time and resource consumption 4=significant decrease of time and resource consumption	1.5	1



Overview - Assessment of Sourcing Option		
Business / networking driver		
Strategy Layer	Requirement	Assessment
Strategic options	1.70	1.75
Governance	1.75	2.17
Complexity	1.75	3.00
Risks	1.88	1.50
Community	2.00	2.00
Political Driver		
Legal Restrictions	3.75	2.00
Public	0.88	1.13
Stakeholder acceptance	1.50	1.50

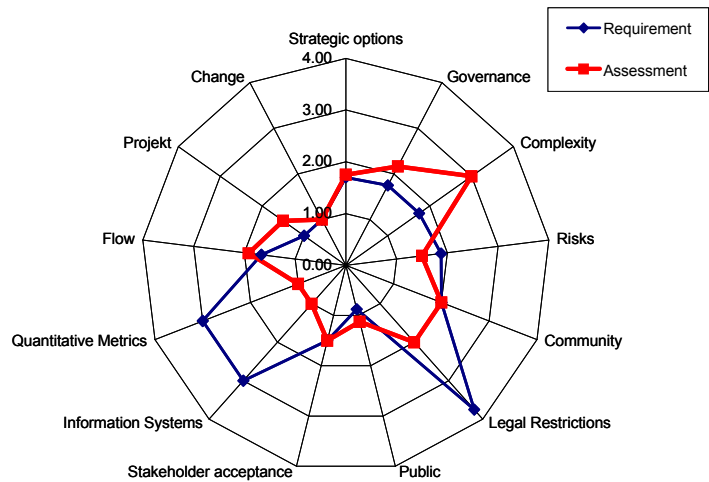


Figure 4: Example for the Operation Mode of the Assessment Model

Deducted from a discussion of a sourcing option for payment execution similar to the case presented in Figure 5

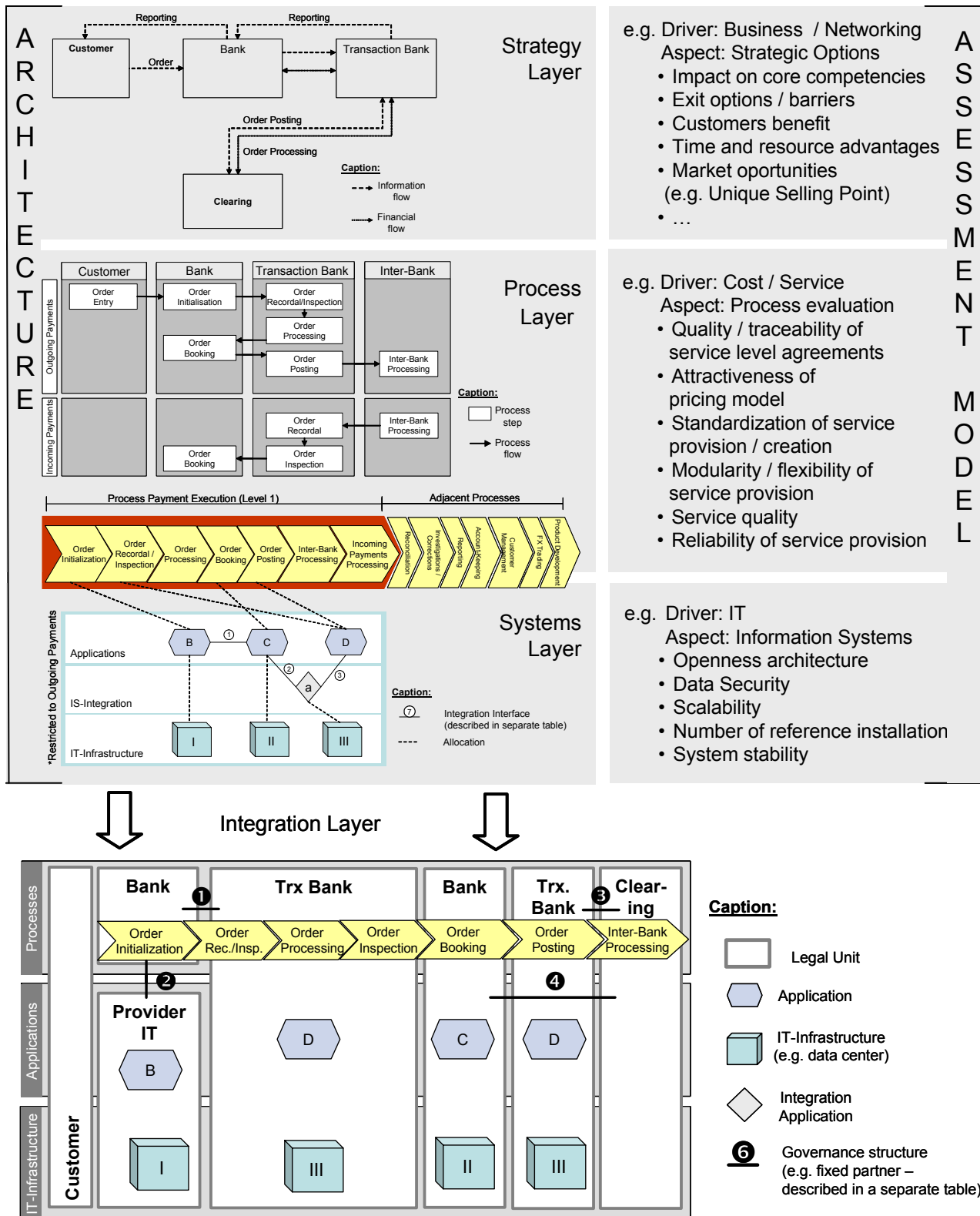


Figure 5: Layers of the integrated architecture and assessment model (Example payment execution)

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