

BY ULRICH HOMANN, MICHAEL RILL, AND
ANDREAS WIMMER

Flexible Value Structures IN BANKING

How service-oriented architectures can help achieve the business objectives of the transformation process in banking.

The financial services industry in continental Europe is in a stage of transformation. Banking has traditionally been an integrated business, where financial institutions exclusively distributed self-developed products via proprietary channels and fulfilled all transaction and support services in-house. To decrease costs and simultaneously enhance customer utility, banks are increasingly focusing on their individual core capabilities while exploring different sourcing options for non-core capabilities. Consequently, they are disaggregating their value chain into independently operable functional units. As communication capabilities reach higher levels of performance and reliability, these functional units are combined across corporate borders, thereby increasing sourcing options and flexibility.

Analogous to software engineering components, these functional units are referred to as modules. From an organizational point of view, these modules are easily manageable and stable units with a high degree of autonomy [4]. Coordination between modules is primarily via non-hierarchical mechanisms¹ of coordination [6]. Each module represents a distinctive core capability embodying a set of business functions.

Figure 1 shows a possible sourcing mix of a

typical retail bank. In this case the in-house capability "Credit Card Processing" is used by third parties as well as by their Internet platform. Other capabilities, such as "Credit Rating" and the distribution channel "Call Center" are sourced from outside. The underlying business objective is to realize economies of scale through specialization and to enhance flexibility by loose coupling² of business units [1].

The extent of this restructuring process varies

¹An example of a non-hierarchical mechanism are service-level agreements (SLAs) negotiated under the condition that service provider and requestor are in principle free to choose between different business partners.

²Systems are characterized as being loosely coupled if single system elements can act independently. This results in higher flexibility and robustness regarding external interference [3, 5].

among different areas of the financial services industry. It is quite advanced in the mortgage industry where specialization and modular design now are the norm. The formerly monolithic value chain is decomposed into separate activities fulfilled by specialized entities. Some market participants concentrate on distribution of loans, while others assume responsibility for operations and refinancing or customer service and administration (see the sidebar “The Transformation Process of Rheinhyp/Eurohypo AG”).

This transformation and disaggregation has, however, come at a considerable price. Communication across modules and enterprise borders remains cumbersome with fragmented processes. Data moves between firms primarily by fax, phone, and simple data transfer (for example, the SWIFT system). Manual re-entry occurs frequently when application boundaries are crossed. Traditionally, most IT systems in banks are monolithic entities with proprietary interfaces focused on a specific set of tasks. Consequently, they are obstacles rather than enablers of modular design. A new approach to system architecture is needed that reduces the complexity and costs of coupling information systems as well as increases flexibility to accommodate change.

Service-oriented architectures provide such an approach.³ Service-oriented architectures are a promising step toward modular design of business functionality in banking, providing a method to reduce complexity and increase the flexibility of coupling internal and external business units. IT resources are considered as being available and discoverable as location-independent services on the network. The architecture provides a layer of abstraction that hides complexity of technical implementations, such as the programming languages or platform specifications underlying such services. Access is provided in a flexible, dynamic, and cost-effective manner.

Web services are the key enabling technology that implement service orientation. Being a standards-based approach to distributed computing, Web services

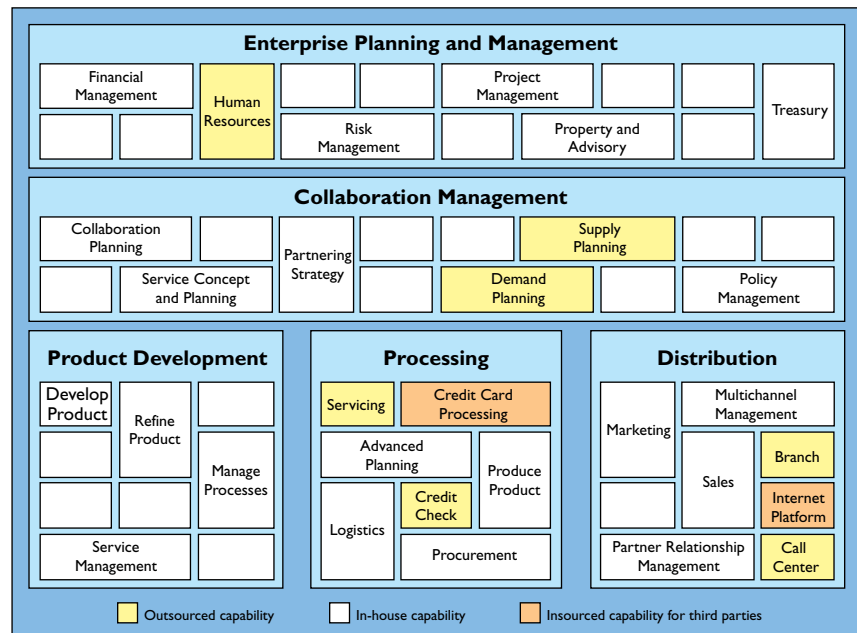


Figure 1. Exemplary sourcing mix of a modularly designed retail bank (module map).

reduce the details of interface implementation. This allows value networks to run at lower costs by providing flexibility to connecting applications and reducing interface-negotiation efforts between collaborating parties. Additionally, it leverages existing technology: instead of replacing legacy systems it intro-

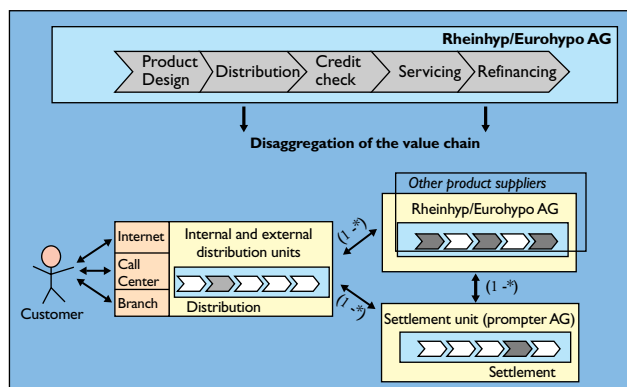


Figure 2. New arrangement of value chains: example of Rheinhyp/Eurohypo AG.

duces a new layer. It is placed on top of (existing or newly developed) applications encapsulating independent modules and providing a set of standards for interfaces. The goal is to get more value out of existing assets [2].

Although service orientation, related syntactic interfaces, and exchange standards provide significant means to achieve loose coupling, semantic standards for vertical industries have yet to be established. These standards would provide a common understanding to

³For extensive treatment of service-oriented architectures, see the October 2003 issue of *Communications*.

The Transformation Process of Rheinhyp/Eurohypo AG

An example of specialization and emergence of value networks is the transformation process of Rheinhyp/Eurohypo AG, a German mortgage bank and a co-owned subcompany of Deutsche Bank, Commerzbank Bank, and Dresdner Bank. Based on its experience from Internet-based distribution of mortgages, the company established a multiproduct and multichannel platform. This Web service-based platform integrates different internal and external distribution channels as well as product offerings of different companies. As a consequence, a distribution model is emerging in which Rheinhyp/Eurohypo AG is one of several product suppliers connected to this platform.

Taking the strategic restructuring process one step further, the Prompter AG, a subcompany of Rheinhyp/Eurohypo, has been founded that focuses on offering back-office services, especially disbursement and administration (for example, ex-post monitoring) of mortgage loans, to other financial

institutions such as (mortgage) banks or insurance companies. By using Prompter as a service provider, the partner companies can outsource all non-core activities related to mortgage financing while at the same time offering a broad range of possible solutions to their customers.

This IT-enabled business transformation gives way to a new value structure in which specialized players fulfill specific roles along the value chain, as shown in Figure 2. In the case of Rheinhyp/Eurohypo the mother company focuses on product management and refinancing while extensively cooperating with different distribution channels and partners with its subcompany Prompter AG as a service provider for loan administration. The economic rationale behind this process is that customer utility can be enhanced by offering customers a broad range of products to choose from and that economies of scale can be realized by bundling processing volumes across different enterprises. **C**

enable integration of new modules, with minimal negotiation effort. Semantic standards need to not only cover data and services being exchanged, but also the protocols, terms, and conditions under which business is being conducted.

Figure 3 structures aspects of module integration as an Integration Impedance Stack. The bottom layers have already been tackled by standardization of transport protocols (such as TCP/IP and HTTP), document formats (XML), security (WS-Security) and transaction protocols (BPEL, WS-Transactions). From a business perspective, issues such as business entity management and business process management arise. Hence further research is needed to identify general functions and arrange them by business-functional affiliation (similar to Figure 1) or processes. In this way, companies could generate a capability or module map⁴ that provides a logical structure and an initial approximation of the resulting business application environment. Using and exchanging such a map facilitates collaborating parties gaining a common understanding

about banking modules. Beyond that, business protocols and policies must be established regarding the setup, execution, monitoring, and change of processes in order to facilitate cross-enterprise collaboration. Once all layers of the Integration Impedance Stack are implemented, the financial services industry will be better able to reap the full benefits of service orientation. **C**

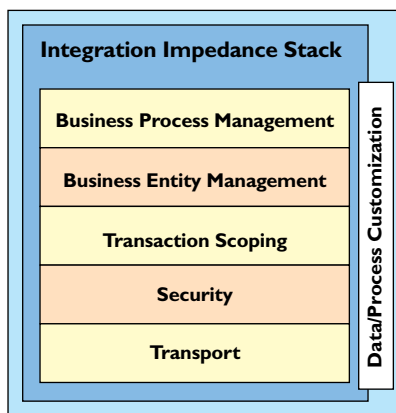


Figure 3. Integration Impedance Stack.

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ULRICH HOMANN (ulrichh@microsoft.com) is a solutions architect with Microsoft Corporation.

MICHAEL RILL (michael.rill@ibi.de) is a senior research assistant at the Institute for Banking Innovation (ibi), an independent scientific organization founded by leading financial institutions at the University of Regensburg, Germany.

ANDREAS WIMMER (andreas.wimmer@ibi.de) is the head of the retail banking competence center at ibi, University of Regensburg, Germany.

⁴The module map concept is developed by Microsoft as a business architecture supplement to service-oriented architecture design efforts. The specifics for retail banking are implemented in cooperation with ibi Research. It is a tool-supported method that helps companies analyze, group, and specify business functions (capabilities) based on an industry-specific framework. It supports intra- and interorganizational collaboration by enabling partners to define process and application interfaces and related protocols.