Executive White Paper

Mortgageserv®
Architectural Overview:

Future-Proofing Your Investment in Loan Servicing Technology

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Fiserv Lending Solutions

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1 Overview

Client satisfaction and retention, loan profitability, and mitigation of potential loss are direct outcomes of a customer-focused, benefits-driven, loan servicing solution. A system must enable high-volume servicers to support—and improve—business processes, while providing front-line users with the comprehensive application functionality and immediate access to customer data financial institutions require to provide quality service to their customers.

In addition, the solution must provide decision-makers with the confidence that they have made a sound long-term decision on behalf of their organization. Here, the solution architecture and vendor's technology vision come to the forefront. The challenge for vendors is not merely to implement new technologies, but to integrate them in a manner that provides servicers with practical solutions today and new opportunities for tomorrow.

Fiserv Lending Solutions has been at the forefront of change in the industry, and sees its loan servicing product, MortgageServ, as having a unique architectural advantage to help servicers handle that change. Further, Fiserv manages change within the MortgageServ architecture as an evolutionary process, capitalizing and expanding upon existing technological strength while at the same time, preserving the business logic and capabilities that have proven their strength and resiliency in some of the largest and diverse financial institutions in North America.

This White Paper describes the evolution of MortgageServ and Fiserv Lending Solutions' strategic product vision as it relates to architectural development and enhancement. Specifically, it discusses how MortgageServ's existing tiered architecture and reusable components have been enhanced to meet industry standard requirements for seamless, Web service-based integration compatibility.

2 A Future-Proof Technology Vision

2.1 A Future-Proof Philosophy

The MortgageServ loan servicing solution is a business-driven technology; it is developed not as a result of a technological imperative, but in order to satisfy customer needs, which include:

» Immediate and secure access to information

» Timely and accurate data

» 24/7 availability

» Workflow and auto-decisioning desktop tools to improve user efficiency

» Access to information relevant to business and financial planning

» Cost control and/or service quality improvements through multiple delivery channels.

Therefore, the Fiserv vision begins with the realization that the assumptions and expectations of our clients—and prospective customers—play a significant role in the strategic direction of the

product. As a result, we take a practical and multi-faceted approach in determining the appropriate time to initiate change processes:

» Technology innovations are evaluated for their potential to meet customer needs.

» Customer input is used to determine when and how technology can be used to better satisfy their business requirements.

Technology for practical business utility is the key to Fiserv Lending Solutions' future-proof development philosophy. Strength and stability—hallmarks of Fiserv solutions—are ensured by integrating new technologies as they mature, become reliable, and demonstrate that they can be used efficiently and cost-effectively to promote the advancement of business within the financial services industry.

Technology decisions are made based upon their ability to create value, support growth and ensure a solid return on investment for both Fiserv and the loan servicer.

2.2 Alignment with IBM Business On-Demand

Information on demand requires a business and technology model that facilitates the integration of business systems and rapid exchange of data. The MortgageServ vision is closely associated with the principles of an on-demand environment as described by IBM. The needs of today's servicing organizations—flexibility, responsiveness and innovation—and the challenges they face—change, intense competition and financial pressures—mirror those of most large businesses.

The IBM On-Demand Operating Environment facilitates optimal business and technology flexibility; component-based business models are supported by component-based applications. Through the modularization of the business environment, companies can design and implement collaborative, high-value networks and dynamic business models. Within a servicing operation, this openness is reflected through standards-based processes and programs; highly integrated yet loosely coupled cross-enterprise information exchange; and automated, self-managing systems.

Where is the value in servicing operations? People, portfolios, and profitability. The on-demand enterprise builds and maintains its competitive edge by increasing productivity, improving customer service levels and finding savings wherever possible. MortgageServ is transforming the value chain by eliminating organizational silos and providing technology infrastructure that promotes flexibility and access for the most efficient life-of-loan management.

3 MortgageServ's Service-based Architecture: Evolution Not Revolution

3.1 Service-based Architecture Defined

From an information technology (IT) perspective, the component-based, modular business requirements of the on-demand enterprise are best served through a service-based architecture.

A service-based architecture (service-oriented architecture; Web services; n-tier architecture) is an information technology environment that enables business functions and transactions (services) from multiple systems to be utilized by other systems as necessary. This enables greater interoperability and communication among distributed systems. The advantage of the service-oriented architecture lies in the reusability of its components and the isolation of the operating system from the application's business logic and user interface.

» **Reusable components.** The separation and exposure of business functionality is critical to business flexibility because it enables other systems to call upon the application to perform

specific tasks and processes (e.g., calculations, data import) without impacting the performance of the system as a whole.

» **Isolation.** A service-based architecture is typically modularized not only by service, but also by tiers, thus facilitating customization and simplifying overall maintenance. In concept, a multi-tiered architecture and a service-based architecture are different; however, these models work together to provide a framework that is flexible and adaptive. Operating systems can be updated, services added or modified, and new user design implemented, all while maintaining the stability and integrity of the underlying business logic.

With all this separation, what is the glue that holds a service-based architecture together? Since a service-based architecture communicates information in a manner that is technology and platform independent, it relies on a common integration protocol that can efficiently control and manage all service interactions. Simply stated, a service-oriented architecture enables the integration of business systems, data, and processes within and across organizations.

Today's best practices call for a Web services model, which uses a standard called Simple Object Access Protocol (SOAP) messaging. SOAP defines how extensible markup language (XML) formatted messages should be constructed for communication between an entity requesting a service and the entity providing the service.

3.2 The MortgageServ Environment Today

MortgageServ runs in an IBM Customer Information Control System (CICS) environment. CICS is IBM's industrial-strength, online transaction management and connectivity for high-volume, mission-critical software applications. With CICS, IBM has demonstrated a firm commitment to supporting technology innovation in a mainframe environment, and the migration to a service-based architecture is a natural evolution in MortgageServ application design.

From the beginning, MortgageServ has operated in a manner that adhered to an architecture closely resembling a service-oriented architecture. Today, that is being leveraged to fully achieve an SOA orientation. Once using the traditional mapping and interface framework offered by TN3270, MortgageServ initiated the transition to a point-and-click, browser-based interface by instituting changes limited to the services involved. Because the TN3270 interface adapter was separate from the application, the transformation to a more user-friendly user interface was completed with little impact to the core system. In fact, a single program routine enabled the transition to a browser-based graphical user interface (GUI).

Fiserv Lending Solutions provided a seamless transition for customers by developing a new transport adapter for the browser-based environment that coexisted with the TN3270 interface adapter. By engaging change at the architectural level, MortgageServ maintains the ability to support any platform and any technology without changing the application logic. Flexibility is not only possible; it is paramount. MortgageServ can present data through a GUI environment, a SOAP message, or an application programming interface (API), providing the highest level of access and integration.

Additionally, the existing multi-tiered MortgageServ solution architecture already supports and has been developed using reusable business logic and data access logic. Independent subroutines can be accessed by many systems and business channels through an API. For example, MortgageServ APIs act as a real-time conduit for sharing data and functions between the servicing system and other applications such as voice response units, Web sites, and third-party providers. This collaboration enables total workflow integration. The API also enables complete transactional functionality, including the ability to update business systems. These systems can

also request information on behalf of the self-service customer, returning specific information about their accounts in real-time.

3.3 The MortgageServ Evolution

To further enhance integration capabilities, MortgageServ continues to develop an open, extensible, and service-based system architecture with the goal of protecting lenders' technology investments. Functionally, the exposure of services is possible and existing today, and technically, the MortgageServ communications strategy has resulted in the conversion to standards-based architectures and secure Internet transport mechanisms for Web support; namely, SOAP over Hypertext Transport Protocol (HTTP).

Recent IBM software releases enable CICS-based applications to be accessed as Web Services within a true service-based architecture or to invoke Web services hosted on other systems. Secure external communication is supported using Secure Socket Layer (SSL) encryption.

The logical tier concept that has been in use for decades within the MortgageServ Solution will be further extended to handle business-rules management (see Figure 1). The architecture will provide a rule authoring and maintenance facility for the end-user and will resolve and fire these rules at the appropriate point during the execution of the business process. Further crystallization of business process definitions and separation of business rules from the application logic will put even more power and control into clients' hands.

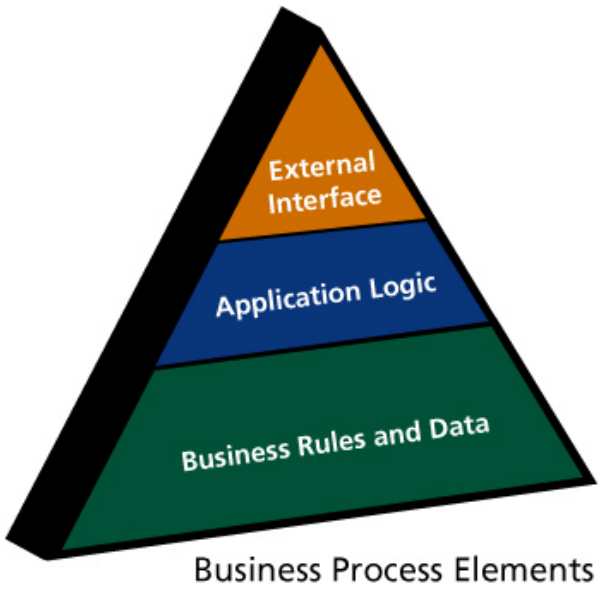

Figure 1.

Depending on reusability, dependency, and/or autonomy attributes, one or more business processes can be grouped to form a Web service. Once again, the architecture insulates the complexities of constructing or interpreting a SOAP message from the application. Business processes can call other business processes and Web services can call other Web services. Either of these components can call a third-party Web service or act as an HTTP client for other resources such as Lightweight Directory Access Protocol (LDAP) elements. The result: greater flexibility, access to functionality, and business performance.

Integration is more "open" and easier than ever (see Figure 2). It can be achieved through direct SOAP calls to MortgageServ via a litany of SOAP-related programming tools available to developers of ancillary systems. Workflow and its associated rules can be incorporated through MortgageServ scripting or any third-party workflow tool that "speaks" SOAP.

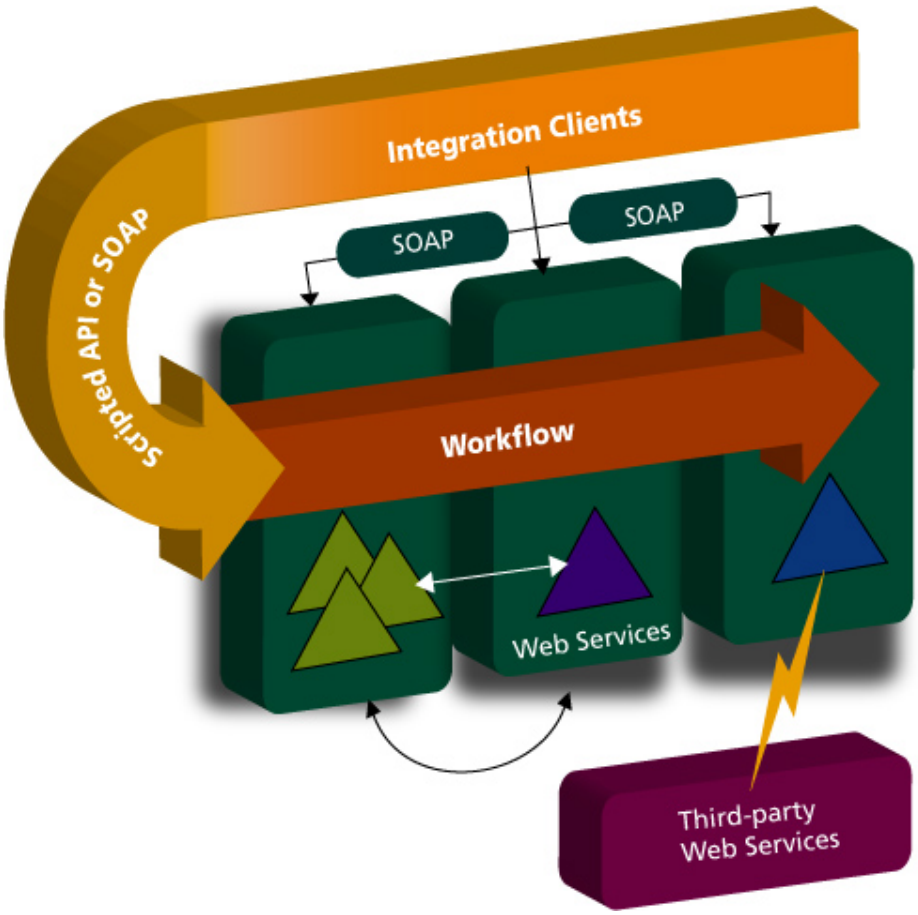

Figure 2.

4 Conclusion

Fiserv Lending Solutions is aggressively committed to helping servicing organizations provide the best possible service across all possible channels. As value chain integration becomes more reliant on loosely coupled shared resources, the MortgageServ loan serving solution is evolving to meet these business requirements.

Already stable, flexible, and adaptable, MortgageServ provides today what many systems are being rearchitected to deliver: a multi-tiered, object-oriented system design with exposed business functionality. With IBM's release of software to support true service-based architectures, MortgageServ is accelerating its movement to standards-based system integration and data access. And, without the need to rewrite and rearchitect the system, the MortgageServ evolution is virtually transparent to users, providing servicers with new technology foundations to improve IT responsiveness, extend existing infrastructure, maximize developer productivity, anticipate change and protect technology investments.

5 For More Information

For more information about the MortgageServ loan servicing solution, please contact Fiserv Lending Solutions at:

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