Redpaper

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Case Study: Corporate Payments Banking Scenario

This IBM® Redpaper™ publication is one in a series of service-oriented architecture (SOA) papers that feature a case study that involves a fictitious company called *JKHL Enterprises* (JKHLE). In this paper, we focus on the banking division of JKHLE titled *JKHL Bank*.

The focus of the case study in this paper is the *banking industry sector and corporate treasury operations* and how organizations can use SOA to construct solutions for corporate customers. This paper discusses the issues from both the bank's and corporate client's point of view.

IBM Banking Industry Framework

IBM provides a unified banking framework that spans the enterprise and software foundation for end-to-end banking solutions. The *IBM Banking Industry Framework* is the strategic middleware foundation for solutions. IBM Banking Industry Framework domains provide software, industry extensions, and accelerators to address specific banking industry needs (as illustrated in Figure 1):

- The *payments and securities* domain provides the middleware tooling to help you progressively transform your payments operations to become more flexible and efficient.
- The *integrated risk management* domain supports taking a holistic approach to managing financial risk, operational and IT risk, financial crimes, and compliance.
- The *customer care and insight* domain helps you build a foundation for creating a single view of the customer and enabling more effective and efficient sales and service.
- The *core banking transformation* domain allows you to modernize existing applications that support core banking functions while aligning with the changing needs of the business.

Figure 1 IBM Banking Industry Framework

The IBM Banking Industry Framework provides the following benefits:

- Enables integration of information and processes across a bank's silos that can lead to greater efficiencies, better customer services, and reduced data requirements.
- Uses software technologies to solve different business problems ranging from improved customer service to better risk management.
- Maximizes re-use of software assets.
- Improves solution deployment time with foundational and module-specific software extensions and accelerators.

The case study in this paper focuses on the *payments and securities* domain from the IBM Banking Industry Framework.

JKHL Bank in the banking industry

JKHL Bank is a fictitious Tier 2 bank that over the last several years acquired five smaller regional banks to create a broader geographic presence. JKHL Bank has 500 branches in six countries, providing retail, corporate, commercial, and private banking. JKHL Bank has identified several initiatives that are intended to improve their corporate payments offering, and these initiatives are the subject of this paper.

The case study that we describe in this paper includes the following key actors and roles:

- Thomas Arnold, Chief Operating Officer, JKHL Bank
- Lucy Dunshore, Relationship Manager, JKHL Bank
- Geoffrey Carroll, Banking Industry Architect, IBM

JKHL Bank business objectives and requirements

JKHL Bank's Chief Operating Officer, Thomas Arnold, is concerned about changing industry trends in banking. Thomas recruits Geoffrey Carroll, a Banking Industry Architect from IBM, to analyze JKHL Bank's existing banking processes and to provide recommendations for a business transformation.

Lucy Dunshore is JKHL Bank's Relationship Manager. She works closely with clients who have corporate accounts at JKHL Bank. Lucy shared with Thomas and Geoffrey the following trends that she sees in the corporate banking market:

- Banking institutions
  - The average revenues per transaction are showing a pervasive and steady decline.[1]
  - The decreasing margins on transaction processing is forcing banks to evolve from purely transactional entities.
  - Corporate customers are increasing demands for customized services.
  - Foreign and domestic competition is increasing.
- Corporations
  - Corporations want to improve effective working capital management and optimized cash management processes.
  - Corporations want to improve inefficiencies in payments processing through consolidation, standardization and centralization.
  - Corporations are increasing regulatory compliance requirements.

Traditional delivery and operating models shared across the retail and corporate sectors are deficient in addressing the needs of the corporate customer. JKHL Bank must develop innovative business processes to cater to the needs of the corporate treasury.

Identifying the JKHL Bank company initiatives

Thomas Arnold tells Geoffrey Carroll that JKHL Bank has become a leader in retail banking in recent years. JKHL Bank wants to build from that success to succeed in the corporate space by addressing the demands of their corporate treasury customers.

[1] Source: Boston Consulting Group

Thomas explains the following goals of JKHL Bank:

- Wants to cater to corporate customers by adapting the business model to deliver products and solutions that fit the customers specific needs.
- Wants to pioneer the standardization of services for the corporate payments domain of the banking industry.
- Wants to achieve differentiation by offering corporate treasuries customized financial services that aid in the support of liquidity and cash management.
- Wants to offer flexible and innovative products that allow customers to reuse existing assets in addition to taking advantage of new technologies.
- Wants to maintain compliance with industry regulations.

Geoffrey Carroll outlines for Thomas how JKHL Bank can benefit from better collaboration with their corporate customers:

- Improved internal visibility into the corporation's business frontline enables JKHL Bank to offer innovative solutions that increase transparency and operational efficiency as well as cash, liquidity, and risk management.
- Consolidation, customization, and automation of corporate payments business models will decrease JKHL Bank's banking costs and increase revenue generating services.
- The availability of straight-through-processing (STP) solutions can enable real-time transactions based on current business data, which directly increases JKHL Bank's e-business volume.

Geoffrey and Thomas ultimately agree that JKHL Bank has two business initiatives for corporate payments:

- To grow revenue in corporate payments
- To reduce operational costs

To meet these initiatives the supply chain payments process will be enhanced and improved reporting will be offered to corporate clients, including automated status reports and end-of-period reports.

Business process modeling

Through a set of interviews with the bank's key stakeholders, Geoffrey Carroll and a team of IBM consultants document the existing processes for reporting from bank to corporate and supply chain related payments and make recommendations for an improved process design.

Current business process analysis

JKHL Bank has continuous integrated processes for cash management and payments (see Figure 2 on page 5). The challenges with these processes are:

- Maintaining a consistent view of transactional data across different business domains and with JKHL Bank.
- Inconsistent data formats and interchange between JKHL Bank and corporate systems.

Note: In each of the high-level business process diagrams, the process activities that are associated with the challenges are circled.

This section describes the following processes:

- Retrieve Current Account Information process
- Retrieve End-of-Day Report process
- Process Supply-Chain Management process

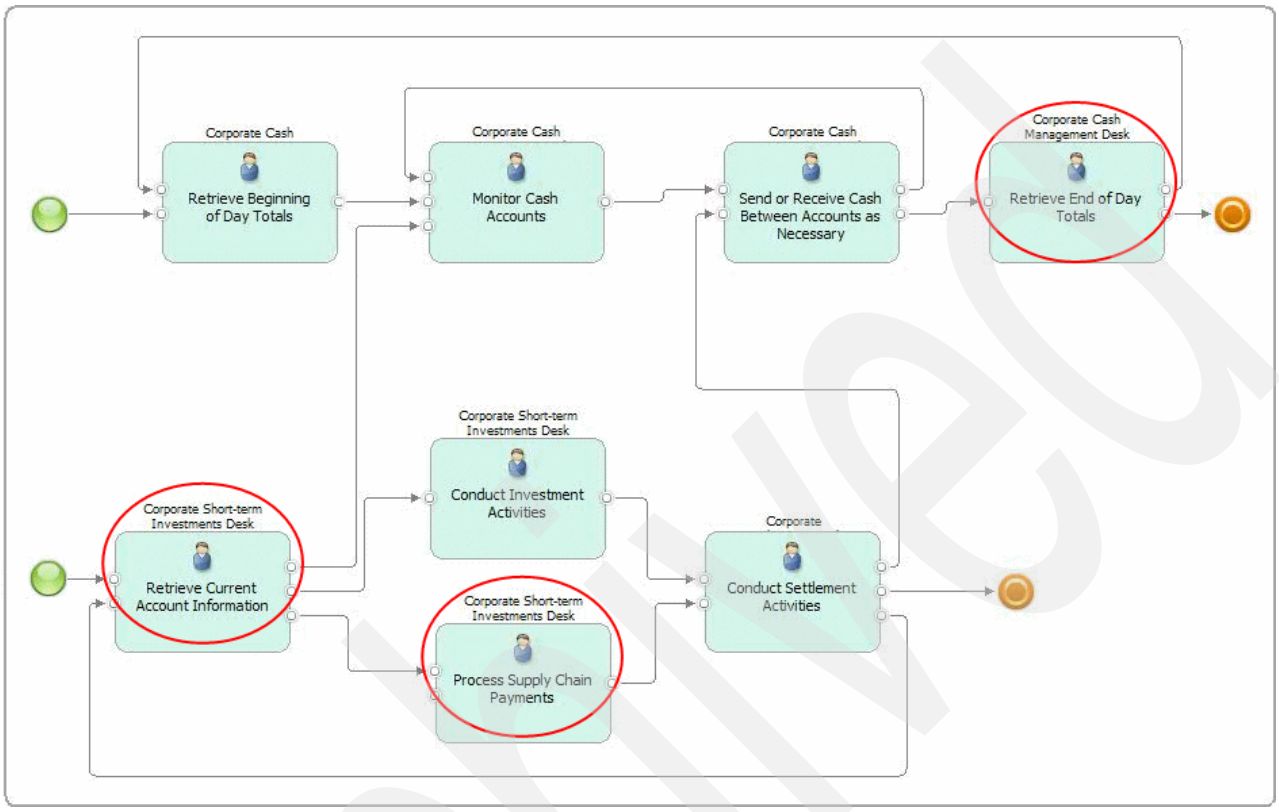

Figure 2 Interaction between the bank and its corporate customers

Retrieve Current Account Information process

A corporate customer requests current account information from JKHL Bank. The bank processes this request and sends the results back to the corporate customer. The corporate customer receives this information and translates it to a format required by their in-house process. Figure 3 shows the Retrieve Current Account Information process.

The challenges with this process are:

- Lack of seamless or standardized system integration between JKHL Bank and its corporate customers for retrieval of required account information.
- Lack of common or standardized data format between JKHL Bank and its corporate customers.

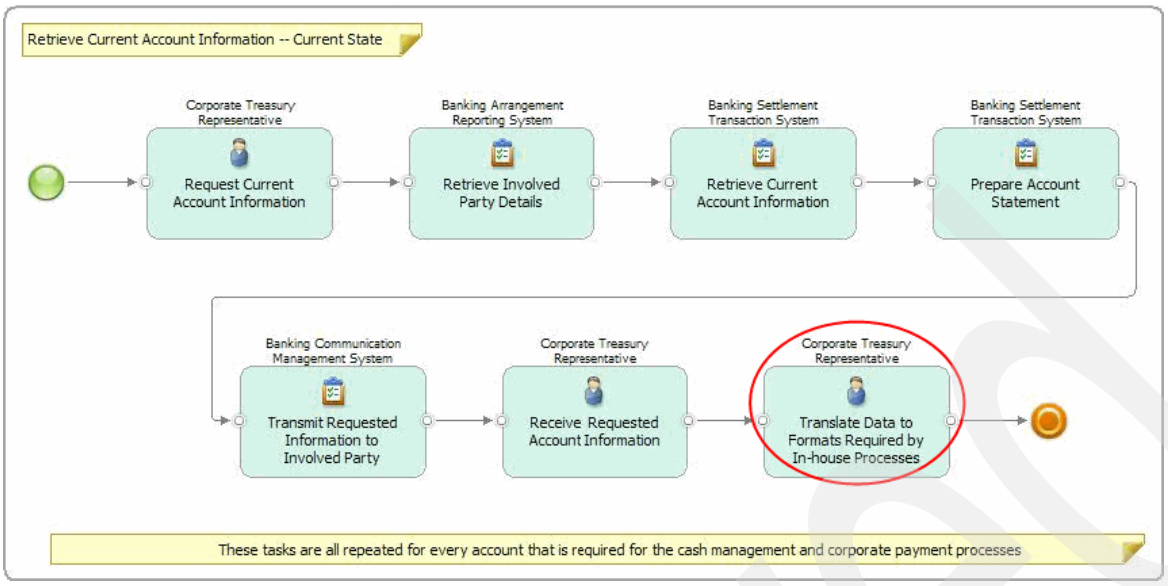

Figure 3 Retrieve Current Account Information process

Retrieve End-Of-Day Report process

A corporate customer requests an end-of-day report. JKHL Bank processes the end-of-day report request and sends the results back to the corporate customer. The corporate customer receives the end-of-day report and translates it to a format required by their in-house process. Figure 4 shows the Retrieve End-Of-Day Report process.

The challenges with this process are:

- Lack of seamless or standardized system integration between JKHL Bank and its corporate customers for retrieval of required account information.
- Lack of common or standardized data format between JKHL Bank and its corporate customers.

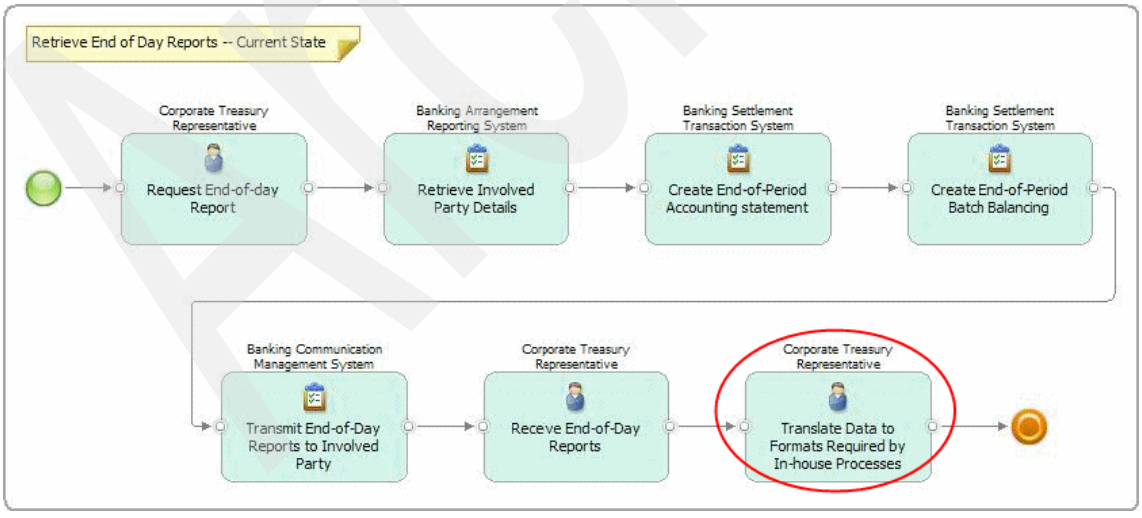

Figure 4 Retrieve End-Of-Day Report process

Process Supply-Chain Payments process

A corporate customer retrieves data from JKHL Bank and manually translates this data for use in assessing financial impact, risk, and settlement position. The corporate customer classifies payments (classifications include *Approved* and *Rejected*) and prepares outpayment instructions. JKHL Bank processes the payment and sends the payment status to the customer. The resulting status message is translated manually into other enterprise systems. Figure 5 shows the Process Supply-Chain Payments process.

This process includes the following challenges:

- Lack of support for corporate payment and cash management decisions.
- Lack of seamless or standardized system integration between JKHL Bank and its corporate customers for retrieval of required account information.
- Lack of common or standardized data format between JKHL Bank and its corporate customers.

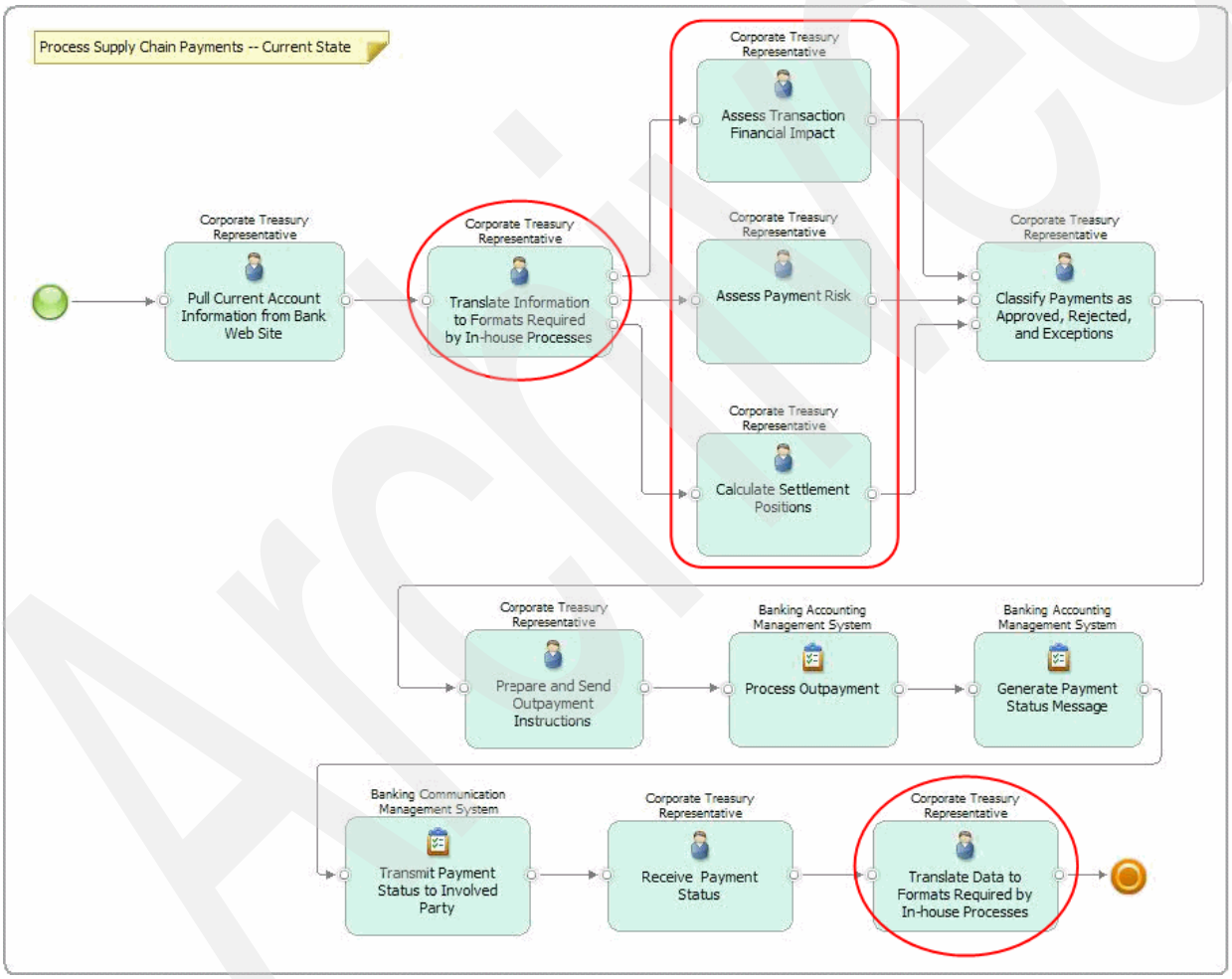

Figure 5 Process Supply-Chain Payments process

Proposed business process design

Geoffrey Carroll and the team of IBM consultants take the following principles into consideration when developing the proposed business process design:

- Automate processes where appropriate to help eliminate redundancy and reduce manual intervention.
- Support increased collaboration with information as a service. This collaboration is between JKHL Bank and the corporate customers and also within the corporate financial supply chain.
- Provide proven guidance based on industry assets and leading practices.

The benefits of adopting these principles include shortened time to value, reduced risk, and a foundation for future enhancements. Based on these principles, the processes are redesigned as follows.

Note: In each of the business process diagrams, the process activities that contain improvements are circled.

Retrieve Current Account Information process

A corporate customer requests current account information from JKHL Bank. The bank processes this request based on information in the customer *Reporting Profile*. The bank formats the data and sends it back to the corporate customer according to the *Communication Profile*. Figure 6 shows the future state Retrieve Current Account Information process.

The benefits of this process are:

- The corporate customer receives data specific to their needs.
- Data arrives with the corporate customer in an electronic format that is usable without manual translation.

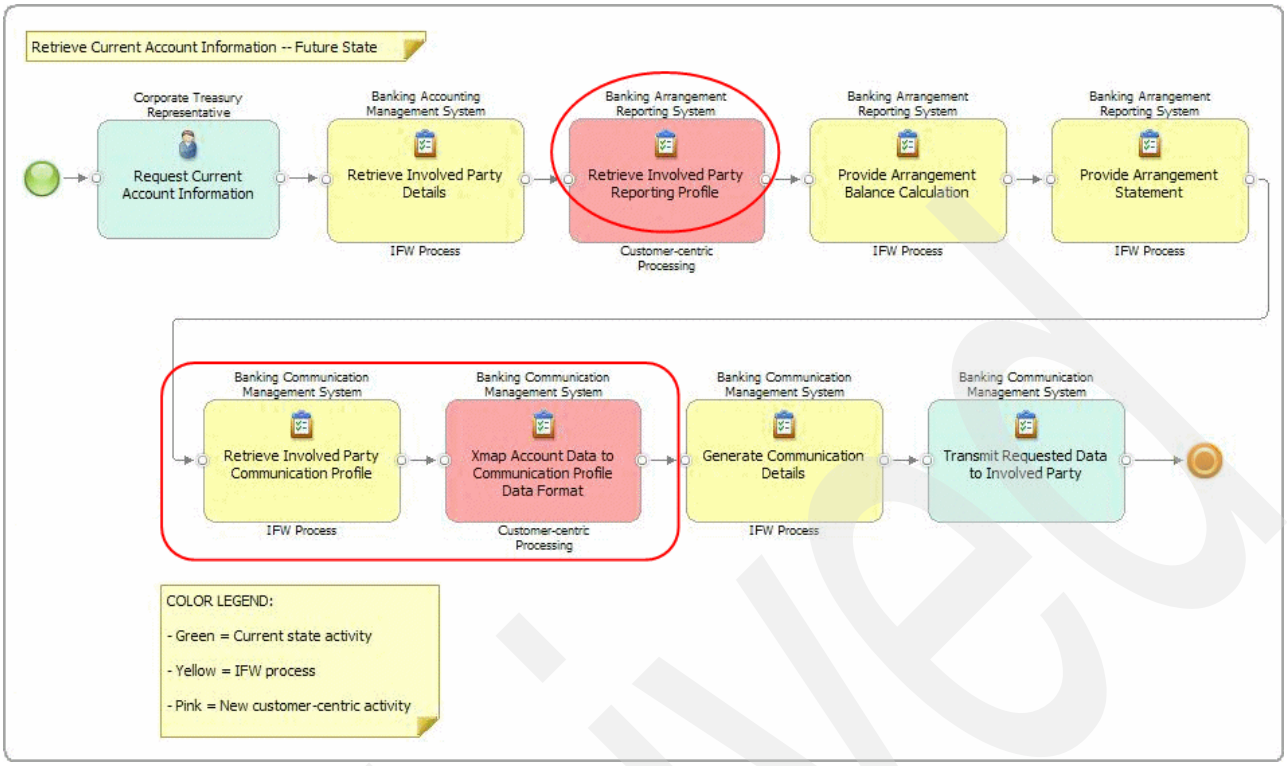

Figure 6 Retrieve Current Account Information process, future state

Retrieve End-Of-Day Report process

A corporate customer requests an end-of-day report. JKHL Bank processes the end-of-day report based on information in the customer *Reporting Profile*. The bank formats the data and sends it back to the corporate customer according to the *Communication Profile*. Figure 7 shows the future state Retrieve End-Of-Day Report process.

The benefits of this process are:

- The corporate customer receives data specific to their needs.
- Data arrives with the corporate customer in an electronic format that is usable without manual translation.

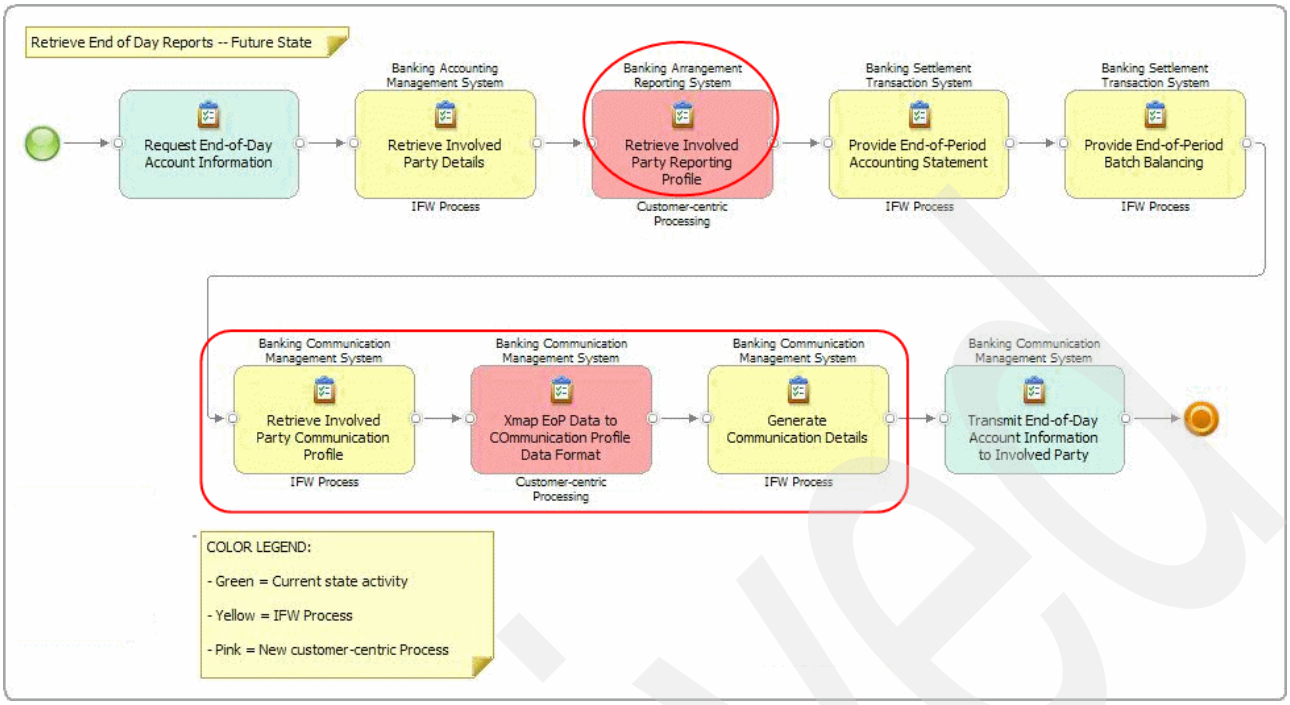

Figure 7 Retrieve End-Of-Day Report process, future state

Process Supply-Chain Payments process

A corporate customer issues payment instructions after using data from JKHL Bank for assistance in assessing financial impact, risk, and settlement position. JKHL Bank processes the payment using leading practices and regulatory compliant processes. The bank formats and sends payment data according to the *Communication Profile*. Figure 8 shows the future state Process Supply-Chain Payments process.

The benefits of this process are:

- The customer has the data necessary for more effective handling of payment and cash management decisions.
- Data arrives with the corporate customer in an electronic format that is usable without manual translation.
- Business measurements track progress toward payment cost goals.

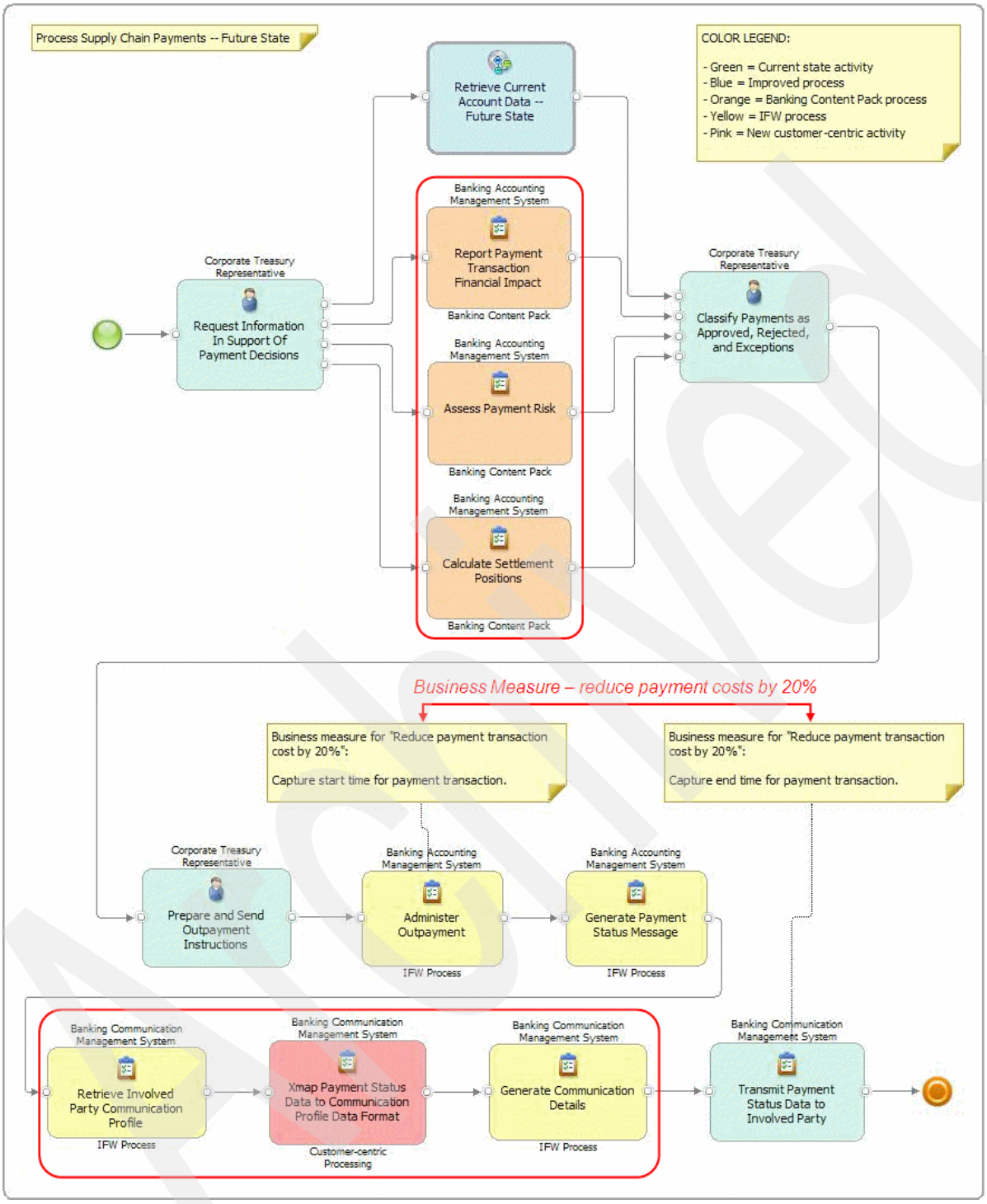

Figure 8 Process Supply-Chain Payments process, future state

Service modeling

After performing business process modeling, the next task is to delineate the services that comprise the business processes. JKHL Bank wants to identify the services that need to be enabled in the solution architecture that is being proposed. Geoffrey Carroll advises JKHL

Bank to use the *service-oriented modeling and architecture* (SOMA) approach from IBM, illustrated in Figure 9, to identify these services. Geoffrey also recommends using the IBM Information FrameWork where appropriate to speed up service design.

SOMA provides an approach to building an SOA that aligns to business goals and ties the business processes directly to underlying applications through services. The process of SOMA consists of three general steps:

- Identification
- Specification
- Realization of services, components, and flows

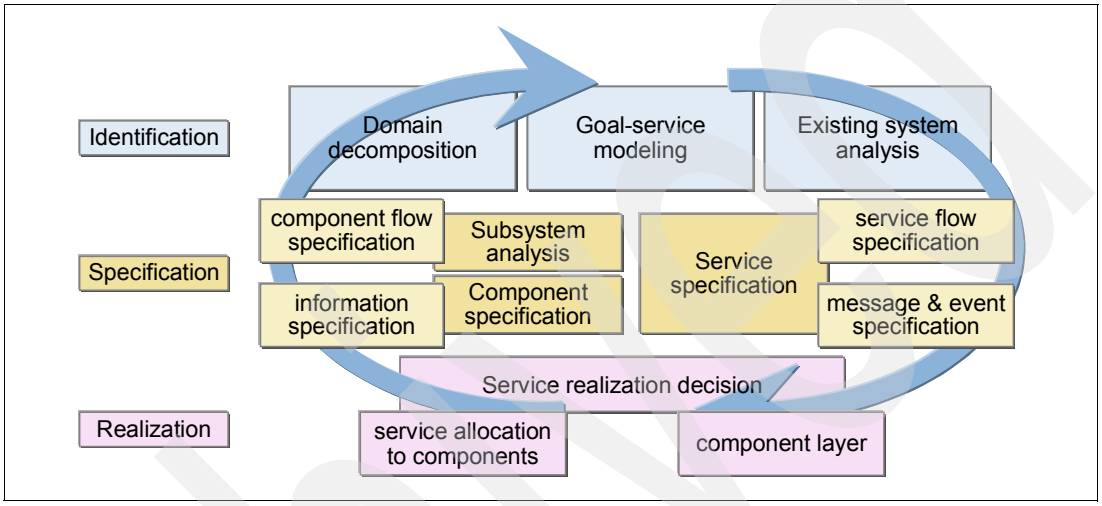

Figure 9 Service-oriented modeling and architecture (SOMA)

Geoffrey explains how the service identification step of SOMA consists of three techniques that can help JKHL Bank identify services for the Account Open business process:

- Domain decomposition

  This is a top-down view of the business process. It consists of process decomposition where processes are broken up into sub-processes and high-level business use cases. In this top-down decomposition, business processes are represented hierarchically with predefined IBM Information FrameWork services, simplifying the decomposition effort.

  For example a *Corporate Payment and Servicing* process can be decomposed into sub-processes such as *Financial Transaction Processing*, *Arrangement Reporting*, and *Account Management*. Each sub-process can in turn be decomposed further, ultimately leading to a list of business use cases. For example, the *Account Management* sub-process can be decomposed into *Assess Payment Risk* and *Calculate Settlement Positions*. These business use cases are typically good candidates for business services.

- Existing system analysis

  In contrast to domain decomposition, this is a bottom-up approach. Existing systems are analyzed according to their suitability for inclusion in business processes. For example, JKHL Bank can analyze the services that make up the *Transmit Requested Data to Involved Party* process (such as *Transmit Payment Status Data*) to determine if any of these services meet the needs of the new business processes. Typically, reuse of existing systems and assets provides a lower cost solution to implementing service functionality than creating new assets.

- Goal-service modeling

  This meet-in-the-middle approach validates other services not captured by the domain decomposition and existing system analysis approach. In this phase, business services

are identified based on goals and metrics. For example, JKHL Bank can define a goal of *Gather Start Time for Payment Transaction* and *Gather End Time for Payment Transaction*. These goals might consist of sub-goals, such as *Reduce Payment Life Cycle Time by 50%* (the percentage value will, of course, vary dependant on the project). Business services can be identified and grouped under these goals.

Note: For more information about applying SOMA, refer to the developerWorks® article, *Service-oriented modeling and architecture*, which is available at:

`http://www.ibm.com/developerworks/library/ws-soa-design1/`

JKHL Bank no longer needs to guess what services will add the greatest value. SOMA provides a systematic approach to building an optimized roadmap to implementing an SOA.

JKHL Bank's technical environment

Geoffrey Carroll summarizes the current state of JKHL Bank's technical environment:

- Point-to-point integration.
- Data is mapped directly from one application to another, often requiring manual translation.
- Process, routing, rules logic needs to be coded to specific message types.
- Growth adds exponential complexity.

Figure 10 illustrates this environment.

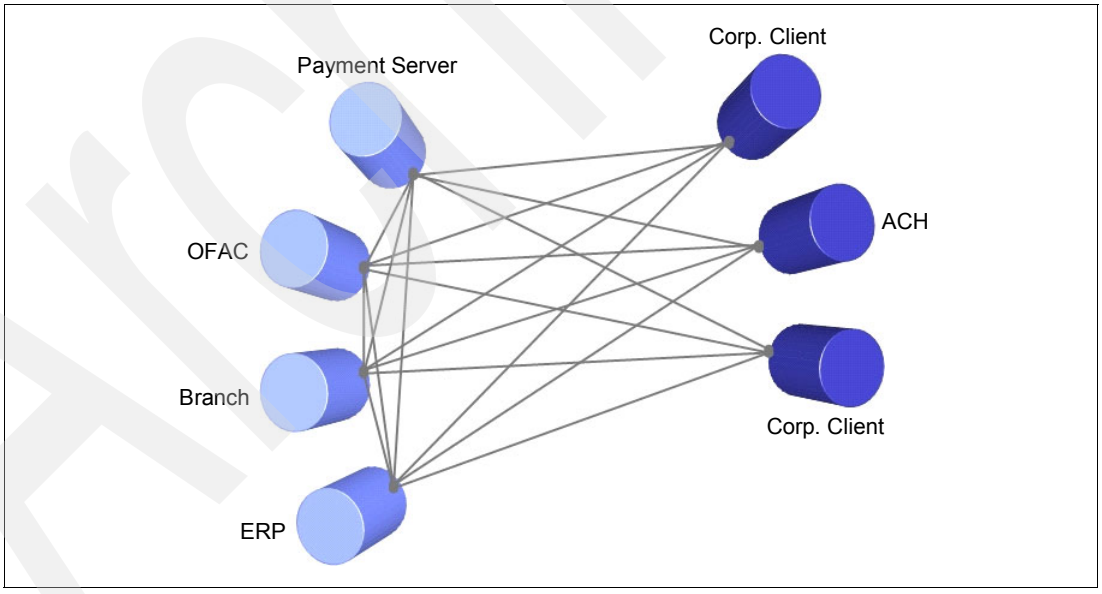

Figure 10 Current state of JKHL Bank's environment

Geoffrey then outlines JKHL Bank's architectural principles for redesigning this solution:

- The solution will be service-oriented.
- Applications will be built as services or collections of services, to maximize business flexibility and agility.
- Applications will locate services through a registry.

- Applications will interact with the SOA infrastructure according to agreed (and documented) behavior.
- Service levels covering performance and availability will be defined and agreed by all the stakeholders and stated in business terms.
- Services will be used to access master data (for example no direct coupling to data stores).
- The channel architecture and presentation layer will be lightweight, with business logic held in the middleware layer or application servers.
- The middleware layer will be the integration vehicle between applications and with a standard user interface will provide services that will enable those interactions.

Using these architectural principles, the proposed target state is illustrated in Figure 11. The target state offers the following improvements:

- Common data translation for process integration.
- Shared message services. For example a single or shared parser and a message independent rules engine.
- Scalability and agility.

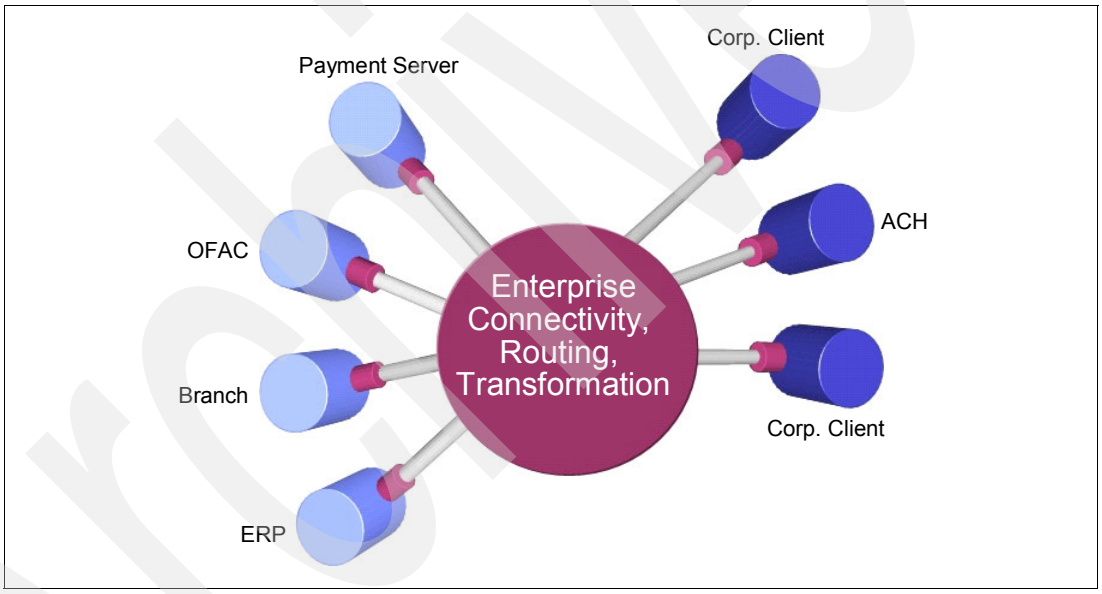

Figure 11 Target state of JKHL Bank's environment

Service-oriented architecture patterns

Geoffrey explains that a good way to define an architecture that meets JKHL Bank's needs is to break the solution into simple *SOA patterns*. These SOA patterns simplify the understanding of the overall solution from an SOA perspective. Applying SOA patterns and best practices makes it easier for JKHL Bank to understand the impact of each piece of the solution and helps JKHL Bank adopt the solution in phases.

There are two distinct types of SOA patterns:

- *Core business* patterns

  Patterns required to solve the business problem at hand (for example what is required to implement the supply chain related payments and reporting solutions).

- *Core infrastructure* patterns

  Patterns required to implement a comprehensive SOA based solution and build upon a strong SOA foundation (for example security, management and governance of services)

This section addresses the core business and infrastructure patterns adopted by JKHL Bank.

Core business patterns

This section addresses the core business patterns used by JKHL Bank.

Applying the Enterprise Integration/Simple Connectivity pattern

This pattern is used to address the following challenges:

- Lack of seamless or standardized system integration between JKHL Bank and its corporate customers for retrieval of required account information.
- Lack of a common or standardized data format between JKHL Bank and its corporate customers.
- The need to move from a siloed architecture to a componentized architecture, for flexibility and agility in future projects.

Technical problem

JKHL Bank's applications are tightly coupled with point-to-point connectivity between several business applications such as corporate client systems, payment systems (ACH, wires, and so forth) and Enterprise Resource Planning (ERP) systems making it inflexible to change current systems and easily add new systems.

JKHL Bank exchanges data in different formats with several of their corporate clients, embedding data transformation into the business logic.

How JKHL Bank applied this pattern

An ESB architecture is introduced at the corporate data center for loose coupling, basic routing and to easily integrate and adapt to many of their corporate client's applications as well as other packaged applications (such as CRM) to open standards. The ESB provides support for different protocols and exchange of message formats between applications at the bank and corporate client.

Set up of new corporate clients and message exchange is now easier, because only the transformation between the canonical data model and the new application is to be created independent of the number of other applications that participate.

IBM Information FrameWork provides the initial service interface design using the Financial Services-Interface Design Model (FS-IDM) to provide a common service language for JKHL Bank.

IBM Banking Industry Framework provides an enterprise-wide SOA blueprint for deploying payments solutions to address a central industry need—a more efficient and flexible payments infrastructure. Pre-integrated software and industry accelerators, combined with the IBM Smart SOA foundation and industry standards, enable financial institutions to progressively renovate their existing payments systems infrastructures.

To implement this solution, JKHL Bank uses IBM Banking Industry Framework components, such as the WebSphere® Message Broker ESB, WebSphere Transformation Extender with industry packs, and WebSphere Registry and Repository. JKHL Bank applies this pattern as shown in Figure 12.

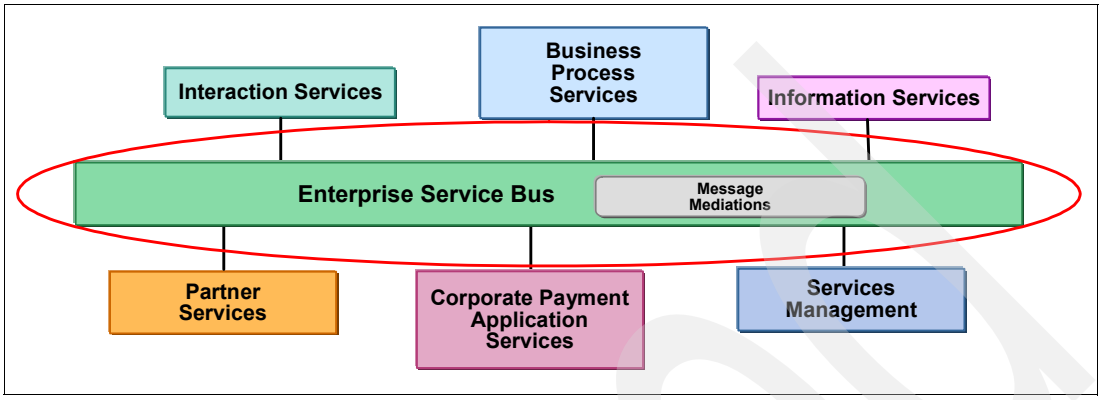

Figure 12 Enterprise integration pattern

Business value of adoption

The ESB provides a solution to serve corporate clients requests in a channel agnostic fashion to support user interface flexibility. The canonical message format makes the communication easy between services, defining a common data schema that will travel through a process flow.

Further information: Refer to *Case Study: Service Connectivity SOA Scenario*, REDP-4380.

Applying the Business Process Management pattern

This pattern is used to address the following challenges:

- Lack of dynamic business rules driven approach for cash management decisions and automated supply chain related payment process.
- Lack of operational efficiency with too many redundant processes, resulting in higher costs. For example, the supply chain related payments process is manual for exception payments and varies for each corporate client, making it difficult to track the efficiency of the processes and improve the business model.

How JKHL Bank applied this pattern

JKHL Bank considers automation of its banking processes critical to its business to be able to deliver faster service to its customers. The automated processes can be monitored and key performance metrics such as payment processing timeframes, number of exception payments, number of approved payments, reduction in payments cost, and so forth can all be tracked and monitored to closely improve operational efficiency. Straight through processing will eliminate unnecessary human interaction and improve the speed in which a business transaction is processed.

IBM Information FrameWork process models become a key asset in designing and implementing processes such as the loan arrangement proposal and loan arrangement. JKHL Bank purchases and installs the pre-built banking content packs to report on payment transaction financial impact, assess payment risk, calculate settlement positions, and so forth. Further, the use of IBM Information FrameWork provides pre-built, low-risk, process models for various tasks using leading practices based on IBM's vast experience in the banking industry.

To implement this pattern JKHL Bank uses IBM Banking Industry Framework components such as WebSphere Dynamic Process Edition, WebSphere iLOG JRules, and IBM Information FrameWork. JKHL Bank applies this pattern as shown in Figure 13.

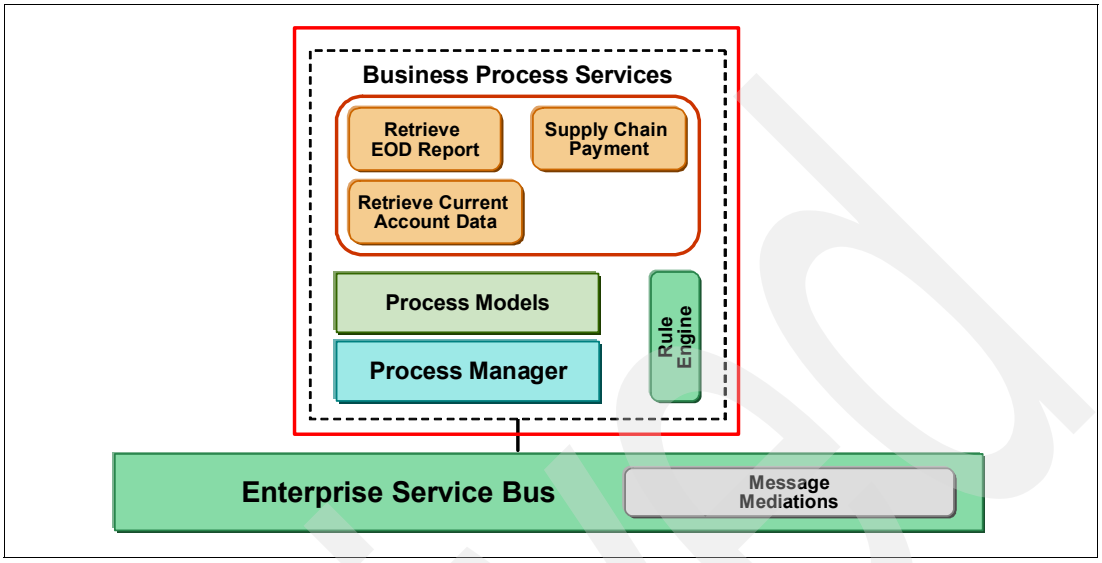

Figure 13 Business Process Management pattern

Business value of adoption

JKHL Bank benefits from the adoption of business process management by gaining operational efficiency, cost savings, and elimination of manual and redundant processes. JKHL Bank also has flexibility to continually improve their business model, and can quickly and easily add processing for operations in new geographies to stay abreast of competition.

Further information: Refer to *Case Study: Business Process Management SOA Scenario*, REDP-4383.

Applying the Business Intelligence pattern

This pattern is used to address the following challenges:

- The ability to provide systematic audit log and trace-ability to reduce risk-compliance costs.
- Facilitate seamless business decisions with real-time analytics as well as event and risk management.

Technical problem

JKHL Bank needs the ability to provide systematic audit log and trace-ability to reduce risk-compliance costs for both the corporate bank and the corporate clients. They need to facilitate seamless business decisions with real-time analytics as well as event and risk management.

How JKHL Bank applied this pattern

IBM Information FrameWork models provide leading practices, definition and monitoring of KPIs, and metrics to support common banking processes such as payments and reporting.

JKHL Bank makes use of a number of metrics and reports. *Origination metrics* represents the origination of corporate accounts and allows analysis of concentration of new accounts originated. *Financial oversight and profitability* provides actual, plan and forecast, balance

sheet, portfolio characteristics, and receivables information. *Basel metrics* are used to present standard Basel metrics for active accounts. The *financial summary* is generated from back office systems with a general ledger.

The bank has access to financial summaries from the back office systems and *GL measures* to present financial detail available from the General Ledger.

To implement this pattern JKHL Bank uses IBM Banking Industry Framework components such as IBM Cognos®, IBM OmniFind® Analytics, IBM OmniFind Discovery, and IBM Entity Analytics Solutions. JKHL Bank applies this pattern as shown in Figure 14.

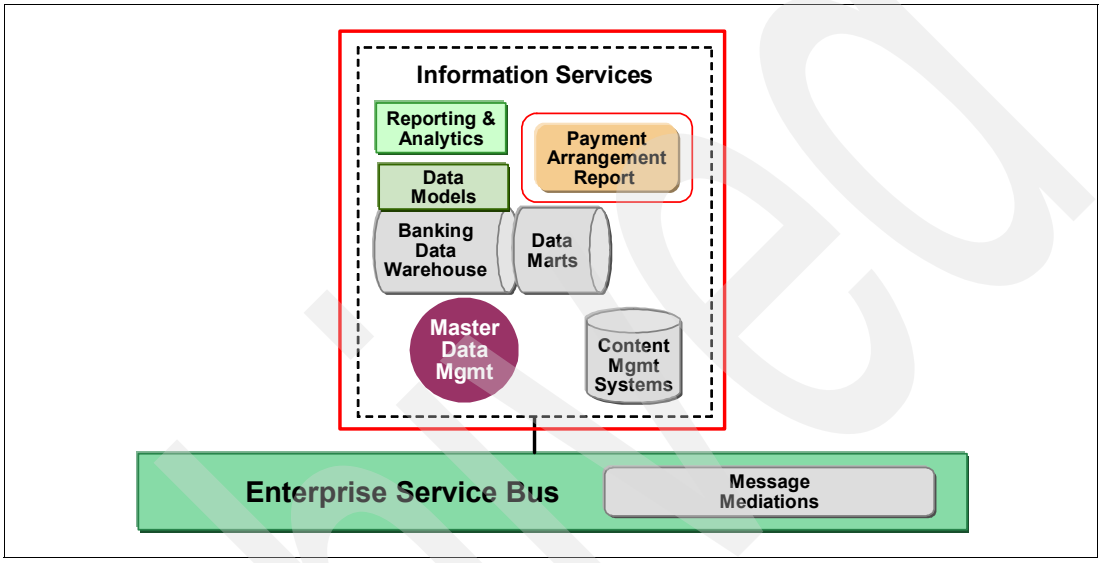

Figure 14 Business Intelligence pattern

Business value of adoption

This architecture supports flexibility and growth (for example changes to regulatory policies). JKHL Bank adopts this solution for business users across line of business groups to facilitate seamless business decisions using dashboards, reporting and real-time event management.

This solution also provides a rapid return on investment because JKHL Bank now uses dashboards and analytics that are pre-integrated into the physical banking Data Warehouse and highlight information regarding organizational risk, product profitability factors, and so forth.

Core infrastructure patterns

This section addresses the core infrastructure patterns used by JKHL Bank. Together these patterns are used to address the following challenges:

- The need to move from modular applications to service oriented applications.
- The need for reuse of services across the enterprise.
- Lack of an enterprise level strategy for security, governance and management.

Applying the Service Security pattern

The service security pattern covers aspects of security management in two areas:

- Consistency of security policy and configuration across a multiple set of endpoints for authorization, message security, and access control.
- Management of identities within SOA environments.

Technical problem

JKHL Bank needs an integrated and centralized SOA security policy management across all endpoints for interactions with service requestors and providers. The bank needs to efficiently manage identities, and this identify information must be available across request flows (including access to services on z/OS®). The security of transactions is important to JKHL Bank, and they must assess compliance to their business policies.

How JKHL Bank applied this pattern

JKHL Bank adopts a federated security framework that is a combination of mainframe security (such as ACF2 and RACF®), Java™ security, LDAP, firewall security, message security, and Web-based security. Enforcement of authentication is managed by a combination of JKHL Bank's enterprise access server authentication module and IBM Tivoli® Directory Server.

JKHL Bank uses Tivoli Federated Identity Manager to support a security token service that maps identities and tokens as they flow from requestors through the ESB to service providers. Tivoli Access Manager enforces authorization policies.

Business value-of-adoption

By adopting a federated security approach, JKHL Bank can secure its environment end-to-end, control access to its back-end systems, and comply with security policies across all business applications.

Further information: Refer to *Case Study: SOA Security and Management Scenario*, REDP-4378.

Applying the service management pattern

Service management covers aspects of monitoring and managing SOAs.

Technical problem

JKHL Bank wants to efficiently manage composite applications, which includes life cycle management, business processes, transactions, Web services, and interactions with partners. The bank needs to closely monitor transactions, which includes services on z/OS. Contextual information must be available for critical points in the flow. The bank needs the ability to specify service level agreements (SLAs) and monitor and report them.

How JKHL Bank applied this pattern

JKHL Bank uses a variety of IBM products to implement SOA management:

- IBM Tivoli Composite Application Manager for WebSphere Application Server monitors the portal, ESB, and business process execution.
- IBM Tivoli Composite Application Manager for SOA monitors service requests that flow from the process engine to the core banking systems and MDM repository.
- IBM Tivoli Monitoring monitors service components against SLAs.
- IBM Tivoli Enterprise Console/Omnibus is the IT event management system that aids problem determination.

- IBM Tivoli OMEGAMON® XE for CICS® monitors and manages CICS transactions and resources on z/OS.
- IBM Tivoli Change and Configuration Management Database is the platform that is used to store deep, standardized enterprise data.

Business value-of-adoption

By implementing a mechanism to perform event correlation across IT tiers, JKHL Bank reduces time for problem determination. For example, if interaction services or business partner services are down, then less time is spent in analyzing events that the middleware emits. Management of systems on z/OS helps to quickly detect and isolate problems when they occur on complex CICS systems. Integrating, automating, and optimizing data, workflows, and policies helps JKHL Bank align the ongoing management of its infrastructure with its business.

Further information: Refer to *Case Study: SOA Security and Management Scenario*, REDP-4378.

Applying the SOA governance pattern

The SOA governance pattern includes regulating new service creation, getting more reuse of services, enforcing standards and best practices, service change management and service version control, and implementing SOA policy.

Technical problem

JKHL Bank has no enterprise-wide governance strategy. The execution of governance practices are currently manual, but the bank needs proactive best practices and enforcement. Compliance reports must be stored and retrieved for audits. Because the bank is now embarking on the SOA path, they are struggling to identify new service candidates and prioritize these candidates.

How JKHL Bank applied this pattern

JKHL Bank plans, develops, and deploys an enterprise-level governance strategy that aligns with business objectives. They institutionalize governance best practices with executive sponsorship and support across lines-of-business. Artifacts are built based on best practices from the IBM Information FrameWork process, IBM Information FrameWork data, and IBM Information FrameWork service models, which are now managed as part of the overall solution life cycle.

JKHL Bank now complies with government, banking, and regional regulations, such as ITIL®, SOX, and Basel II. To regulate the creation of new services with future SOA projects, JKHL Bank implements, a centralized registry and repository, using a combination of Rational® Asset Manager, WebSphere Service Registry and Repository, Tivoli Change and Configuration Management Database, and Rational Method Composer.

Business value of adoption

By adopting an enterprise-level governance strategy, JKHL Bank benefits from reduced costs because the standards enforce usage of the same monitoring tools, technologies, procedures, and reporting for audit compliance.

JKHL Bank has now reduced exposure to litigation and is trusted by its customers and partners by following banking, government, and regional regulations.

Further information: Refer to *Case Study: SOA Governance Scenario*, REDP-4384.

Reference architecture

By applying the SOA patterns, Geoffrey Carroll with that team of IBM consultants can define a proposed reference architecture for JKHL Bank.

Figure 15 shows the reference architecture model.

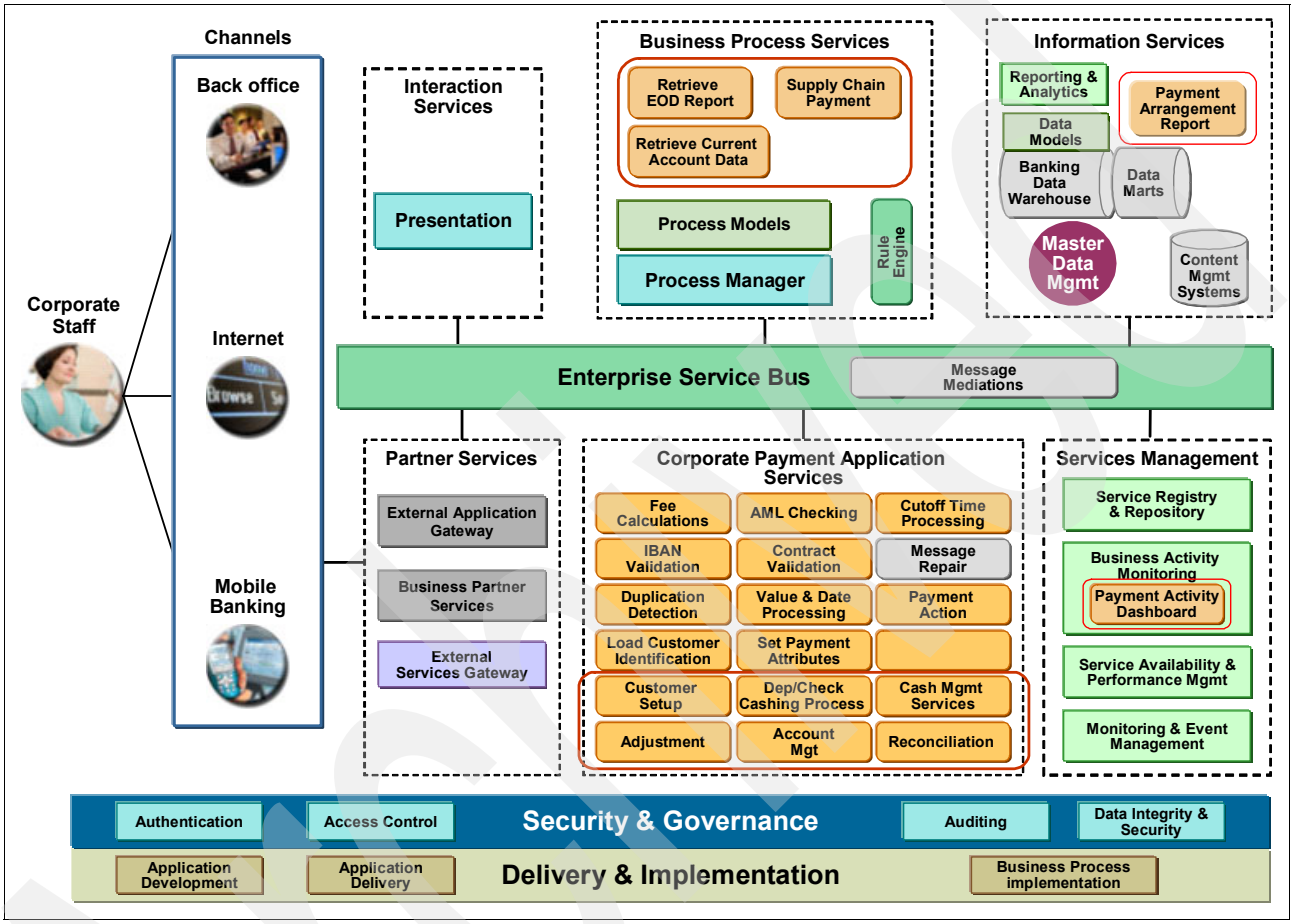

Figure 15 Reference architecture model

The components used in the reference architecture are from the IBM Banking Industry Framework as follows:

- Enterprise Service Bus
  - WebSphere Message Broker, WebSphere DataPower®, and WebSphere ESB provides service access routing, message transformation and mediation. This family of ESB products support a variety of protocol transformation, service level characteristics and topology configurations.
  - WebSphere Transformation Extender with Industry Packs is used to easily integrate different data types from disparate sources using a range of industry standard data formats and data mapping.

- Information Services
  - Rational Data Architect facilitates an enterprise-wide understanding of heterogeneous data assets.
  - COGNOS provides for real-time dashboard reporting and sophisticated analytics across multiple data sources.
- Interaction Services
  - WebSphere Portal is the foundation for the payments process user interface, user interaction and deployment
- Partner Services
  - WebSphere Partner Gateway provides centralized, consolidated business-to-business trading partners and transaction management.
- Services Management
  - WebSphere Service Registry and Repository manages the life cycle of services including registration, lookup and deprecation.
  - Rational Asset Manager tracks asset relationships, allowing the enterprise to understand the impact of changing services.
  - Tivoli Composite Application Manager for SOA delivers a comprehensive management solution for customers building and deploying SOA solutions, ensuring key business applications are effectively governed and are meeting agreed service levels.
- Corporate Payment Application Services
  - Fundtech Global Payments Plus (GPP) automates all aspects of the funds transfer and customer notification process, enabling straight-through-processing (STP) of payments.
  - Clear2Pay Open Payment Framework offers the ability to process payments through a centralized payments engine that uses re-usable business services across all payment types.
  - IBM Payments Director can enable the bank to move from an existing, paper-based check system that is inflexible to changing business needs, to an electronic payment system
- Security and Governance
  - Tivoli Federated Identity Manager is used to manage identity flow across services.
  - Rational AppScan® (PCI DSS) and Policy Tester™ deliver, maintain, and regularly test secure systems and applications.
- Delivery and Implementation
  - Rational Jazz™ is used to collaborate in real time and in-context while thinking and working in unison in an open and extensible architecture.
  - Rational Software Architect with IBM Information FrameWork is used to define, design and create common payments business services that can be reused across the enterprise.
  - IBM Banking Payments Content Pack is used for reference templates to accelerate the building of payments-specific business services.
  - WebSphere Business Modeler with IBM Information FrameWork is used to fully visualize, understand, and document payments processes.
  - Rational RequisitePro® is needed for flexible, integrated requirements traceable to business processes and services.

Summary

By adopting the IBM Banking Industry Framework for the corporate payments solution, based on a strong SOA foundation, JHKL Bank can:

- Cater to corporate customers by adapting its business model to deliver products and solutions that fit their specific needs.
- Pioneer the standardization of services for the corporate payments industry.
- Achieve differentiation by offering corporate treasuries customized financial services that aid in the support of liquidity and cash management.
- Offer flexible and innovative products that allow its customers to reuse existing assets in addition to taking advantage of new technologies.
- Maintain compliance with industry regulations.

IBM SOA Sandbox

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