

# Integration Roadmap for Real-Time Business

Implementing real-time business can be a challenging proposition. Fewer endeavors within information technology are as far reaching, or require the coordination and involvement of as many organizations, people, systems, and information. Case studies and industry folklore abound with both integration successes (some leading to real-time business, others not) and failures. However, the benefits to the enterprise of a successful broad integration initiative that effectively achieves real-time business are equally far reaching. Selecting a powerful real-time business technology platform and executing upon a sound corporate integration program is key to success. This document addresses the topic of implementing a corporate program that will drive integration initiatives and real-time business.

For the purposes of this document, integration refers to the implementation of enterprise backbone, business integration, and business optimization software, which are discussed in more detail in section 1.3.

This document identifies the items that need to be considered, activities performed, and decisions that need to be made in order to effectively support an integration program designed to help achieve real-time business.

**Intended Audience:** This document is intended for the information technology and business leaders who have the responsibility of planning or directing large-scale integration initiatives. Senior management from other organizations may also benefit from reading this document, as it will give them a perspective on the issues and questions associated with a large-scale integration program.

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# 1 Introduction

## 1.1 What is Real-Time Business and What's its Value?

Business is about interactions—between employees and customers, between incompatible applications and information sources, and between organizations of all shapes and sizes. Any barrier to interaction is a barrier to success, and that's why real-time business is important.

Real-time business is about three key capabilities:

1. The power to coordinate the actions and activities of people, partners, and applications for maximum speed, synergy, and efficiency
2. The power to ensure that information is available wherever and whenever it's needed, in context and actionable
3. The power to leverage that information to drive immediate change into the way resources are allocated and activities are executed

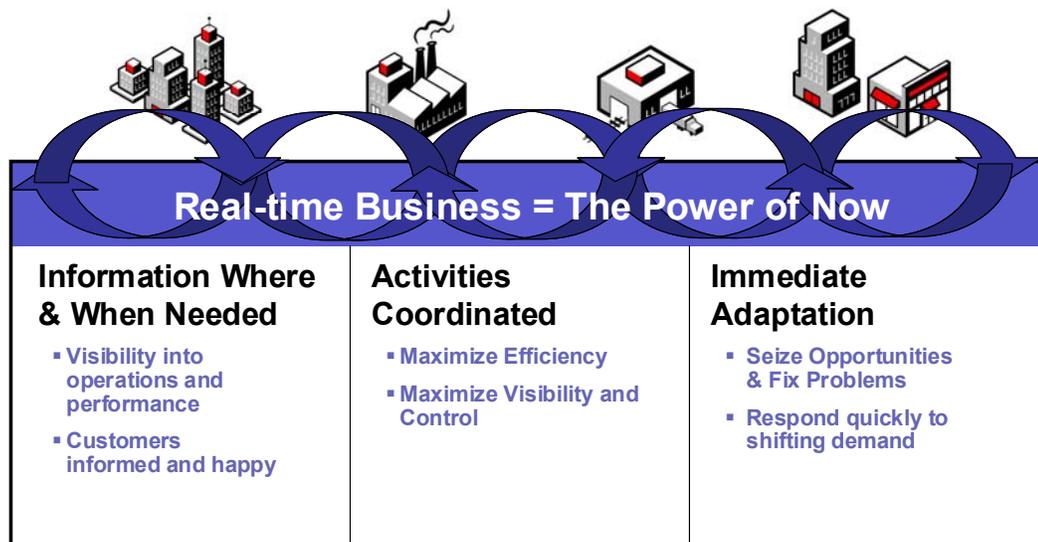


Figure 1. Real-Time Business

Together, TIBCO calls these capabilities The Power of Now®.

Companies of all sizes, in businesses ranging from the simplest to the most complex, can derive value from real-time business. The benefits of real-time business can be remarkably immediate, cost-effective, and sustainable. There are three primary areas of value relating to real-time business:

1. The coordination of activities makes individual people, applications and partners more effective, and increases the efficiency of the system as a whole;

2. The availability of more complete and timely information helps people more quickly identify and analyze problems and opportunities throughout their business and in the market;
3. The ability to quickly reorient activities and reallocate assets lets business respond to events and conditions that represent opportunity, and let them fine-tune their operations for optimal performance

## 1.2 Applying Real-Time Business to Your Business

Your business is a complex set of activities and processes, all designed with the end goal of delivering some product or service to a customer, either directly or indirectly. It is important to realize that there is real business impact, actual bottom line business value, found in improving the way individual activities are performed.

Real-time business can help improve the efficiency, velocity, and agility of your business by providing systems and people with more complete and timely information, by letting you automate and coordinate their activities and interactions, and by letting you quickly adapt your activities and reallocate your assets.

## 1.3 Enabling Technology for Real-Time Business

Real time business requires the technology components shown in the diagram below.

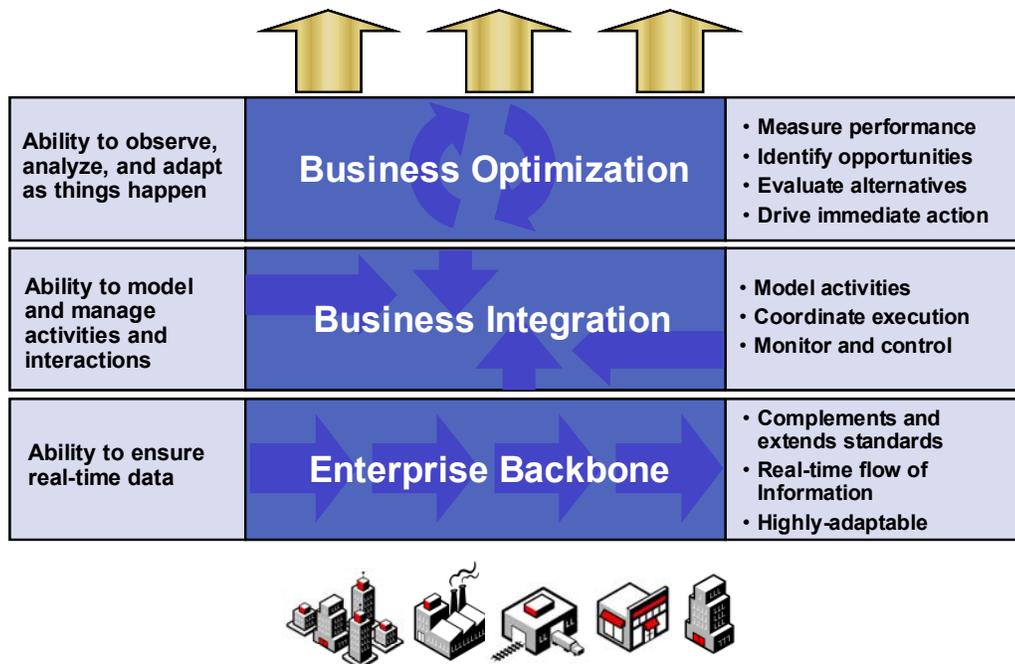


Figure 2. Enabling Technology Components

- **Enterprise Backbone.** Enterprise backbone software enables the flow of real-time information across organizations and their extended enterprise of customers and partners. This flow of information is a critical part of real-time business. Whether it's a small business that wants to use XML and Web Services or a global enterprise that needs the performance or scalability of a specialized messaging platform, enterprise backbone software enables the flow of information.
- **Business Integration.** Business integration software performs two key functions. It enables interactions between incompatible and distributed systems and enables the automation and coordination of processes that involve multiple people and applications. By performing these two functions, business integration software provides a solid foundation for real-time business. The software should be easy to implement and use, reliable and scalable, and support leading standards and technologies.
- **Business Optimization.** Business optimization software provides a feedback loop that lets companies constantly evaluate the performance of their entire business and drive change into the organization to continually adapt for maximum success. Business optimization software enables superior understanding and action on business level metrics by giving users the information they need when they need it, along with the ability to understand and act on that information.

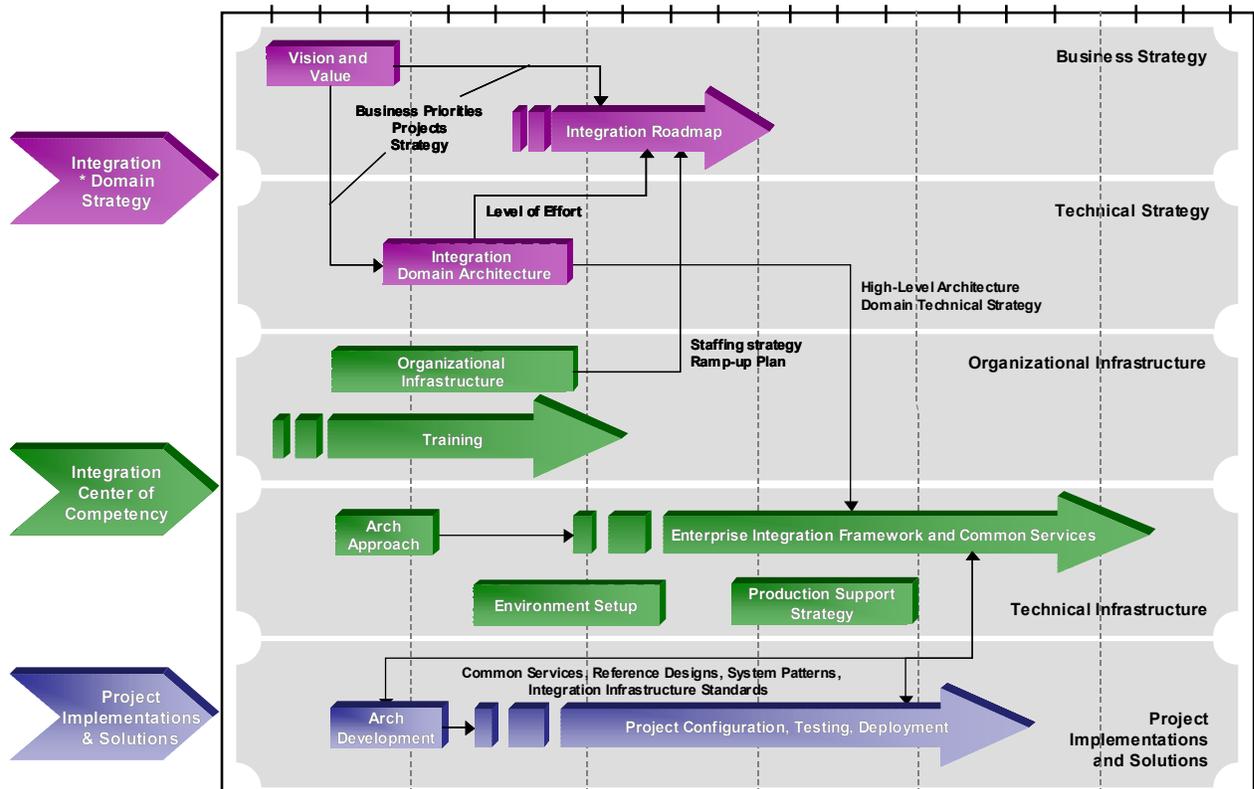
## 1.4 Document Overview

This document describes the primary activities and best practices that are associated with successful major integration programs designed to achieve real-time business. For the purposes of this document, "integration" refers to the implementation of enterprise backbone, business integration, and business optimization software. If approached correctly, a successful integration program may significantly reduce costs, minimize risks, accelerate delivery, and result in a quality integration solution, which drives real-time business, meets current real-time business requirements, and provides a foundation for supporting future requirements as the enterprise changes and grows.

A corporate integration program should consist of three major focus areas as shown in the diagram on the next page:

- Integration Strategy
- Integration Center of Competency (or similar type organization)
- Project Implementations

Together, Integration Strategy and Integration Center of Competency is what TIBCO calls Enterprise Integration Planning (EIP) and is the focus of this document.



\* A domain is a set of processes, systems, information, and people that works collaboratively to achieve some business objective



Figure 3. Integration Program Development Approach

This document is organized as follows:

Section 2 – Broad Integration Planning Considerations

Section 3 – Integration Strategy

Section 4 – Integration Center of Competency Overview

The appendices provide additional details relating to integration organizational models, roles and responsibilities, and some TIBCO specific technical considerations.

## 2 Broad Integration Planning Considerations

These items and perspective should be considered when laying out the integration program that will drive real-time business.

### 2.1 Enterprise-Level Considerations

The successful implementation of a large-scale integration initiative will change the enterprise. Positive changes will occur in the way business is performed, the capability to respond with new product and service offerings, and the company's ability to effectively compete and thrive in the marketplace. As with any substantial situation of change, the change must be understood and managed.

### 2.2 Organizational Considerations

Most large corporations have organizational structures that are somewhat aligned to the underlying systems which they use to perform their business functions, or the systems are aligned to the various parts of the business. IT organizations are frequently aligned to the systems that they implement, maintain and operate. This is sometimes referred to as "orgetecture", in that the organization is closely aligned to the system architectures.

Implementation of integration initiatives that will drive real-time business will change the corporate system architecture, which may have a ripple effect on the corresponding organizational structures. Integration will allow some systems to be used either more or less extensively, or new systems to be introduced. Integration will automate certain functions and will reduce activity associated with duplicate data entry and data error correction, which will reduce job functions associated with those activities. These positive changes need to be understood and communicated throughout the organization and the appropriate stakeholder buy-in solicited and obtained throughout the process.

### 2.3 Business Process Considerations

The business processes performed by the organization will change with the successful implementation of the integration program. The desired changes need to drive the integration objectives and requirements. The capability to perform business processes faster, with higher quality and flexibility will change the corporate business process.

The increasing level of business process automation requires a deeper understanding of the business process than has been traditional in IT organizations. In particular, IT organizations need to understand the business processes and must respond to breakdowns in the business process (both business exceptions and systems issues). Furthermore, when the breakdown occurs in an interaction that crosses organizational boundaries, the affected business organizations and supporting IT organizations must be involved to ensure that the handling of potential breakdowns is well-defined and clearly understood.

## 2.4 Technical Considerations

The integration initiative will involve the introduction of new technologies and products into the organization. These items need to be fully understood by the associated organizations and staff.

## 3 Integration Strategy

To get the most value out of real-time business, enterprises need a plan and an architecture that defines how they will implement the enabling software throughout their organization and how it will be maintained over time.

The purpose of this plan and architecture is to define a strategy for integration initiatives so objectives can be achieved quickly and with as little risk as possible. There are three areas that should be addressed:

- Integration vision and value (section 3.1)
- Integration domain architecture (section 3.2)
- Integration roadmap (section 3.3)

Achieving integration success across an enterprise should be approached as an iterative endeavor. When developing an integration strategy, its focus should be on a “domain” of the enterprise. A domain is a set of processes, systems, information, and people that work collaboratively to achieve a business objective (e.g. order processing, billing, customer relationship management, sales, etc.)

### 3.1 Vision and Value

The first step is the development of an integration vision and defining its value. These activities help to establish stakeholder commitment and shared recognition of the value of integration, and identify ways of maximizing the value of the integration and real-time business technology investment and other complementary technologies.

The objective is to identify and quantify the ways in which the technology will benefit the organization, communicate that value to key stakeholders across the business, and ultimately achieve support and sponsorship for integration initiatives. An integration vision should include the target processes, information flows, and information portal and dashboard high-level requirements and characterize and quantify the value that would result from applying integration technology to them.

Also part of the integration vision and defining its value is the definition of integration goals, technical objectives, and requirements and ensuring that they are tied to the business goals and strategy, and the organization and prioritization of projects in a way that will increase the chance of receiving company-wide support.

### 3.2 Integration Domain Architecture

Having a solid integration architecture foundation for the domain will promote consistency, reduce development costs, and ensure quality implementations by establishing a common technical strategy and high-level architecture for the enablement and implementation of integration projects across the integration domain.

The integration domain architecture should identify common integration patterns and establish a standardized architecture for each pattern that will simplify the implementation and maintenance requirements of projects across the integration domain. It is important that the architecture include models of business processes that are representative of the targeted areas for integration, and that these models include the business rules for handling breakdowns (business exceptions and system problems) that may occur. Creating this technical vision requires the development and validation of architecture patterns, the identification and documentation of the required integration components and shared services, and the creation of plans and procedures for addressing capacity planning and other design issues.

### 3.3 Integration Roadmap Development

A well thought out integration roadmap will help to decrease risks and ensure successful implementations by defining a detailed implementation plan including timeline, dependencies, critical success factors, deliverables and deadlines.

Figure 3, “Integration Program Development Approach”, indicates the Integration Strategy inputs to the integration roadmap: the business priorities, projects, and strategy developed during Vision and Value activities described in paragraph 3.1, and the level of effort to build the Integration Domain Architecture that was established through the activities described in paragraph 3.2. As will be discussed in the next section, the staffing strategy and ramp-up plan developed during the Organizational Infrastructure activities also provide input to the roadmap.

The roadmap provides a detailed plan for the implementation of integration projects. Projects are prioritized and their dependencies (both business and technical) and critical success factors identified. The roadmap is a comprehensive plan for implementation, including a detailed timeline, resource estimates, milestones and clear deadlines for specific deliverables. Once the roadmap is established, key stakeholders should be solicited for their commitment and support, and the risks should be assessed and a plan for risk mitigation put in place. After its initial development, the roadmap becomes a living plan for integration success. As business priorities and circumstances change, the roadmap is revised to reflect the current business situation.

## 4 Integration Center of Competency

Integration requires skills, knowledge, standards, architecture, and best practices that are most likely not present in existing project teams. A means of bringing project teams up to speed in these areas is critical to the success of integration projects. While external organizations may be used for basic skills training, these organizations cannot, on their own, provide a full set of standards, architecture, and best practices appropriate to the organization: the organization itself must be an active participant, and take ownership in these areas. For most companies, the most effective means of accomplishing this is the Integration Center of Competency.

The integration Center of Competency (or similar organization) spearheads the integration program, providing leadership to the organization in all areas related to integration. It is either a dedicated or matrixed organization focused solely on the integration initiative. The very nature of the broad scope of integration initiatives dictates that many organizations will be involved. However, those organizations are focused on their primary functions and will not have the capability or charter to be deeply involved in the integration issues and implementation.

The integration Center of Competency is often a dedicated group, which is augmented by staff on loan from other IT and business organizations, as well as system integrators knowledgeable of the real-time business technology and associated technical and business planning activities.

The creation of an organization that specializes in integration technologies and strategy can help companies of all sizes improve the speed with which they implement integration projects and the success they achieve across those projects.

There are two separate but equally important aspects of the Integration Center of Competency that must be defined and developed:

- Integration organizational infrastructure (section 4.1)
- Integration technical infrastructure (section 4.2)

### 4.1 Integration Organizational Infrastructure

An effective integration organizational infrastructure can reduce the cost of integration and improve consistency, smoothness, and effectiveness of integration projects. It is important that this infrastructure be designed and implemented such that it supports the unique environment, culture, and structure of the business.

There is no “one size fits all” approach on how to organize for integration success, but the integration organizational infrastructure should address the following:

#### 4.1.1 Integration Organizational Approach

The integration organizational approach should include a definition of the organizational model that’s most appropriate for the business. For convenience sake, this document

refers to an Integration Center of Competency, but there are other ways to organize for integration success (e.g. Integration Service Center, Steering Group, and Consortium models) that can be equally effective. All of these models have similar driving principles. Appendix A describes four common integration organizational models. Most companies use some hybrid of these.

Once the integration organizational model is established, a ramp-up plan should be defined and launched that addresses roles and responsibilities (see examples in Appendix B), staffing, and training.

Of particular importance (and often overlooked) is defining and executing upon a training strategy that will enable project teams to be brought up to speed on what they need to know to implement integration solutions effectively. The training strategy should address how knowledge transfer and mentoring will take place in all of the following areas:

- Technology description and value
- Use and administration of products
- The company's integration life cycle processes, procedures, and collateral
- How to most effectively architect an integration solution
- Use of the company's integration infrastructure standards, reference designs, system patterns, common services, and other re-usable components that form the enterprise integration framework

#### **4.1.2 Integration Life Cycle Definition**

The integration life cycle definition should address the policies, procedures, and collateral that will be used and followed for each integration project implementation. Focus should be placed on the integration organization's capabilities and governance, integration planning, implementation, post implementation activities, project management, feedback to standards, and collateral presentation and workflow.

The objective is to ensure a standard set of processes, procedures, and collateral that can be re-used across the enterprise and the existing corporate software development lifecycle (SDL) approach should be used as the basis for this activity. Typically it is only a matter of taking inventory of what exists today, matching that with what is required specific to integration, and then addressing the gap.

#### **4.1.3 Execution Plan**

An integration organizational infrastructure execution plan should address issues required for success, such as stakeholder buy-in, communication strategy, and an ongoing process for updating and evolving integration roadmaps to accommodate increasing demand and a changing business environment.

## 4.2 Technical Infrastructure

The objective of the Integration Center of Competency's technical infrastructure is to provide a solid technical foundation for project implementations that will help ensure success, and to help accelerate the delivery of integration projects while minimizing risks, reducing costs and maximizing the quality of implementations. This is accomplished by providing project teams with a common and consistent set of reusable integration standards, designs, components, tools, and guidelines.

### 4.2.1 Architecture Approach

Architecture is the most important factor in ensuring a quality integration solution and ensuring that it will meet your real-time business vision. The Integration Center of Competency should ensure that there is a standard approach to integration architecture development that is based upon best practices. The approach should include applicable tools and templates that can be used across projects and the enterprise.

The TIBCO Architecture Synthesis and Analysis Process (ASAP) is TIBCO's best practice for developing peer-to-peer distributed systems (the end result of any integration). The first step in this approach is business process analysis. During this step the use cases and major scenarios are identified, prioritized and modeled. The manner in which the integrated systems will support the business processes is defined, and particular attention is paid to defining the business-appropriate handling of breakdowns (both business process exceptions and systems issues). As part of this process, the occurrence rates and required completion times for each scenario are determined. This information is an essential prerequisite for performance prediction and capacity planning.

The next step is to develop the architecture itself. During this step, the following design issues are considered:

- Identify each integration component
- Assign component roles and responsibilities with respect to each use case scenario
- Identify communications between components
- Propose a process/network topology
- Identify communications infrastructure and adapters
- Establish information policies
- Establish activity coordination patterns and error handling
- Establish parallel process coordination (fault tolerance, high availability and load leveling)
- Incorporate security requirements
- Define operational monitoring

The final step is to evaluate the capacity of the architecture (i.e. its ability to handle the anticipated load), particularly when recovering from unexpected conditions. This evaluation also provides the information required to determine the number and types of machines required to support the integration, and the network bandwidth requirements.

Once the architecture has been developed and validated, the approach to deployment, testing, environment migration, and operational monitoring and recovery procedures should be defined.

Lastly, the architecture and all related decisions should be documented using a standard integration architecture template.

#### 4.2.2 Enterprise Integration Framework

The objective of an enterprise integration framework is to establish a set of integration best practices appropriate to the enterprise, along with standardized system patterns, reference designs, and infrastructure standards. These elements provide detailed support for the integration vision, high-level architecture, and technical strategy defined during the Integration Strategy activities described in section 3. Typically, an enterprise integration framework consists of:

- **Best Practices**. These are a set of integration best practices that reflect the optimal approach to integration topics for this particular enterprise and its chosen integration style as set forth in the domain architecture. These best practices should cover areas such as integration network and system infrastructure, integration security, software installation, implementation (to include testing), operations management, and applications management.
- **Infrastructure Standards**. Many best practices call for the standardization with respect to the handling of specific integration issues. For each best practice where appropriate (e.g. data cross-referencing, namespace management, exception handling, fault tolerance, etc.), standards should be defined.
- **System Patterns**. These define standard approaches to specific individual design problems that developers typically face in implementing integration solutions. The objective is to provide standard implementation techniques that will be used across projects. Typical system patterns include adapter patterns, message oriented patterns, metadata management patterns, process management patterns, performance enhancement patterns, and system management patterns.
- **Reference Designs**. Real design challenges often require addressing multiple design issues, and thus require combining the patterns associated with the multiple issues into a single design. These reference designs provide standardized solutions for typical integration use cases that require addressing multiple design issues. They provide a standardized architecture and design for each combination. The required reference designs are typically identified through the development of the domain architecture, and typically include designs for data access, data replication, internal

enterprise application integration (EAI), B2B applications, web access applications, business process management, portal, business activity monitoring, and web services.

#### **4.2.3 Environment Setup**

The objective of this activities is to ensure a consistent and effective plan for the development, test and production environments that optimizes the use of resources, and to provide rules for version control and migration, repository management, and configuration updates across those environments. A key element of the test environment is the ability to exercise both the system and its support procedures as it detects and responds to both business exceptions and system failures.

#### **4.2.4 Production Support Strategy**

The integration production support strategy should establish a plan for administering, monitoring, managing and scaling the integration environment. This plan should reflect a merger of integration support best practices with the policies and practices of the current production support organization. It should enable higher levels of service and minimize the operational impact of changes to the infrastructure.

#### **4.2.5 Common Services**

There are the common services (e.g. process initialization, auditing, logging, exception handling, etc.) that are typically required for all integration initiatives. Where appropriate<sup>1</sup>, the approach to and framework for these common services should be put in place so that it can be consistent across the enterprise. Standard project templates should be developed that included example processes using these common services, repository contents, and source code used.

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<sup>1</sup> Due to performance considerations, certain high-throughput pipelined architectures may not be able to adopt this full approach.

## 5 Conclusion

Achieving real-time business requires the coordination of people, partners, information, and systems for maximum speed, synergy, and efficiency. Real-time business helps ensure that information is available wherever and whenever it's needed, and helps give companies the power to immediately change the way resources are allocated and activities are executed. This lets companies respond to threats and opportunities before the competition, and lets them fine-tune their operations for optimal performance.

Selecting a highly reliable, flexible and scalable integration platform and executing a well thought out corporate integration program are the keys to achieving the benefits of a real-time business.

An effective integration program requires the formulation of an integration strategy and the establishment of an organizational and technical infrastructure to support that strategy. The strategy must define how the objectives of integration initiatives can be achieved quickly and with as little risk as possible, the organizational infrastructure must address how integration expertise and standards can be brought into the enterprise in a way that works with corporate structure and culture, and the technical infrastructure must leverage the best of existing technologies while leaving the door open for the immediate and eventual incorporation of new and improved technologies.

Attaining real-time business is an achievable undertaking if approached with a well-thought out integration program that addresses both the organizational and technical issues required to succeed.

## APPENDIX A. Integration Organizational Models

This appendix describes four approaches to organizing for integration success. Most businesses utilize some hybrid of these. However, the various roles that must be allocated are the same in each model. The difference is in the allocation of those roles.

### Integration Service Center Model

The Integration Service Center model is the most centralized model. In this model, the service center is responsible for all integration services and 2<sup>nd</sup> tier support for all business units and development teams. The center provides all services relating to the integration technology including architecture, design, standards, installation, development, deployment, and support services. This model usually requires fast growth to meet demands once successful projects are rolled into production. The organization supports good control over governance of standards and best practices, but can be costly as it does not scale easily. Some organizations adopt this model initially, as a stepping-stone to the competency center model discussed in the following section.

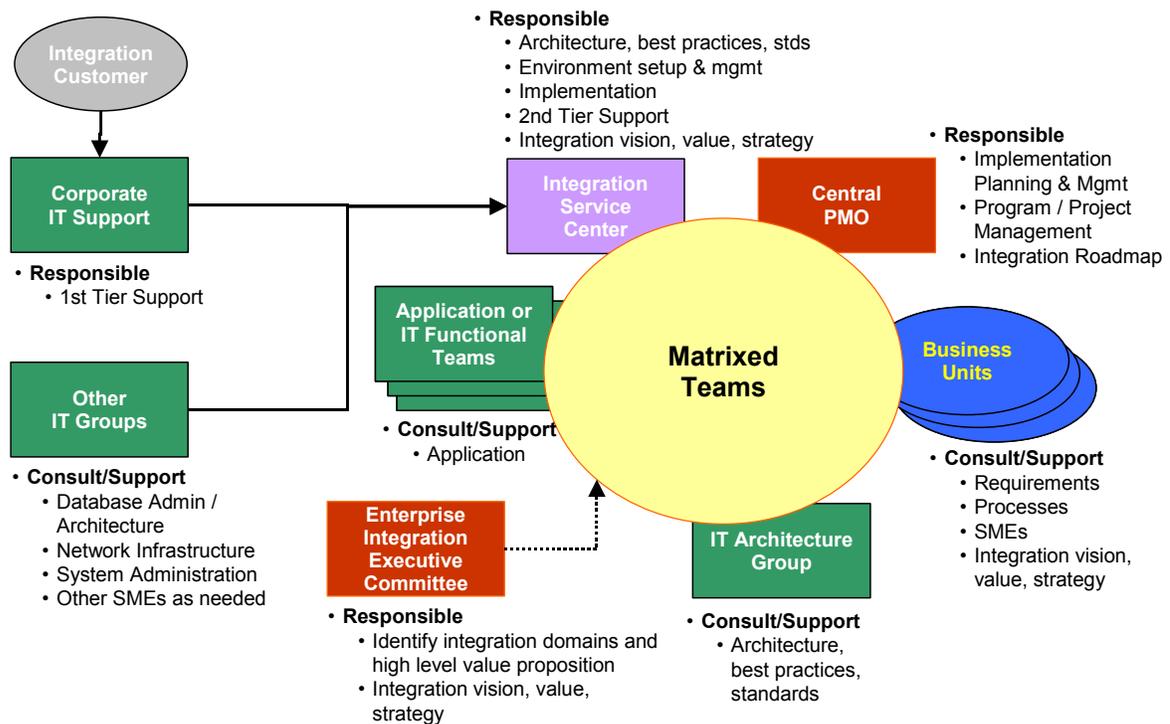


Figure 4. Integration Service Center Organizational Model

## Integration Competency Center Model

The Integration Competency Center model is less centralized than the service center model and differs from it in that implementation and 2<sup>nd</sup> tier support activities are now performed by the business' IT application/functional groups instead of the central service center.

The Competency Center maintains a core team of integration architects and specialists that are assigned to integration projects and provide technology mentoring and support to the IT application/functional teams. Since much of the implementation and support activities are being pushed out to other IT groups, the Integration Competency Center model scales better than the service center approach.

This model often grows from the service center model, through evolution based on need or as a planned growth pattern. Training and mentoring plans are then activated to build similar expertise in the IT application/functional groups and business units. The resulting model represents a center that provides guidance and support to remote groups, and maintains a core team to support new development projects and provide governance over the use and upgrading of technology and standards throughout the appropriate layers of the enterprise. The model balances growth by limiting the size of the central team while expanding technologies into the IT application/functional groups and business unit development organizations. The competency center is positioned for mentoring and staffing augmentation, maintaining standardization across the enterprise.

In the figure below, the *red italicized text* indicates the primary differences between this model and the service center model.

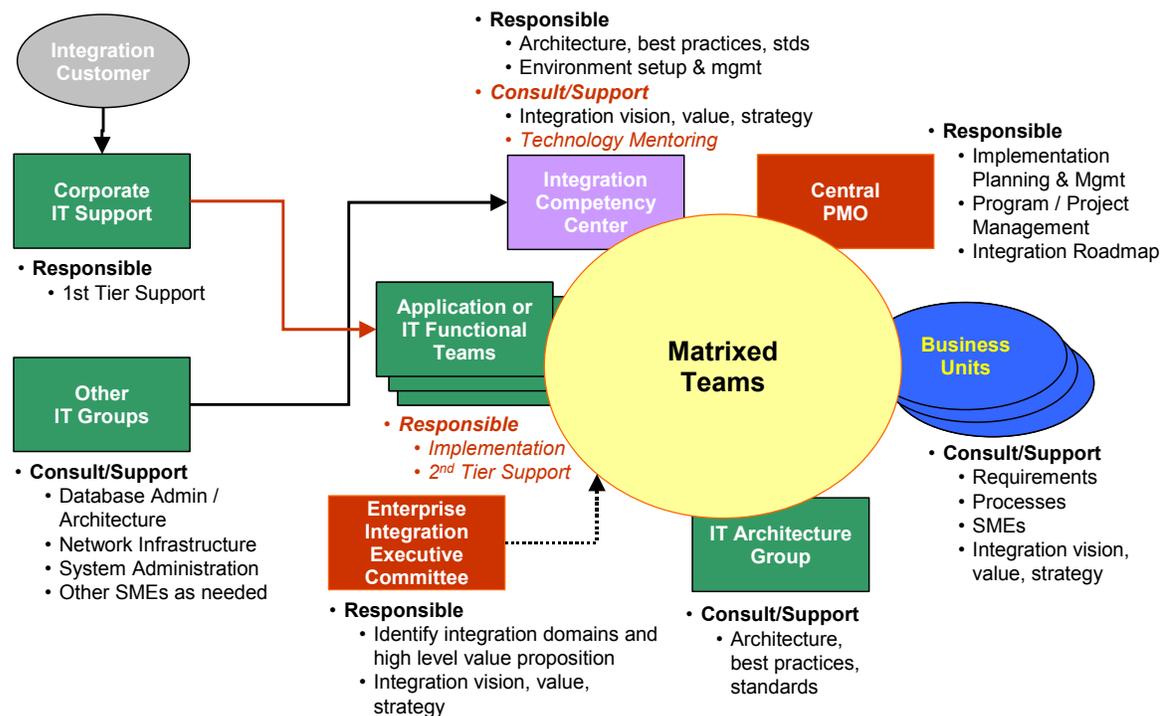


Figure 5. Integration Competency Center Organizational Model

## Integration Steering Group Model

The Integration Steering Group model is the least centralized of the three models. In this model, the steering group has minimal staffing and provides only architecture and high-level services, training and mentoring, governs standards and supports some initial installation, configuration and demonstration of products, but does not engage in full implementation services. The development teams must be self-sufficient in their ability to perform and maintain implementation services (typically for a business unit(s) or functional area or the organization). This model is useful to very large organizations who maintain standardization across multiple enterprises, each running independently of the other.

In the figure below, the *red italicized text* indicates the primary differences between this model and the service center model.

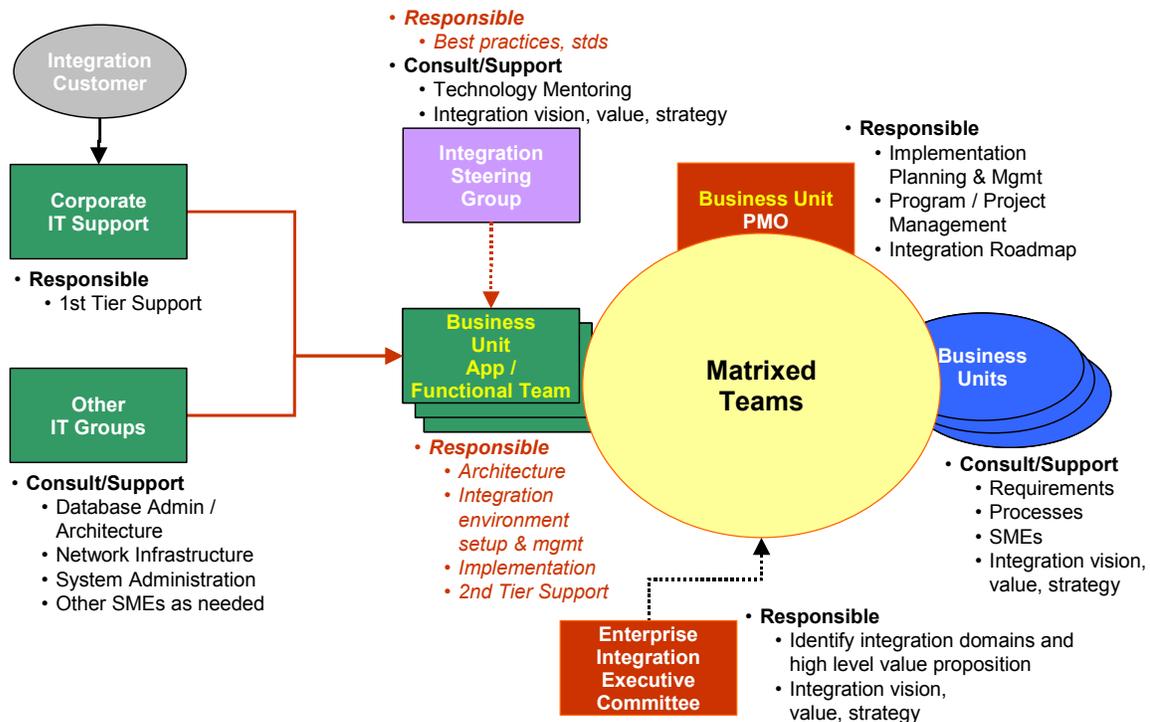


Figure 6. Integration Steering Group Organizational Model

### **Integration Consortium Model**

In this model, business units provide resources to the integration organization (service center, competency center, or steering group) for a temporary assignment, as with a consortium. This serves the business unit in providing focused expertise in the technology, and provides the center with a near-direct link into the business unit for driving decisions. The result may tend to be that decisions are made by 'committee', and often by team members who have differing (possibly competing) interests. Expectations must be set for sharing knowledge and skill sets across business units. A key advantage to this model is that there is little or no overhead associated with the center, as the resources are sponsored by the business units. The resulting technical expertise is moved directly back into the business unit when the team member(s) return to their original environment. The expertise that is lost, must then be replaced within the service center, competency center, or steering group.

## APPENDIX B. Example Roles and Responsibilities

The individual roles and responsibilities associated with an integration initiative will vary in each individual situation. The following is a sample division of individual roles and responsibilities associated with an integration implementation project. These must be tailored to suit the organizational model and approach.

### Project Manager

- Overall responsibility for initiating, planning, execution, controlling, and closing-out the project
- Risk assessment and management
- Issues management
- Scope management
- Deliverables management
- Coordinate with the DB administrators, network infrastructure engineers, system administrators and other IT groups for support
- Ensure that developers are coding/configuring in the correct order and in the correct timeframe, according to the plan

### Integration Architect

- Develop and document the integration architecture and design
- Ensure that all the technical and business requirements are being met
- Define/refine technical architecture, best practices, standards, and strategy
- Evaluate/Advise on vendor/consultant selection
- Evaluate/Advise on infrastructure components
- Develop production transition plan
- Market/communicate the technical architecture
- Ensure that architecture and design is implemented correctly and effectively
- Address and review data architecture:
  - Design and keeper of the global data architecture and common data model
  - Act as lead on designing and moving data globally
  - Determine data typing at a conceptual logical level
  - Working with the Business Analyst define message content
  - Develop strategies for data synchronization, update, and integrity
  - Market/communicate the data architecture and strategy

### **Integration Business Analyst**

- Work with business and IT subject matter experts to define and document functional and non-functional requirements (requirements include business processes)
- Market/educate/communicate architecture to the business

### **Business Subject Matter Expert**

- Provide details of the business functional and non-functional requirements, to include business process details

### **Technical Team Lead**

- Coordinate the design team in their refinement of the architecture into a detailed design
- Work with the architect to resolve any technical issues that may arise
- Work with the project manager to define the design and implementation plan and track its execution
- Supervise the assembly and test of the system
- Ensure proper maintenance of the repository
- Liaison with and communicate to Project Manager regarding status, priorities, issues, risks, and results
- Develop and maintain Site Guide (installation, configuration, administration, and operations information)

### **Integration Developer**

- Configuration and integration of the various components of the system
- Provide input for Site Guide development and maintenance
- Migration planning for new versions of components
- Awareness of latest software versions and set-ups to ensure that the correct versions and set-ups are used

### **Integration Tester**

- Prepare test plans in conjunction with the business analyst, architect, and technical team lead.
- Execute test plans
- Document test results
- Review test results with the business analyst, architect, and technical team lead, iterate as necessary

## APPENDIX C. Select TIBCO Technical Considerations

The following identifies some technical discussion topics, best practices and guidelines for implementing a TIBCO® based integration platform. These are some of the areas that should be included in the Enterprise Integration Framework discussed in paragraph 4.2.2.

### Adapters

- A standardized way of configuring TIBCO productized application and technology adapters
- Some guidelines will apply to all adapters and other guidelines will apply to specific adapters
- A standardized approach to building custom adapters should be defined
- When to use of the TIBCO Adapter SDK™, and when not
- Rules for the small number of situations where direct use of the communications API is preferable over the use of the TIBCO Adapter SDK
- Use of the repository metadata
- Use of TIBCO Hawk™ monitoring features
- Fault tolerance and fail over approach
- Guidelines should be specified for the use of 3rd party adapters
- Preferred approach to integrating with systems and platforms For example, for a specific system it may be possible to integrate using an API, directly accessing the database, or with a messaging interface supported by that application
- Common templates
- The roles, responsibilities and demarks for the integration Center of Competency and the application specific IT organization

### Message models

- When to use point-to-point, request-reply, broadcast reply or fire-and-forget message paradigms
- When to use reliable, certified or transactional paradigms
- When is a store-and-forward mechanism appropriate
- Message / Channel Naming Conventions
- Identify how the message / channels should be named
- Should the environment (Development/Production/Test/Training) be a factor in channel naming

## Flow Control

- Approach when sending system can generate messages faster than receiving systems can process them
- Approach when receiving systems are off-line
- Approach when systems are off-line and buffered message data stores are reaching their maximum capacities

## Data Models

- Use of a common information model
- How will the messages be defined
- Will the messages contain Active Enterprise objects, TIBCO Rendezvous™ wire format, XML or some other format
- If XML, will the messages contain “clear” XML, or compressed XML
- Will the adapters be responsible for data format and content validation

## System Interactions

- Many logical operations require sequences of interactions with one or more systems. What portion of the sequence will be implemented with TIBCO BusinessWorks™
- When is it appropriate for multiple system interactions to be handled by the adapter

## Metadata and configuration data

- Guidelines for the use of metadata
- Metadata naming and organizational conventions
- Approach for organizing metadata into separate operational data stores

## Network topology and analysis

- Network technology options and approach
- Network traffic analysis
- Blueprint for the TIBCO bus implementation
- Physical topology
- Logical topology, to include logical message buses and connectivity between the logical buses
- Approach for WAN connectivity
- Network fail over and fault tolerance
- Network changes / configurations needed to support the integration infrastructure

## Security

- Identification of the security issues related to the EAI initiative
- Bus access security
- Message security
- Message content security
- Portal security
- Approach for encryption of data
- Analysis of integration of existing security products and approaches

## Mainframe Integration

- Identify the mainframe applications involved in the EAI initiative (Online: CICS, IMS or IDMS; Batch: Files or DB2)
- Identify interfaces: 3270, CICS Commarea, Messaging, Files, Database
- Identify security requirements (RACF or ACF/2, userid and password checking, IMS application security)
- Identify performance requirements (transactions/sec, messages/sec, average response time, transactions daily volume)
- Analyze alternatives available: Substation ES for CICS and IMS, IDMS-RV interface, mainframe RV, Active Database to DB2, others

## Fault Tolerance and Failover

- Define when fault tolerant / failover is required
- Define fault tolerance implementation guidelines
- Identify recommendations for the use of fault tolerant active/standby pairs vs. distributed process groups