

White Paper - Top 10 Best Practices for Development Tools Integration



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Introduction

Enterprise application integration remains an age-old challenge for software product and project development. The emergence of new technologies for hosting infrastructure, platform, and software across locations, including on-premise, managed, and cloud-based data centers make integration process even more demanding and complicated. The traditional application integration approaches do not meet the challenges of changing business needs and therefore, pose threats to the agility and flexibility of an organization. Application integration, if done properly with the right choice of technology and best practice considerations, can deliver an immense strategic and technical value. How an enterprise pursues application integration practices, can really make a difference between a project's pitfall and success.

In this paper, Kovair discusses the best practices to be adopted by the stakeholders while implementing an effective application integration solution within an organization.

1. Know Your Goals

Defining the goals of your integration project is a key step towards its successful implementation. Stakeholders need to understand:

- The business drivers for integrating applications
- The information available at management's end
- The existing applications and services under management
- The core business processes and their dependencies
- The integration scenarios, such as Application-to-Application (A2A), Business-to-Business (B2B), and Cloud-based applications (Software-as-a-Service – SaaS)

And, then define:

- The high level objectives
- The requirements that address organization's actual near-term, midterm, and long-term integration objectives
- The road map of the features and functions to be deployed

2. Consider the Right Integration Approach

Selecting the right integration technology is the next important step once you have set your goals. Choose an Integration Platform instead of multiple ad hoc point-to-point solutions that:

- Gives you a one-stop-solution for all your integration needs
- Provides fast and simple deployment options
- Requires limited IT Support
- Offers improved adaptability and agility
- Supports Functional Reusability
- Provides end-to-end traceability across toolsets and artifacts
- Has an independent Change Management system
- Delivers interoperability in a loosely coupled framework
- Helps to orchestrate rather than just integrate tools of different functions and technology
- Generates configurable reports for visual monitoring of integration success and failure
- Supports both linking and syncing mechanisms along with data migration needs
- Meets the needs of enterprise-class security
- Supports multiple versions of the same tool or application
- Can easily accommodate the future replacement of any application or addition of new applications to your application ecosystem in a plug-and-play mode

You may select an Integration Technology that is:

- Based on Service Oriented Architecture (SOA)
- Built around Enterprise Service Bus (ESB) - a hub-like architecture that connects applications through light-weight Adapters or Connectors
- Supported with Open APIs for Adapters or Connectors – Organizations can build the adapter for their homegrown tools
- Extensible and configurable in a codeless manner
- Easily scalable and maintainable

- Capable of generating tasks for users automatically and providing control or governance through business rules and workflows.
- Capable of supporting long-running business processes having large volume of data
- Mobile ready

3. Be Aware of Technical Considerations

Before driving an application integration project, the project stakeholders need to consider and analyze the specific technical requirements for:

- Semantic and Metadata Management
- Validation of data for correct structure and format
- Standard and Advanced Transformations
- Information Consumption, Processing and Delivery
- Intelligent Routing
- Connectivity and Adapter Management
- Governance across all applications

4. Know the Functional Requirements

Project stakeholders need to identify:

- Applications or tools to be integrated
- Information/data required to be synchronized across tools
- Mapping of metadata between applications or tools
 - Avoid meaningless data replication if it does not address any specific business need
- Relationships between artifacts of different tools to be synchronized
- Integration rules to follow
 - Identify which tools and items need bi-directional data integration and which need one-way integration
 - Identify the conditions for which data would flow from one tool to another
- Data latency requirements
 - For some tool, it may be sufficient to synchronize the data on a daily basis and for some other tool, it may be required to synchronize data in every minute

5. Know the Non Functional Requirements

The non-functional requirements to be considered are:

- Performance
 - Determine the data volume that would be transported on a regular basis – Define performance metrics upfront
 - Determine the permitted latency limits
 - Determine the growth of data over the years
 - Plan hardware configuration to support probable data volume up to at least two years
- Scalability
 - Understand the scalability options
 - Plan for load balanced servers based the load of on your data flow
- Security
 - Understand and document security requirements
 - Ensure compliance with organizational data security policies
 - Encrypted storage and transport of security credentials
- Reliability
 - Understand and document reliability measures needed
 - Check whether the integration framework will provide the required reliability measures
- Availability - Failover
 - Understand the availability and failover options
 - Plan for configuring these options based on your availability needs
- Migration
 - Define your data migration needs
 - Check with the vendor – how to implement data migration
- Monitoring
 - Failures and faults at the services/ adapters level
 - Failures and errors at the data synchronization level

- Notifications/Reporting for failures/ errors
- Integration Health Dashboard

6. Focus on User Management

User Management is done differently in different applications or tools. Some tools support LDAP (Light-weight Directory Access Protocol) based user management while others have their own user management functionalities. Application integration requires user synchronization between different tools. An Integration Platform should provide the following options for it:

- LDAP/ Active Directory based User Management support for all applications
- Automated User Mapping Policies between applications
- Manual User Mapping between applications
- Any central User Management system shared by all applications

It is recommended to document your organizational User Management Policies and decide on the best options for your case. It could be a combination of the above options.

7. Work on Project/Template Management Setup

Organizations deal with hundreds of projects. Reusing the configuration setup done for integrating several applications across projects is the key to success of an Integration Platform deployment. An Integration Platform should support the following best practices to facilitate an integration setup:

- Automation in Integration Setup for large number of projects
- Integration Templates for different project types
 - Set of applications to be integrated
 - Metadata mapping between objects from different applications
 - Set of Integration Flows or Rules
- New projects inherited from the above templates based on the project type
- Templates administered by Process/ Tools Group
- Project specific Integration Setups are managed by Project Managers

8. Select Integration Adapters/Connectors

Stakeholders need to identify the integration use cases upfront and ensure that the adapters/connectors can support easy and effective implementation of those use cases.

- Identify the tools, 3rd party and homegrown, for which Integration Adapters would be needed
- For standard applications, discuss and define:
 - Common Use Cases - Examples:
 - Unidirectional and bi-directional synchronization
 - Support for different field types – simple text, rich text, number, date, single/multiple select lookup list, cascade select list, choice list and others
 - Support for field data type and size validation
 - Ability to detect new custom (user defined) field created in a tool and mapping to fields in other tools for data transfer
 - Tool specific Integration Use Cases – Examples:

Use Case	Tool	Event	Action
	IBM RequisitePro – Requirements Management Tool	A Requirement is approved for implementation in a particular release.	
	HP Quality Center – Test Management Tool		RequisitePro Requirement is replicated in Quality Center as a Test Requirement.
	HP Quality Center	Test Cases created by Tester in Quality Center to test the functionality provided by the above Requirement. Test Cases are executed and Test Results are recorded in Quality Center.	

Use Case	Tool	Event	Action
	IBM RequisitePro		Test Results for the Requirement are replicated in RequisitePro.

- Edge Case Scenarios – Examples:
 - Default behavior in the target tool when mandatory field value not supplied from the source tool
 - Default behavior in the target tool when lookup list value does not exist or is not mapped
- For homegrown applications, discuss and document:
 - Integration Use Cases
 - API availability for the homegrown tool
 - Data Storage for the homegrown tool – Database or File System based
 - Adapter development and testing options. Integration Platform should provide the option for building the adapter, in case API is not available for the homegrown tool.
- Establish a Deployment Road Map for different Adapters/ Connectors.

9. Ask Support for Tool Version Upgrades

Often, organizations need to deal with several versions of a same tool. Once a tool vendor comes up with newer versions of a tool, upgrades become a routine activity for tool users...Managing and planning for these upgrades is essential to maintain the integrity and stability of your integrated tools ecosystem. An integration platform should allow you to -

- Document tool-wise list of different versions that need to be supported.
- Ensure that proper planning is done to bring the support for newer versions of tools and adapters are ready on time for deployment.
- Newer versions of Adapters may expose new objects from the tools. Planning is needed to use those features in your integration scenarios.
- Standardize on tool versions used across the organization

- Supporting numerous versions of the same tool across the organization should be minimized as much as possible because it increases the complexity of the integration scenario and makes it difficult to maintain.

10. Learn the Deployment Stages

Follow the best practices for deploying an integration platform.

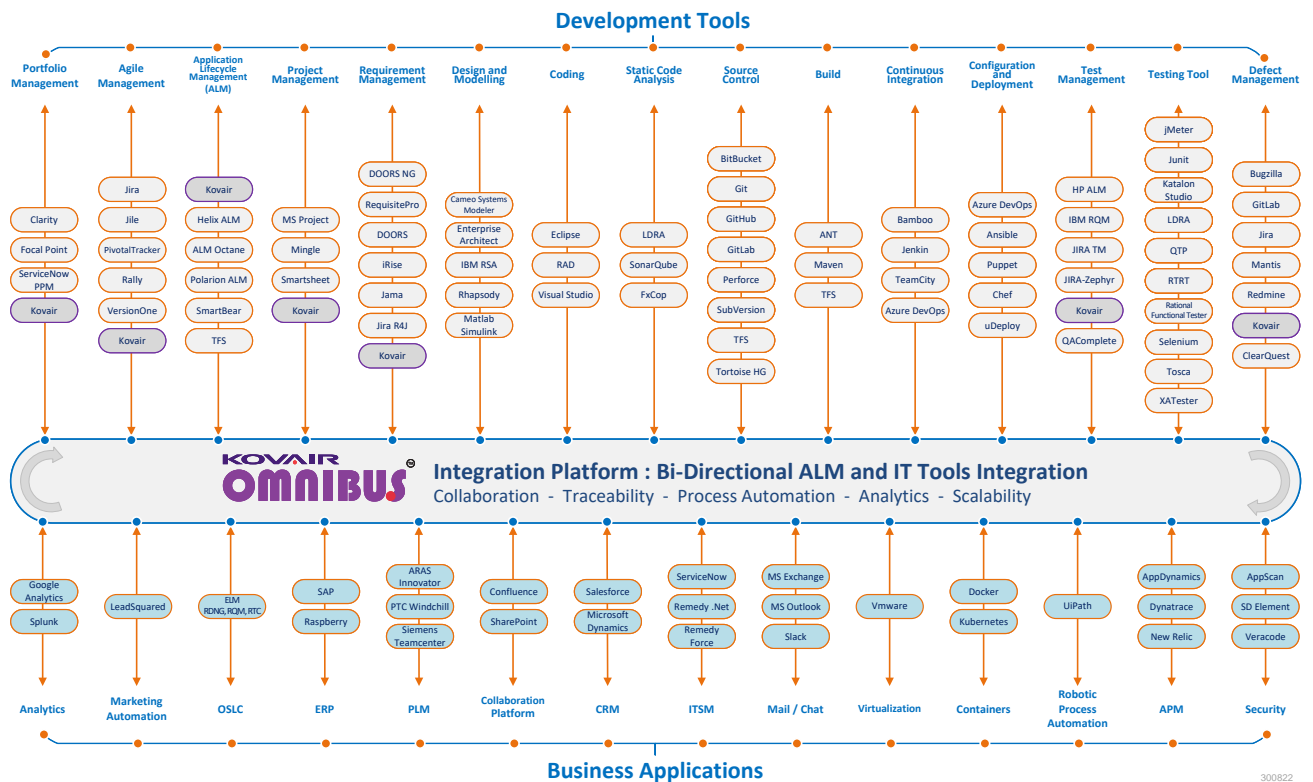
- Staging environment
 - Set up Development environment
 - Set up Test environment
- Testing
 - Configure Test Cases to verify your Integration Use Cases
 - Execute Tests on Development and Test servers
 - Perform load testing
 - Perform security testing
 - Perform reliability testing – check the scenario when tools are down or offline
 - Perform availability and failover testing
- Production
 - After successful testing, deploy the integration platform and adapters on Production servers
 - Ensure failure/exception alerts are sent to the right people
 - Set up regular backup of the relevant integration components

How Kovair Omnibus Integration Platform Helps

Kovair Omnibus is the leading Enterprise Service Bus (ESB) integration technology available for Application Development and IT tools. With standardized SOA based tool-specific Omnibus adapters, one can create his or her own tools ecosystem. These tools can be from any vendor, or any legacy data, or any custom homegrown application development and IT tools.

Kovair's Omnibus integration technology has major advantages that are not typically found in the vendor-specific point tools or even a suite of tools.

Currently Available 110+ Integrations with Kovair Omnibus



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The following table lists the advantages of implementing Kovair's Omnibus integration technology in an organization.

Bus or Hub based integration as well as point-to-point integration when a pair of tools is getting considered thus supporting all integration and migration needs of an organization.	Leveraging existing tool investments for customers – no need to rip and replace tools
Support for multi-directional Synchronization, Migration and Federation	Synchronization of data and relations between lifecycle artifacts in different tools of same or different functional areas
Ability to define attribute mapping, integration flows, user and relationship mapping using simple mouse-click configuration	Integration of IBM Jazz based OSLC tools with OSLC non-compatible tools
Support for data validation and transformation	Conflict Detection and Mediation during integration flow
Customizable Integration Rules & Data Mapping independent of Adapters or Connectors – No rule hardcoded in the Adapter	Reuse of built-in configuration templates to support automated integration setup for hundreds and thousands of projects.
An end-to-end traceability from Requirements to Code to Testing and Delivery ensuring compliance	Connects tools behind firewalls through SOA – needed for globally distributed team
ALM tools interoperability, cross-repository linking and transparency across organizations	Automated end-to-end ALM processes with Task-based workflow management

Conclusion

Organizations continually face challenges in finding out ways to leverage more ROI out of their existing infrastructure and applications. Having an effective Application Integration strategy is critical to taking on this daunting challenge. Choosing the right integration technology and following the best practices to establish an agile, reliable and scalable platform that is equipped to extend the life of your existing proven applications can meet your future application development demands. For any question, you may send an email to the marketing@kovair.com.

About Kovair

Kovair Software is a Silicon Valley based software product company specializing in the domain of Integrated Application Lifecycle Management (ALM) solutions and supports global software development and management. Kovair's focus on integrating third party best-of-breed ALM tools enables creation of applications in a synchronized tools environment.

Kovair has partnered with leading technology brands like Microsoft, IBM, CA, BMC and more to provide customers a wide range of integration solutions.

Product Portfolio: Kovair's flagship products [Omnibus Integration Platform](#), [ALM Studio](#), [QuickSync](#) and [Integrated DevOps](#) are highly preferred solutions by some of the major corporations globally.

Recognitions: [The SD Times 100](#) has recognized Kovair as one of the top 100 software innovators in the domain of Application Lifecycle Management. Kovair's Innovations in ALM Tools and ALM Integrations are well recognized both in the industry and by analysts at places like [Gartner](#) and [Forrester](#).

Business Focus: Application Lifecycle Management Products and Services, Integration Platform

Industry Verticals: IT Consulting and Services, Banking and Financial Services, Telecom, Manufacturing, Networking, Healthcare, Defense and Government.

Contact: For more information about product and services contact sales@kovair.com. You may follow Kovair updates on [Facebook](#), [LinkedIn](#), [Twitter](#), [Google+](#), [Slideshare](#) and [YouTube](#).

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