

Case Study - Why Kovair was selected for a Large Federal Agency



KOVAIR

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Executive Summary

The engineering tools environment at the IT department at this large Federal Agency, our customer, is a conglomeration of non-integrating multi-vendor Commercial-off-the-Shelf (COTS) tools, defined for use in disparate processes, and owned and administered by various contractors and our customer's internal organizations. In order to smoothly re-engineer the organization with minimal impact to current development and maintenance activities, an integrated tool environment for IT Lifecycle Management (ITLM) is needed. Kovair, with its application lifecycle Management tool and its Omnibus Integration Technology, is the only vendor that can provide this type of seamless control.

The first phase in re-engineering the environment was to eliminate the large amount of manual work currently performed in integrating the different tools, and to provide stakeholder visibility to project life cycle information. Kovair provides this in the form of adapters connecting its Omnibus Integration Bus that enable tools to seamlessly integrate information, and custom role-based information templates to enable tailoring of the integrated information according to role.

The second phase was to impose the standard IT Lifecycle Management process and standard procedures for requirements management and other engineering disciplines. Kovair enables this process and procedure standardization through the use of custom workflow definition. Using Kovair, the customer's IT department will obtain consistency of process, reduction of costs, and greater stakeholder visibility with minimal impact to on-going development and maintenance. Concurrent with these phased efforts, as tool licenses expire, our customer can plan to move gradually to a standard set of tools with minimal disruption to ongoing operations.

Introduction

This White Paper discusses the need at the IT department at a large Federal Government Agency for a Software Life Cycle (SDLC) tool, referred to in this document as an Application Lifecycle Management (ALM) tool. Such a tool is required to replace stove-piping technologies currently in use and to integrate and/or replace the organization's existing processes and procedures, which are outdated. Currently, numerous Government-off-the-Shelf (GOTS) and Commercial-off-the-Shelf (COTS) products address many facets of the Software Lifecycle Development methodology. None of these tools, however, addresses the entire process successfully and provide ease of use, actionable output, traceability, synchronization and cost effectiveness for the IT department.

After describing the existing sub-optimal environment, the remainder of this document will define requirements for tools that meet the organizational objectives, as well as discuss particular tools that meet these requirements.

Current Situation

A critical mission of the IT department at our customer is to provide an infrastructure as well as services supporting Information Technology (IT) development and maintenance throughout the larger organization. Currently, the IT department does offer such support, but in a fragmented manner. The IT department lacks an automated tool that integrates IT support across the entire SDLC. What is more, at the present time, responsibility for IT services is split among three divisions: engineering, support, and delivery. Each of these divisions has its own processes, structure, methodologies, and tools.

Adding further complication, business solutions and applications are developed and maintained by contractor firms in their own development environments, using tools of their own choosing that support the various phases of the development lifecycle. Our customer currently specifies no standard tool set for the engineering/development process.

When the solution is developed and ready for independent testing, the code is transported, stored, controlled, and tested in another environment, most often with a different set of tools. After migration to the production environment, problem and incident reporting and tracking occurs at a different organization using yet another set of tools. . When information is captured in a given tool, each of the various tools becomes its own silo which reinforces the tendency of maintaining silos across the IT department. The disparate tools are not smoothly connected with each other and the information flow among them is mostly manual, lacking coordination and synchronization. The IT department found it difficult to share information between different lifecycle solutions, trace items through phases, propagate changes through phases, establish end-to-end automated lifecycle processes, enforce consistent project management controls across phases and gain total visibility into the status and progress of development and IT projects.

More specifically, the IT department has the following problems regarding coordinating and synchronizing life cycle management tools:

Lack of Process across the Tools: The IT department has numerous processes that support IT services. The processes are not standardized and cross-organizational consumption of data is cumbersome. Each tool supports its own process. The process steps are typically manual, and data generated in one organization does not easily cross over to the processes in other organizations. The control of tools tends to obscure the control of processes.

Traceability between Engineering Artifacts is difficult, and error prone: All relationships among engineering artifacts are created and maintained manually. Requirements are copied from Word or Excel files and pasted into Hewlett Packard Quality Center (HPQC) to express relationships among requirements and test cases, for instance. Likewise, test failures are entered as Test Problem Reports into an internal tool called Tracker, and traceability between a given Test Problem Report, test case, and requirement are maintained manually. Interoperability between any of the IT department tools and data does not exist. Test Analysis Reports are written in Word; data from HPQC is manually

retrieved and copied into Word. Defects are manually recorded and stored in Tracker, and also copied into the Test Analysis Report.

Manual Consolidated Reporting: Information reporting the state of IT solutions during each release's milestone reviews is consolidated by Quality Assurance (QA) analysts manually from multiple tools and rendered as text in a Word document stored in an interwoven document repository. Similarly, only test results, not test cases, are reported in QC, with the results also being recorded in Word documents and manually entered into Tracker.

Lack of Visibility: Especially when a single group uses one particular tool, all information it has generated remains locked in that tool, invisible to the rest of the organization. Members of the systems engineering team, for instance, have no visibility into the independent

Major Challenges

- ❖ Lack of Process across the Tools
- ❖ Traceability between Engineering Artifacts is difficult and error prone
- ❖ Manual Consolidated Reporting
- ❖ Lack of Visibility

IT Department Standard Control Environment

The IT department is taking action to improve the current stove piping situation. First, the organization is developing a standard control environment that will be physically located in the central data center and supports integration in the data center's staging, test, and development environments. The methodological framework is based upon Application Lifecycle Management (ALM) and IT Service Management using the Information Technology Infrastructure Library ITIL v 3 (Service Operation). The automated IT tool chosen to support this methodological framework is the Kovair tool, which will break down the information and organization silos that now prohibit optimal IT service engineering, support, and delivery. The current section of this document discusses the IT department's Standard Control Environment, including key concepts of Application Life Cycle Management (ALM) and ITIL v3, and key capabilities of Kovair.

(This paper discusses tool usage in terms of the ALM, which is the contemporary industry standard phrase and which is equivalent to our customer's ITLM.)

Application Lifecycle Management (ALM)

ALM is the coordination of life-cycle activities, including requirements, modeling, development, build and test, through:

- ❖ Enforcement of processes that span these activities
- ❖ Management of relationships among development artifacts used or produced by these activities
- ❖ Reporting on progress of the development effort as a whole

In the earlier days of software development, individual tools were used to support the various activities comprising the discipline. Over time, simple, loosely integrated suites of tools emerged – Rational products, for example. The industry is now moving towards obtaining comprehensive lifecycle tools that are fully integrated and provide capabilities for most of the activities in ALM. Many commercial vendors in the ALM sector have developed or acquired tools that help fill gaps in their previous ALM offerings. It is important to note, however, that ALM is more than just a suite that manages a set of disparate activities. As Carey Schwaber indicates, “Much of ALM’s value comes from its connections to the separate but related disciplines of project portfolio management and IT operations. The best project portfolio management efforts leverage ALM data to inform executive decision-making and handoffs to and from IT operations to fulfill, propel, and inform development activities.

- ❖ The three pillars of ALM: ALM is not just a product category, but rather a discipline having three “pillars” - traceability, process automation, and reporting and analytics—each of which corresponds to a manual process that can be made more efficient and effective through automated tool integration. It is the connections, not the tools themselves that finally comprise an ALM solution. Many traditional development tool vendors have tried to re-position themselves by defining their collection of separate tools as true ALM. These manufacturers have failed because of the nature and definition of ALM.
- ❖ ALM assures synchronization among all life cycle activities: A development effort can still fail even if all separate life cycle activities are carried out with excellence in their own right – requirements analysis and management, for instance, architecture modeling, coding, and testing. ALM assures that these activities are coordinated and allows practitioners to focus on delivering solutions that meet business needs.

IT Service Management with Information Technology Information Library v3

As development processes are unified with ALM, so ITIL Service Management brings together formerly disparate operations support functions into a centralized, reliable framework. Within this framework, the help desk has evolved into a robust service desk with enhanced capabilities that add value to the

organization. A primary function of Service Management is to receive, triage, and manage all calls regarding service interruptions. Not only do service desk personnel focus on resolving problems and incidents, but they also frequently play roles in change management. What is more, Service Management also comprehends other related functions.

Kovair integration of ALM and ITIL Framework

As Figure 1 shows, organizations that provide ALM and ITIL functions are usually divided between engineering and support organizations. Such a division is inefficient and less than optimally effective. Leveraging Kovair allows these functions to be smoothly integrated. The following sections discuss Kovair’s capabilities in this regard.

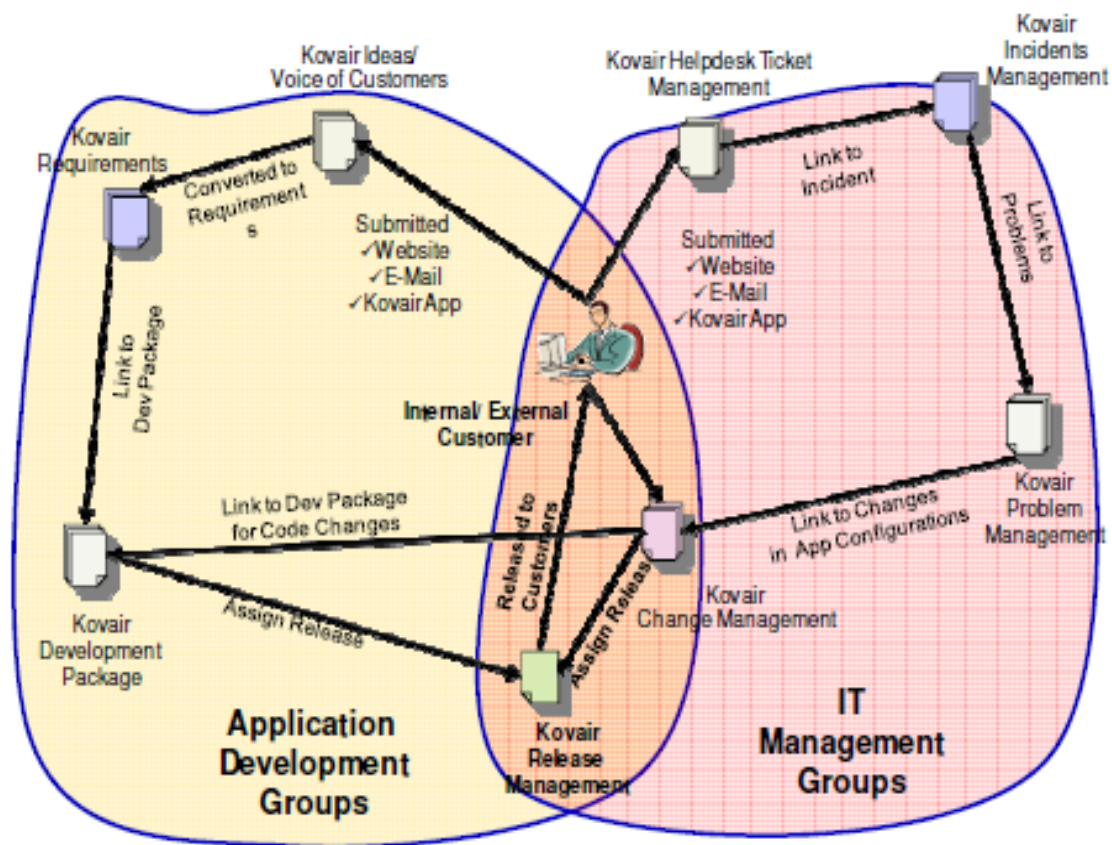


Fig 1: Relationship of Engineering and Support Organizations

The support organization needs to capture, store, manage, and track information related to service support. Traceability, process automation, and reporting and analytics (the three pillars of ALM) apply as much to support services as to engineering services.

Our Customer’s Service Support and Engineering Support – “As Is” and “To Be”

Currently, Service Support, the IT department support organization of our customer, has a significant investment in Remedy v7 for the following: service desk management; incident management; problem management; and change management. However, Remedy does not directly support the automation

needs of idea management, requirements management, test management, or defect management, but Kovair does. In fact, Kovair not only supports all engineering management needs, but also all support function requirements. Kovair integrates with every existing IT department life cycle management tool, while offering the distinct capabilities of each tool. This functionality allows the IT department the flexibility to reduce the number of supported tools, and as a result can plan the following transitions:

- ❖ Installing Kovair's Remedy adaptors for integration of workflow and data between engineering and support functions.
- ❖ Using the Kovair Requirements Management tool for linking requirements to other life cycle and support management entities.
- ❖ Installing Kovair's HP QC adaptor for linking test cases to requirements, and possibly considering the replacement of HP QC with the Kovair Test Case Management tool.
- ❖ Installing Kovair's Tracker adaptor for linking Test Problem Reports to test cases and to requirements, and possibly considering the replacement of Tracker with the Kovair defect management application.

Kovair

Our customer's Executive Management team asked their IT department to find a requirements management tool for use across the parent organization. The Software Engineering Section led the effort to respond to this challenge, attempting to select a tool that would be an enterprise solution. Because ALM is the industry standard, only tools that support the three pillars of ALM were considered. There is no Magic Quadrant that provides an unbiased qualitative analysis of requirements management tools. Therefore, the selection committee began by considering 14 products identified by Booz Allen Hamilton in its Requirements Management Software Market Analysis (2002). The ability to integrate with the existing IT department ALM tool set was important to selecting the final candidates. The committee chose Telelogic's DOORS and IBM's Requisite Pro for evaluation. Additionally, Serena Requirements Manager (RM) was considered because of the IT department's current use of Tracker and Version Manager, tools that are no longer supported but that would carry the virtue of tool standardization. During its survey, the selection committee also discovered the Kovair Omnibus integration technology. The group was positively impressed by the suite and concluded that it was much more than simply a requirements management tool.

Kovair has built-in life cycle and support management applications that not only compete with those of other standalone tools, but that offer additional value. Kovair also provides the following important features: a common interface among its tools, user account management, and single sign-on to its whole range of components. In addition, Kovair is characterized by a built-in, configurable and task-based workflow engine that automates any IT process or product development; unlike Remedy, no coding is required in this context. Instead, workflow rules, events, and decisions are established by means of a graphical user interface, dragging and dropping, and simple condition statements –

capabilities in fact that no other requirements management tool has. What is more, Kovair also uses a workflow engine, which has become a cornerstone of the IT departments' Control Environment, along with having the ability to push and pull data to and from any other life cycle or support management tool using the Service Oriented Architecture-(SOA) based Kovair Omnibus Integration Bus. The Kovair process engine is discussed in detail – and graphically represented under the topic 'Kovair Process Engine' in this document.

Kovair Omnibus Integration

Kovair uses Omnibus Integration Bus technology, which allows multi-tool integration in bus architecture. This approach provides significant savings in integration effort in man-hours and cost over ad-hoc point-to-point integrations. The number of distinct integration code pieces for the integration bus is 'n' which is substantially less than $n*(n-1)/2$ for point-to-point integration for 'n' number of tools. Integration of 5 tools with the Kovair Omnibus will require 5 adapters whereas in the point-to-point integration scenario it will require 10 integrations. Benefits of the Omnibus Integration include:

- ❖ **Two-way Synchronization:** Two-way synchronization is necessary to keep all synchronized information current in both tools. Data synchronization is the starting point of integration.
- ❖ **Synchronization among Data Items:** Greater value is gained by synchronizing the relations among synchronized data items – a basic capability of Kovair.
- ❖ **Federation of Data:** Getting data from other repositories on-demand. It is not necessary or even desirable to replicate all data among all tools. Instead, Kovair allows on-demand access of data, which minimizes data replication while also reducing network traffic.

Kovair Adapters

Numerous adapters are already available in Kovair, and development of other specific adapters is planned. The company will also create additional adapters for Omnibus Integration as needed. These items enable easy interoperability between Kovair and IT tools that are commonly used across the life cycle. Kovair can also provide API for the creation of these adapters to any company wishing to develop them on their own. The Table below summarizes the range of other tools for which Kovair has existing, planned, or potential adapters.

Table 1: Currently Available

IBM/Rational	Microsoft	HP/ Mercury	Others
Requisite Pro	Word	Quality	Perforce Software Configuration
Rose	Excel	Center	Management by Perforce
Test Manager	Project		Subversion by Collabnet
ClearCase	Visual Studio Visual SourceSafe		

Table 2: Planned / Under Development

IBM/Rational	Microsoft	HP/ Mercury	Others
ClearQuest	Outlook SharePoint	Project Portfolio Center	Remedy by BMC

Kovair Process Engine

Integration without process and process without automation is undesirable. When multiple groups are using different tools at different locations and work in conjunction with each other without a process, it is difficult to manage information creation and flow. What is more, it is hard to circulate detailed guidelines and rules written on paper among a community whose participants frequently change as is the case in the IT world. The most desirable solution is to define, implement, automate, and enforce processes using process automation tools. Very few development tools have built-in process engines. Those tools that do have them are typically state-based engines that can only implement a simple linear workflow, but are not powerful enough to implement complex needs. Very few vendors provide process capability across integrated tools or even among their own toolsets. On the other hand, Kovair's task-based Omniprocess automation engine achieves the following:

- ❖ Allows sequential as well as parallel workflow paths with path merge capability.
- ❖ Allows complex branching logic to accommodate automatic control of flow.
- ❖ Receives events from various tools as well as triggers actions for them.
- ❖ Enables a hierarchical process structure.

Additionally, the combination of Kovair's Omnibus and Omniprocess technology, also known as Kovair Integrated Process Framework (IPF), allows users to achieve the following:

- ❖ **Map between objects in the Integration Bus and external tools.** The IPF provides a way to define multiple objects of various kinds and to map them to the objects in the external tools including attributes, methods, and policies.
- ❖ **Create processes for each different object.** The IPF allows a process to define business rules for each object. Figure 2 shows a sample Kovair process design template.
- ❖ **Trigger actions at a specific tool based on events and process steps at other tools.** A Test that is tested 'Failed' in the automated testing tool and automatically puts the result against the requirements to which the test traces back and also triggers a process for a new defect and assigns to a developer for fixing it is an example of a process across three different tools integrated through IPF.
- ❖ **Support tools located anywhere behind the firewalls.** An IPF based on the SOA technology will allow it to be firewall friendly and work with tools running anywhere and on any technology platform.

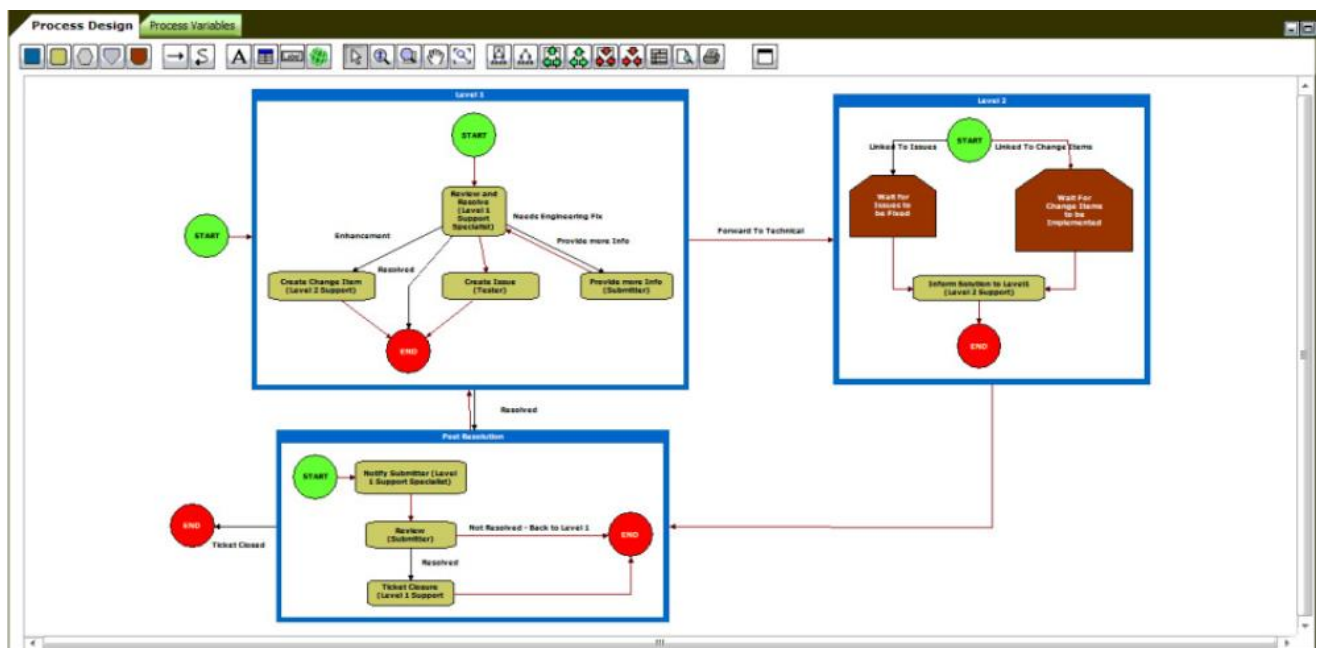


Fig 2. Sample Kovair Process Design Template

An Example of Kovair Integration at a Global IT Services Company

Kovair integrated three tools from IBM Rational from the company's suite of SDLC point tools and two internally developed tools used for business modeling and project management in the delivery of software services in less than 2 months. The company was using a mix of standard tools from different vendors and some home grown tools to support individual phases of Software Development and IT Management lifecycle. These tools were not strongly connected with each other and the information flow between the tools was mostly manual, lacking coordination and synchronization. The company found it extremely difficult to share information between different life cycle solutions, trace items through phases, propagate changes through phases, establish end-to-end automated lifecycle process, enforce consistent project management controls across phases and gain total visibility into the status and progress of development and IT projects. The company needed an open integration framework that could connect all the currently used tools in a simple and effective manner. The integration framework needed to be flexible enough to provide easy replacement of any existing tool or introduction of any new tool in the future.

Kovair executed a project demonstrating successfully how Omnibus can connect the tools supporting various application lifecycle phases to provide an Integrated Software Development and IT Lifecycle Management environment for this company. The company was using an internal tool for Business Modeling, IBM Requisite Pro for Requirements Management, IBM Rose for Analysis & Design, IBM Test Manager for Test Management and an internal tool for central Project Management and Tracking. Kovair built the adapters for these three IBM tools and two internal tools to connect them to Omnibus. Kovair demonstrated how Business Requirements, System Requirements, Use Case Models, Architecture Models, Component Models, Test Cases with Results and Defects could now flow automatically across the tool boundaries. This integration ensured process automation and correspondence of activities across disciplines. Tracing lifecycle items backward and forward through Business Modeling->Requirements Management->Analysis & Design->Development->Testing became a reality.

Kovair Omnibus offered the following immediate benefits for this company:

- ❖ Eliminated expensive manual data transfer processes and human errors
- ❖ Synchronized data everywhere for everyone
- ❖ Enhanced productivity in the range of at least 10 – 15%
- ❖ Increased visibility across groups, management levels, and geographically-dispersed personnel
- ❖ Supplied user-preferred tool environment for individual functions in a totally integrated environment.

Disadvantages of Single Vendor ALM Solution

Most of the leading vendors in the ALM market, offer various single- function tools focused on particular phases of the development life cycle. These vendors indicate that an organization can keep all tools within a single vendor and hence the complexity of vendor management is minimized. However, there are disadvantages of the single vendor approach and their implementations.

The disadvantages include:

- ❖ **Incompatible tool sets:** Most of the ALM vendors grew their portfolio of tools by several acquisitions over recent decades. For example, IBM acquired Rational and Requisite Pro. IBM also acquired Telelogic and the DOORS requirements management tool. Rational and Telelogic themselves acquired the same tools by acquisition of the original developing companies of the respective tools. Because of these multiple acquisitions, the tools in the portfolio of the same vendor have separate user interfaces, repositories, architectures and consequently may be incompatible with each other.
- ❖ **Forced to use less appropriate tools:** It is hardly expected that all tools in the repertoire of a single vendor are either equally good or suitable for the needs of a single organization.
- ❖ **Integration among tools is brittle if they exist:** Single vendor's claim of integration among their individual tools is typically ad-hoc point-to-point. Without a proper integration infrastructure, like Bus architecture, each integration code is hand-crafted for each pair of tools. This lacks consistency, robustness and maintainability. Every time a tool vendor releases a new version it breaks the integration code. Finally, the business rules being hard-coded in the integration codes makes it very difficult to change the business rules without the need for the vendor to modify the integration code.

In contrast to vendors of single-function tools, Kovair offers integrated functionality among the engineering and service tools. It also integrates the offerings of vendors of single-function tools as shown in Figure 3.

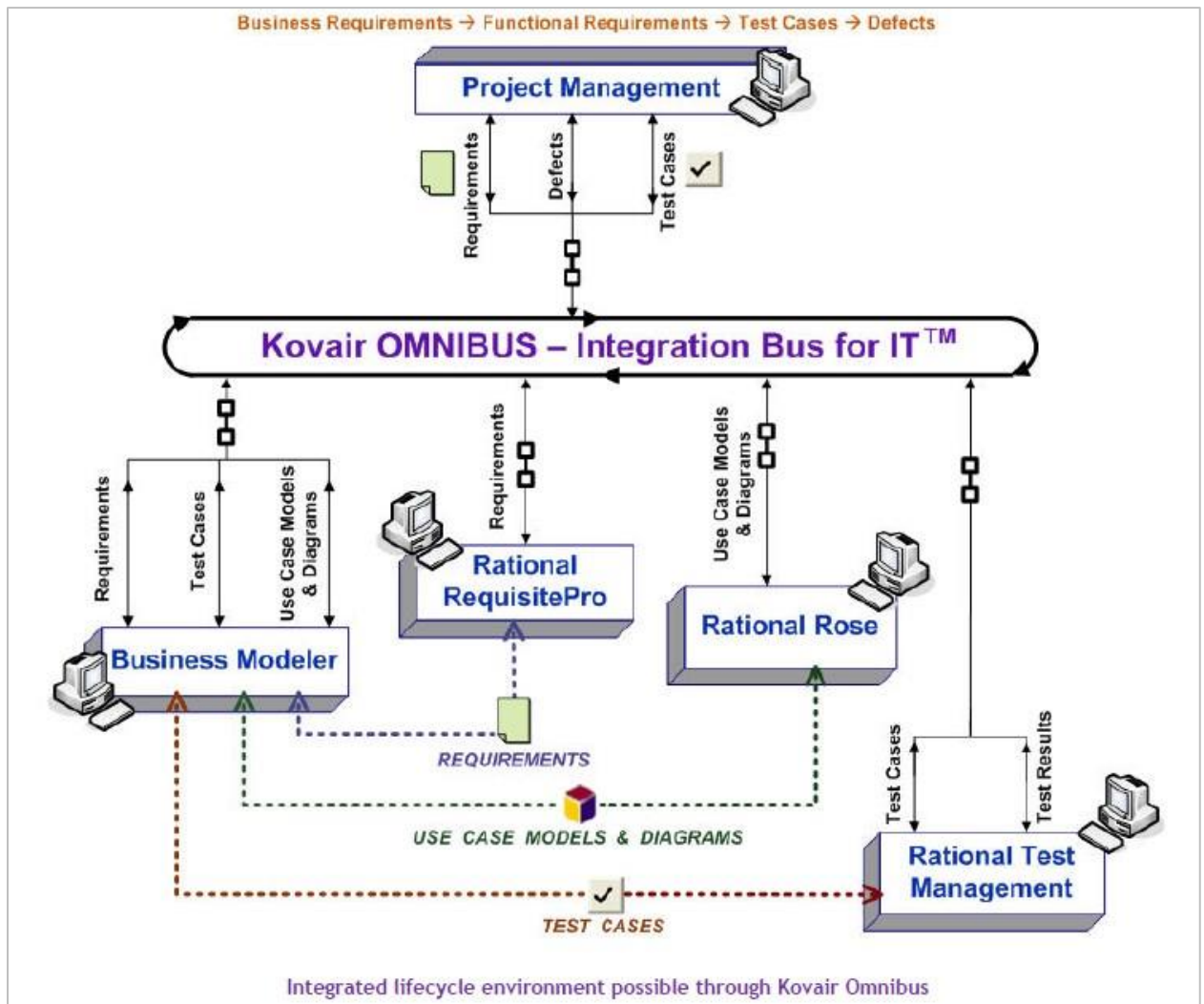


Fig 3. Integration of Multi-vendor Tools

Conclusion

The Kovair Software Life Cycle Development tool suite offers a uniform procedure, common interface, and automated tools with several adaptors designed for scalability and availability to the current software library. The suite supports code storage, traceability metrics, reporting, development, testing, integration, production, and trouble-shooting until final decommissioning of the software package.

The suite fits into the ITIL v3 framework (Service Operation) on the grounds that it:

- ❖ Was found to be superior to other tools for Requirements Management.
- ❖ Uses current SDLC/ALM best practices for software development and maintenance.

- ❖ Provides clear guidance with its process methodology.
- ❖ Provides direction for policies and procedures used by engineering review boards and other integrators that will support the organization.
- ❖ Makes available adaptors that allow it to exchange information with other tools already being used in the IT environment and enhances their ROI.
- ❖ Has Omnibus Integration Bus technology that allows multi-tool integration in bus architecture.

Our customer viewed purchasing the Kovair tool as a cost-effective solution for addressing requirements for an effective and efficient Software Development Life Cycle tool and to meet the mission needs of their IT department.

Appendix A. Acronym

Acronyms	Description
ALM	Application Lifecycle Management
COTS	Commercial-off-the-Shelf
GOTS	Government off-the-Shelf
HPQC	Hewlett Packard Quality Center
IPF	Integrated Process Framework
IT	Information Technology
ITIL	Information Technology Infrastructure Library
ITLM	IT Lifecycle Management
QA	Quality Assurance
SDLC	Software Development Life Cycle
SOA	Service Oriented Architecture
TPRs	Test Problem Reports

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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