

White Paper - Requirements Collaboration and Reusability with Kovair ALM Studio



KOVAIR

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Introduction

In a distributed software and systems development project, Requirements Management plays a critical role in ultimate success of the project. For an efficient and optimal management of Requirements, a fully functional Requirements Management tool is not just a necessity; it can be a life saver. Using documents and spreadsheets often is an easy way to start Requirements Management as a practice, but in no time it becomes a liability instead of a reliable tool.

The two aspects of Requirements Management, which can substantially help a distributed project, are Collaboration and Reusability. These two are also the features which force a group using documents for Requirements Management to upgrade to a tool based Requirements Management. This paper describes how Kovair's Requirements Management tool helps a distributed project in achieving collaborative Requirements Management with high degree of reusability which can substantially reduce the development time and risks.

Collaborative Approach to Managing Requirements

Collaboration is the basis for working together to share information and to accomplish common tasks. In modern software development practices, the "Collaboration" among different groups / roles working from various geographic locations has become a necessity. Out of all phases of software development lifecycle, it is the Requirement Management phase that greatly demands collaboration, especially due to the fact that various globally distributed stakeholders need to be involved in creating, reviewing and approving Requirements.

Kovair application provides a Collaborative Knowledge Management Infrastructure for distributed teams. A single web-based application covers all the features necessary for all asynchronous collaboration. Kovair Requirement Management, a 100% web-based customizable solution, offers multiple avenues to work collaboratively to manage requirements.

Collaboration for all stakeholders, Anytime Anywhere Access - 100% Web-based

Kovair application is 100% web-based, which means any user with identity authentication can access the application over the Internet from any geographic location. The application is supported by most popular browsers like – Internet Explorer, Firefox and others.

The system is designed and architected from the ground-up to be an enterprise class, 100% browser based system. This allows users to access Kovair Requirement Management solution from remote locations and enables collaboration across geographically distributed teams. Maintenance and

Upgrades to the software are seamless to the end-user and are of light over-head to the IT departments.

One other important aspect of distributed development often overlooked is the difference in time zones and date/time format. Kovair Global Lifecycle allows personal preference setting to own time zone and date time format so all database date/ time are translated to the correct date/ time and format.

It is a well-known fact that the TCO (Total Cost of Ownership) is substantially lower for a 100% web based software than a similar client-server software with a light web interface offering small subset of functionality.

Collaboration while traveling - Email Notifications and Mobile Email Support

Kovair fully supports email notifications to any email addresses. Notifications can be generated manually on an ad-hoc basis or can be automated by means of Kovair Policies.

Event driven Policies can be created to send notifications based on an event occurring in the Kovair database. Kovair also allows scheduled policies that can send email notifications based on specified frequencies. In the following screenshot the details of a Scheduled Policy are shown:

The screenshot displays a form for defining a schedule policy. The fields are as follows:

- Scheduled As :** Recurring (dropdown menu)
- Start Date :** 04/20/2016 (text input with calendar icon)
- End Date :** (text input with calendar icon)
- Occurs :** Daily (dropdown menu)
- Frequency :** (Section header)
- Recurr Every :** (text input) day(s)
- Daily Frequency :** Occurs Every (dropdown menu)
- Frequency :** (text input) hour(s) (dropdown menu)
- Starting at :** 00:00 (text input with up/down arrows)
- Ending at :** 23:59 (text input with up/down arrows)

Figure 1: Defining a Schedule Policy in Kovair application

Email notifications can be associated with a Mail template. A Mail template in Kovair can be of Plain Text and Rich Text. Mail templates can be customized with embedded macro variables corresponding to the field values. Users can include read only fields as well as editable fields in the Mail template, so that users can **update editable field values directly from the mail itself**. An email enabled mobile phone e.g. Blackberry, iPhone can be used for interacting with these email notifications for both receiving as well as sending information to Kovair application. This allows users to collaborate with the rest of the team even when they are traveling or physically apart.

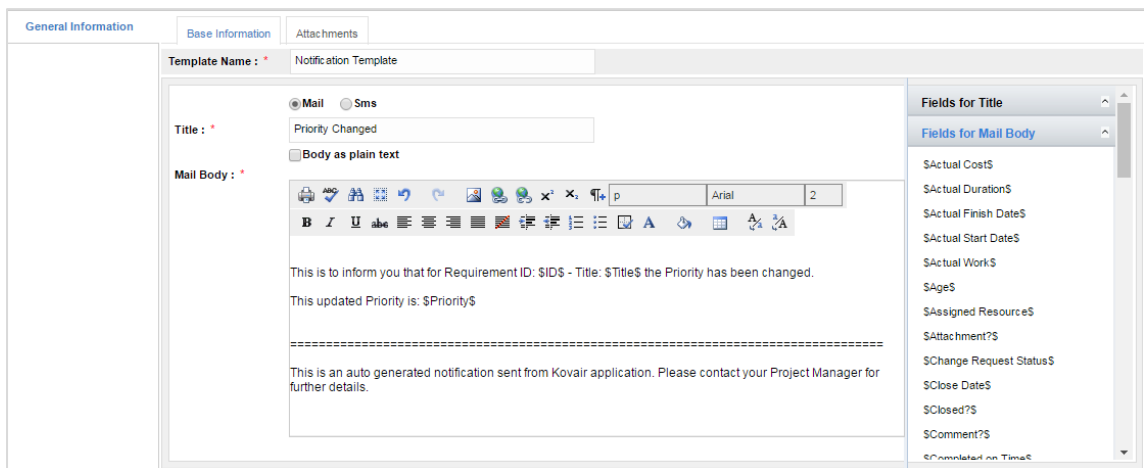


Figure 2: Defining Notification in Mail Template

Collaboration with history – Multi-threaded Discussions

A primary activity of any team is to make a series of decisions based on comments and opinions of its members. These are sometimes done in synchronous meetings (either in-person or using technologies like teleconference or online-meeting). Whereas such meetings have their place, multi-threaded discussions (in the context of each collaboration item) provide a forum to share such comments in a more structured way, reducing the need to have costly meetings. These discussion-threads allow one to capture a complete history (and hence the intellectual property) of the decision making process. For instance, if one were to ask the question 'Why did we decide to have a mechanical brown-ness control (of a toaster) rather than an electronic one' a year into the project, it is much easier to query the knowledgebase and get the contextual threaded discussions than by poring over volumes of meeting minutes or email threads (assuming they exist in the first place).

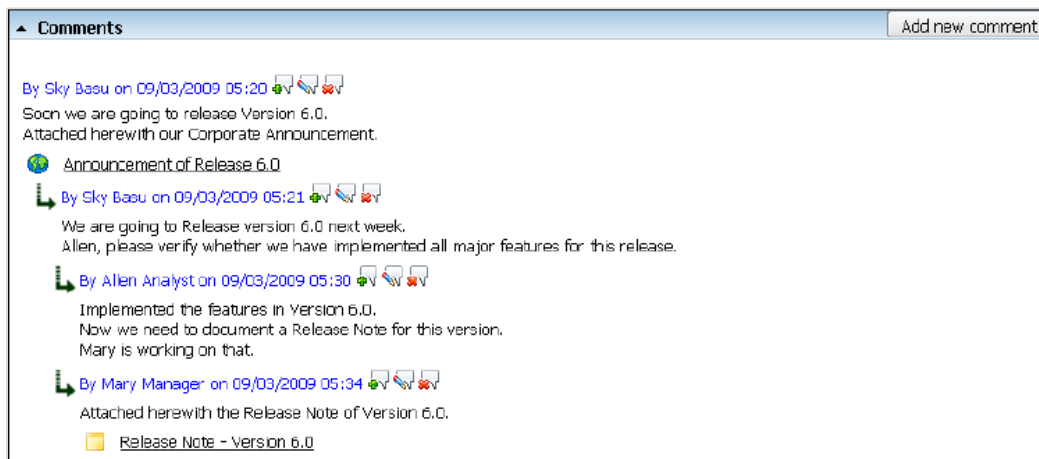


Figure 3: Threaded Discussions (with Attachments)

Kovair Application supports multi-threaded discussions in terms of contextual Comments. Kovair has a built-in Comments section that can be exposed to the users via system pre-defined or custom defined forms. The purpose of this section is to enable users to carry out multi-threaded discussions

in the context of each Requirement. The discussions are entered either as a New Comment or Reply to an existing comment. Comments can be in the form of rich text with all sorts of formatting and even embedded images. Kovair allows users to include multiple attachments to their comments. The attachments can be – simple Notes, any type of Files (Word document, spreadsheet, image etc.) and URL. These multithreaded discussions are saved in the context of the version of a Requirement.

Collaboration with Developers - Integration with Visual Studio & Eclipse IDEs

Visual Studio Team System (VSTS) and Eclipse are acknowledged as industry's leading Integrated Development Environments (IDE). These IDEs are mostly used by the developers, and often they need to work together and share information with other stakeholders like – Business Analysts, Architects, Project Managers and Testers. However the developers using these IDEs prefer to collaborate from within their preferred development environments, rather than opening up yet another tool external to the IDE.

'Kovair plug-in for Visual Studio' and 'Kovair plug-in for Eclipse', the platforms for developers, ensure collaboration among the stakeholders throughout the development lifecycle, and synchronization among disparate tools. By means of Kovair plug-ins for Visual Studio and Eclipse, the access of developers can be extended to all software development artifacts like – Requirements, Designs, Test Cases, Defects and Tasks originating from diverse ALM tools without leaving their preferred IDE. Kovair plug-ins are a much needed functionality for .NET and Java developers who wish to use a single tool environment both for doing their primary development job and collaborating with other teams.

How Integration with VSTS and Eclipse IDEs help Requirement Management

The integration between Kovair Requirement Management and VSTS / Eclipse IDEs facilitates easy and convenient way of managing the entire development procedure synchronized with the lifecycle of each Requirement. The plug-in establishes two-way flow of information between the IDEs and Kovair Requirement Management.

Since the developers prefer to work from within VSTS/Eclipse, the plug-ins ensures the developers to stay tuned in their preferred IDEs, and can view the Tasks generated from Requirement Management process of Kovair. The plug-in also exposes project artifacts (Requirement, Design Elements, Test Cases, and Use Cases) in the development environment to help developers understand actual requirements or features the customers are asking for. So, the plug-in enhances the accessibility and visibility of developers, and ensures synchronized collaborative development activities for Requirement Management.

Collaboration with QA group - Integration with HP Quality Center

Kovair offers seamless integration with HP Quality Center. This integration enables the synchronization of real time data between these two tools such that the different stakeholders like Analysts, Development and QA are benefited from it. Cross-tool communications are done through Kovair OMNIBUS – the Integration Bus for IT using API based communication.

How Integration with HP Quality Center helps Requirement Management

The integration between Kovair Requirement Management and HP Quality Center (Test Management Tool) facilitates easy and convenient way of managing the entire testing procedure synchronized with the Requirement Management lifecycle. The two-way flow of information between the integrated tools ensures that any Requirement item defined in Kovair is thoroughly tested in HP QC. The integrated framework of Kovair with HP QC helps in quick identification of defects in QC that are then automatically cycled back to Kovair for development purpose.

Testers working from HP QC can view the Requirements which are approved in Kovair application, and can write the Test Plans without leaving their preferred work environment. Requirement Coverage can be done in QC, and this automatically establishes traceability linkage between Requirement and Test in Kovair application.

Collaborating concurrently with Kovair Tasks

Kovair has built-in Task Management for users to collaborate in the management of Software development in general and Requirements Management in particular. Tasks can be created either manually or automatically using Kovair's Process Automation or Policy Automation functionality. One or more Tasks can be created for one or more users asking them to do different activities for a single Requirement. This unique Kovair feature allows concurrent operations on a single Requirement by multiple actors.

By focusing on the Tasks assigned to them, users can participate in a complex Requirements Management process without being aware of the process definition. This also reduces the need of extensive training as the process remains transparent to the end users.

In Kovair application, users get a separate page from where they can view the allocated Tasks from multiple Workspaces. This page is user specific, meaning a user can view only those open Tasks which are assigned to him/her from all the accessible Workspaces. Collaboration with tasks allows users to simultaneously contribute to various activities of a single Requirement. **With most other Requirements Management tool this is not possible since they are State based (i.e. a Requirement can be in one state alone at any time) and does not have a built-in Task Management functionality.**

ID	Title	Owner	Activity	Status
3	DE:8:Defect : TC for SR Requirement 1 - Run On - 11/30/2015 12:53:00...	Kovair Support	Assign Defect	Not Started
6	DE:9:Defect : New test case1 - Run On - 12/01/2015 10:13:00:Assign D...	Kovair Support	Assign Defect	Not Started
7	CR:2:CR:Defect : ITM_Test1 - Run On - 11/26/2015 18:52:00:Analyze CR	Kovair Support	Analyze CR	Not Started
8	CR:3:CR:Defect : TC for SR Requirement 1 - Run On - 11/30/2015 12:5...	Kovair Support	Analyze CR	Not Started
9	CR:4:Forget Password Change for Login page:Analyze CR	Kovair Support	Analyze CR	Not Started
10	CR:5:Forget userid for login page:Analyze CR	Kovair Support	Analyze CR	Not Started
12	PP:5:Kovair Reports Release:Gather Requirements	Kovair Support	Gather Require...	Not Started
13	PP:6:RTC Timesheet Integration 6.0:Gather Requirements	Kovair Support	Gather Require...	Not Started
14	CR:7:CR:Defect: Raised for Release 1:Analyze CR	Kovair Support	Analyze CR	Not Started
15	CR:8:CR:Defect: Raised for Release 1:Analyze CR	Kovair Support	Analyze CR	Not Started
16	CR:9:CR:Defect: Raised for Release 1:Analyze CR	Kovair Support	Analyze CR	Not Started
17	CR:10:CR:Defect : ITM_Test1 - Run On - 11/26/2015 18:52:00:Analyze ...	Kovair Support	Analyze CR	Not Started
18	PP:7:Release: For Enhancement of Word Import Features:Gather Req...	Kovair Support	Gather Require...	Not Started
19	DE:10:Reports : Error in viewing tabular report:Assign Defect	Kovair Support	Assign Defect	Not Started
20	DE:11:Review Req: User is unable to provide comment in review.:Ass...	Kovair Support	Assign Defect	Not Started
21	CR:11:CR:Defect : ITM_Test2 - Run On - 11/27/2015 09:48:00:Analyze ...	Kovair Support	Analyze CR	Not Started
22	DE:12:Defect : Res4 - 12-2-2015 12-26-09 PM:Assign Defect	Kovair Support	Assign Defect	Not Started
23	DE:13:Defect : Res5 - 12-2-2015 12-42-44 PM:Assign Defect	Kovair Support	Assign Defect	Not Started
24	DE:14:Defect : Res5 - 12-2-2015 12-45-43 PM:Assign Defect	Kovair Support	Assign Defect	Not Started
25	DE:15:Defect : ITM_Test1 - Run On - 11/26/2015 18:52:00:Assign Defect	Kovair Support	Assign Defect	Not Started

Figure 4: My Task page showing 'Open Tasks' across all Workspaces

From this list page the user can navigate to the detail page of the task where detailed level information of the task as well as the parent requirement can be made available. Kovair also provides access based flexibility of viewing and modifying the details of the parent requirement.

Collaboration with Process Automation

Kovair's built-in Process Engine helps to design workflows (processes) for managing different artifacts (Requirement, Design, Use Case, Test Case, Issue) of Requirement Management, and automate the processes. Automation of Requirement Management process eliminates manual intervention in allocating tasks to different roles, and therefore reduces the chance of human errors and follows the same methods consistently for all Requirements. Top level collaboration among different roles working on different artifacts, can be established via cross-process synchronization.

In the Requirement Management process, certain activities (e.g., Requirement Analysis, Requirement Review, Requirement Approval, and Requirement Ranking) are better known as 'collaborative activities'. In these activities, multiple people belong to same role (say, Analysts, Review Board, Approval Committee, Architects) participate and work together on same Requirement. For example, a group of Architects can work together and provide their individual feedback on the feasibility of each requirement. Also, a group of Analysts can work together and individually rank each requirement based on certain common parameters.

The collaborative activities, as explained in the earlier paragraph, can be implemented in Kovair application by designing and enforcing a visual workflow process using a drag and drop Microsoft Visio like visual designer without writing a single line of code. Process-based collaborative activities of Requirement Management can be configured via Kovair's user-friendly process designer.

The process designer of Kovair application is capable of supporting workflow/process with sequential activities as well as concurrent activities. Moreover, if there exists separate processes for multiple artifacts (like – one process for managing Requirements and another one for managing

Design Elements), then cross-process synchronization can be established using process designer to ensure related items (Requirements and the linked Design Elements) in sync throughout the development lifecycle. By doing this, ultimately the collaboration can be established between a set of users working on Requirements, and another set of users working on related Design Elements.

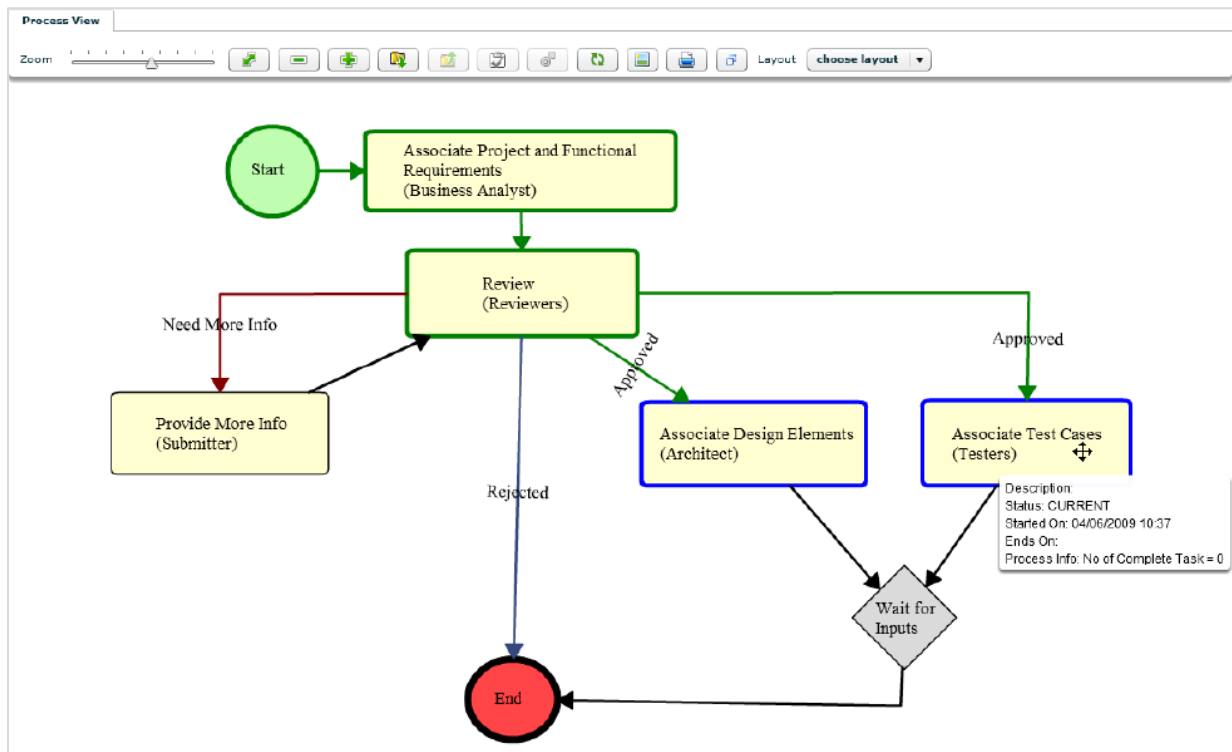


Figure 5: Process View

Collaboration with Customized Workspace

A successful Requirements Management team includes stakeholders of various disciplines and groups. This helps in getting inputs from various perspectives early in the project lifecycle and increases the probability of a project's success. However, with the involvement of various groups of people, the challenge is to present the individual and a set of Requirements in such a way so that only the information relevant for a user is visible, hiding all other complexity. By presenting the same information to the diverse users groups like business analysts, project managers, developers, testers, customer representatives either overloads the user with unnecessary information or cripples the user with lack of information. Single generic interface for various groups of users is often an impediment to successful collaborative Requirements Management. Kovair's Requirements Management with customizable and multiple visual interfaces promotes collaboration at various levels.

Customizable Interface

Kovair allows the entry Forms of the different entities to be completely customized. Administrators of the application can define the sections or layouts of the forms; including the grouping of fields in various sections, the placement of fields within each section and the Labels for each field. The customization is easy to perform through the graphical form builder.

In Custom Forms any field can be made Mandatory or Read-only. For a single or multiple section fields the lookup values may be filtered to show only certain values. There can be multiple Custom Forms of the same type, each assigned to different groups of users. E.g. to enter and edit a Business Requirement the users in the Customer Group may use a simpler form than the Project Manager Group users.

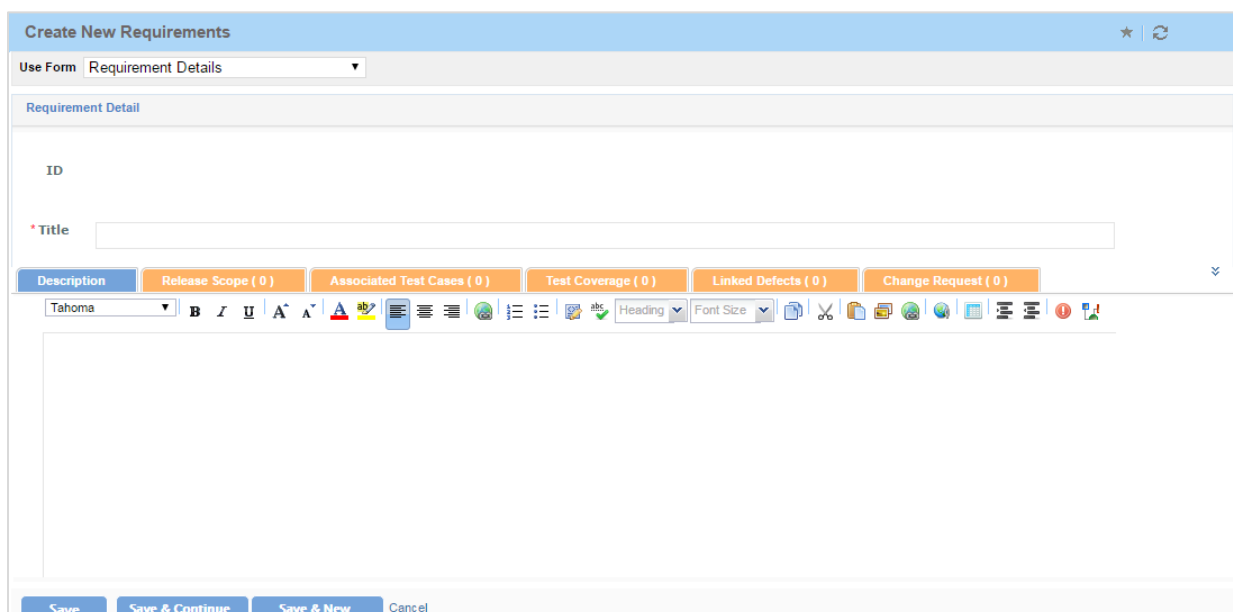


Figure 6: Custom Form to collect Requirement Details

Document View

Requirements are mostly gathered in documents with formatted texts and images. Kovair's built-in Document View is an advantage for the stakeholders who are familiar with document-based Requirement.

The Document View of Kovair application gives the same flavor to those users so that they feel as if they are working in their preferred environment. The Document view lists the requirements with their descriptions (formatted texts and images) as it is found in a normal Word document. A unique feature about this View is that it allows the users to do inplace edits of the descriptions right in the view itself. Often for the sake of various process activities of Requirement Management, the stakeholders (Analyst, Designer, or Project Manager) are forced to manage Requirements in several Word documents. Managing wide range of documents with various versions is quite cumbersome. Instead, the documented Requirements can be managed with ease via a single Document View, and the records can be retrieved by filtering them based on types of Requirements (say, System Requirement, Marketing Requirement, and Customer Requirement).

Business Requirement + Create Business Requirement

View: Document View Filter: All Customer Care Requirem... Search: Search by Text

4.2.3 The Resource should have the following properties:

Name	type	size	tooltip	comment
REST endpoint	Alpha	260	The full REST URL like: http://myHost/service/v4/rest.php	Should support logical names
Send For Review	Alpha	100	The user name for logging on to the SugarCRM System	Should support logical names
Password	Alpha	100	The password for logging on to the SugarCRM System	Password field **
			The metadata and login caching levels:	Should support logical names
Caching level	Numeric	1	None - No caching	Values should be 1.None
			Context - Login and metadata is cached throughout the context	2.Context
			Global - Login and metadata is cached for all contexts	3.Global (default)

4.3.2 The Service should have the following properties:

Name	type	size	tooltip	comment
SugarCRM Resource	Alpha	260	The SugarCRM resource	A combo holding the available SugarCRM resources

Page 1 of 1

Figure 7: Document view of Requirements

Traceability View

Traceability is a technique to trace Entity items, according to the relationships with the items of the same or different entities, and to manage dependent items for impact analysis. Traceability relationships allow users to track linked items of different Workspace Entity. For example, Test Cases are derived from Requirements, and Issues are linked against Test Cases. So, relational dependencies exist among cross entity items. Kovair allows users to create 1 Way / 2 Way relations between the entities defined in the workspace. Any impact due to traceability can send notifications to the appropriate people.

Using the built in Traceability View a user can get to see the entire chain of linked entity items of a workspace. The advantages of such a Traceability View are as follows:

- ❖ **Consolidated Visibility:** Linked items are displayed in a hierarchical tree structure – grouped by entity
- ❖ **Complete Traceability:** Chain of linked items for backward and forward traceability
- ❖ **Wider Coverage:** Hierarchical tree structure is available
- ❖ **Optimum Effort:** Easy to track related items, and analyze the impacts on dependent items

The following screenshot shows a Traceability View that depicts the following traceability relation hierarchy: Project → Customer Requirement → Functional Requirement → Test Case → Issue.

ID	Title	Priority	Review Statistics	Submitter	Submission Date				
48	Updating Profile Info	!	Approved - 2 (100.00%)	Sam Manager	12/02/2013 03:36				
Use Case(Business Requirement to Use Case)									
ID	Title	Submitter	Submit Date						
2	Use Case for Managing User Profile	Sam Manager	12/26/2013 14:30						
Functional Requirement(Use Case to Functional Requirement)									
ID	Title	Reviewer	Submitter	Submit Date					
16	Data providers should be able to return to the web	Tony Reviewer,Sar	Sam Manaj	12/24/2013 15:09					
Test Case(Functional Requirement to Test Case)									
ID	Title	Executed	Executed O	Execution S	Test Case Coverage				
23	TC for checking specific Functionalities pertaining	Sam Manaj	12/11/2013	Failed					
22	TC for Designing of Home Page	Sam Manaj	12/12/2013	Failed	Failed - 1 (100.00%)				
Test Run(Test Run to Test Case)									
ID	Title	Executing Test C	Executed	Executed O	Test Run Covera	Run Exec St	Hidden Execution	Passed	
35	TC for Designing of Home Page - (Test Case) - Run TC for Designing of	Sam Manaj	12/12/2013	Failed - 1 (50.00%)	Failed	Failed	Failed	1	
Defect(Test Run to Defect)									
ID	Title	Detected	Detected On	Priority					
31	Defect created due to the failure of TC for Design	Susan Tes	12/10/2013 03:32	!					
12	Test Case for assignment of efficiency factor	Sam Manaj	12/12/2013	Failed	Failed - 3 (100.00%)				

Figure 8: Traceability View

Visual Interfaces

For some of the Kovair functionality a visual interface is provided for an easy and intuitive interaction with the tool. For some of these visual interfaces there are textual alternatives, but the visual interface gives a perspective and often some unique functionality which the more traditional textual interfaces lack. With diverse collaborative groups, a visual interface in addition to textual interfaces increases user participations and understanding.

Version Diagram

By means of the Version Diagram, Kovair Global Lifecycle provides a visual representation of the different branching and versioning that a requirement has gone through. Not only does it give a better visibility to the users but it also allows users to drill down from each of the version nodes to view the details. From the Version diagram itself, users can do a number of operations like comparing with the previous version or with any other versions, merging one version with another and also it allows users to branch from an existing version.

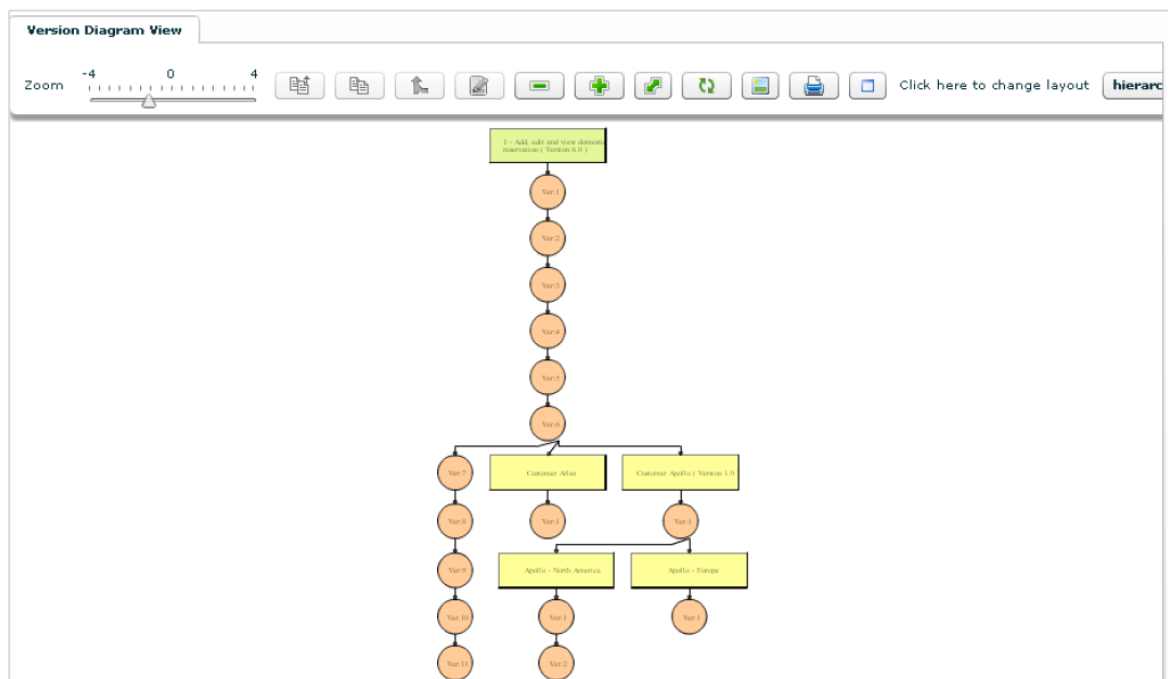


Figure 9: Version Diagram of a Requirement

Relation Diagram

Relation diagram provides a visual representation of the complete Traceability Relationships of one requirement with all other entity items. The red link connecting one item with another denotes that the relation has been impacted because of changes in the upstream item. Right clicking on a link allows users to clear any existing Impacts between two entity items. Using the drag drop functionality from the diagram itself, users can create new Traceability relationships as well as delete

any existing relationships. Additionally users can right click on an entity item icon from the diagram to open the record in the View Mode. The designer allows users to do a number of operations like expanding all the underlying relations, zooming the diagram, etc.

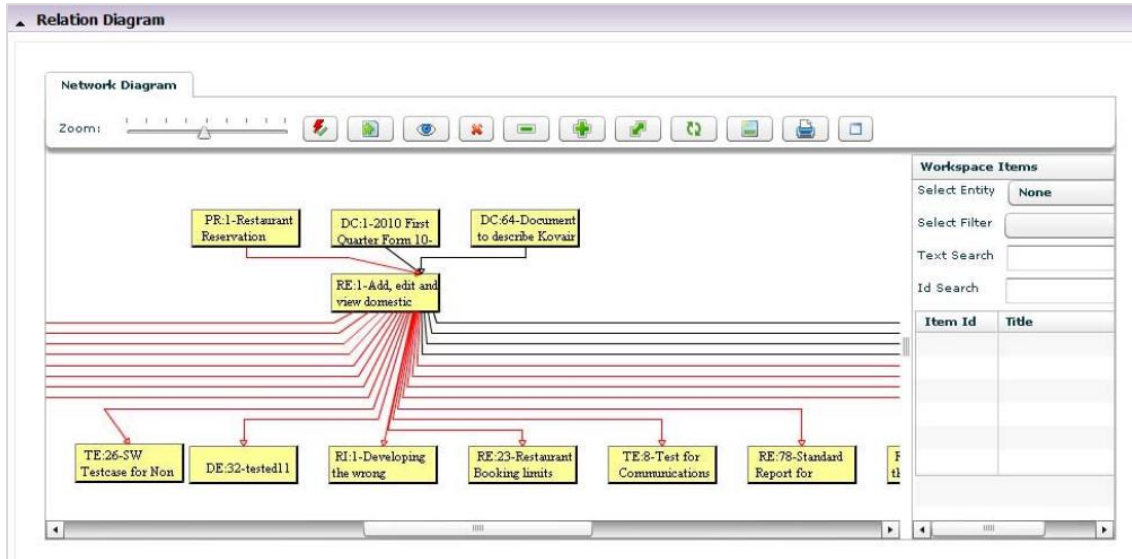


Figure 10: Relation Diagram of a Requirement

Process Diagram

The process diagram shows the real time status of a Requirement as it is flowing through a workflow process. It gives a 360 degree view of the process paths that has been traversed from its initiation including the activities completed, the start date, the finish date, the values set at each of the activities. The users can directly work on their Tasks from the Process diagram itself.

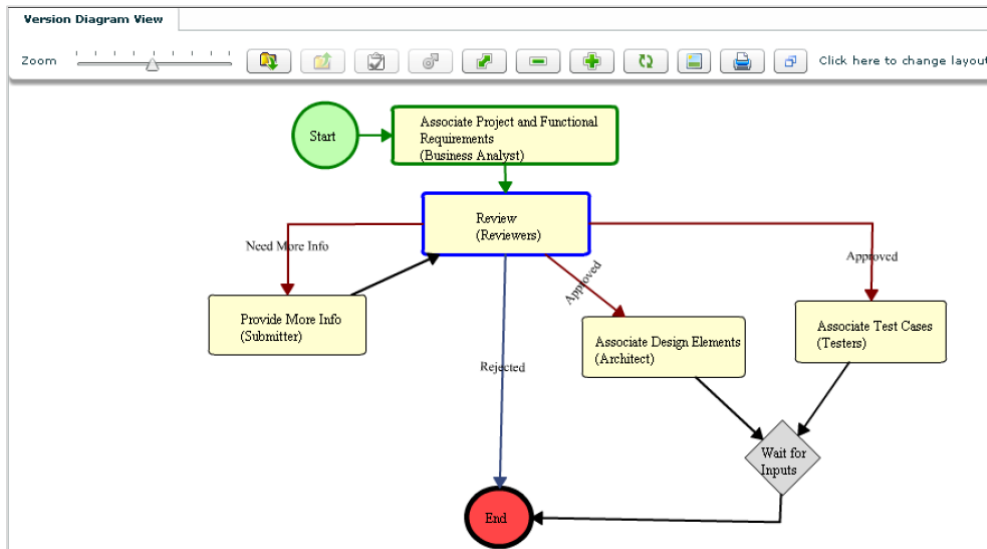


Figure 11: Process Diagram of a Requirement

Reusing Requirements in Kovair

Requirements reusability allows users to use well defined, reviewed and approved Requirements from one scenario to another. The scenarios may vary in terms of different projects, different customers, different products or even different releases of the same product. Kovair offers a number of tools to manage the reusability. This includes:

- ❖ Cloning of one or more Requirements
- ❖ Reusing Requirements across various Organizational units like Projects (or Products or Releases...) for Views and Traceability

Reusing by Requirements Cloning

The clone operation allows users to create copy of one or more Requirements. While creating these copies users have some flexibility in defining the type of copy it will make. For example:

- ❖ Only the record (i.e., a Requirement). In this case, if a Requirement has relational linkage with Test Cases and Use Cases, then for the cloned item those linkages will not be established. The new Requirement will have a new unique Id completely unrelated to the source Requirement.
- ❖ The record (i.e., Requirement) with traceability linkages. In this case if a Requirement has relational linkage with Test Cases and Use Cases, then for the cloned item those linkages will automatically get established. The new Requirement will have a new unique Id completely unrelated to the source Requirement.
- ❖ The record (i.e., Requirement) and related items. In this case if a Requirement has relational linkage with Test Cases and Use Cases, then the related items will be cloned along with the Requirement. The new items will have a new unique Ids completely unrelated to the source items.

Optionally the cloned item can be automatically traced to the source item to keep a historical context of its origin.

In addition to the above control over cloning the related items users can also control how the new cloned Requirement will be related to the source item in terms of versioning. By creating a 'Branch' while cloning, the cloned item shares the same Id as the source item but with a unique Branch identifier. This allows a cloned item to be viewed as special version (Branched) of the same Requirement. The typical example is when the same Requirement is used for different customers

with slight changes. This can be achieved by creating various branches from the same root Requirement and Branches are identified by the Customer names. The following diagram shows that a Requirement at its' Ver. 6 branched out to customers 'Atlas' and 'Apollo' who want the same Requirement with slight variations. In addition Apollo's North American and European divisions want their own versions of the same Requirement. Each branch can be managed independently with their own version controls. In the future, branches can be merged too. For example if customer Apollo decides that all divisions should use the same version then the North America and Europe branches can be merged to a single Apollo branch.

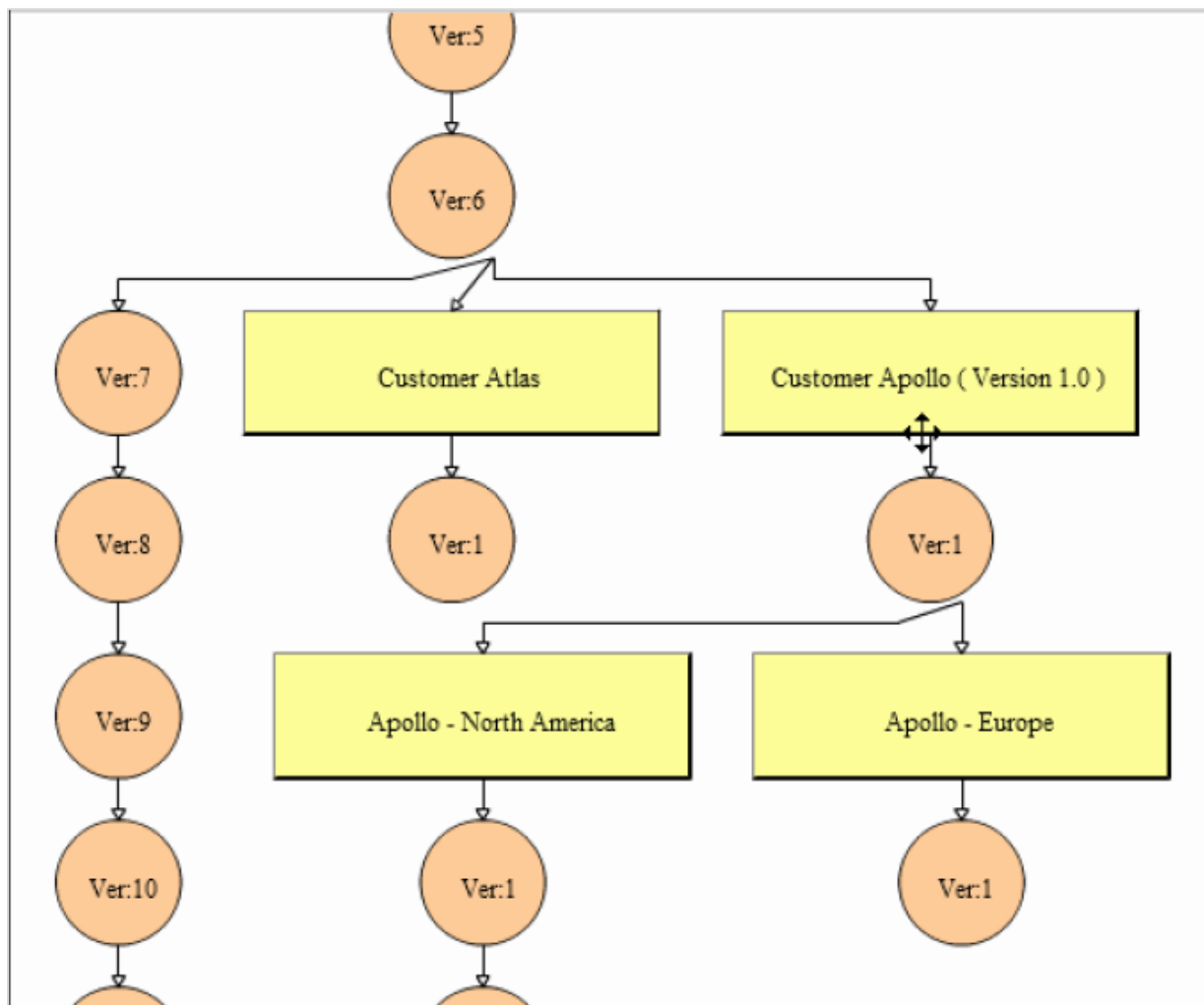


Figure 12: Reusing cloned Requirement in different Branches

Reusing Requirements with Baselines

With respect to the Requirements Management scenario, versioning of Requirements is a very well-known practice. Conceptually speaking, though the Baseline functionality in Kovair is more or less same as requirement versioning yet, it has a much broader spectrum.

Baseline drawn on a particular date captures a snapshot of included Requirements, Use Cases, and Test Cases and other artifacts. During the course of time, even though any of these items get

changed, the baseline would still hold the exact state of the item as it was on the date when the baseline was drawn. In context of Requirement Management, the milestones can be set by creating Baselines on regular interval. The reason being, it archives the history of Requirements so that you can refer to them and compare with their current state on a later date. For instance 6 months down the line, if the management wishes to view the contents of the set of Requirements as it was on the Project kick off date, they can refer to the Baseline drawn on that kick off date. Kovair's Baseline is very flexible since this kind of report can easily be generated as of any arbitrary point in time to show the status of an ongoing project.

Kovair also provides the functionality to compare two baselines drawn on two different dates so that the management team gets an insight of all the changes occurred in the Project between these two dates.

Reusing Requirements across different Organizational Units

Unlike cloning, sometimes it is required to refer to Requirements from different organizational units (e.g. Projects, Products, Divisions or Releases of the same Product) especially in terms of Traceability relation. Kovair allows managing Requirements for various organizational units within a single Workspace. For example a single Workspace can be used for managing Requirements of multiple Projects, Products, Divisions or Releases of the same Product. By creating Access Groups users can be limited to create, view or edit Requirements of a particular organizational unit. Users who have access to multiple organizational units, can view Requirements from multiple units in a single view or report. They can also create Traceability relations between Requirements from different organizational units.

Conclusion

In this paper, we have discussed three approaches to Integrated ALM by comparing them for technology, business values and cost. It has been shown that the method of ESB based ALM integration is the most suitable method for implementing Integrated ALM in organizations having or needing multiple vendor tools.

Kovair has the ALM Middleware technology called Omnibus Enterprise Service Bus, which is the leading integration technology in the ALM industry today. For more information about Kovair's Omnibus technology please visit www.kovair.com or contact sales@kovair.com.

Each tool name used in this paper is the registered trademark of the corresponding tool vendor.

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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