SIEMENS
Ingenuity for life

Accelerate collaboration with unified software requirements management

Business best practices

Ever-growing customer expectations for innovation amplify the challenges companies face in today's competitive business environment. While the increased ratio of software in modern products has accelerated innovation, it has also intensified complexity and risk.

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Executive summary

Process and organizational changes alone are no longer sufficient to meet the mandate of improved quality, governance and auditability. Manufacturers must unlock synergies among their disparate teams through unified yet flexible tools that bridge different work environments.

Development environments to synchronize team efforts have proliferated. But most of them are cobbled together, posing a wide range of disadvantages:

- Difficulty linking and tracing artifacts across differently structured repositories
- Challenges in re-using artifacts across repositories, curtailing sharing across projects and teams
- Problems of low visibility into project status, impact of changes and release predictability
- Lack of a cohesive feedback loop that brings important context to every stakeholder

On the other hand, Polarion™ ALM, Siemens PLM Software for application lifecycle management, empowers development teams with a purpose-built solution on top of one centralized repository. Unified data structures and business logic deliver benefits that aren't possible with solutions that are integrated after the fact.

Leveraging Polarion ALM flexibility, customers can choose from different configurations to provide all collaborators with the level of information and functionality they need, while keeping the total cost of ownership (TCO) the lowest in the industry.

In this white paper, we discuss industry best practices of Siemens PLM Software customers and the resulting business value they derive from using Polarion Requirements™ to unlock synergies across disparate software development teams and empower all stakeholders with the capabilities and information they need to accelerate collaboration.

Requirements management

Re-use and branch management

Collaboration Traceability Workflow

Change and configuration management

Audits and metrics, reports

The dilemma of software requirements documentation

Effective software requirements analysts must be good translators. They must be able to speak the language of the business, effectively interpret it for the analytical minds of the technical implementers and find the right vehicles to convey the information.

Software requirements typically encompass varying pieces of content, including:

- Paragraphs to provide overviews and explain details
- Lists and tables to detail structured data and rules
- Images and models to illustrate requirements
- Flow charts to describe a series of events

Because no document format can adequately communicate all this information well, analysts tend to use a mix of tools readily available to them, including Microsoft® Visio® and Excel®, before combining everything in Word. But that can be confusing for the different audiences, with managers interested in business goals, while testers need to focus on specific tasks.

Bring collaborators online with "easy-as-Word" functionality

Despite all the downsides, however, document-oriented domain experts including business and requirements analysts love the formatting functionality of the Microsoft Office® suite. This is one reason why most software requirements are still authored in Word.

Siemens PLM software's unique architecture enables features that most people would never expect in a browser-based requirements management solution. Siemens PLM software's Polarion LiveDoc™ documents are a great example.

LiveDoc online functionality looks and edits like documents in Microsoft Word or Google Drive, but can do so much more. Siemens PLM developed the functionality to solve the dilemma of authoring requirements in Word. A special focus was placed on providing granular traceability, which is the biggest reason why Office documents are not well suited for lifecycle management. Polarion LiveDocs are a Siemens PLM Software first, intended to bring those that author and manage requirements online, and to deliver the capabilities they prefer with none of the distractions of bloated desktop tools.
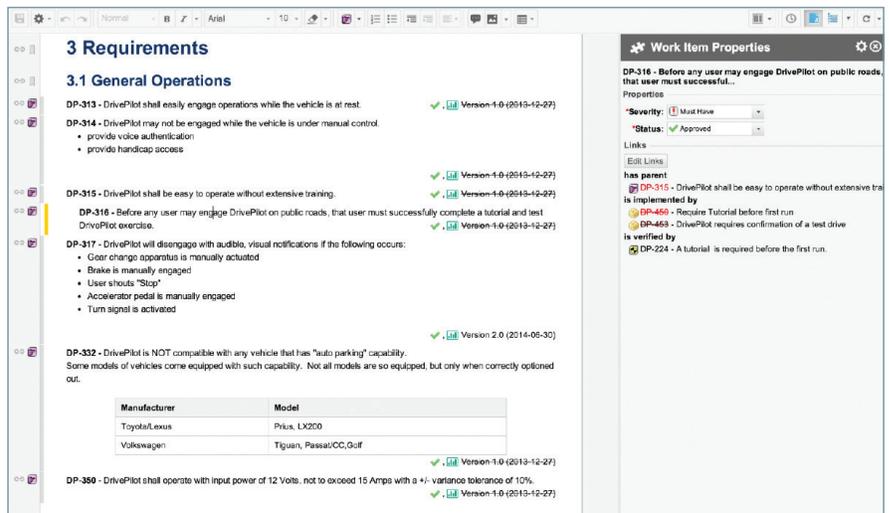
Provide context to drive business value

Unprecedented synergies can be unlocked when teams can work more collaboratively online, while domain experts remain in their familiar work environments and if all artifacts are linked multi-directionally and stored in one central location. Teams are freed up to focus on driving cutting-edge functionality instead of getting preoccupied with tools that are hard to use and synchronize.

At the heart of this success is the Polarion Requirements always-up-to-date online environment with intuitive requirements authoring, coupled with automated workflow and sophisticated review functionality. Wikis, subscriptions, live dashboards, change alerts and access-controlled threaded commenting further enhance the knowledge transfer.
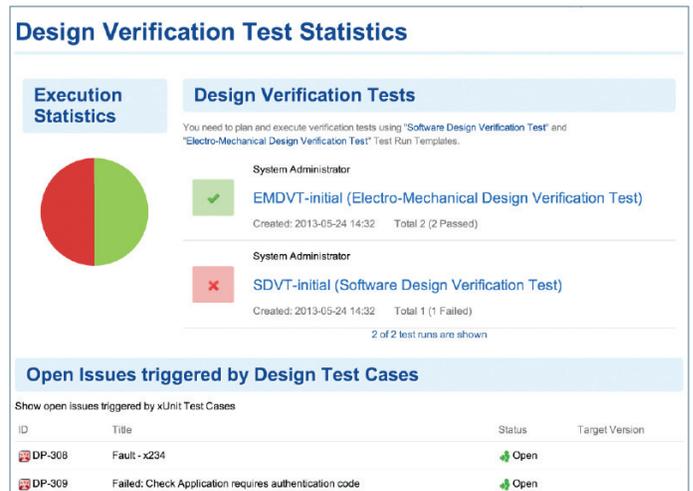
"Polarion Requirements drastically improved the collaboration of stakeholders by tearing down the walls between organizational units and encouraging them to participate in a comprehensive product development approach."

Jörn Tiedjen
LMT Lammers Medical Technology

Accelerate collaboration with real-time access to content

In the dynamic, distributed world of modern application development that Siemens PLM customers navigate every day, real-time communication is as essential as context. Decisions must be made as quickly as new information arrives, across disparate collaborators. All of this is feasible in Siemens PLM software's unified online collaboration environment for application lifecycle management.

Documents created in Microsoft Word or Excel can be added to the lifecycle by importing them with the import wizard and converting them into fully functioning LiveDocs. Online documents in turn can be exported while maintaining their familiar functionality via Polarion Requirements RoundTrip™ for Word and Excel. Changes made outside of the system are imported back seamlessly while keeping the original formatting and traceability.

Consequently, companies that use Polarion Requirements are no longer forced to rely on meetings, sending emails, or circulating formal documents to make decisions, even with their partners and other external collaborators.
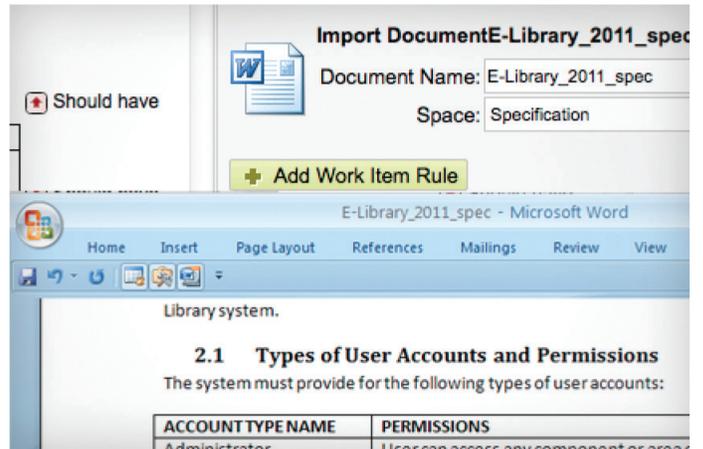
Tie in domain experts who need the tools of their trade

Customers can integrate best-of-breed applications with full traceability, with Polarion ALM serving as the single-source repository for all artifacts to further improve collaboration.

One of the largest banks in Switzerland, for example, was looking for a modern solution that would enable data exchange and synchronization between different tools. Polarion Requirements was chosen by the engineering community as the "best-of-breed" tool for software requirements management to complement the tool chain.

The Polarion ALM native integration with MATLAB® enables customers to add Simulink® Model-Based Design workflows as an integral part of the application lifecycle. Bi-directional traceability facilitates navigation from Simulink model elements to associated work items and vice versa. Versioning and audit trails further aid collaborative design and requirements reviews.

Another native integration is available for the Requirements Interchange Format (ReqIF) to support lossless exchange of requirements and associated metadata between software tools across complex supply chains.The Object Management Group's (OMG's) standard for requirements exchange is a widely used XML file format and workflow for lossless transmission between partners.

"Polarion Requirements was selected as the best Requirements Management tool to complement our best-of-breed tool chain. It helps to improve collaboration and provides all the transparency and traceability needed in a solution delivery process."

Lead Requirements Engineer

To complete the picture, connectors for popular third-party tools such as HP® Quality Center® and Atlassian® Jira® are available, and so is an open and fully documented Java API. As a result, a strong community of more than 100,000 members has formed and created extensions, integrations and customizations. All of them are made available for Siemens PLM software's Polarion users via an Extension Portal.
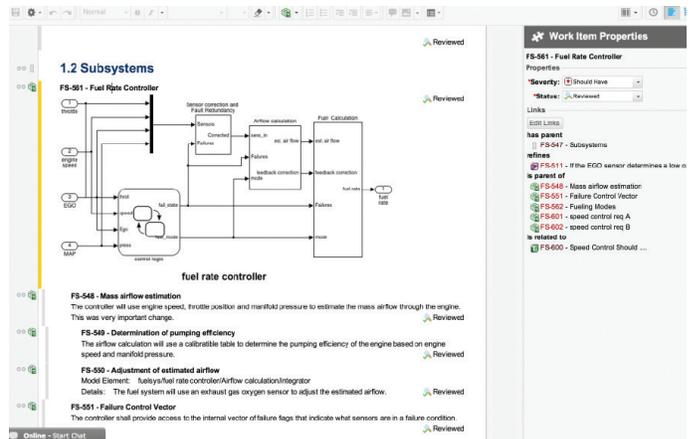
"The Polarion products' recent integrations with MATLAB® Simulink®, Klocwork and others show a real deep understanding for their target markets."

Michael Azoff
Principal Analyst
OVUM

Re-use with end-to-end traceability

To maintain the fast pace, globally distributed teams need immediate access to previous work products and full transparency across overlapping initiatives. When all artifacts are linked and stored in one central location, comprehensive traceability from business requirement, to test case, to defect enables re-use of previous work product.

The Polarion Live-Branch™ capability supports the granular management of requirements variants. Customers appreciate the ability to propagate granular changes instantly or on-demand through all branches, because it protects accuracy and full traceability.

One of Siemens PLM Software's customers, Spansion, formerly worked with Microsoft Excel and Word, and had two processes for each task, which was time-consuming and error-prone. Now the company uses the unified Polarion product platform for software requirements management, change management and test case management and enjoys an 80 percent time reduction on traceability management while proving compliance with ISO 26262/IEC 61508 industry standards.

Best-practice project templates are available to get new customers started quickly. They include embedded knowledge and facilitate full traceability for common processes including Scrum, Waterfall and others. Baselining and versioning comparisons support programmatic re-use and reveal how decisions were made. Furthermore, secure audit trails for all development lifecycle artifacts are created automatically while people perform their tasks, making audit headaches a thing of the past.

"The Polarion product platform's designed-in traceability support saves significant time. Before, the company invested 20 to 25 percent of project time just managing the process with Excel and Word. With Polarion Requirements, the traceability is achieved by pressing a button and the time invested is reduced to five to 10 percent."

Uli Markert
Supervisor Software Services
Spansion

Deliver release predictability and satisfy regulators

Leveraging the power of Siemens PLM Software's Polarion products, customers use impact analysis to decide which project artifacts need to be checked, changed or added, and employ suspect management to assist in propagating changes. Linking change requests with their related requirements also helps prove compliance.

Because every artifact change in the Polarion product is tracked and reported using the underlying configuration management system, customers automatically gain a complete audit trail of who did what, when and why, making it impossible to change anything without leaving a trace.

Taking a step beyond the wide range of real-time reports available to provide insight into the current state of projects and increase release predictability, teams can also browse, search and report on any historical baseline state via the Polarion TimeMachine™ capability.

"Visual Diff" functionality is available to easily detect the changes between different states, and customers report that teams that take advantage of change management and impact analysis are much more successful.
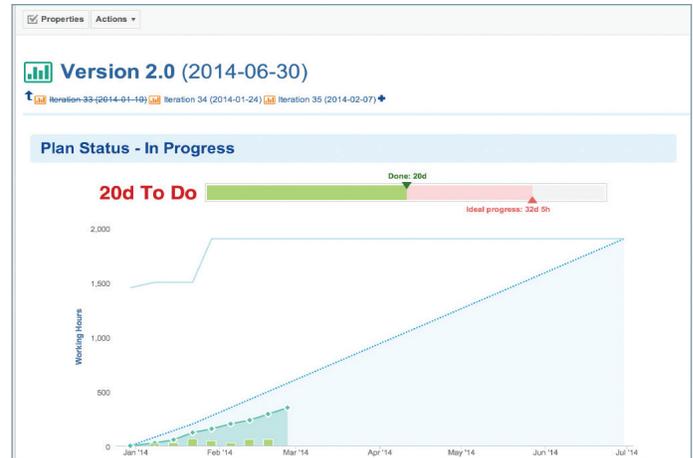
"Polarion Requirements moved our development unit to a new level. It enables us to fulfill all of our regulatory and non-regulatory requirements. It provides a platform to collaborate with all our stakeholders in a very efficient and transparent way."

Lars Wischnewki
Innomedic

Reduce time-to-market while cutting total cost of ownership

A unified approach to requirements management ensures that all software development processes and engineering artifacts are connected, and so are the teams that originate, manage and review them. Streamlined workflows and engineering processes have proven to further productivity, and in turn drive more innovative products to market faster at a lower cost. A unified solution in which all parts of the application are synchronized is a powerful concept that many enterprise vendors are still trying to achieve. There is a big difference between "integrated" and "unified."

With Siemens PLM Software's Polarion products, customers know that they don't waste tight budgets on costly point solutions and consultants to make them work together. They get one unified, collaborative, browser-based platform that can be implemented in weeks, not months. Fully integrated team collaboration capabilities help them achieve compliance while reducing total cost of ownership (TCO) every day.

"I have worked in automotive electronic development for more than 20 years. With Polarion, it is the first time that the entire spectrum of development activities is covered by one tool. This improves the product quality and saves time and money."

Rainer Kirchner
ASK Industries

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About Siemens PLM Software
Siemens PLM Software, a business unit of the Siemens Digital Factory Division, is a leading global provider of product lifecycle management (PLM) and manufacturing operations management (MOM) software, systems and services with over 15 million licensed seats and more than 140,000 customers worldwide. Headquartered in Plano, Texas, Siemens PLM Software works collaboratively with its customers to provide industry software solutions that help companies everywhere achieve a sustainable competitive advantage by making real the innovations that matter. For more information on Siemens PLM Software products and services, visit www.siemens.com/plm.

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