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## Polarion for Requirements engineers

### Polarion and requirements management

Defining and managing requirements with Polarion provides significant advantages over legacy approaches.

- Best of both worlds support. People who are accustomed to a document-centric approach can continue to work with documents, while those who need data and tools to manage their work can take that approach. No one has to give up much in order to work effectively and efficiently in their role.
- Integration of requirements into the overall process. Too often, requirements have been isolated in office documents that are decoupled from the processes of implementation and testing. With Polarion, requirements are an integral component of the overall development process from start to finish.
- More efficient and timely collaboration. All stakeholders can have access to the same version of requirements at all times. Changes are reflected in real time — no delays waiting for emailed copies. The process is integrated and automated so that no steps are missed or skipped due to miscommunication. Stakeholders can see the current status, and they are notified automatically as changes take place and requirements move forward in the process.
- Easier and more robust traceability. Rigorous and thorough traceability has been tough to do with legacy document-based approaches. Even dedicated point solutions tended to make traceability an afterthought, and not very visible. Polarion makes deep and broad traceability easy to implement, and totally transparent.

**Note**

All Polarion licenses support basic requirements management. You can have a **Work Item** type named **Requirement** which can be linked to other Work Items representing things such as tasks. However, advanced requirements management features are available only with **ALM** and **Requirements** licenses.

## Approaches to requirements

Traditionally there have been two main approaches to requirements management that have been more or less mutually exclusive:

- **Document-centric approach** — Requirements are defined in office applications like Microsoft Office Word or Excel, and engineering and QA work from copies of the requirements, which they hope are the right and most up to date copies.
- **Tool-centric approach** — Requirements are defined using data-driven software tools such as DOORS, Requisite Pro, and others. Engineering and QA can manage their processes more efficiently, but the business and domain experts who author requirements often resist the adoption. Extensive training becomes necessary for these users when the tools approach is mandated.

Polarion supports both approaches, and even enables a hybrid approach where some requirements and other artifacts are document-based while others are tool-based. Document-centric workers can stay within the familiar document paradigm using **LiveDocs** to author specifications, and marking parts of the content as requirement artifacts that they and others can track, manage, and trace throughout the life cycle.

**Tip**

Artifacts that represent requirements, test cases, tasks, and others are collectively called **Work Items** in Polarion.

**LiveDoc** are often referred to as **Documents** in help text and the Polarion user interface.

People such as developers and QA testers who are accustomed to using data-driven tools can keep within that paradigm, using integrated tracker, workflow, and project planning and management features to work efficiently — even when artifacts like requirements live in Documents.

Polarion also makes possible a unique hybrid approach. For example, requirements, test cases, or other artifacts written up in Documents automatically create data in the background, which is accessible in tools and reports. Stakeholders can access their preferred presentation — Document or tools. It's quite easy to switch between these presentations.

## Features to explore

- Definitely have a look at **Documents**. Within that topic, learn about the **Word Import feature** that lets you leverage existing assets authored in Microsoft Word, and the **Word Round-trip feature** that

enables you to collaborate with external people who use Word, or work on your Documents offline and synchronize your changes with the portal.

## Requirements projects

Your requirements exist in the context of a **Polarion project**. Polarion provides a **Project Template** specifically for requirements projects. The template contains preconfigured **Work Item** types, link roles, and workflow that are suitable for many requirements projects. We recommend that you create a test project in a sandbox area of your system, and explore the requirements project template to determine whether it meets your needs, or if you will need to **customize** it.

When setting up any project, there are a number of things to consider and plan for. Before starting a new project for requirements, we recommend the topic **Planning for a Project**.

### Integrating with development and QA

Whether written up in Documents, or authored with integrated tools, Requirements in Polarion are a type of **Work Item**, that is, an artifact that is tracked and managed through a process. You can customize your project configuration to support whatever semantics you use. For example, if your organization uses the Scrum methodology, you might name the **Work Item** type that represents requirements as **User Story**. Regardless of semantics, requirements are tracked and managed the same as any other artifact — development tasks and change requests, or QA test cases and defect reports. Artifacts created by other teams can be linked to requirements to create traceability. For example, QA engineers can link **Work Items** representing test cases to **Work Items** of the Requirement type that the test cases verify. Engineering can link **Work Items** representing tasks and change requests to the requirement they implement. **Work Items** representing defects found by QA can be linked to an implementation **Work Item** that fixes them, and easily traced back to that item's requirement or requirements.

When preparing to use Polarion for requirements, you need to think about how the requirement **Work Items** you create will be linked to others like tasks and test cases. For example, you will need to decide what processes will be managed in a given project. Will requirements have a separate project, or will they be part of the same project used to manage implementation and testing? Maybe Requirements and QA will have one project, and Engineering a separate project. All approaches are possible. Linking for traceability across projects is a little more involved than when all artifacts are managed in the same project, but it is still quite feasible. In any case, your requirements team will need to coordinate with these other teams to decide the best approach to projects.


## Elicitation phase


During the requirements elicitation phase there is typically a need for communication and collaboration, and for tracking the results of these, to finally come up with defined requirements. The following features can be used during the elicitation phase while you are still gathering input to process into actual requirements:

- **Documents** — Create Documents in the portal, or import Microsoft Word documents. All stakeholders with access to your project can access Documents and collaborate on the content, with changes showing up in real time. For information, see [Documents and Pages](#), and the topic on [importing from Microsoft Word](#).
- **Word Round-trip** — If you have stakeholders who do not have access to Documents on your Polarion portal, you can use the [Word Round-trip](#) feature to share Documents with them. They can comment and/or modify content, depending on the permissions granted when exporting. Changes can then be merged into the source Document in Polarion.
- **Pages** — You may find **Info** type **Pages** useful for collecting and collaboration on information and content that will eventually become requirements that you copy to [LiveDoc Documents](#), or that you create in the integrated [tracker](#). For more information, see [Working With Pages](#).

## Definition phase

Polarion has several features that you may find useful during the phase when requirements engineers are actually defining requirements, prior to their review and approval/acceptance.

- **Documents** — If you prefer a document-centric approach to Requirements, then use Documents to create specification documents and requirement artifacts for tracking and management.
- **Integrated tracker** — If you prefer a tool-centric approach you can create requirements artifacts directly in the integrated tracker: **Navigation** ➔  **Work Items**. Your project should be configured with the Requirement Work Item type, or whatever type corresponds to a requirement in your process and semantics. If you take this approach, we recommend you read the topic [Manage Polarion Work Items](#).
- **Auto-assignment** — This feature can save a great deal of work over the life of the project. You can configure Auto-assignment in your projects so that new requirements are automatically assigned to one or more owners. If your process involves parallel work on test cases for verifying requirements, you can configure Auto-assignment for new requirements to include the responsible QA person as an assignee. For information, see [Configure Auto-assignment](#).
- **Linking** — You can begin creating traceability even as you define requirements. For example, if you or your QA team develop test cases in parallel with requirements, test cases can be linked to the requirements they verify. Likewise, if requirements you define involve change requests for your development team, you can create those artifacts and link to them to the appropriate requirements so that you have traceability right from the start.

You can do some linking of requirements within Documents. See [Link a Document's Work Items](#). You can also link Work Items in the tracker (**Navigation** ➔  **Work Items**), in the [Table view](#) or the [Matrix view](#). For more information, see [Linking Work Items](#).

## Approval phase

Polarion makes the process of approving requirements simple and efficient. The following features are the ones to take a closer look at to support this phase:

- **Workflow** — Review and approval is just one or two steps in a larger process. That process is defined in the Project's workflow configuration. Polarion comes with several Project Templates that support requirements elicitation, authoring, and management. These have preconfigured Document types and Document workflows suitable for many requirements projects. If the defaults don't reflect your exact process, Project Templates, and/or individual projects can be customized by administrators to map your process into the workflows of both Documents and Work Items.

When your process is mapped into the project workflow, then people always know the current status of a requirement, and what the next step is. For example, when a requirement is created, workflow might assign it a status of **Draft**, and define the next possible action as **Send to review**. When a user invokes that action, the requirement transitions to a new status — **Under review**, for example. Then, the workflow might present possible next actions such as **Approve** and **Reject**.

Polarion automatically sends notifications to the relevant stakeholders when transitions occur. The workflow defines what happens when any action is invoked. For example, the **Reject** action might set the status back to **Draft**. The change can trigger a notification to the author, the assignee, and others. The **Approve** action could set a new status like **Approved**, also resulting in notifications.

The foregoing is a relatively simple scenario. It is also possible to set up Document-specific workflows that make Document content read-only when the Document has a given status — **In Review** or **Approved**, for example. It is also possible to **configure the workflow** to require an electronic signature by users transitioning a Document from one status to another, and/or to provide an **electronic signature** when approving an entire Document.

- **Auto-assignment** — Again, Auto-assignment comes in handy. For example, you could configure Auto-assignment to reassign requirements to someone when the status changes — to **Approved**, for example. Possible assignees might include a developer in engineering, and/or a tester in QA. Again, appropriate notifications are sent when the status changes, so everyone who must do something with approved requirements automatically knows it's time to move forward.

### Tip

Be sure to have a project administrator look at the **Notifications configuration** to ensure that your scheme of notifications works the way you need it to work and notifications always go to all the right people for every system event, such as the status of a requirement changing.


## Common operations

### Locate requirements

Requirements are defined in the context of a project, so generally the first step in locating requirements is to open the project that contains the requirements you want to work with. For information, see **Access projects**.

In projects, requirements may be defined in the context of **LiveDoc Documents**, or they may be defined directly in the integrated **tracker** (**Navigation** ➔ **Work Items** ➔ **Table**), or a combination of the two approaches may be used. The simplest way to locate the requirements in a project is as follows.

## Procedure

1. In navigation, expand the  **Work Items** topic. The Work Item types currently configured for the current project appear as child nodes.
2. Click **Requirement**. The Table view becomes current in the Work Items page and the table contains all the Requirement type Work Items in the project whether they are defined in a Document or directly in the tracker.

Work Item types are configurable to support the semantics of any process. In the above steps, if you don't see **Requirement** it is because your project has been customized with different types. You would click on whatever type corresponds to requirements in your organization or project. For example, if your process is some variant of the Scrum methodology, you might see **User Story** in Step 2 above rather than **Requirement**.

If a requirement you have located is defined in a LiveDoc Document, and you want to edit or view it there, you can easily open the containing Document. When selected in the top section of the page, the **Edit in Document** button appears in the Viewer/Editor toolbar in the lower part of the Work Items page. Click this button to open the associated Document and go directly to the selected requirement in it.

## Access requirements

Once you know how to **locate requirements** in a project, you will most likely want to access some or all of them. At a minimum, you need the permission to view Work Items for the project containing requirements. If you are unable to access requirements, or perform some operation with them, contact the project leader (usually listed on the project's Home page), or the project administrator to review your user permissions.

### Query for the type of Work Item

In a **LiveDoc Document** that contains requirements, you can use a query to filter the content to show only the requirements. See **Filter Work Items in a Document**.

In any context where the user interface provides the possibility to enter and run a query, you can isolate Work Items corresponding to requirements using the following query:

```
type:requirement
```

Where `requirement` is the ID of the Work Item type corresponding to a requirement in your specific project.

### Tip

Most contexts where you can specify a query provide the **Visual Query Builder** tool, which enables you to construct simple and complex queries without having to know the underlying query language and syntax.

### Legacy tool: Module

Special containers for requirements called **Modules** were provided in Polarion versions prior to version 2011. Modules appear in that and subsequent versions if they existed prior to the upgrade. It is recommended that users convert any existing Modules to the current **LiveDoc Document** format. Contact Polarion Technical Support if you need to convert legacy Modules to LiveDoc Documents.

## Create requirements

### Note





To create new requirements, you must be granted the permissions to view and to create new **Work Items** in the project.

Your approach to creating a new requirement depends on the **approach to requirements** you have decided to use with Polarion.

If you have opted to define requirements using **LiveDocs**, see **Work Items in Documents**. You can automatically create requirement artifacts in Polarion when you import a Microsoft Word document. See **Importing Word Documents**.



You can optionally create requirement artifacts directly in the project's integrated **tracker**. Remember that the **Work Item** type **Requirement** is a default type for some project templates, and that some other type corresponding to requirements may be define in your project configuration.

### Procedure

1. Open the project (see **Access Projects**).
2. In **Navigation**, click  **Work Items** and select the  **Table** view.
3. In the **Table** view's toolbar, click  and choose **Requirement** (or the custom type that corresponds to a requirement in your project). A new **Work Item** is created.
4. In the **Work Item Editor** (lower half of the **Table** view), edit the data fields as needed and click  **Save**.


### Tip

- Enter a **Title** and **Description** for your **Work Item** so that it's readable in all Polarion views.



- See [How Work Item Titles are created and updated](#) to learn how Polarion auto-creates and updates **Titles** if they are not explicitly defined.
- You can change the **Title** and **Description** by opening the **Work Item** in  **Table** or  **Tree** view.

## Modify requirements

How you go about modifying existing requirements depends on how they are stored (in a **LiveDoc** or in the integrated **tracker**), and what exactly you want to modify.

Modifying requirements defined in a **LiveDoc** is very straightforward; simply open the **LiveDoc** and edit it as you would any office document. Requirements created directly in the integrated tracker must be edited using that tool. Generally, the  **Table** view is best for changing text content or data fields.





Depending on your requirements and what fields you want to modify, you can use the following editing options:

- To make essential changes in several fields of a specific **Work Item**, use the **Work Item Editor**.
- To update several queried **Work Items** listed in  **Table** and  **Tree** views, use the **Inline Editing** feature.
- To set the same value for several fields in several **Work Items**, use the **Bulk Edit** feature.

### Modify requirements using the Work Item Editor

To modify requirements using the **Work Item Editor**, do the following:

#### Procedure




1. Locate the item as described in [Locate Requirements](#).
2. Select the desired requirement in the  **Table** view of the  **Work Items** topic.
3. Edit the requirement in the **Work Item Editor**, located at the bottom portion of the  **Table view**. Some data fields can be edited in place, that is, without invoking **Edit** mode on the entire Work Item. To edit the entire requirement, click the **Edit** button in the Work Item Editor toolbar in the  **Table view**.
4. Click **Save**.



## Modify requirements using Inline Editing

To modify requirements using Inline Editing, do the following:




### Procedure

1. Locate the item as described in [Locate Requirements](#).
2. Select the desired requirement in the  **Table** or  **Tree** view of the  **Work Items** table.
3. Click on an item to select it, then click again to edit it inline.
4. Click **Save**.

## Modify requirements using Bulk Edit

To modify requirements using Bulk Edit, do the following:

### Procedure

1. Locate the items as described in [Locate Requirements](#).
2. Select the desired requirements in the  **Table** or  **Road Map** view of the  **Work Items** table.
3. Enter your desired changes in the Work Item Editor at the lower part of the pane.

#### Note

Some fields cannot be edited using **Bulk Edit**. Moreover, you can only modify those fields using Bulk Edit that are available in all of the selected Work Items types.

4. Click **Save**.

## Link requirements

Traceability — from requirements to implementation tasks and source code, to tests, to defects and fixes — is an important issue for many organizations, especially those in industries where rigorous regulatory mandates must be met, and compliance must be verifiable. Polarion makes this kind of deep and broad traceability both easy to achieve, and highly visible. For many projects, the process starts with the requirements.


The key to success is timely linking of requirements to others, and to other artifact types representing such things as QA test cases and defect reports, and engineering tasks and change requests. As a requirements engineer, you will probably be most concerned with linking requirements to other requirements, and possibly to test cases. Other teams may link their artifacts to your requirements as well, depending on your

organization's traceability needs. As with other common operations, your approach to linking depends on your basic approach to requirements: **Document** or **tool-based**. This topic points you to the features you need to link requirements for both approaches.

## Linking in Documents

You can link the Work Items defined in a Document to other items in the same Document, in a different Document, or stored directly in the Tracker. See **Linking a Document's Work Items**.

## Linking in the Work Item Editor

The table view of the  **Work Items** topic, and the same view of a Document, provide an editor for Work Item data that you can use to link a requirement to any Work Item of any type. The link can be to Work Items in your project, or in another project. **Linking to Work Items in a different repository** is also possible, but that is an advanced issue, and is not needed for most requirements engineering projects.

The **Linked Work Items** section of the Work Item Editor provides a graphical interface for linking a selected requirement with another Work Item. A picker dialog box is available with integrated querying, including **graphical query builder**, that you can use to locate the target Work Item for the link.

To familiarize yourself with linking this way, see **Linking Work Items**.

See also: **Linking via the Matrix View**.

## Export requirements

In Polarion, requirements are a type of **Work Item**. Consequently, you can use any of the Work Item export features to export requirements to other formats. For information, see these topics:

- **Export Work Items** (covers all export features).
- **Share Documents using Word Round-trip** (covers Word Round-trip import/export for Documents).
- **Export Documents to ReqIF**.

## Exchange requirements

Polarion supports the exchange or interchange of requirements specifications with external customers or suppliers who use ReqIF and/or RIF technology. You can import ReqIF or RIF files to new or existing Polarion **LiveDoc Documents**. Conversely, you can export **LiveDocs** to new or existing ReqIF or RIF files.

For information, see **Use ReqIF Import/Export**.

## Review and approve requirements


If your job is to review and approve requirements developed and managed in Polarion, you need to know how to **locate** the requirements you need to review, and how to mark them as approved or rejected. There is no universally applicable procedure. What you must do depends on your organization's development process, and how that process is mapped into Polarion's workflow. Assuming that has been done, then you should receive email notifications about requirements that need your attention. This will most likely happen in response to a status change in a requirement type Work Item: from **Draft** to **Awaiting Approval**, for example.

Polarion fully supports a formal review and approval process. Workflow can be customized with the necessary statuses and transition actions, as well as automated assignment of items to those responsible for review and approval. Any type of Work Item, including requirements, can have an approval process built into its type-specific workflow.

For information on how to review and approve/disapprove Work Items, see **Approve or Disapprove Work Items**.

## Advanced topics

### The Traceability Matrix

The  **Matrix** view of Work Items enables you to link multiple Work Items of two different types in a single operation. This approach can be useful when traceability linking needs to be managed centrally rather than relying on individual users to link Work Items as they process them day to day. It can also be useful

for correcting incorrect or inappropriate links. For a brief introduction to the Matrix view, see [Matrix View](#). Linking with the **Matrix** view is a topic for Advanced users. To learn how to use this feature, see [Linking Work Items in the Matrix View](#).



Most people will only need to link individual requirements as they create or process them. To learn about this approach, see the topic [Link Work Items](#).

## Traceability reporting

You can use the **Matrix View** of the Work Items to generate traceability data which can be exported to spreadsheets or printed as hard copy. For example, you can easily create a report that shows which requirements have links to test cases, or the analogous artifact type configured for your project.

The following procedure illustrates how to create a report according to this example.


### Procedure

1. In Navigation, select  **Work Items**, then in the view selector on the Work Items page, select  **Matrix**.
2. In the **Rows** list, select **Work Items**, then use the Visual Query Builder to construct a query that returns the requirements you want to export. For example, the following query returns all resolved requirements:

```
type:requirement AND HAS VALUE:resolution
```

3. In the **Columns** list, select **Work Items**, then use the Visual Query Builder to construct a query that returns the test cases you want to export. For example, the following query returns all resolved test cases:

```
type:testcase AND HAS_VALUE:resolution
```

4. Click **Search**. The matrix shows which requirements are linked to test cases, and just as importantly, which ones are not linked.
5. Click  at the top and choose **Export** if you want to save the report to a Microsoft Office Excel sheet, or **Print** to send the result to a printer.

### Note

If requirements and test cases are maintained in different projects, the queries would need to be run in the scope of a project group, provided that the requirements and test case projects are in the same

project group. If they are in different project groups, then the queries need to be run in the repository scope. In the latter case, you would need to create the necessary queries to retrieve just the items from the projects you want to report.

If there too many items in the result set, system performance would degrade for all users if Polarion tried to render than all in the matrix. In such cases, Polarion displays a message informing you that it cannot display the items, but that you can still export the results.

**Tip**

You might explore the possibility of using **LiveReport Pages** to build traceability reports.

## Polarion for project managers

### Planning to start a Project

#### Overview of Planning to start a Project

The topics here cover information about Polarion features and common tasks that are of interest mostly for project managers. Of course some features and topics may overlap with information for software developers or system administrators. In such cases, this may contain only a cross reference to information elsewhere in the documentation.

When you are planning to manage a project with Polarion, there are quite a number of issues to think about. The prefabricated project templates for the different license types are a good way to get many projects up and running quickly. But other projects may require more thought, planning, and customization. Where do you begin, and what issues should you think about and explore? The topics here cover exactly that. Not every issue or every customization mentioned may apply to your situation, but you can only decide that if you are aware of the possibilities. So let's begin with an overview of the Polarion features and configurations to consider when gearing up for a new Polarion project.

#### First things to look at

Project planning actually starts when you **create a Project** in the Administration interface. At that time you specify the outer parameters of the project: the starting and ending dates. The project ending date is not a fixed, permanent date. You can change it any time as the project progresses, extending the project, or moving the end date up.

#### Working Calendar

Another important system configuration that affects project planning is the Working Calendar. It tracks how much overall working time is available. The Working Calendar defines both working time, and nonworking time such as weekends and holidays. A Polarion administrator should configure the calendar in the global (Repository) scope. The global calendar generally specifies the organization's normal work policy — the days and hours when people work, as well as days off for weekends and holidays. The global