

Implementing Acceptance Criteria with Xray and Jira

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Overview

In Agile Methodologies, Acceptance Criteria (AC) are used to define when a given user story can be "accepted" by some relevant stakeholder.

The criteria that a component or system must satisfy in order to be accepted by a user, customer, or other authorized entity. - ISTQB Glossary

Acceptance Criteria:

- clarify some aspects of the underlying story that are relevant to someone;
- can be checked and validated by testing; they should be clear enough so that clear accept/don't accept decisions can be taken.

But the following question arises: How can we know whether a certain criterion has been checked or validated by testing?

Before diving into it, we need to be aware of typical patterns teams follow for handling AC.



Please note

"Accepting" the story doesn't mean it's bug-free or that acceptance criteria should describe all possible usage scenarios about the story; it's only a way to clarify some usage rules that are important for some stakeholders and that the user story "can work".

A common misconception is on "done" vs "acceptance criteria". Acceptance criteria are user story specific, while the definition of done applies to all product increments/user stories.

Therefore the fact that acceptance criteria have been met, doesn't mean it can be considered as "done" and thus ready to be shipped.

Jira and Acceptance Criteria

Jira doesn't enforce a way of handling AC.

Usually, teams describe AC as a list in the Description field of the related Story.



As a user, I can login the website to perform restricted operations

[Edit](#)
[Comment](#)
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Details

Type:	Story	Status:	OPEN (View Workflow)
Priority:	<input type="radio"/> Trivial	Resolution:	Unresolved
Affects Version/s:	None	Fix Version/s:	None
Component/s:	None		
Labels:	None		
Requirement Status:	UNCOVERED		

Description

As a user, I can login the website to perform restricted operations.

<http://robotwebdemo.herokuapp.com/>

Acceptance Criteria:

- a specific login page must exist for authenticating
- a user profile has a username and password data

Test Coverage

No Tests were found testing the requirement.

[Add Tests](#)



AC can be enumerated using bullets: either numbered bullets or standard ones but with some prefix.

This is an unstructured approach that inhibits full traceability between story<=>AC<=>tests<=>test runs<=>defects.

Some teams may decide to use specific custom fields for this purpose or even to use specific Jira apps/plugins to clearly manage AC. However, these usually don't have unique IDs that can be referred elsewhere.

Xray and Acceptance Criteria

Xray does not provide nor enforce a way of handling AC. But, you can take advantage of some built-in capabilities to have more explicit visibility of it.

While most teams create Tests and associate them to the related requirements/stories (e.g., Story<=>Test(s)), this may not be sufficient if you want to analyze each criterion individually.

If you aim to understand which Tests address a specific acceptance criterion and how it is based on the related testing results, then we need to turn each acceptance criterion into a manageable, identifiable, and coverable entity.

That will allow us to have more detailed traceability, such as **Epic<=>Story/ies<=>Acceptance Criteria<=>Test(s)**, and track the coverage status up to the Acceptance Criteria level.

Having explicit visibility of Acceptance Criteria and tracking their status with Xray

AC implemented as "sub-requirements" in Xray

Xray supports the concept of [requirements and sub-requirements](#).

In this approach, a given story/requirement is decomposed into multiple sub-requirements, which in turn can be covered by tests.

The sub-requirement, in this case, is our acceptance criterion that will be implemented as an issue.

We can define the relation between the Story and related acceptance criteria based on a sub-task or on a specific issue link type, accordingly to what we have defined on [Xray coverage-related settings](#).

Configuring it

- 1. Create an issue type named "Acceptance Criterion" or equivalent. Go to **Jira Settings > Issues > Issue Types**.

Add Issue Type

Name*

Acceptance Criterion

Description

Type

Standard Issue Type

Sub-Task Issue Type

Add

Cancel

- a.
- 2. Add that issue type to the issue type scheme used by your Jira project
- 3. Define in [Xray settings](#), the sub-requirement (e.g. the "Acceptance Criterion" issue) to be handled as a coverable issue (i.e. by adding it to the "Requirement Issue Types" column)

Administration

Search Jira admin

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ATLASSIAN MARKETPLACE

Find new apps

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TEAMWORKX PUSH AND PULL

FAVORITES

Push Service

Dashboard Order

XPORTER

Global Settings

Project Settings

Issue Type Mapping

Requirements and Defects are two concepts commonly related to Tests. A Requirement represents a singular document an error, flaw, failure, or fault in a computer program or system that produces an incorrect or unexpected result, or caus The same issue type can be both a Requirement and a Defect.

Available Issue Types

Test

Test Set

Test Execution

Pre-Condition

Test Plan

Change

Incident

Sub-task

Requirement Issue Types

Epic

Story

New Feature

Improvement

Acceptance Criterion

Defect Issue Types

Bug

Sub-bug

- a.
- 4. Define in [Xray settings](#), the relation between the parent requirement (e.g. the "Story" issue) and the sub-requirement (e.g. the "Acceptance Criterion" issue)
 - a. Note: if you want to define this relation based on a custom issue link type (e.g., you could create a "Satisfy: satisfies/is satisfied by"), then you need to create it first. Sub-tasks and issue links relations are not possible at the same time (as of Xray 6.4).

Sub-Requirements

Sub-Tasks/Links

Use Sub-Task Issues

When this option is enabled, Sub-Requirements are associated with Requirements by Sub-Task Issues. When this option is disabled, Sub-Requirements are associated with Requirements with issue links configured below.

Epic - Story relation as a Requirement

Epic - Story relation as a Requirement

When this option is enabled, the relation Epic - Story is handled as a Requirement - sub-requirement link

Issue Link Type

Satisfy

Select the issue link type for the Requirement <-> Sub-Requirement relation

Direction

is satisfied by -> satisfies

Select the Link Direction for the parent -> child relation of Requirement -> Sub-Requirement

Save

i.

Administration Search Jira admin Back to project: CALC

Applications Projects **Issues** Manage apps User management System Structure Scriptrunner

ISSUE TYPES
Issue types
Issue type schemes
Sub-tasks

BROWSE AND EXPORT
Archived issues

WORKFLOWS
Workflows
Workflow schemes

SCREENS
Screens
Screen schemes
Issue type screen schemes

FIELDS
Custom fields
Field configurations
Field configuration schemes
Custom fields optimizer

PRIORITIES
Priorities
Priority schemes

ISSUE FEATURES
Time tracking

Issue linking

Issue linking is currently ON.
To deactivate issue linking, simply click below.

Deactivate

For the users you wish to be able to link issues, ensure that they have the **Link Issues** permission for that particular project.

Name	Outward Description	Inward Description	Actions
Blocks	blocks	is blocked by	Edit Delete
Cloners	clones	is cloned by	Edit Delete
Defect	created	created by	Edit Delete
Duplicate	duplicates	is duplicated by	Edit Delete
Problem/Incident	causes	is caused by	Edit Delete
Relates	relates to	relates to	Edit Delete
Tests	tests	tested by	Edit Delete

Add New Link Type

Add a new link type

Name (eg "Duplicate")

Outward Link Description (eg "duplicates")

Inward Link Description (eg "is duplicated by")

Add



Please note

In Xray, sub-requirements can be identified and related to parent requirements using:

- a specific, configured, issue link (e.g., you could create a "Satisfy: satisfies/is satisfied by")
- sub-tasks

Using sub-tasks may allow further control over the progress of the parent issue (e.g. the Story), such as giving the ability to restrict closing it or not. However, the usage of "sub-tasks" namely for this purpose, is something that has to be evaluated in your specific context.

To use sub-tasks:

1. Please make sure they are enabled. Go to **Jira Settings > Issues > Issue types > Sub-tasks**.
2. Create the sub-requirement/acceptance criterion as a sub-task issue type. Go to **Jira Settings > Issues > Issue Types**.

Add Issue Type

Name *

Acceptance Criterion

Description

Type *

- ☐ Standard Issue Type
- ☒ Sub-Task Issue Type

Add

Cancel

- a.
3. In **Xray settings**, make sure the Issue-Sub-tasks relationship is defined for test coverage hierarchy

Sub-Requirements

Sub-Tasks/Links ☒ Use Sub-Task Issues

When this option is enabled, Sub-Requirements are associated with Requirements by Sub-Task Issues. When this option is disabled, Sub-Requirements are associated with Requirements with issue links configured below.

Epic - Story relation as a Requirement ☒ Epic - Story relation as a Requirement

When this option is enabled, the relation Epic - Story is handled as a Requirement - sub-requirement link

Issue Link Type

Select the issue link type for the Requirement <-> Sub-Requirement relation

Direction satisfies -> is satisfied by


Select the Link Direction for the parent -> child relation of Requirement -> Sub-Requirement

Save

a.

Using it

Create the Story as usual. The story may be part of an Epic or not.



Bookstore

 / BOOK-653

As a user, I can login the website to perform restricted operations

Edit

Comment

Assign

More

Start Progress

Resolve Issue

Workflow

Admin

Details

Type:

Story

Status:

OPEN (View Workflow)

Priority:

Trivial

Resolution:

Unresolved

Affects Version/s:

None

Fix Version/s:

None

Component/s:

None

Labels:

None

Requirement Status:

UNCOVERED

Description

Click to add description

Test Coverage

No Tests were found testing the requirement.

Add Tests

Then create the Acceptance Criterion issues. The exact details depend on how you decided to implement the AC and relate them to the Story issues:

- If using a specific issue link type to relate the AC to the Story, then:
 - Create the Acceptance Criterion issue and link the previous issue to the Story using the configured issue link type:

Create Issue

Configure Fields

Project* Bookstore (BOOK)

Issue Type* Acceptance Criterion

Summary* a specific login page must exist for authenticating

Priority Trivial

Due Date

Component/s

Start typing to get a list of possible matches or press down to select.

Affects Version/s

Start typing to get a list of possible matches or press down to select.

Fix Version/s

Start typing to get a list of possible matches or press down to select.

Assignee Automatic

Create Issue

Configure Fields

Visual Text

Original Estimate (eg. 3w 4d 12h)

The original estimate of how much work is involved in resolving this issue.

Remaining Estimate (eg. 3w 4d 12h)

An estimate of how much work remains until this issue will be resolved.

Attachment Drop files to attach, or browse.

Labels

Begin typing to find and create labels or press down to select a suggested label.

Epic Link

Choose an epic to assign this issue to.

Sprint

Jira Software sprint field

Linked Issues satisfies

Issue BOOK-653

Begin typing to search for issues to link. If you leave it blank, no link will be made.

Create another Create Cancel

- If using sub-tasks as a way to relate the AC to the Story, then proceed as follows:



As a user, I can login the website to perform restricted operations

Edit

Comment

Assign

More ▾

Start Progress

Resolve Issue

Workflow ▾

Admin ▾

▼ Details

Type: Story

Priority: Trivial

Affects Version/s: None

Component/s: None

Labels: None

Requirement Status: UNC

▼ Description

Click to add description

▼ Test Coverage

No Tests were found testing the requ

Add Tests ▾ ...

▼ Attachments

Log work

Agile Board

Rank to Top

Rank to Bottom

Archive

Attach files

Attach Screenshot

Voters

Stop watching

Watchers

Create sub-task

Convert to sub-task

Move

Link

Clone

Labels

Status: OPEN (View Workflow)

Resolution: Unresolved

Fix Version/s: None

s to attach, or [browse](#).

From the Acceptance Criterion issue create Tests and execute them as usual, reporting the final status (e.g., PASS/FAIL)



Bookstore / BOOK-655

a specific login page must exist for authenticating

[Edit](#) [Comment](#) [Assign](#) [More](#) [Start Progress](#) [Resolve Issue](#) [Workflow](#) [Admin](#)

Details

Type: ☒ Acceptance Criterion Status: **OPEN** [\(View Workflow\)](#)
Priority: ☐ Trivial Resolution: Unresolved
Affects Version/s: None Fix Version/s: None
Component/s: None
Labels: None
Requirement Status: **UNCOVERED**

Description

[Click to add description](#)

Test Coverage

No Tests were found testing the requirement.

[Add Tests](#)



Bookstore / BOOK-657

Test Execution for a specific login page must exist for authenticating

[Edit](#) [Comment](#) [Assign](#) [More](#) [Close Issue](#) [Reopen Issue](#) [Admin](#)

Details

Type: ☒ Test Execution Status: **RESOLVED** [\(View Workflow\)](#)
Priority: ☐ Trivial Resolution: Fixed
Affects Version/s: None Fix Version/s: None
Component/s: None
Labels: None
Test Plan: None
Test Environments: None

Description

[Click to add description](#)

Tests

[Add Tests](#)

Overall Execution Status

1 PASS

Total Tests: 1

[Filter\(s\)](#)



Show 100 entries

Columns

Rank	Key	Summary	Test Type	#Req	#Def	Assignee	Labels	Status
1	BOOK-656	Test a specific login page must exist for authenticating	Manual	1	0	Xpand IT Admin	None	PASS

You can then check coverage directly on the Story, which is based on all related testing results (i.e., results from Tests covering all the related Acceptance Criterion issues).



As a user, I can login the website to perform restricted operations

Edit Comment Assign More Start Progress Resolve Issue Workflow Admin

Details

Type: ☒ Story
Priority: ☐ Trivial
Affects Version/s: None
Component/s: None
Labels: None
Requirement Status: **NOK**

Status: **OPEN** (View Workflow)
Resolution: Unresolved
Fix Version/s: None

Description

Click to add description

Test Coverage

Add Tests

TEST COVERAGE FOR THE FOLLOWING ANALYSIS SCOPE

Scope: Version; Version: None - latest execution; Environment: All Environments

NOK

Filter(s)



Show 10 entries

Columns

P	Status	Resolution	Key	Summary	Test Runs	Test Status
<input type="checkbox"/>	OPEN	Unresolved	BOOK-656	Test a specific login page must exist for authenticating	10	PASS
<input type="checkbox"/>	OPEN	Unresolved	BOOK-659	Test a user profile has a username and password data	10	FAIL

Showing 1 to 2 of 2 entries

First Previous 1 Next Last

You can also go to each Acceptance Criterion issue to understand if it's being satisfied or not, based on the coverage information, which in turn is based on the related testing results. In this example, one of the AC (CALC-1305) is NOK.



Bookstore / BOOK-655

a specific login page must exist for authenticating

Edit Comment Assign More Start Progress Resolve Issue Workflow Admin

Details

Type: ☒ Acceptance Criterion Status: **OPEN** (View Workflow)
Priority: ☐ Trivial Resolution: Unresolved
Affects Version/s: None Fix Version/s: None
Component/s: None
Labels: None
Requirement Status: **OK**

Description

Click to add description

Test Coverage

Add Tests Execute ...

TEST COVERAGE FOR THE FOLLOWING ANALYSIS SCOPE

Scope: Version; Version: None - latest execution; Environment: All Environments

OK

Filter(s)



Show 10 entries Columns

P	Status	Resolution	Key	Summary	Test Runs	Test Status
<input type="checkbox"/>	OPEN	Unresolved	BOOK-656	Test a specific login page must exist for authenticating		PASS



Bookstore / BOOK-658

a user profile has a username and password data

Edit Comment Assign More Start Progress Resolve Issue Workflow Admin

Details

Type: ☒ Acceptance Criterion Status: **OPEN** (View Workflow)
Priority: ☐ Trivial Resolution: Unresolved
Affects Version/s: None Fix Version/s: None
Component/s: None
Labels: None
Requirement Status: **NOK**

Description

Click to add description

Test Coverage

Add Tests Execute ...

TEST COVERAGE FOR THE FOLLOWING ANALYSIS SCOPE

Scope: Version; Version: None - latest execution; Environment: All Environments

NOK

Filter(s)



Show 10 entries Columns

P	Status	Resolution	Key	Summary	Test Runs	Test Status
<input type="checkbox"/>	OPEN	Unresolved	BOOK-659	Test a user profile has a username and password data		FAIL

Showing 1 to 1 of 1 entries

First Previous 1 Next Last

In the Traceability Report, it's possible to see full traceability between Epic<=>Stories<=>Acceptance Criteria<=>Tests<=>Test Runs<=>Defects. The following screenshot clearly shows this hierarchy:

Scope: Version; Version: None - latest execution; Environment: All Environments ▾ JQL: key=BOOK-662 ▾ [How to read this report](#)

Quick Filters: OK (0) NOK (1) UNKNOWN (0) NOTRUN (0) UNCOVERED (0)			
Requirement	Tests	Test Runs	Defects
<div>1 (3) BOOK-662 OPEN</div> <div><div>NOK</div><div>Version: -</div><div>authentication</div></div>			
<div><div>BOOK-653</div> OPEN</div> <div><div>NOK</div><div>Version: -</div><div>As a user, I can login the website to perform restricted operations</div></div>			
<div><div>BOOK-655</div> OPEN</div> <div><div>OK</div><div>Version: -</div><div>a specific login page must exist for authenticating</div></div>	<div><div>BOOK-656</div> OPEN</div> <div><div>Test a specific login page must exist for authenticating</div><div>PASS</div></div>	<div><div>PASS</div><div>BOOK-657</div><div>View Details</div><div>Version: -</div><div>Finished On:13 minutes ago</div><div>Executed By:xadmin</div><div>Tests environments:-</div><div>Revision:-</div></div>	
<div><div>BOOK-658</div> OPEN</div> <div><div>NOK</div><div>Version: -</div><div>a user profile has a username and password data</div></div>	<div><div>BOOK-659</div> OPEN</div> <div><div>Test a user profile has a username and password data</div><div>FAIL</div></div>	<div><div>FAIL</div><div>BOOK-660</div><div>View Details</div><div>Version: -</div><div>Finished On:8 minutes ago</div><div>Executed By:xadmin</div><div>Tests environments:-</div><div>Revision:-</div></div>	<div><div>BOOK-661</div> OPEN</div> <div>username field is missing</div>

Supported features

	Supported?
create one or more AC per Story/requirement	X
uniquely identify each AC	X
ability to create linkable references to AC (.e.g ability to mention AC from somewhere else)	X
AC as issues	X
see AC on the Story/requirement issue screen along with their status	X
link Tests to each AC	X
"ignore" AC without Tests for the calculation of coverage	X
full traceability story/requirement<=>AC<=>tests<=>test runs<=>defects	X

FAQ

- Do we have to implement AC as issues?
 - No. Only if you wish to track coverage status (i.e., their acceptance information) on a per acceptance criterion basis.
- Can a Test be considered a form of AC?
 - A test is a concrete example of a certain usage of the requirement/story, so to an extent it can be seen as a sort of acceptance criteria. However, usually tests are one level below AC and contain fine details.
- How can we implement Acceptance Criteria whenever adopting Gherkin (e.g. "Cucumber") to support our BDD endeavour?

- Recent versions of Cucumber have support for the Rule entity, which is an acceptance criterion. The Rule sits between the Feature and the Scenarios. Each Scenario represents an example (and thus Scenario have been renamed to Example) of a given Rule. However, even if you're not adopting a recent version of Gherkin supporting the Rule keyword, your Scenario/Scenario Outline can represent AC; it all depends on how you use them. Xray doesn't yet support the Rule keyword.
- Are there other ways of implementing AC in Jira? How? Can they be used together with Xray?
 - You can use your own way to implement AC, such as having a dedicated custom field on the Story. You can also decide to use a Jira app/plugin or that purpose. All those are valid approaches but keep in mind that if you want to track the coverage status of each acceptance criterion defined that way, as these are not entities that Xray has visibility of, then you won't be able to do so.

References

- <https://callumakehurstriansblog.wordpress.com/2021/08/25/why-checking-an-ac-isnt-enough/amp/>
- <https://cucumber.io/blog/example-mapping-introduction/>