Requirements vs. System Documentation

Jiri Walek
VP Product Management

Presenter Background

Jiri Walek

VP Product Management

Jiri brings over 15 years experience in software product management and engineering to Polarion, where he is responsible for the product road map and product management. His unique mix of technical acumen and business savvy enables him to translate market needs into enterprise-grade solutions that are proven to help Polarion customers accelerate collaboration, integrity and innovation.

POLARION

POLARION

- ✓ **2004** Founded with Disruptive Vision
- ✓ **2005** First Unified, 100% Browser-Based ALM
- ✓ **10 Years** Focus on Unlocking Synergies:
  Full Traceability, Real-Time Collaboration, Intuitive UI
- ✓ **10 Years** Customer Satisfaction & Growth
- ✓ **2014** $10M Siemens VC Investment

250+	2.5+M	200+	15K
Fortune 1000 Deployments	Users	Extensions	Registered Community Members

Today's Agenda

Requirements vs. System Documentation

o **Agile Approach**

o Challenge #1 – **Integrity**

o Challenge #2 – **Compliance**

o Challenge #3 – **Impact Analysis**

o Challenge #4 – **Reuse**

o **Q&A**

"With Polarion you can live your process."
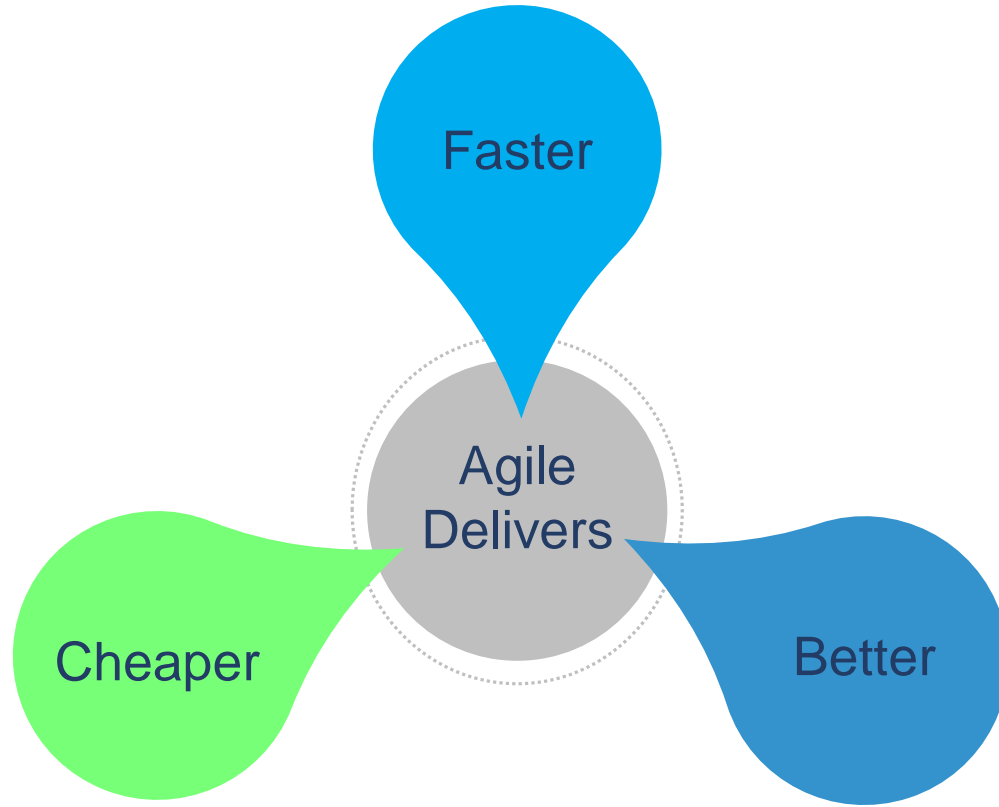**- Guido Küpper, DSA GmbH**

"The only constant in life is CHANGE"

Heraclitus of Ephesus

EMBRACE
Change

POLARION

Individuals and interactions over processes and tools

Working software over comprehensive documentation

Customer collaboration over contract negotiation

Responding to change over following a plan

That is, while there is value in the items on
the right, we value the items on the left more.
(Agile Manifesto, 2001)

POLARION

Specifications

The **product backlog** is what will be delivered, commonly written in **user story** format, **ordered** into the sequence in which it should be delivered based on considerations like risk, business value, dependencies, date needed, etc.
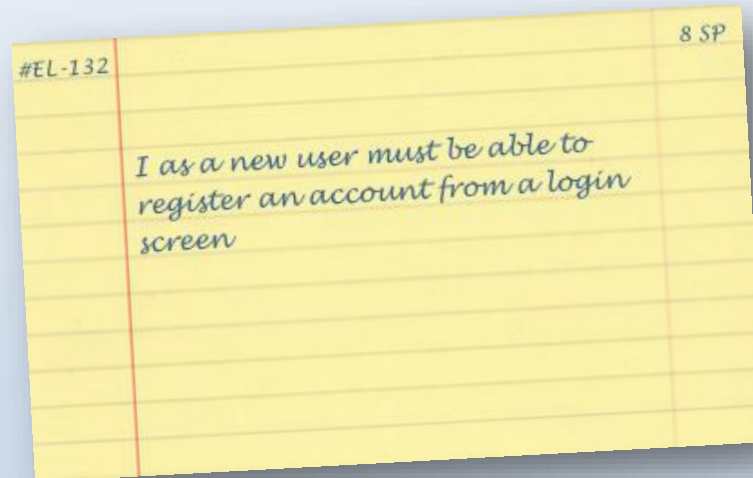
User Story

- Describes increments
- Feasible to implement
- Estimation Ready
- Focused
- Flat structure

?

POLARION

Challenge #1
Integrity

"The radio and navigation system in the current S-class Mercedes-Benz requires over 20 million lines of code alone, and that car contains nearly as many ECUs as the new Airbus A380"

Alfred Katzenbach, director of Information Technology Management at Daimler

User Story

➢ Describes Increments
➢ Feasible to Implement
➢ Estimation Ready
➢ Focused
➢ Flat structure

POLARION

Specifications vs. User Stories

**Specifications
(Static)**

Maintain when done

- ☑ Ensures Consistency
- ☑ Manage Complexity

**User Stories
(Dynamic)**

Discard when done

POLARION

localhost/polarion/#/project/elibrary/wiki/Specification/Catalog%20Specification

E-Library ▾

System Administrator
My Polarion

Home

Specification
- Index
- Administration Specification
- Catalog Specification
- Product Specification

Releases

Development

Testing

Work Items
- Defect
- Requirement
- Task

Catalog Specification

1 Introduction

1.1 Purpose

This document describes couple of functional requirements related to the application interface portal.

1.2 References

Specifications:

- E-Library Product Specification

2 Functional Requirements

2.1 User name and Password validation

EL-101 - User name must be validated when a new user account is created 　　　　Should Have, ✔ Verified

　　EL-146 - User name may not contain spaces 　　　　Should Have, ✔ Verified

　　EL-152 - User name must be longer than 3 characters 　　　　Should Have, ✔ Verified

　　EL-151 - User name must contain at least one number 　　　　Should Have, ✔ Verified

EL-147 - Password must be validated when the user wants to change it 　　　　Should Have, ✔ Verified

　　EL-149 - Password must differ from the user name 　　　　Should Have, ✔ Verified

　　EL-148 - Password must contain at least one number 　　　　Should Have, ✔ Verified

　　EL-150 - Password must contain at least 8 characters 　　　　Should Have, ✔ Verified

2.2 Login Screen

User Story

- ➤ Describes Increments
- ➤ Feasible to Implement
- ➤ Estimation Ready
- ➤ Focused
- ➤ Flat structure

Specifications

- ➤ Easy to Read and Write
- ➤ Structured Text
- ➤ Overlapping
- ➤ Context Related
- ➤ Not ordered
- ➤ Easy to write

POLARION

Test First
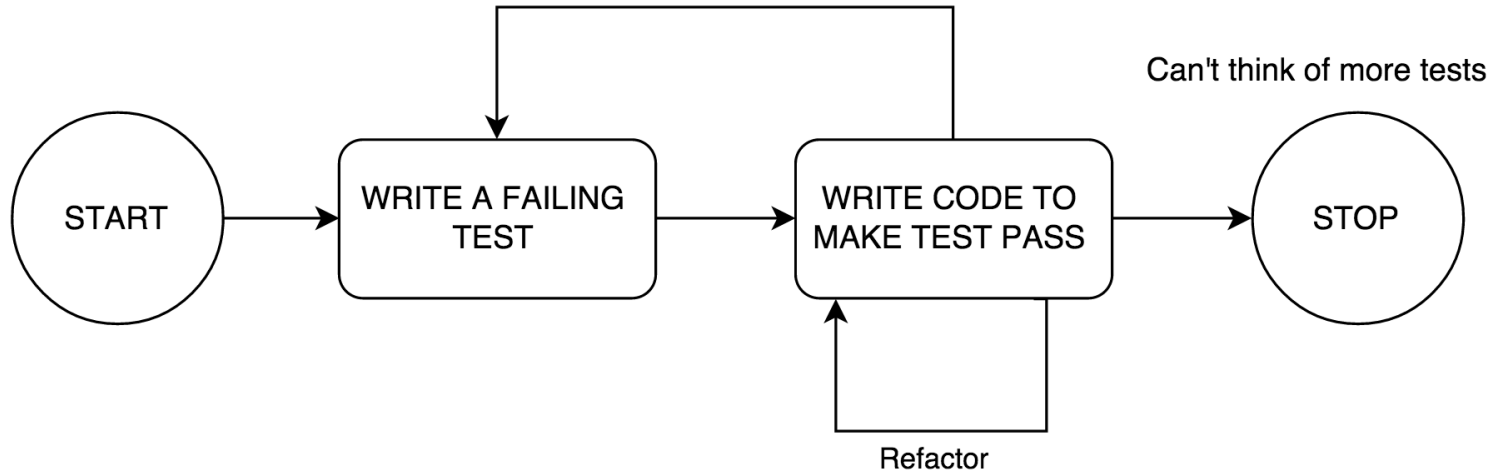
Requirement

- Specification Items
- Ensures Consistency
- Manages Complexity
- No heavy Up design
- Maintained when Done

Catalog Specification

1 Introduction

1.1 Purpose

This document describes couple of functional requirements related to the application interface portal.

1.2 References

Specifications:

- E-Library Product Specification

2 Functional Requirements

2.1 User name and Password validation

EL-101 - User name must be validated when a new user account is created — Should Have, ✔ Verified

EL-146 - User name may not contain spaces — Should Have, ✔ Verified

EL-152 - User name must be longer than 3 characters — Should Have, ✔ Verified

EL-151 - User name must contain at least one number — Should Have, ✔ Verified

EL-147 - Password must be validated when the user wants to change it — Should Have, ✔ Verified

EL-149 - Password must differ from the user name — Should Have, ✔ Verified

EL-148 - Password must contain at least one number — Should Have, ✔ Verified

EL-150 - Password must contain at least 8 characters — Should Have, ✔ Verified

Challenge #2
Compliance

"

SOFTWARE FAILURES RESPONSIBLE FOR 24% OF ALL MEDICAL DEVICE RECALLS

FDA

"

Regulatory Compliance

Demonstrate that the software units fulfill the software specifications and do not contain undesired functionality.

- ☑ Requirements are documented
- ☑ Verification Results are provided
- ☑ Changes are tracked and traceable

POLARION

Traceability

Traceability refers to the completeness of the information about every step in a supply chain.

The formal definition of traceability is the ability to chronologically relate uniquely identifiable entities in a way that is verifiable.

POLARION

Traceability

Requirements - Test Case Coverage

Displays statistics about test coverage for selected requirements, i.e. the ratio of requirements linked and not linked by verification test cases. Requirements without linked verification test cases are also listed in detailed table below.

There are **6 Requirements** without verifying test cases.

Requirements without Test Cases

ID	Title	Status
EL-101	User name must be validated when a new user account is created	Verified
EL-147	Password must be validated when the user wants to change it	Verified
EL-148	Password must contain at least one number	Verified
EL-149	Password must differ from the user name	Verified
EL-151	User name must contain at least one number	Verified
EL-152	User name must be longer than 3 characters	Verified

6 items found

Test Run Template:	System Verification Test	
Group-Id:		
Finished from - to:	2013-01-01	-

Apply Save as Default Show Advanced Options...

Reported by System Administrator
Mon Feb 23 21:52:12 CET 2015

Test Run Statistics

Displays statistics about selected Test Runs, filtered by Test Run Template, Execution Time and Group ID (i.e. build number).

Failed Test Cases

Test Cases that were executed and have failed at least once.

ID	Title
DP-473	DrivePilot will disengage when User shouts "Stop"
DP-224	A tutorial is required before the first run.

2 items found

Not-Verified Requirements

The requirements that were not tested by any of the executed test cases (test case does not exist or was not executed)

0 items found   Expand

Defects reported

Defects reported and linked with test cases that have failed in the selected test runs.

ID	Title	Type	Status	Severity
DP-449	Failed: A tutorial is required before the first run..	Issue	Verified as Done	
DP-475	Failed: DrivePilot will disengage when User shouts "Stop"	Issue	Reopened	

2 items found

POLARION

Polarion ALM
Trusted Tool
ISO 26262
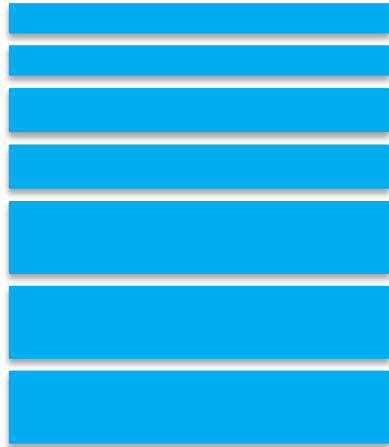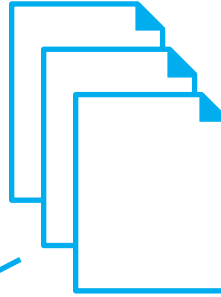
Product Documentation
Component Specifications
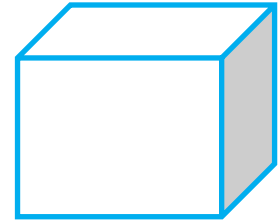
Potentially
Shippable
Product

User Stories

Backlog

+
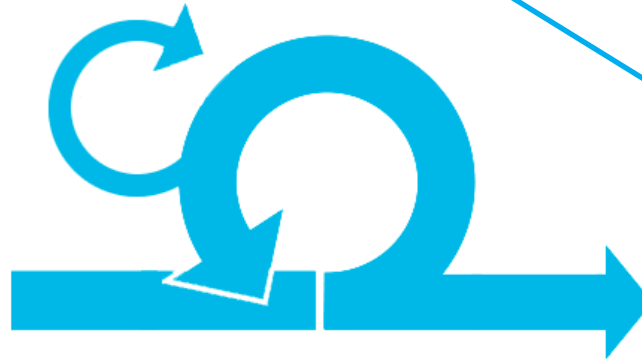
Updated
Product
Documentation

+

Updated
Product
Backlog

Challenge #3
Impact Analysis

Downstream:
What if I want to change the product behavior?

Upstream:
What if I change this line of code?

POLARION

Show Backlinked | Work Items having Any | role expanded to 2 levels | ☑ Include Commits | ☐ Filter Linked Items

	ID	Title	Status	Priorit	Assignee(s)	Planned In	Initial Estimat	Remaining Es	Created
	EL-147	Password must be validated when the user wants to change it	✔	50.0					2011-01-05 18:
	EL-105	I can register myself as a Patron	✔	81.0	Steve Develop	Version 0.9 (20			2010-11-20 12:
	EL-202	word condition			rem				2015-02-23 21:
					rem				2015-02-23 21:
									2015-02-23 22:
	EL-18		✔	50.0	Steve Develop				2012-02-01 18:
			✔	50.0					2011-01-05 18:
			✔	50.0					2011-01-05 18:
	EL-148	Password must contain at least one number	✔	50.0					2011-01-05 18:
	EL-36	Register user	🔧	50.0		1/12h	1/12h		2010-12-06 14:
	EL-18	Failed: Register user	✔	50.0	Steve Develop				2012-02-01 18:
	EL-101	User name must be validated when a new user account is created	✔	50.0					2010-11-20 08:

This hi-level requirement is ...cted ...rs

Which was implemented in this story

Through following source code revision

Path : Repository / Demo Projects / elibrary / trunk / src / main / java / com / polarion / demo / Library.java

Trunk | browse... | up ↑

ⓘ Info

Revision: 1   Date: 2015-01-21 13:41   Author: System Administrator   Revision: 96   Date: 2015-02-23 22:48   Author: Robert Project

Comment: import

➕ Added: 1   📝 Changed: 0   ➖ Deleted: 0   kend service

UTF-8 | Previous Change | Next Change

Where following method has been changed

```
15      public Library() {
16          books = new LinkedList();
17      }
18
```

```
17      }
18
19  /**
20   * Register a user.
21   *
22   * @param book
23   */
24  public void register(String user, String password) {
25      library.add(new User(user,password));
26  }
27
28
```

```
19  /**
20   * Adds a book to the library.
21
```

```
29  /**
30   * Adds a book to the library.
31   *
```

Path [revision 96] :   Repository / Demo Projects / elibrary / trunk / src / main / java / com / polarion / demo / Library.java

Trunk | browse... | head | up ↑

Info

Revision: 96   **Date:** 2015-02-23 22:48   **Author:** Robert Project   **Size:** 1 865

Comment: EL-201 - Implement: User Registration Page - backend service

Annotate | UTF-8

```
 1   2015-01-21 13:41   System Administrator                              books = new LinkedList();
 1   2015-01-21 13:41   System Administrator                           }
 1   2015-01-21 13:41   System Administrator
96   2015-02-23 22:48   Robert Project                           /**
96   2015-02-23 22:48   Robert Project                            * Register a user.
96   2015-02-23 22:48   Robert Project                            *
96   2015-02-23 22:48   Robert Project                            * @param book
96   2015-02-23 22:48   Robert Project                            */
96   2015-02-23 22:48   Robert Project                           public void register(String user, String password) {
96   2015-02-23 22:48   Robert Project                               library.add(new User(user,password));
96   2015-02-23 22:48   Robert Project                           }
96   2015-02-23 22:48   Robert Project
96   2015-02-23 22:48   Robert Project
 1   2015-01-21 13:41   System Administrator                           /**
 1   2015-01-21 13:41   System Administrator                            * Adds a book to the library.
 1   2015-01-21 13:41   System Administrator                            *
 1   2015-01-21 13:41   System Administrator                            * @param book
 1   2015-01-21 13:41   System Administrator                            */
 1   2015-01-21 13:41   System Administrator                           public void add(Book book) {
 1   2015-01-21 13:41   System Administrator                               books.add(book);
 1   2015-01-21 13:41   System Administrator                           }
 1   2015-01-21 13:41   System Administrator
 1   2015-01-21 13:41   System Administrator
 1   2015-01-21 13:41   System Administrator                           /**
 1   2015-01-21 13:41   System Administrator                            * Removes a book from the library, if it was previously added.
 1   2015-01-21 13:41   System Administrator                            * Returns <code>true</code>, if the book was removed.
 1   2015-01-21 13:41   System Administrator                            *
 1   2015-01-21 13:41   System Administrator                            * @param book
 1   2015-01-21 13:41   System Administrator                            */
 1   2015-01-21 13:41   System Administrator                           public boolean remove(Book book) {
 1   2015-01-21 13:41   System Administrator                               return books.remove(book);
 1   2015-01-21 13:41   System Administrator                           }
 1   2015-01-21 13:41   System Administrator
 1   2015-01-21 13:41   System Administrator                           /**
 1   2015-01-21 13:41   System Administrator                            * Returns total count of books in this library.
 1   2015-01-21 13:41   System Administrator                            */
 1   2015-01-21 13:41   System Administrator                           public int getSize() {
 1   2015-01-21 13:41   System Administrator                               return books.size();
 1   2015-01-21 13:41   System Administrator                           }
 1   2015-01-21 13:41   System Administrator
 1   2015-01-21 13:41   System Administrator                           /**
 1   2015-01-21 13:41   System Administrator                            * Searches this library for books that contain the given word
 1   2015-01-21 13:41   System Administrator                            * in title, author or publisher field.
 1   2015-01-21 13:41   System Administrator                            */
 1   2015-01-21 13:41   System Administrator                           public Book[] search(String word) {
 1   2015-01-21 13:41   System Administrator                               List result = new LinkedList();
```

Path : Repository

browse...

Default Repository ▾

🔍 Search

System Administrator
My Polarion

🏠 Home

📄 Documents & Wiki

🧩 Work Items

🗄 **Repository Browser**

▾ Expand

ⓘ **Info**

Revision: 96	**Date:** 2015-02-23 22:48	**Author:** Robert Project	**Total items in dir:** 1		

Comment: EL-201 - Implement: User Registration Page - backend service

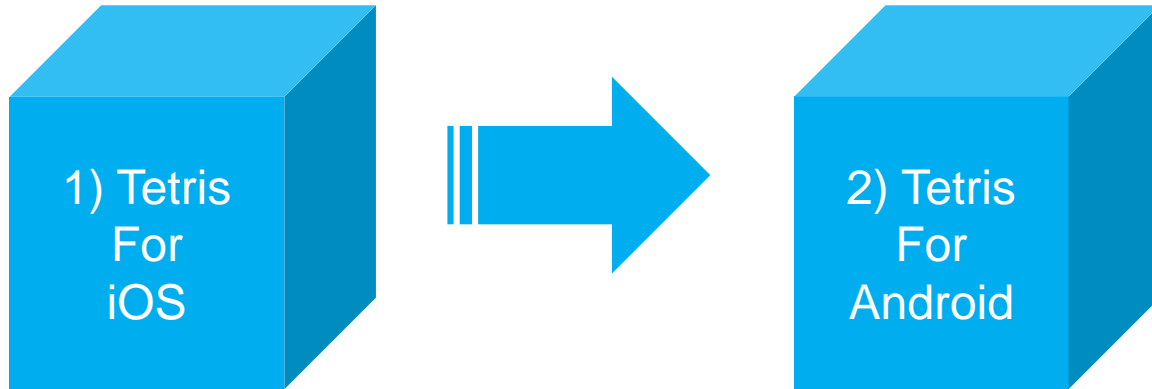**Linked Work Items**

EL-201 - Implement: User Registration Page

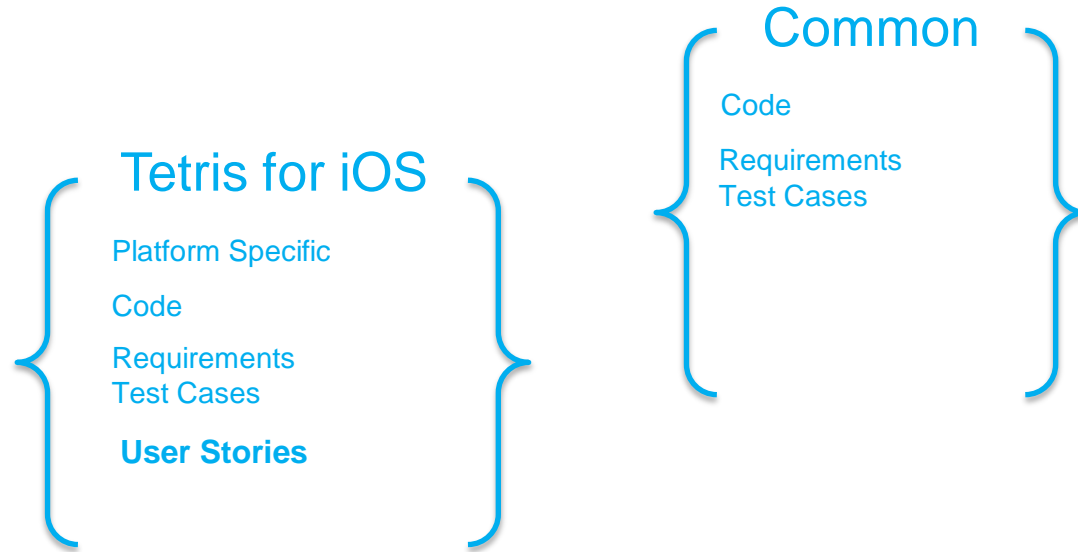| Changed resources	Copy from path	Copy from revision
Demo Projects/elibrary/trunk/src/main/java/com/polarion/demo/Library.java		

ID: EL-201   6 found

Show **Linked** ▾ Work Items having **Any** ▾ role expanded to **2** ▾ levels ☐ Include Commits ☐ Filter Linked Items

	ID	Title	Status	Priorit ▾	Assignee(s)	Planned In	Initial Estimat	Remaining Es	Created
☑	EL-201	Implement: User Registration Page	✓	50.0	John Requirem				2015-02-23 21:
	EL-105	I can register myself as a Patron	✓	81.0	Steve Develop	Version 0.9 (20			2010-11-20 12:
	EL-150	Password must contain at least 8 characters	✓	50.0					2011-01-05 18:
	EL-147	Password must be validated when the user wants to change it	✓	50.0					2011-01-05 18:
	EL-101	User name must be validated when a new user account is created	✓	50.0					2010-11-20 08:
	EL-110	Basics							2010-11-20 12:

Edit ⚙ ▾ Save ▾ Cancel

EL-105 +   Created: **2015-02-23 21:59**, Updated: **2015-02-23 23:09**

↑ ⚙ ☑ **EL-201 - Implement: User Registration Page**
↑ +

Type: ☑ **Task**

*Severity: ☐ **Normal**

Author: **System Administrator**

Project: **E-Library**

Assignee(s): **John Requirement**

*Priority: ☐ **Medium [50.0]** ▾

*Status: ✓ **Verified as Done**

Resolution: **Done**

Initial Estimate:

Time Spent:

Remaining Estimate:

Categories:

✏ Description

Implement the user registration page for patron to register himself/herself.

💬 Comments

Create Comment   Collapse All   Expand All   View: **Tree** ▾   ☐ Show resolved comments

📅 Work Records

Challenge #4
Reuse

Product Variants

Tetris for iOS

Platform Specific

Code

Requirements
Test Cases

User Stories

Common

Code

Requirements
Test Cases

POLARION
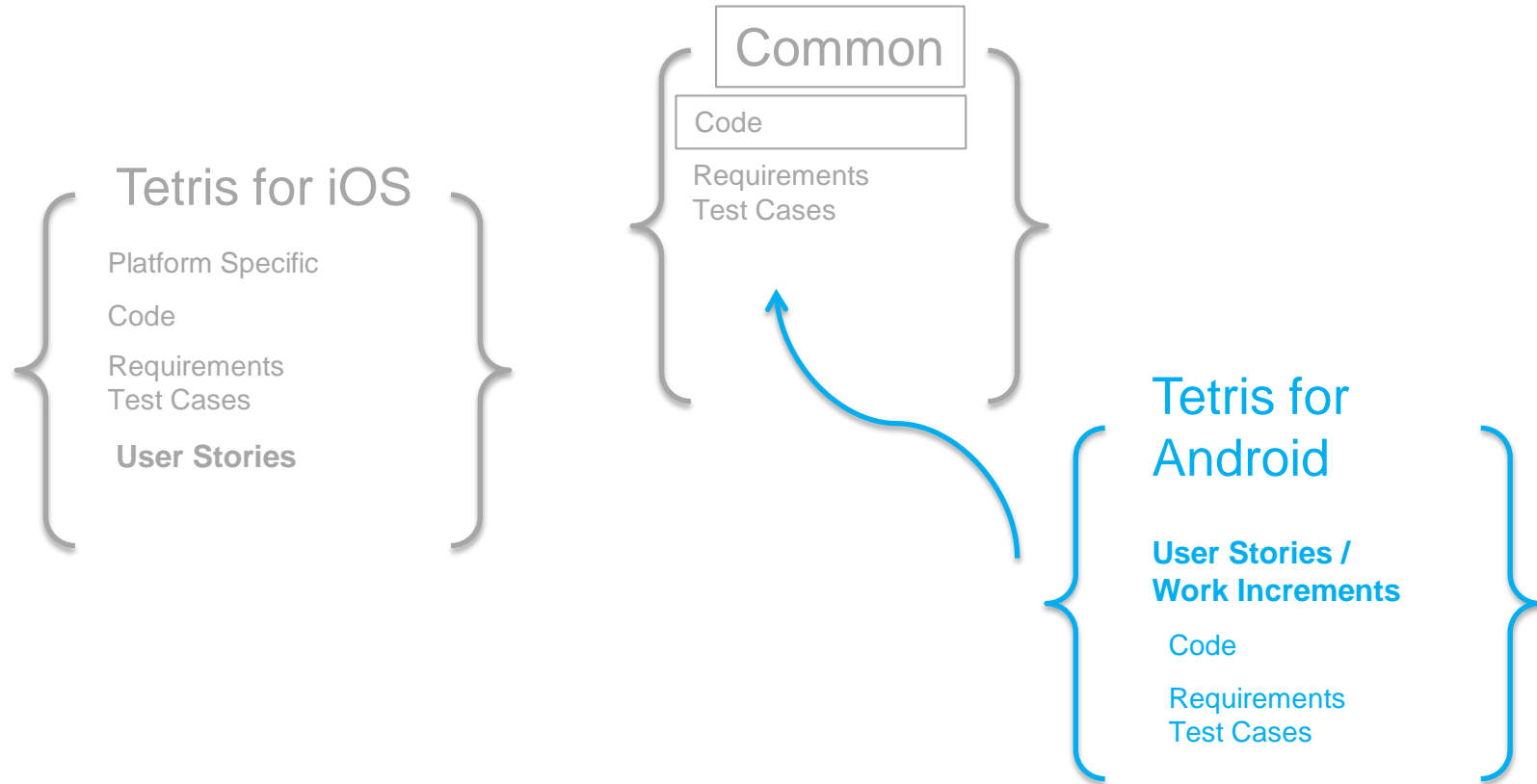
Variant Management

Drive Pilot >
Common System Requirements

SysR-12 - SW must ..
SysR-13 - Controller shall

Drive Pilot >
Car Pilot

SysR-12 - SW must ..
CP-24 - Controller shall
CP-25 – Car specific req…

Drive Pilot >
Boat Pilot

SysR-12 - SW must ..
SysR-13 - Controller shall
BP-22 – Boat specific req …

Variant Management

- Manage requirement variants without copy and past
- Propagate changes instantly or on-demand
- Save time on managing isolated copies

Car Pilot Backlog

CP1- Check Manual Transition
CP2- Ignition Mode

Boat Pilot Backlog

CP2- Sail Lock control

Product Variant Backlogs describe the actual increments / "changes" specific to the product variant / model.

Question:

Requirement

or

Tests Case

Why Requirements?

And not Test Cases?

1) Easy to Read
2) Easy to Write

Questions