



Creating and Managing Requirements and Other Documentation In Workspaces Desktop

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Abstract

The Workspaces Desktop toolset has the RequirementsTracker tool that can be deal with a project's Requirements, Requirements Review, Design Document, Verification Plan and Verification Report. This tool helps you create and manage requirements and other key documentation for a design.

Documents can contain links to the design and document templates which semi-automate the creation and retrieval of these items. Links can also support traceability of requirements to the design and its verification.

Things You Can Do

- Capture the Requirements.
 - Three methods exist for requirements management in Workspaces
 - 1. Import requirements from a .txt file [or .htm file]
 - 2. Import requirements from a Word document via HTML
 - 2. Create requirements from a new or existing design
 - 3. Create new requirements from scratch (starting with a template)
- Review the Requirements.
- Associate Requirements with the Design.
- Create the Design Description (aka Design Implementation Document)
- Create the Verification Test Plan.
- Create simulation tests.
- Create Verification Report.

Importing a Text File

- The text file must be formatted so that a line with a number or *number.number* item followed by words is the paragraph number and title such as:
 - 1.0 Scope
 - 2.0 Applicable Documents
 - 3.0 Requirements
 - 3.1 Item Description
- Stuff between the paragraph number/title lines is the text
- Limitations of text file import:
 - Figures, URLs, formatting info and tables are lost or obfuscated unless html notation is used i.e. “<table><tr><td>First column</td></tr></table>”
 - Text lines that start with a number may be misinterpreted as a new paragraph number / title
 - Tabs and other non-printing characters may cause difficulties

Example:

1. Scope

This is a demo text file that may be imported into the Requirements Tracker tool.

2. Applicable Documents

Although you can list applicable documents however you wish, the tool provides ways to enter and manage the applicable documents list so they can be referenced for traceability.

3. Requirements

3.1 Item definition

This is a description paragraph. You can reference a figure or add formatting data using basic HTML notation. For example see the block diagram of `Figure 1`.

3.2 More stuff

The item shall have more stuff as described in Table 1. `<table border="1"><tr><th>Item</th><th>Description</th></tr> <tr><td>Color</td><td>Red</td></tr></table>`

4. Quality Assurance Provisions

5. Preparation for Delivery

6. Notes

Importing an HTML File

- HTML files may be read.
 - Headings- h1, h2, h3 etc – are interpreted as containing paragraph number and title
 - The rest is interpreted as spec data
- Limitations of HTML import
 - Bug in exporting to .xml version
 - Other non-essential HTML tags are retained, sometimes affecting readability

Example:

```
<html>
<body>
<h1>1. Scope</h1>
<p>This is a demo HTML file that may be imported into the
Requirements Tracker tool.
</p>
<h1>2. Applicable Documents</h1>
<p>Although you can list applicable documents however you wish,
the tool provides ways to enter and manage
the applicable documents list so they can be referenced for
traceability.
</p>
<h1>3. Requirements</h1>
<h2>3.1 Item definition</h2>
<p>This is a description paragraph. You can reference a figure or
add formatting data using basic HTML notation. For example
see the block diagram of Figure 1</img>.
</p>
<h2>3.2 More stuff</h2>
<p>The item shall have more stuff as described in Table 1.
</p>
<table border="1"><tr><th>Item</th><th>Description</th></tr>
<tr><td>Color</td><td>Red</td></tr></table>
<h1>4. Quality Assurance Provisions</h1>
<h1>5. Preparation for Delivery</h1>
<h1>6. Notes</h1>
</body>
</html>
```

Example of the .xml database

```

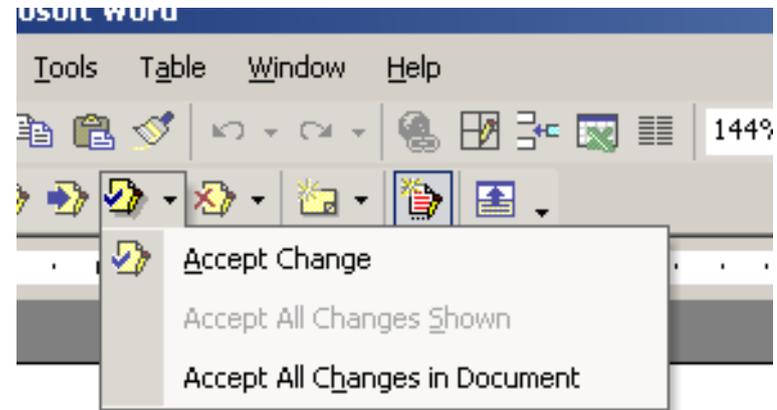
<?xml version="1.0"?>

<requirements_document>
<title>example, ,, ,, ,, ,,,,,,</title>
<second>imported from D:\Documents and Settings\kaupinw\My Documents\la2\example.htm</second>
<cover><br></br></cover>
<item id="0"><rqt>1.</rqt><desc>Scope</desc><from> </from><to> </to><text><p>This is a demo HTML file that may be imported
into the Requirements Tracker tool.</p></text><method>N</method><evidence> </evidence><comment> </comment><val>
</val><reviewed> </reviewed><critical> </critical></item>
<item id="1"><rqt>2.</rqt><desc>Applicable Documents</desc><from> </from><to> </to><text><p>Although you can list applicable
documents however you wish, the tool provides ways to enter and manage the applicable documents list so they can be referenced
for traceability.</p></text><method>N</method><evidence> </evidence><comment> </comment><val> </val><reviewed>
</reviewed><critical> </critical></item>
<item id="2"><rqt>3.</rqt><desc>Requirements</desc><from> </from><to> </to><text></text><method>N</method><evidence>
</evidence><comment> </comment><val> </val><reviewed> </reviewed><critical> </critical></item>
<item id="3"><rqt>3.1</rqt><desc>Item definition</desc><from> </from><to> </to><text> <p>This is a description paragraph. You can
reference a figure or add formatting data using basic HTML notation. For example see the block diagram of Figure 1</img>.</p></text><method>N</method><evidence> </evidence><comment> </comment><val>
</val><reviewed> </reviewed><critical> </critical></item>
<item id="4"><rqt>3.2</rqt><desc>More stuff</desc><from> </from><to> </to><text><p>The item shall have more stuff as described in
Table 1.</p><table
border="1"><tr><th>Item</th><th>Description</th></tr><tr><td>Color</td><td>Red</td></tr></table></text><method>N</method>
<evidence> </evidence><comment> </comment><val> </val><reviewed> </reviewed><critical> </critical></item>
<item id="5"><rqt>4.</rqt><desc>Quality Assurance Provisions</desc><from> </from><to>
</to><text></text><method>N</method><evidence> </evidence><comment> </comment><val> </val><reviewed>
</reviewed><critical> </critical></item>
<item id="6"><rqt>5.</rqt><desc>Preparation for Delivery</desc><from> </from><to>
</to><text></text><method>N</method><evidence> </evidence><comment> </comment><val> </val><reviewed>
</reviewed><critical> </critical></item>
<item id="7"><rqt>6.</rqt><desc>Notes</desc><from> </from><to> </to><text> </text><method>N</method><evidence>
</evidence><comment> </comment><val> </val><reviewed> </reviewed><critical> </critical></item>
</requirements_document>

```

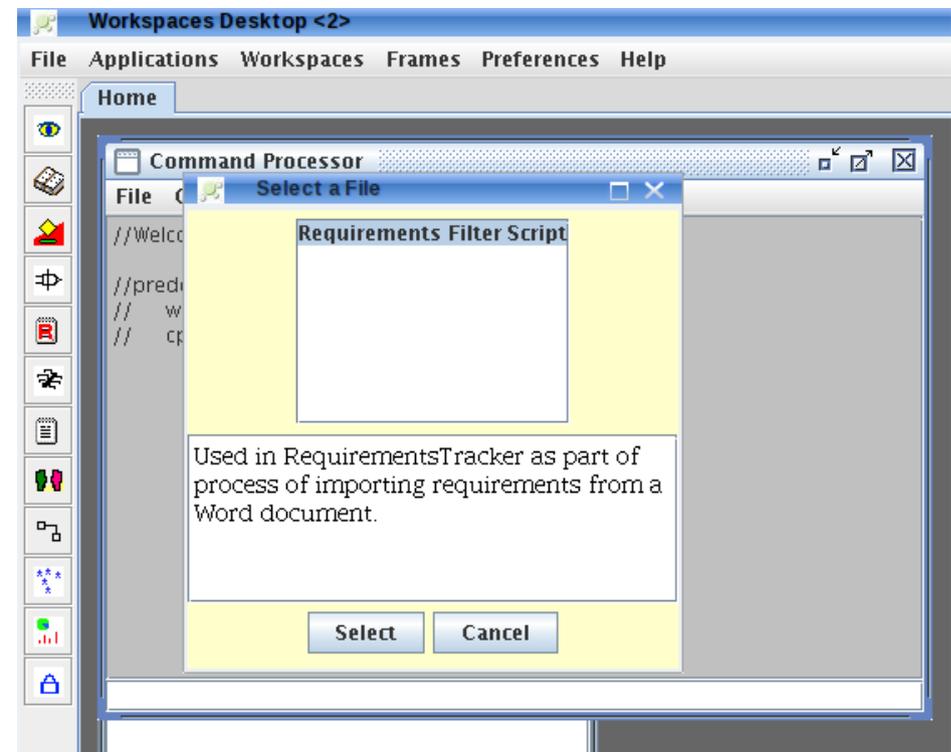
Importing Requirements from Word (1 of 2)

- Using Word, read in the .doc or .rtf file
- From the Change Tracking Toolbar pulldown menu, Accept All Changes
- All paragraph numbers and titles should have a Heading style (i.e. H1 – H6)
- From the File > SaveAs menu
- Select HTML (Filtered) as the type



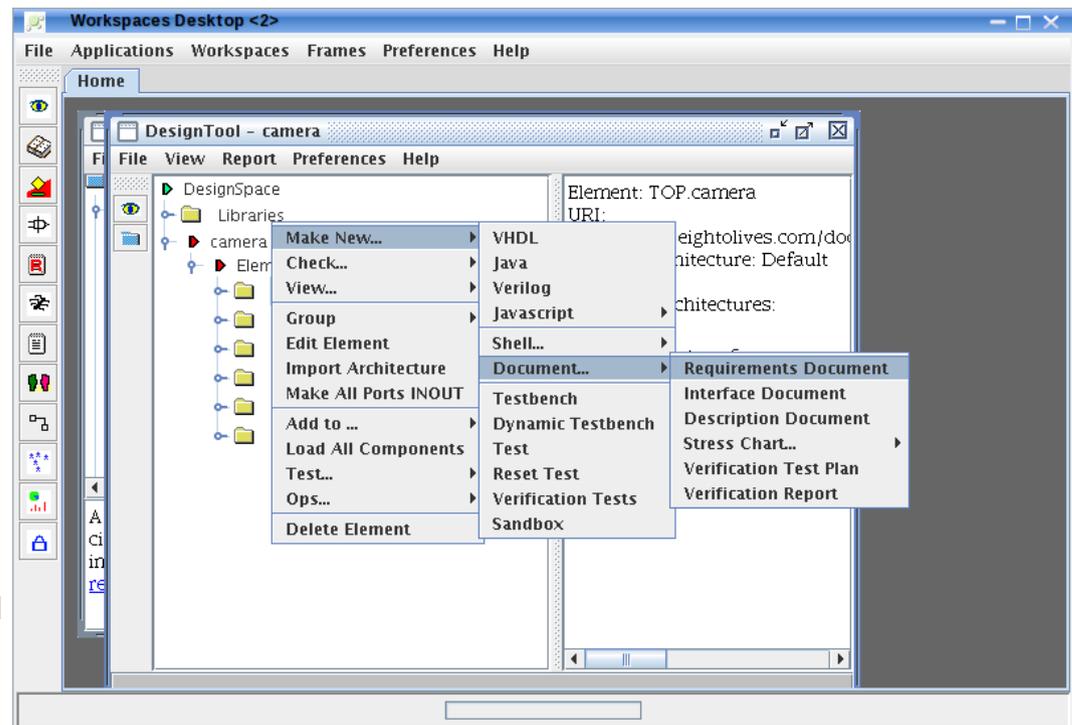
Importing Requirements from Word (2 of 2)

- In Workspaces select Command Processor from the Application Menu
- In Command Processor, select File > Load Library Script and then select RqtsFilterScript.js
- The script will open an edit window results.txt which should be reviewed and then saved
- Open the Requirements Tracker tool and File>Open File the saved results.txt
- Review the imported document and then File > Save as > Save Database as .xml
 - Save it as: designname_requirements.xml and save it in the designname\doc directory



Creating Requirements from a Design

- In the Workspaces Design Tool, File > Import the top level VHDL file
- Right click the top element and select Make New > Document > Requirements Document
- In the Requirements Tracker tool, File > Save As > Save Database as .xml
- Save in the doc directory: doc\DesignName_requirements.xml



RequirementsTracker has 3 Primary Views

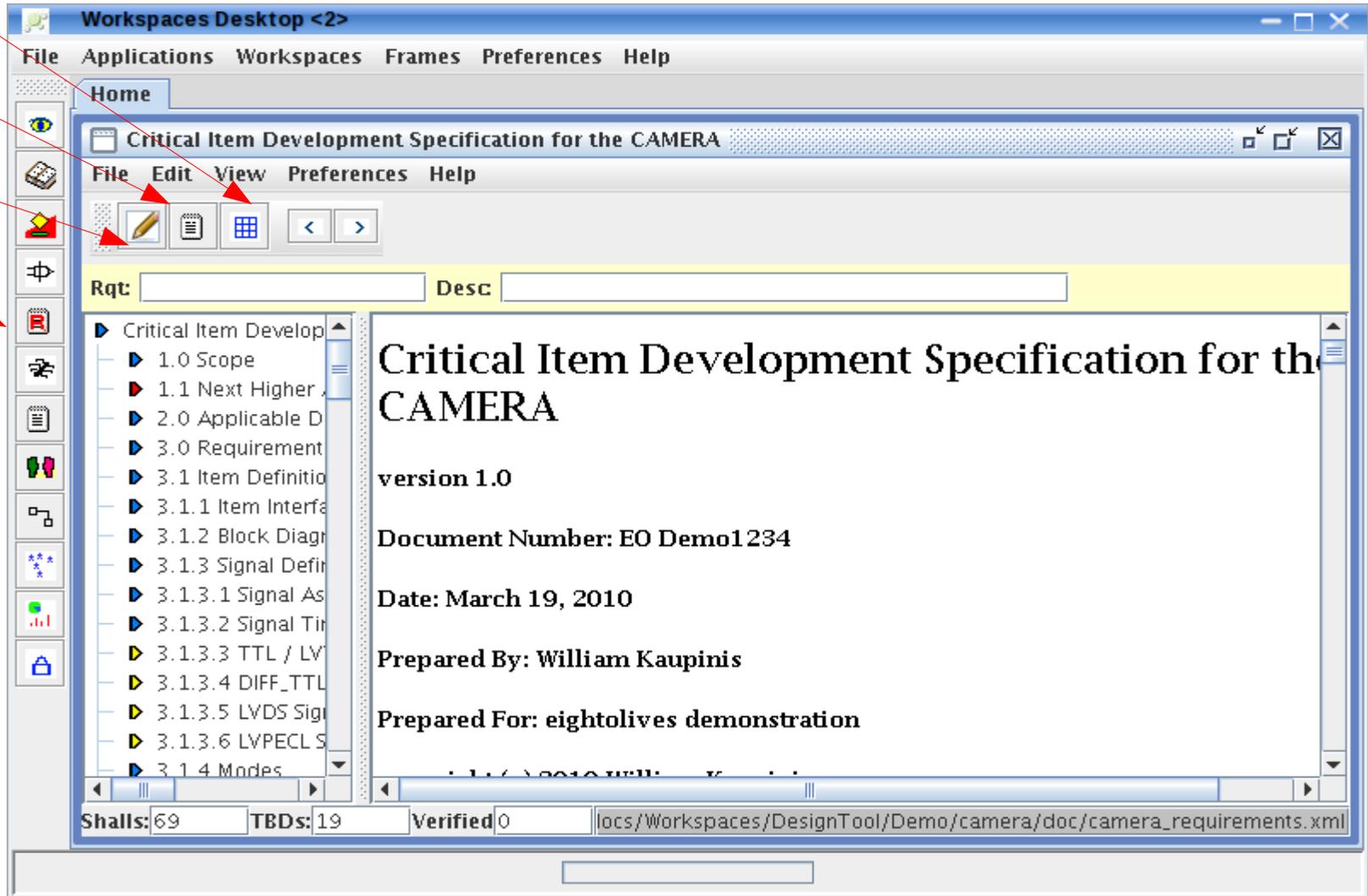
Click for Matrix View

Click for Document View

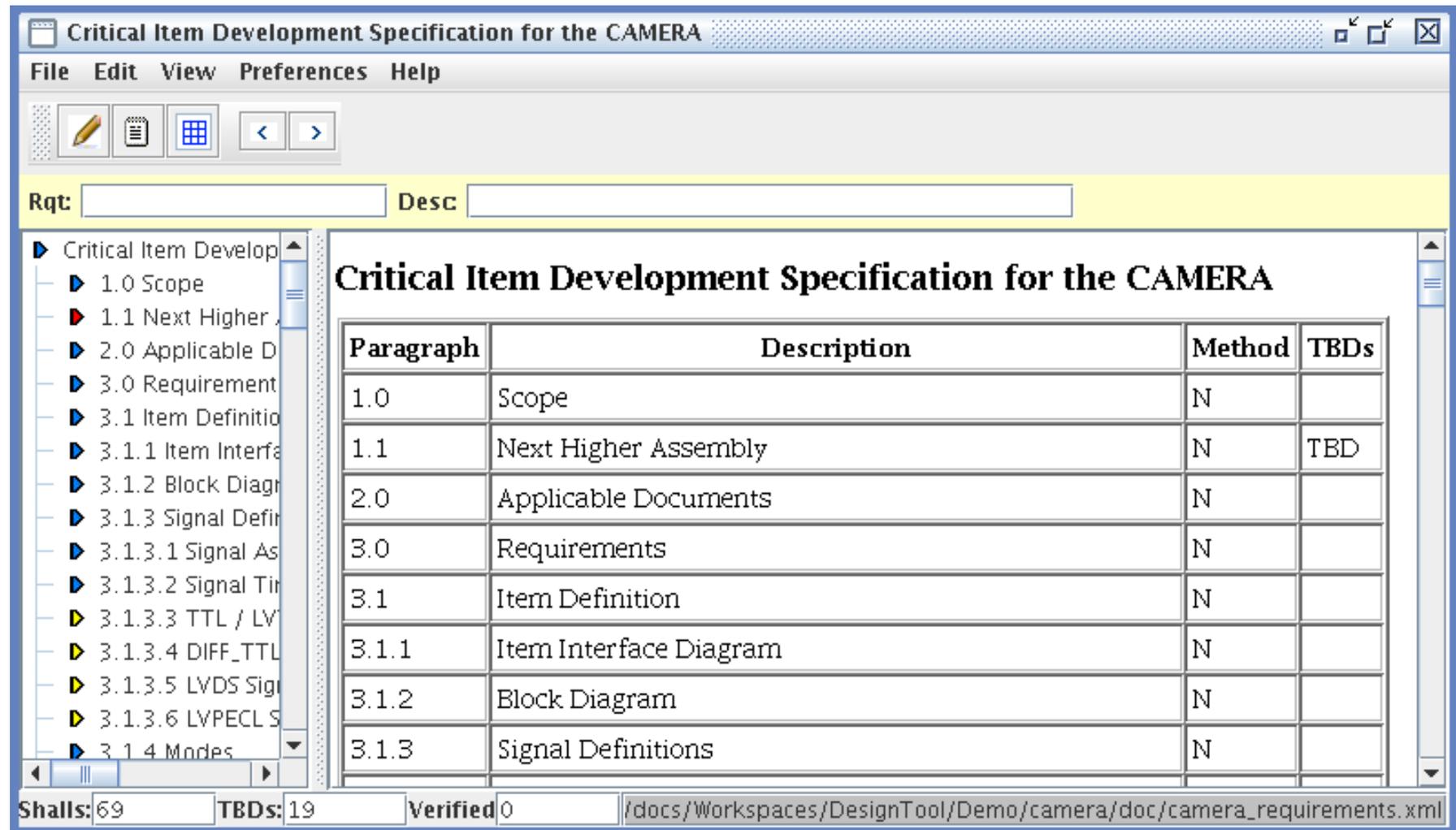
Click for Editor View

Click to Invoke Requirements From Workspaces

Document View shows the HTML view



Matrix View Can Display Various Status



Create traceability and compliance matrices and “shall” tables.

Editor View for editing

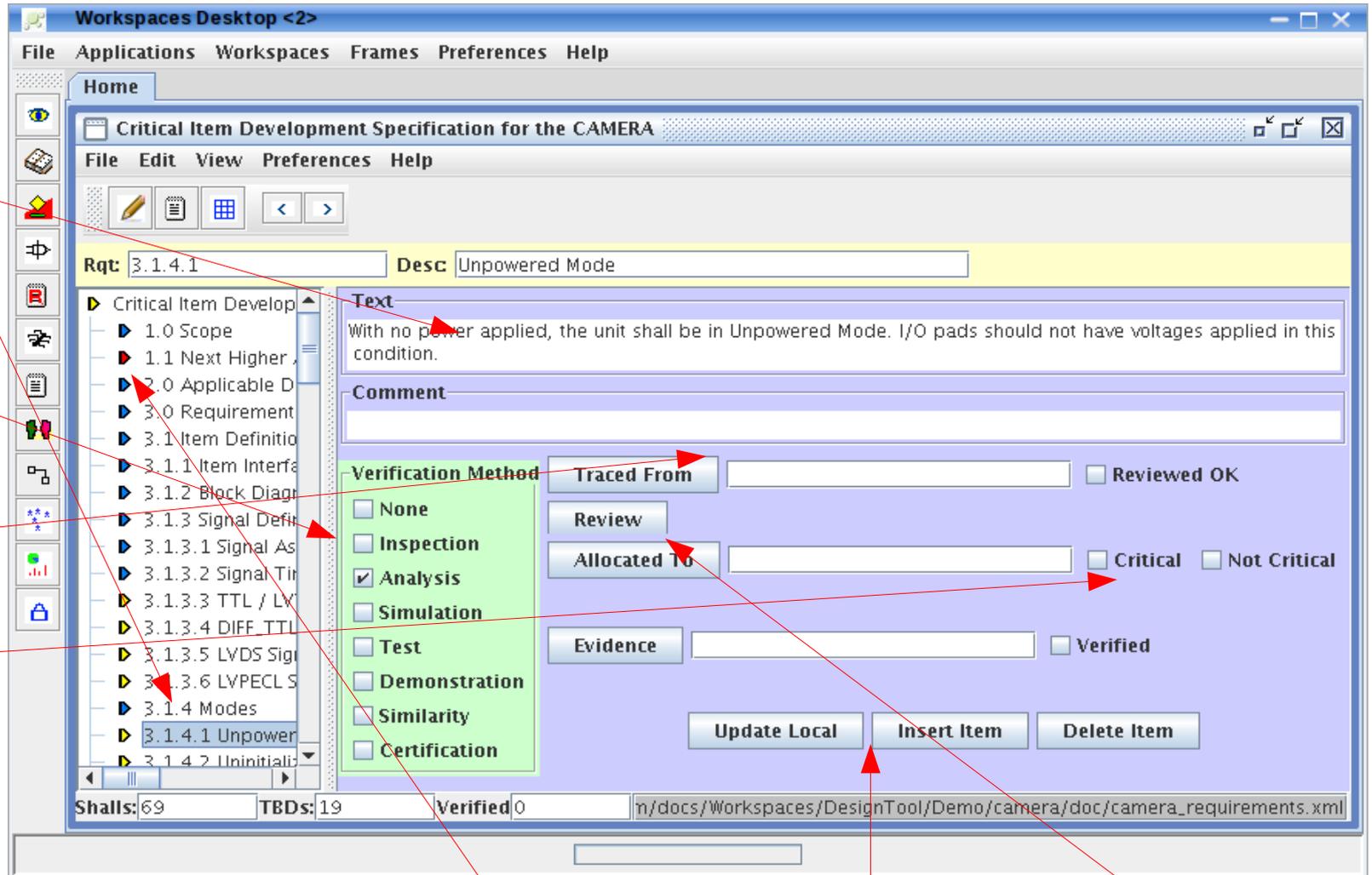
Select an item in the tree.

Edit fields in the text boxes

Select the verification method.

Define Traceability to Applicable Documents

Identify as safety critical or not.

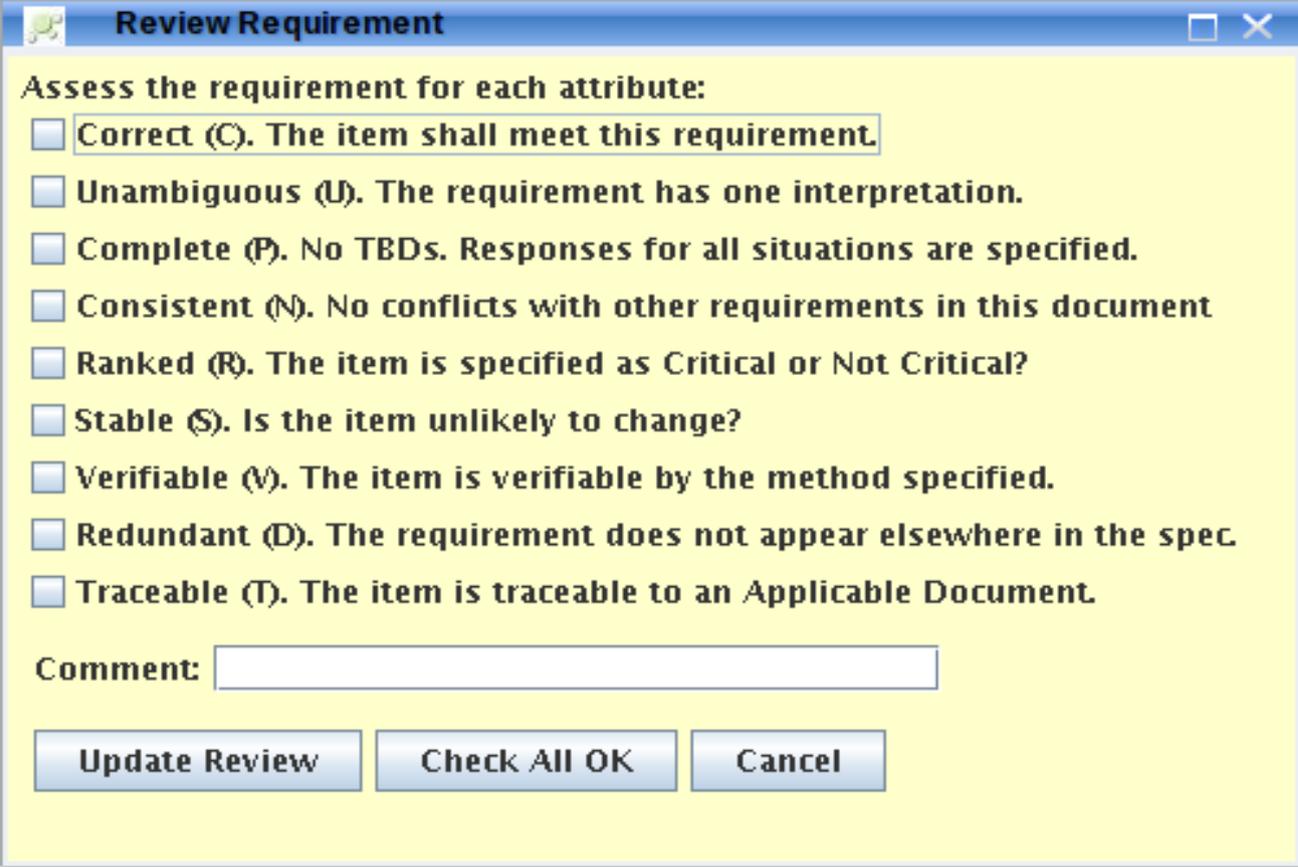


TBDs are highlighted in red

Update, insert or delete

Review the requirement

Review each “shall” requirement



Review Requirement

Assess the requirement for each attribute:

- Correct (C).** The item shall meet this requirement.
- Unambiguous (U).** The requirement has one interpretation.
- Complete (P).** No TBDs. Responses for all situations are specified.
- Consistent (N).** No conflicts with other requirements in this document
- Ranked (R).** The item is specified as Critical or Not Critical?
- Stable (S).** Is the item unlikely to change?
- Verifiable (V).** The item is verifiable by the method specified.
- Redundant (D).** The requirement does not appear elsewhere in the spec.
- Traceable (T).** The item is traceable to an Applicable Document.

Comment:

This Review Checklist highlights things that make a requirement “good”.

Click for a Requirements Review

Critical Item Development Specification for the CAMERA

File Edit View Preferences Help

Rqt: 3.1.4.1 Desc: Unpowered Mode

2.0 Applicable Documents

Title	Version	Author
Critical Item Development Specification for the CAMERA	-	

3.0 Document Characteristics

Parameter	Value
Number of Shalls	69
Number of Critical Items	0
Number of Reviewed Items	0
Items Requiring Inspection	21
Items Requiring Analysis	37
Items Requiring Simulation	6

Shalls: 69 TBDs: 19 Verified: 0 n/docs/Workspaces/DesignTool/Demo/cam

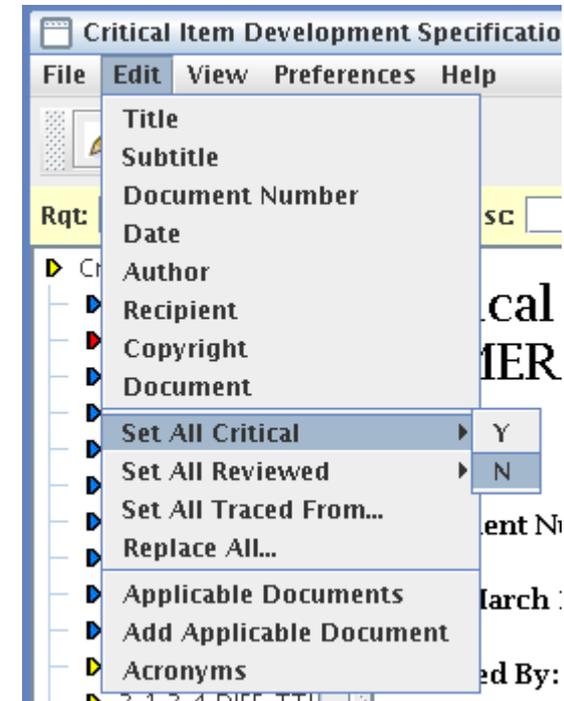
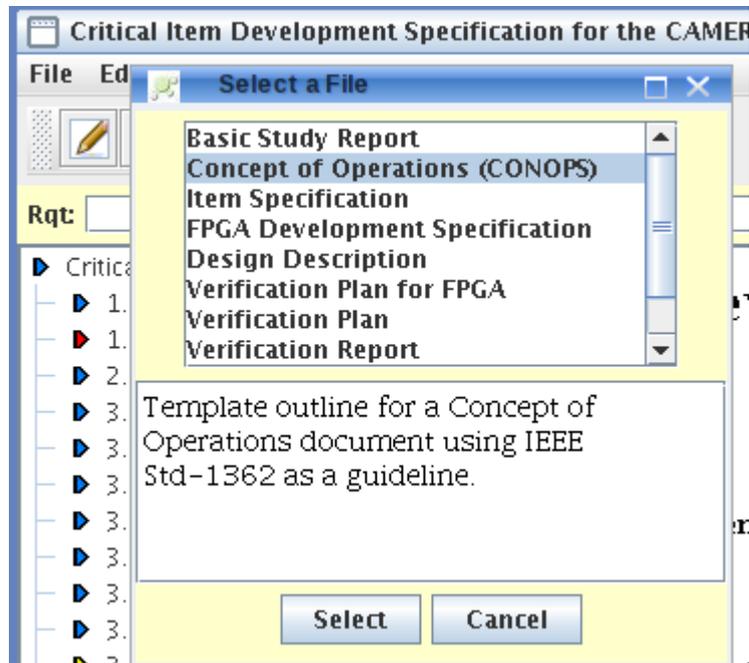
4.0 Defect Summary

The following items are considered defects that need

Parameter	Value
Number of TBDs	19
Requirement items with no method	2
Items with no traced-from link	58
Items with no criticality ranking	58
Items needing review	58
Items failing review	58
Sentences with multiple shalls	3

5.0 Requirement Review

Other Features



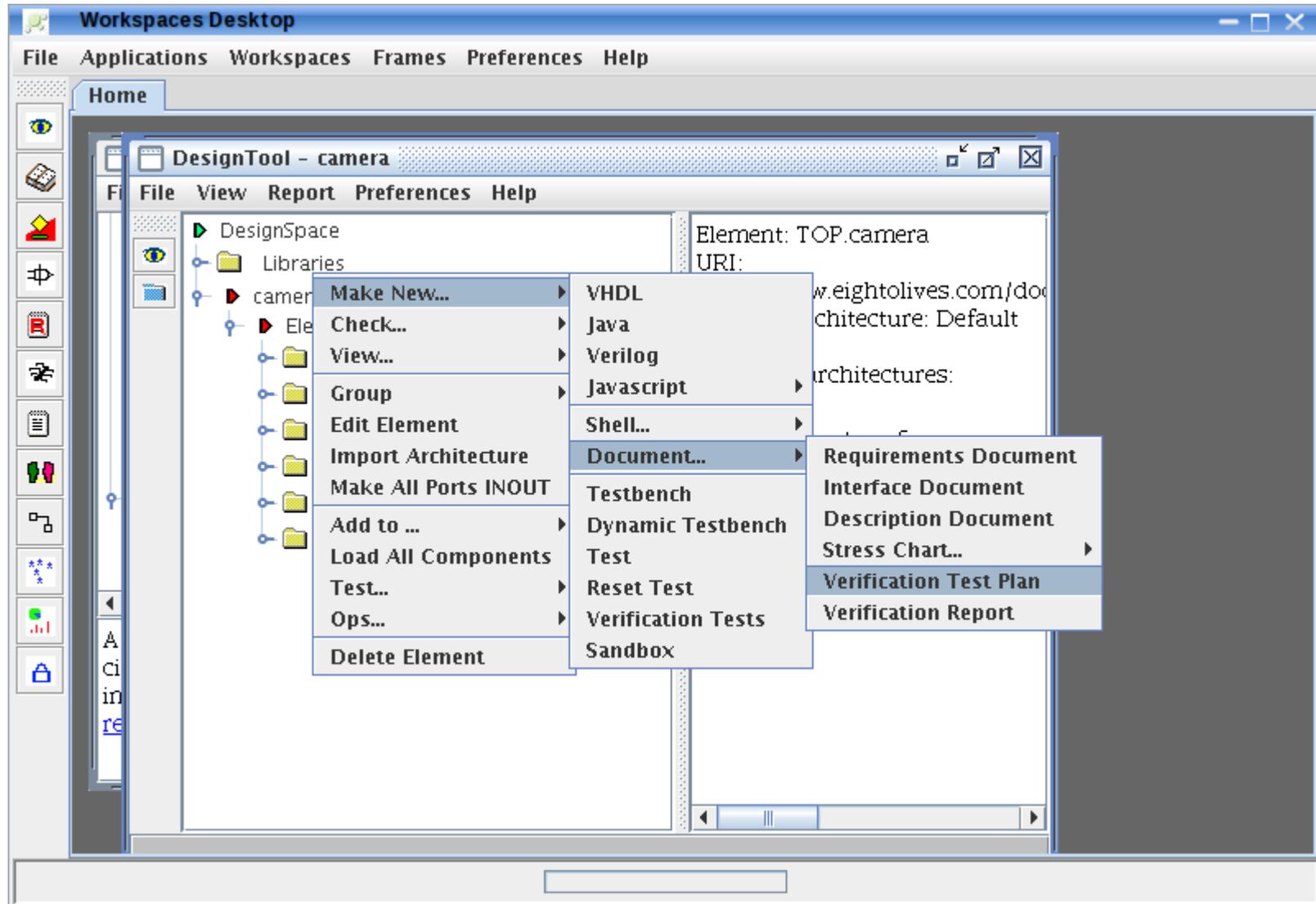
- Start new documents using various templates.
- Compare different versions of the rqts for differences
- Merge new versions of the rqts with an existing one

- Set Document Title / subtitle
- Set the critical flags to a default
- Set a default for traceability
- View and edit the Applicable Documents list
- Add new Applicable Documents

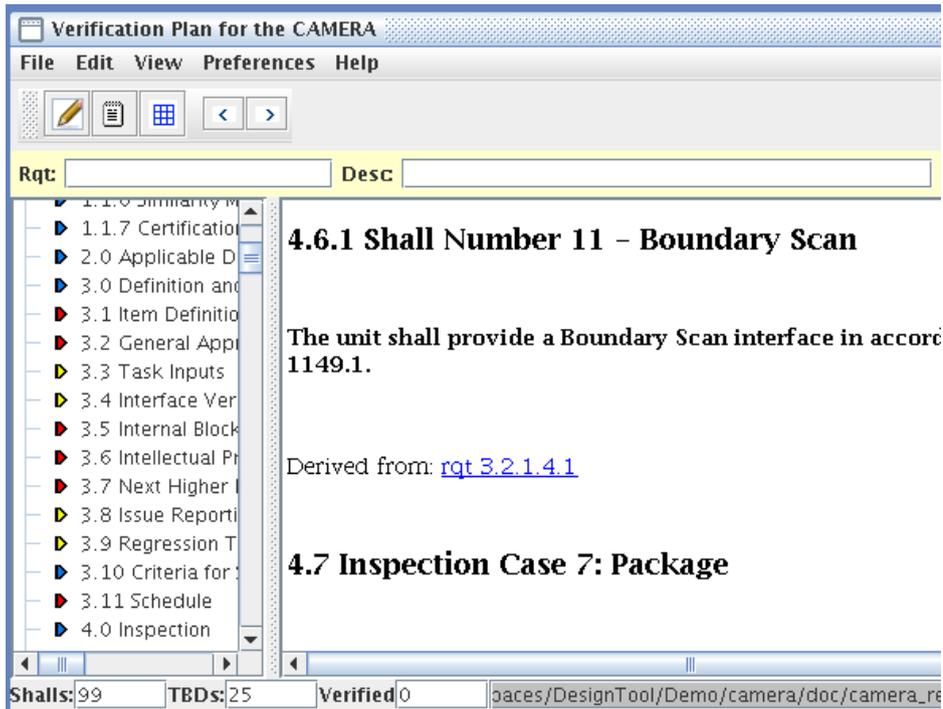
Use DesignTool to Create Documents With Design Data

- You can create a Design Description template
- Once you create a Requirements Document for your project you can create a Verification Plan template with all requirements (“shalls”) itemized and linked to the Requirements Document
- Once you have a Verification Plan, you can create a Verification Report template

Right Click on the Top Design Element



Fill in the “plan” details for each item



- The Verification Plan has sections for Inspection, Analysis, Simulation, Test, Demonstration, Similarity and Certifications.
- “Shalls” to be verified are itemized.
- Edit the document to allocate Simulation Shalls to a testbench test and add a comment about how the shall should be simulated.
- Save the Database in the doc directory

Create a Verification Report

- Once you have Requirements and a Verification Test Plan, you can create a Verification Report
 - In the Workspaces DesignTool, right click the element and Make New > Document... > Verification Report
- Select Preferences and enable the following to show data in the report:
 - Show Comments
 - Show Rqt Verified (shows in matrix view only)
 - Show Evidence

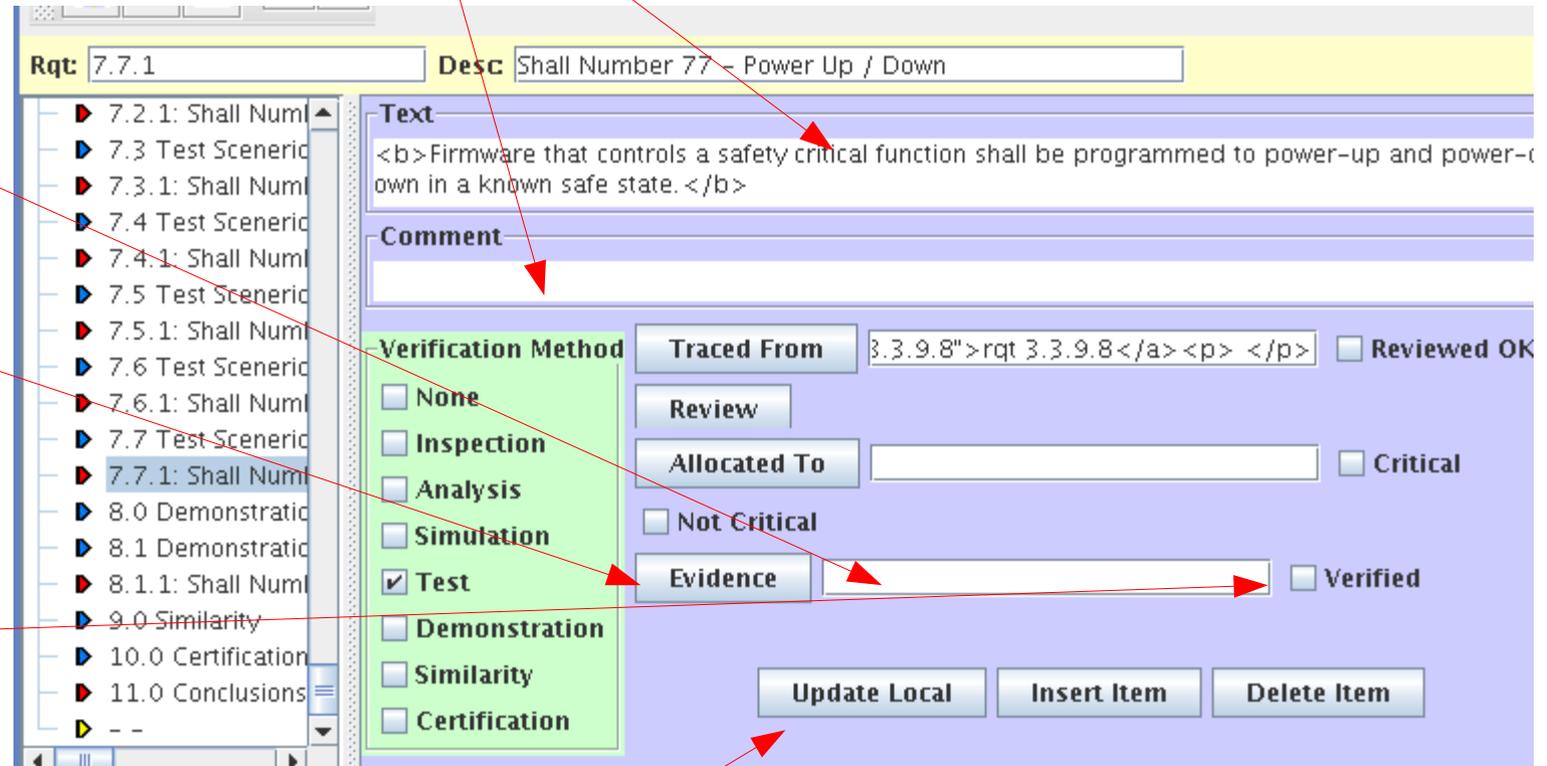
Explain compliance in the Comment Field

Text field contains the Requirement
Comment field explains compliance

Enter a link to
evidence.

Evidence
button gets
link from
Applicable
Documents.

Click the
Verified
Checkbox.



File > Save As to save the data.
Update Local to save data in memory.

End Notes

- Printing may unfortunately result with larger than expected font sizes
 - You can save the files in HTML (.htm) format and then post-process them in your favorite editor for nicer printing
- Matrix views and “Shall Tables” can also be saved as a .xls file which is readable by Microsoft Excel
- Remember that the “Update Local” button updates memory only
 - Use the menu option File > Save As to store your data in a file.

For more information

- Check the tutorials at:
<http://www.eightolives.com/tutorials.htm>
 - Workspaces Desktop Tool Overview
- Checkout some of the document templates at:
<http://www.eightolives.com/templates.htm>
- Read the Workspaces Desktop Users Manual