



D21.3 Certification Toolkit Installation, Deployment and User Manual

Work package	WP21	Services/Toolkits Development and Adaptation
Task	T21.13	Certification Toolkit Development
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Doc Id		
Dissemination Level		PUBLIC
Issue	1	
Date	05/06/2014	


Abstract:

This document represents the User Manual for the Certification Toolkit developed for the SCIDIP-ES project. It contains relevant information on how to install, configure, manage and use the Certification Toolkit.

Document Log

Date	Author	Changes	Version	Status
14/02/2014	Shirley Crompton, Brian Ritchie	First draft for internal review	0.1	Draft
3/04/2014	Shirley Crompton	Updated in line with additional features (report generation and edit assessment reference documentations).	1.0	Released.
5/06/2014	Shirley Crompton	Updated for 2.0.4 bugfix release	1.1	Released

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SCIENCE DATA INFRASTRUCTURE FOR PRESERVATION - EARTH SCIENCE

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1 Introduction

1.1 Purpose and Scope

This document provides an overview of the M30 release of the Certification Toolkit focusing on its design, installation, maintenance and usage.

1.2 Who should read this document

Users who may want to deploy and/or use the Certification Toolkit.

1.3 System Context

The Certification Toolkit is used independently within the SCIDIP-ES e-infrastructure to support repositories wishing to perform a structured self-assessment for compliance with ISO 16363 specification¹ for trustworthy repository status. It has no dependency on other SCIDIP-ES software components. It should be noted that the tool is not an expert system and does not provide feedback on the user's input. It is designed to guide users through a review of their existing preservation policies and practices with reference to the metrics defined in ISO16363. The aim is to highlight potential areas for improvement rather than to achieve a pass or fail decision. If formal certification is required, users may send their completed reports to an ISO 16919² certification authority for validation.

1.4 Release Notes

This release demonstrates the basic operations for using the tool:

- User login/registration
- Create an assessment collection and assessment
- Edit, store and retrieve assessment evidence and reference documents information to/from the database
- Generate a printable assessment form.

Future releases will:

- Allow storage of reference documents in the database
- Link references directly to particular answers

1.5 License and Conditions of Use

The SCIDIP-ES Certification Toolkit is licensed under the Apache License, Version 2.0 (the "License"). You may not use this software except in compliance with the License. A copy of the License could be obtained at: <http://www.apache.org/licenses/LICENSE-2.0>. Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

¹ http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=56510

² http://www.iso.org/iso/catalogue_detail.htm?csnumber=57950

2 Installation Guide

The Certification Toolkit is a 3-tier Java Server Faces (JSF)³ web application supported by a MySQL⁴ database (open source version). See Section 3 for an overview of its design.

2.1 Download Information

The recent stable source code could be accessed from SVN at *Sourceforge*. The URL to the svn trunk is: <svn://svn.code.sf.net/p/digitalpreserve/code/SCIDIP-ES/software/toolkits/CertificationToolkit/trunk>

Milestone releases of the software may also be downloaded via the SCIDIP-ES maven nexus repository at: <http://nexus.scidip-es.eu/content/repositories/releases/eu/scidipes/toolkits/certificationtoolkit/ctk/>

2.2 Overview

The Certification Toolkit requires an initial database to be created in MySQL using a provided MySQL script (repocert-load.sql) that creates the schema and loads the default data (see Section 2.5.1). The toolkit itself is packaged as archive files (zip and tar.gz). The archive is structured as below:








Name	Type	Compressed size
 javadocs	File folder	
 certification-toolkit.war	WAR File	22,876 KB
 ctk-config.properties	PROPERTIES File	1 KB
 LICENSE	File	4 KB
 NOTICE	File	1 KB
 README.html	HTML Document	3 KB
 repocert-load.sql	SQL File	19 KB

Figure 1: Certification Toolkit Archive Structure

2.3 Prerequisites

The installer should have a working knowledge of the MySQL database, Tomcat⁵ and Maven⁶ build tool.

2.3.1 Software prerequisites

Software prerequisites respect SCIDIP-ES guidelines and include:

- Tomcat version 7 minimum
- MySQL 5.5

³ Java Server Faces - <https://javaserverfaces.java.net/>

⁴ MySQL database - <http://dev.mysql.com/>

⁵ Apache Tomcat - <http://tomcat.apache.org/tomcat-7.0-doc/>

⁶ Apache Maven - <http://maven.apache.org/>

The web application is built using the JSF framework and UI components from the PrimeFaces⁷ extension library.

2.3.2 Hardware prerequisites

None.

2.4 OSS/COTS Installation

None.

2.5 Certification Toolkit Installation

2.5.1 Database configuration

The Certification Toolkit uses a database called **repocert** to store both static and dynamic data. The static data includes the set of ISO16363 questions, content page/section structure and their ordering; the dynamic data includes users, projects, assessments and answers.

Deployers may use the file `repocert-load.sql` to create the database objects, populate the static data and set up the database user (**certuser**) by running the following command line in a standard shell:

```
shell> mysql < repocert-load.sql
```

Dependent on the setup of your MySQL database, you may need to provide additional login parameters for the MySQL root or power user. Please consult the [MySQL reference menu](#) for your specific installation for more information. Alternatively, set up the database objects by calling the following goal during the Maven build:

```
antrun:run
```

This goal runs an Ant SQL target to load the `repocert-load.sql`. Note that you need to:

1. have MySQL running
2. update the required properties in the appropriate profile in the POM (see Table 1) to match your environment
3. run the build with the correct Maven build profile. The provided POM assumes that the 'live' profile is always active. You should override this to provide the correct configuration properties.

Property	Description	Default Value	Configurable Externally
<code>ctk.dbDriver</code>	MySQL database driver	<code>com.mysql.jdbc.Driver</code>	Via the <code>ctk-config.properties</code> file which is used at runtime by the application to load

⁷ PrimeFaces - <http://www.primefaces.org/index>

			configuration information.
ctk.dbHostUr1	MySQL host database URL to use in the JDBC connection String	jdbc:mysql://localhost/	Via the ctk-config.properties file which is used at runtime by the application to load configuration information.
root-user	Name of the root/power user with sufficient privilege to run the load script	root	-
mysql-pswd-root	Password for the root/power user	-	Can be hidden in the Maven .settings.xml file
ctk.dbUr1	Application database URL to use in the JDBC connection String	jdbc:mysql://localhost/repocert	Via the ctk-config.properties file which is used at runtime by the application to load configuration information.
ctk.dbUser	Default application database user. This is currently used in the JDBC connection String.	certuser	Via the ctk-config.properties file which is used at runtime by the application to load configuration information.
ctk.dbPswd	Password of the default application database user.	cujimmy25	Via the ctk-config.properties file which is used at runtime by the application to load configuration information.

Table 1: Database configuration properties

It is possible to alter the connection parameters to the **repocert** database at runtime via an external `ctk-config.properties` file. An example configuration file is included in the distribution archive (see Figure 1). To use this facility, you need to define a system environment property 'ctk-config' containing the absolute path to the file on your system.

2.5.2 Web app configuration

Assuming that Tomcat is installed and running, extract and copy **certification-toolkit.war** from the distribution archive (see Figure 1) to `$TOMCAT_HOME/webapps` to deploy the web application.

Alternatively, you could deploy this via Maven using the `tomcat7:deploy` goal. To do this, you need to:

1. have Tomcat running
2. update the required properties (see Table 2)
3. run the build with the correct Maven build profile. The provided POM assumes that the 'live' profile is always active. You should override this to provide the correct configuration properties.

Property	Description	Default Value
tomcat-server	Id of the Tomcat server. This contains the Tomcat admin user name and password hidden in your Maven <code>.settings.xml</code> . Alternatively, you could uncomment the relevant section in the POM and provide this in-line.	scidip-tomcat
tomcat-url	URL to the Tomcat admin web app.	<code>http://localhost:8080/manager/text</code>
username	Tomcat admin user name. See tomcat-server above.	-
password	Tomcat admin user password. See tomcat-server above.	-

Table 2: Tomcat configuration properties

It should now be possible to visit:

`http://localhost:8080/certification-toolkit/`

in a web browser; this should bring up the Toolkit's login page (Figure 4).

2.6 Uninstallation

The Certification Toolkit can be uninstalled by un-deploying the war package (**certification-toolkit.war**) and dropping the **repocert** database in MySQL. You may also un-deploy the web application by running Maven using the `tomcat7:undeploy` goal.

3 Software Design

Certification Toolkit is a typical MVC application developed using the JSF Framework which provides a powerful, component-based UI development framework built on proven JSP and servlet technologies (see Figure 2). Web-accessible UI components are bound to server-side JavaBeans that are registered as “ManagedBeans”. The latter implements business logic delivering functionalities for managing audit projects or assessment collections. Each collection may contain one or more self assessment for trustworthy preservation repository status. The applications runs as a web application in a Apache Tomcat 7.0.12 servlet container and is accessed via standard web browser such as Google Chrome or Internet Explorer, etc.

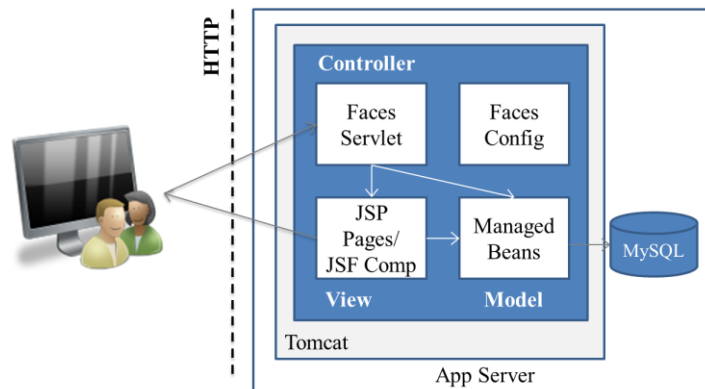


Figure 2: Overview of the Certification Toolkit application.

Figure 3 presents the generic interactions between a new user and the Certification Toolkit. These involve a new user:

- accessing the application using a standard browser
- registering with the toolkit
- creating a new assessment collection
- creating a new self-audit assessment
- editing the self-audit assessment
- logging off.

Information created by the user, i.e. the dynamic data, is persisted to a MySQL database deployed on the server side (see Figure 2).

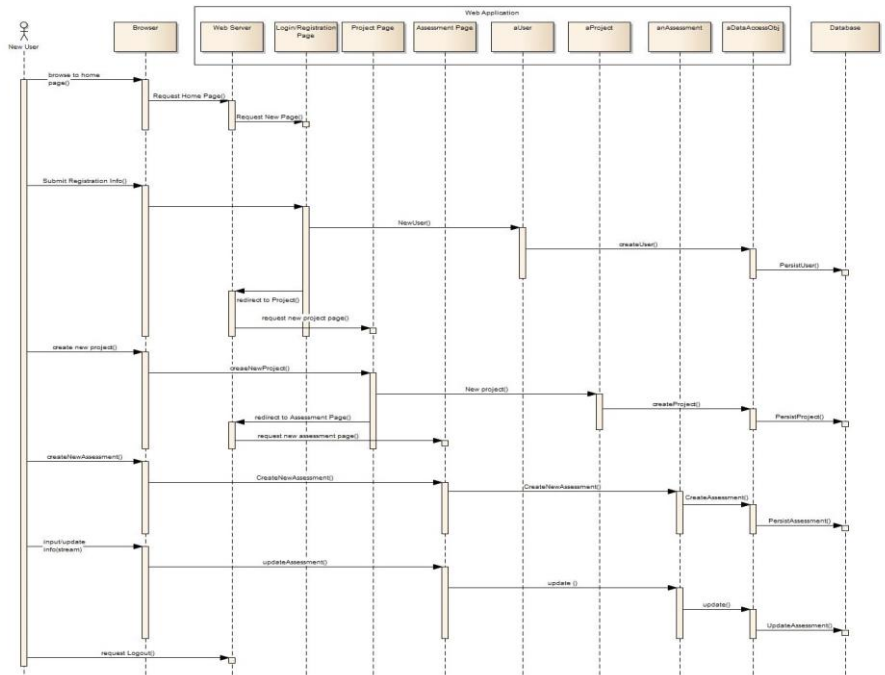


Figure 3: Generic interactions supported by Certification Toolkit.

4 Using SCIDIP-ES Certification Toolkit

Please see Section 1.3 for a description of the intended purpose of the tool. To avoid inconsistent behavior, please use the links in the toolbar to navigate between pages rather than using your browser’s Back button.

4.1 Opening the Certification Toolkit

Visiting the URL (or the equivalent on your server):

<http://localhost:8080/certification-toolkit/>

in a web browser; this should go to the Toolkit’s Login page (Figure 4).

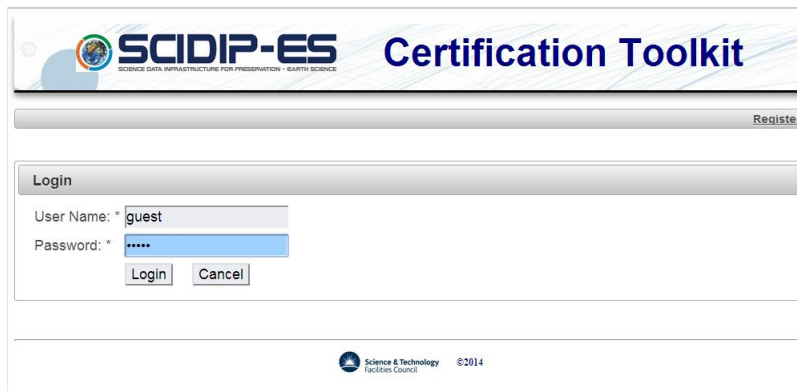


Figure 4: Certification Toolkit login page

New users should register by clicking on the [Register](#) link on the right hand corner of the toolbar. This will bring up the registration form (Figure 5):

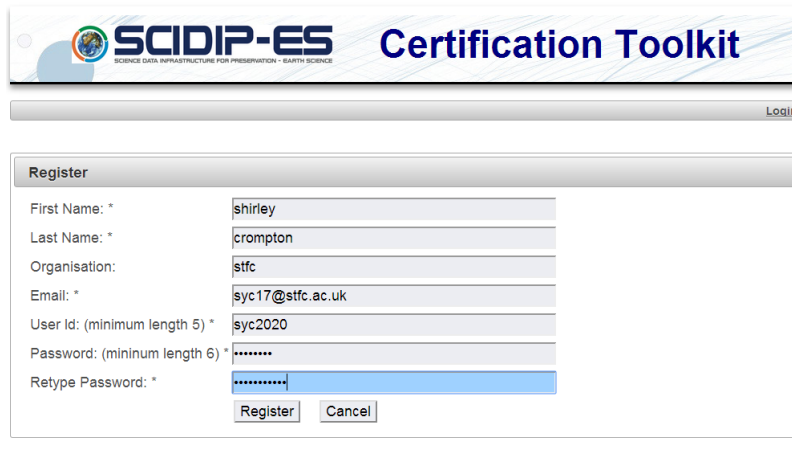


Figure 5: User registration page

In line with general convention, mandatory input fields are marked by *.

4.2 Managing Assessment Collections

On successful registration, new users will be directed to the Create New Assessment Collection page (Figure 6). Existing users not associated with a collection will also be directed to this page after logging on. Those who have already created one or more collections will be directed to the list collections page (Figure 7).




Figure 6: Create new assessment collection page

User can create, delete or browse individual self-audit project by clicking on the relevant link on the page (see Figure 7). For example, to view a single assessment collection, click on the [Select](#) link. To create a new assessment collection, click on the [create](#) link towards the bottom of the page. This will bring up the create assessment page (see Figure 6).

Users can also use the toolbar’s embedded links to return to the list assessment collections page or to log off.



Assessment Collection List

This page lists your assessment collection. A collection is a convenient container, just like a file folder, for grouping your individual assessment. For example, you may have a collection of assessments for a particular archive within your data repository or for a particular objective such as a milestone.

Assessment Collection Name	Assessment Collection Desc	Action	Action
Guest Project	Example project	Delete	Select
My collection	My collection	Delete	Select

Alternatively, [create](#) a new assessment collection.

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Figure 7: Assessment collection page listing collections associated with the user.

4.3 Manage Assessments



Assessment List

This page lists your assessments which are self-assessments conducted for compliance to the [ISO1636 specifications for trustworthy digital repository status](#).

Assessment Name	Assessment Desc	Action	Action
Guest Assessment	Example Assessment	Delete	Edit

Alternatively, [create](#) a new assessment.

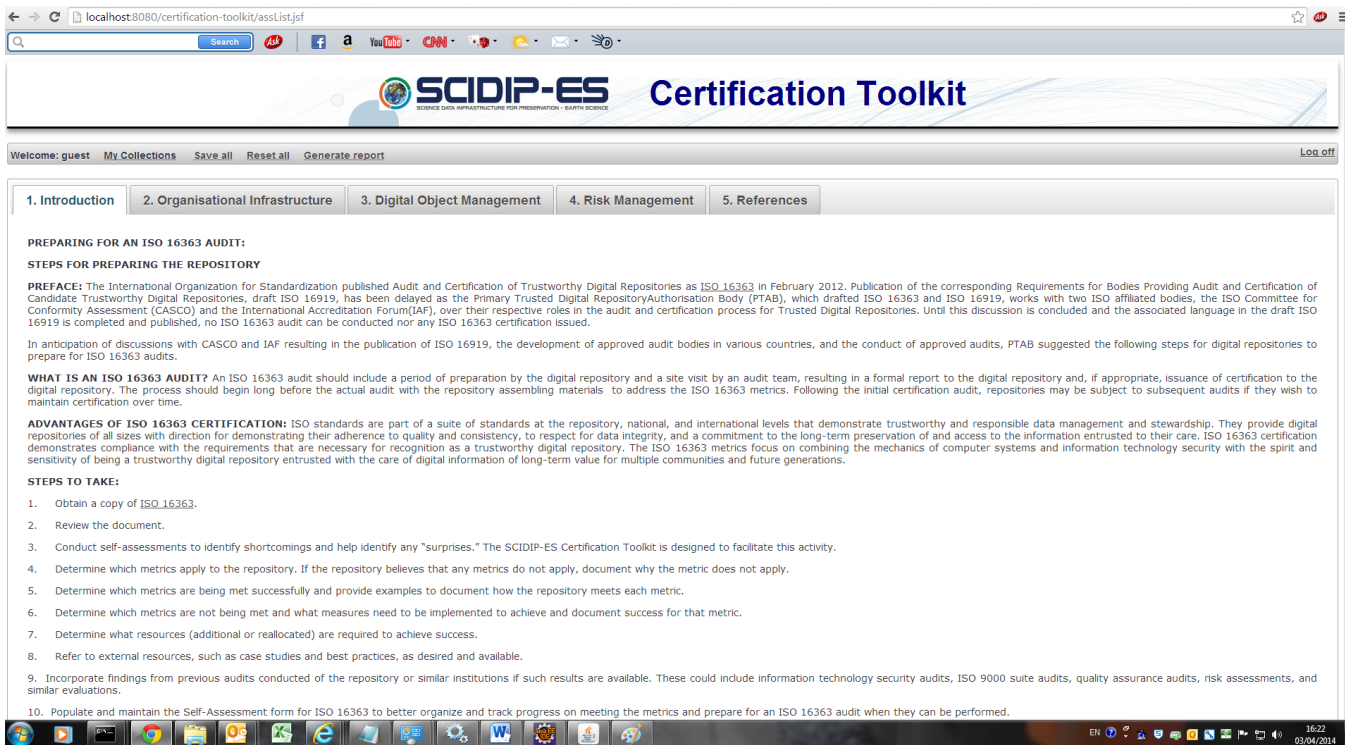
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Figure 8: Assessments page listing assessments under a single collection.

This page displays the self-assessments contained in a single collection. User can delete, access individual assessment or create a new assessment by clicking on the relevant link on the page (see Figure 8). For example, to edit an assessment, click on the [Edit](#) link.

4.4 The Individual Assessment

An assessment is divided into tabulated sections organised in line with the ISO16363 exemplar. Users can access the required section by expanding the relevant tab along the top of the page. In the initial view (Figure 9), the first tab is shown. This contains notes on how to prepare for an ISO16363 assessment.



1. Introduction 2. Organisational Infrastructure 3. Digital Object Management 4. Risk Management 5. References

PREPARING FOR AN ISO 16363 AUDIT:

STEPS FOR PREPARING THE REPOSITORY

PREFACE: The International Organization for Standardization published Audit and Certification of Trustworthy Digital Repositories as ISO 16363 in February 2012. Publication of the corresponding Requirements for Bodies Providing Audit and Certification of Candidate Trustworthy Digital Repositories, draft ISO 16919, has been delayed as the Primary Trusted Digital Repository Authorisation Body (PTAB), which drafted ISO 16363 and ISO 16919, works with two ISO affiliated bodies, the ISO Committee for Conformity Assessment (CASCO) and the International Accreditation Forum (IAF), over their respective roles in the audit and certification process for Trusted Digital Repositories. Until this discussion is concluded and the associated language in the draft ISO 16919 is completed and published, no ISO 16363 audit can be conducted nor any ISO 16363 certification issued.

In anticipation of discussions with CASCO and IAF resulting in the publication of ISO 16919, the development of approved audit bodies in various countries, and the conduct of approved audits, PTAB suggested the following steps for digital repositories to prepare for ISO 16363 audits.

WHAT IS AN ISO 16363 AUDIT? An ISO 16363 audit should include a period of preparation by the digital repository and a site visit by an audit team, resulting in a formal report to the digital repository and, if appropriate, issuance of certification to the digital repository. The process should begin long before the actual audit with the repository assembling materials to address the ISO 16363 metrics. Following the initial certification audit, repositories may be subject to subsequent audits if they wish to maintain certification over time.

ADVANTAGES OF ISO 16363 CERTIFICATION: ISO standards are part of a suite of standards at the repository, national, and international levels that demonstrate trustworthy and responsible data management and stewardship. They provide digital repositories of all sizes with direction for demonstrating their adherence to quality and consistency, to respect for data integrity, and a commitment to the long-term preservation of and access to the information entrusted to their care. ISO 16363 certification demonstrates compliance with the requirements that are necessary for recognition as a trustworthy digital repository. The ISO 16363 metrics focus on combining the mechanics of computer systems and information technology security with the spirit and sensitivity of being a trustworthy digital repository entrusted with the care of digital information of long-term value for multiple communities and future generations.

STEPS TO TAKE:

1. Obtain a copy of [ISO 16363](#).
2. Review the document.
3. Conduct self-assessments to identify shortcomings and help identify any "surprises." The SCIDIP-ES Certification Toolkit is designed to facilitate this activity.
4. Determine which metrics apply to the repository. If the repository believes that any metrics do not apply, document why the metric does not apply.
5. Determine which metrics are being met successfully and provide examples to document how the repository meets each metric.
6. Determine which metrics are not being met and what measures need to be implemented to achieve and document success for that metric.
7. Determine what resources (additional or reallocated) are required to achieve success.
8. Refer to external resources, such as case studies and best practices, as desired and available.
9. Incorporate findings from previous audits conducted of the repository or similar institutions if such results are available. These could include information technology security audits, ISO 9000 suite audits, quality assurance audits, risk assessments, and similar evaluations.
10. Populate and maintain the Self-Assessment form for ISO 16363 to better organize and track progress on meeting the metrics and prepare for an ISO 16363 audit when they can be performed.

Figure 9: First page of the assessment form

The second (see Figure 10), third and fourth tabs contain specific assessment questions and answers organised in expandable accordion panels. Users can expand and collapse specific panels to optimise the display. Only one section can be expanded at a time. Clicking on the heading of a collapsed section will expand it and collapse the currently-open section (if any). Clicking on the expanded section's heading will collapse it.

The questions within each section are also presented as accordion panels, but multiple questions can be open at the same time.

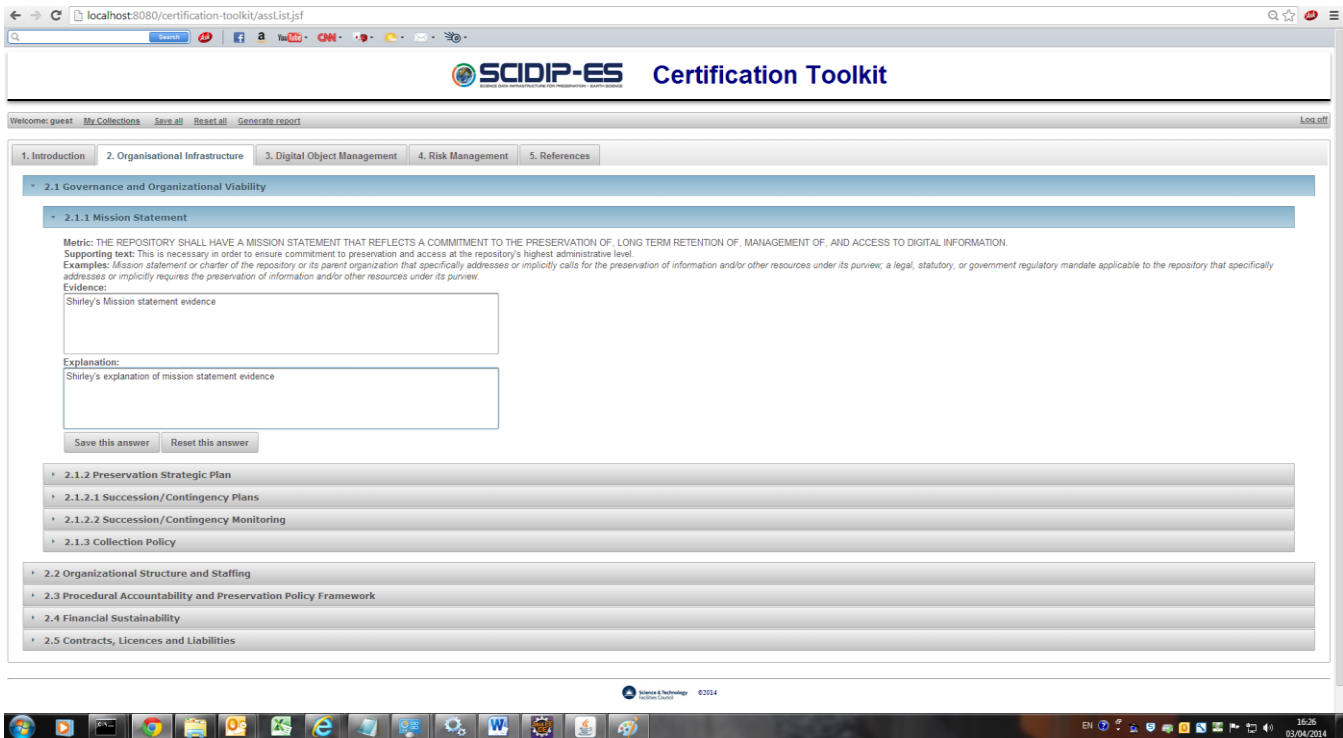


Figure 10: Initial view of the second tab of the assessment, showing the first question

The final tab (References) contains the list of documents referenced in the user's answers (see Section 4.4.2).

4.4.1 The Questions and Answers

Each question (see Figure 10 above) consists of:

- A short title (sometimes just a section number)
- A "metric" that describes the question in detail
- A "supporting text" that explains the need for this question
- One or more examples of evidence / explanation / documents used to support the answer

Beneath each question are text areas into which the user should enter some descriptive evidence and explanation.

Each question/answer section has buttons labelled **Save this answer** and **Reset this answer**. Clicking on the first updates the answer in the database (i.e. replacing any previously saved answer). Clicking on the second will reload the answer from the database, thus overwriting any unsaved changes. Note that neither operation can be undone, nor is there any confirmation dialog.

Similar Save all, Reset all links to save or reset the entire assessment form are located in the main toolbar.

4.4.2 The References Page

This page contains an editable table listing the documents that the user has provided as certification evidence (Figure 11). An input form below the table allows new reference information to be added.

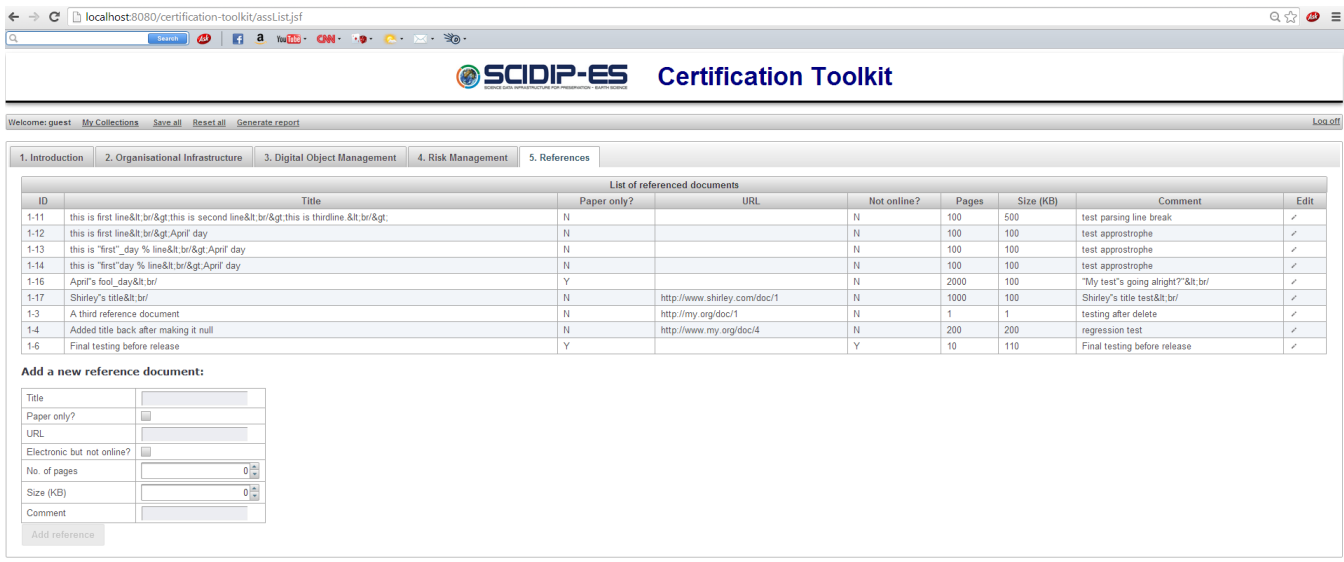


Figure 11: The references page

The current implementation loads the reference information but not the actual document. This will be provided in a future release.

Users can update the references listed in the table by clicking on the pencil icon in the Edit column. Input fields will replace the output display on the selected row. After completing the edit, clicks on the ✓ icon in the Edit column to save or the × icon to cancel (see Figure 12). The edit operation uses AJAX⁸ which is supported by most recent versions of browsers, including Internet Explorer, Chrome, Opera, Safari, Konqueror and Netscape.

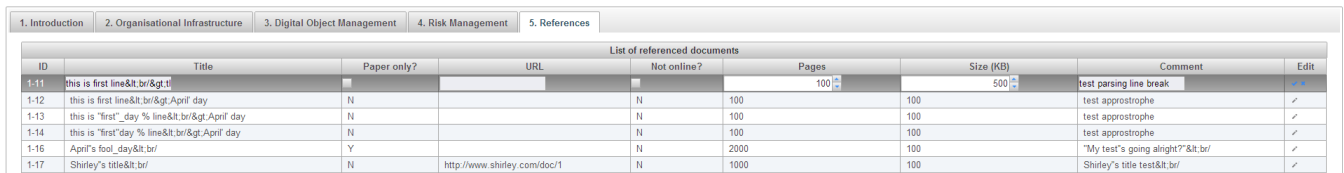


Figure 12: Edit reference information

Users can delete a reference from the table using the context menu. First select the relevant row, and then right click to bring up the context menu (see Figure 13).

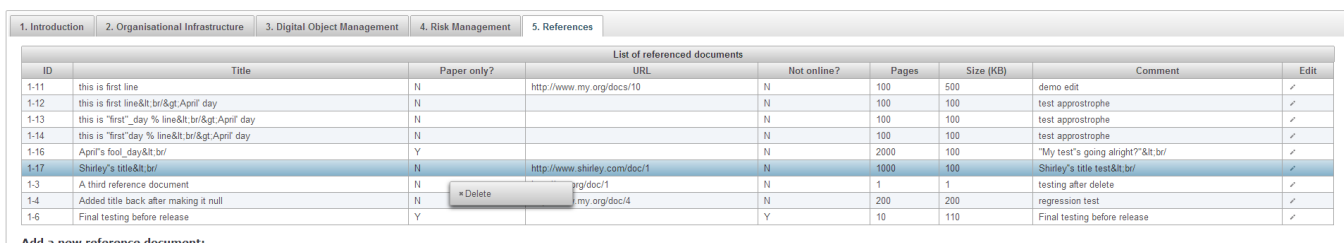


Figure 13: Delete a reference

⁸ Asynchronous JavaScript and XML - <http://www.w3schools.com/ajax/default.ASP>

4.4.3 Generate Printable Assessment Form

Users can generate a printable version of the assessment form using the [Generate Report](#) link in the toolbar (see Figure 11). The operation creates an HTML page with a flattened assessment form containing the saved information. Users can print this page using the [Print](#) link in the toolbar (see Figure 14). This operation calls the browser’s native print function. You may configure the print using the native print dialogue, e.g. to remove header etc. (Figure 15). Users can return to the edit view using the [Back to Assessment](#) link in the toolbar.

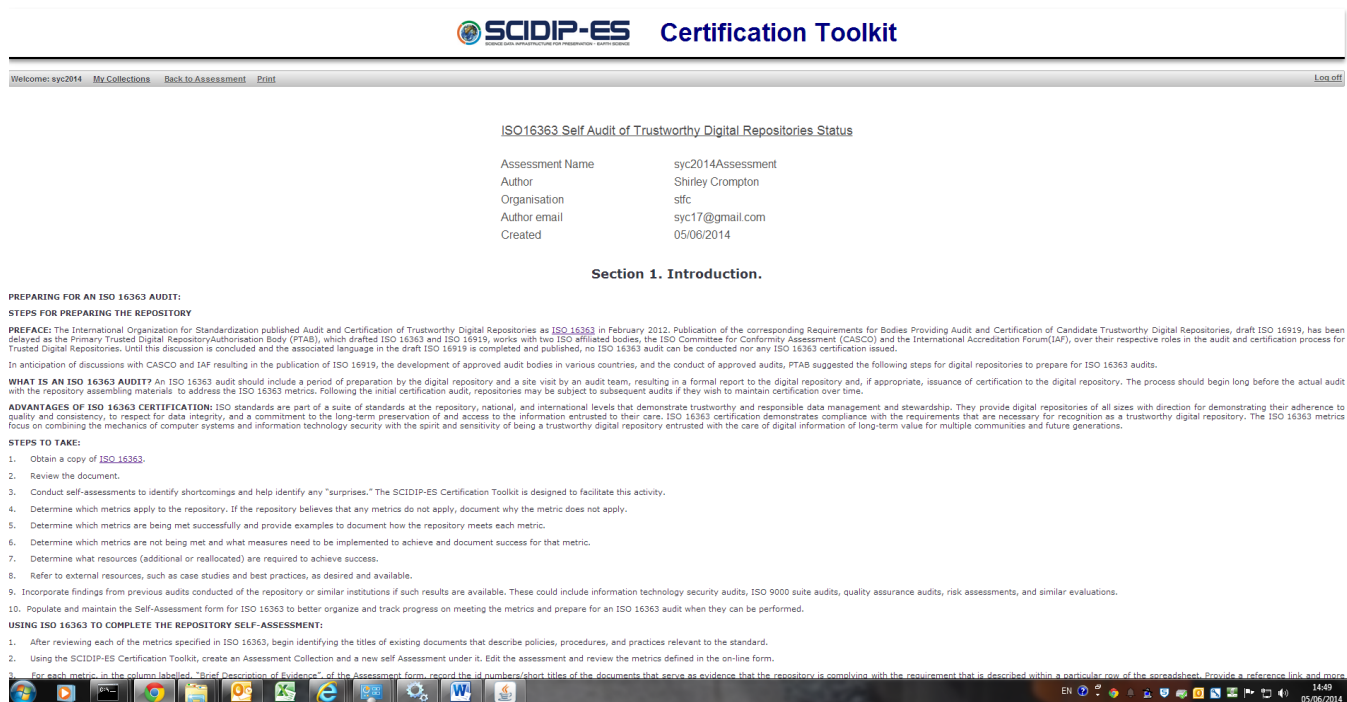


Figure 14: Printable assessment form.

Please note that with Chrome, it may be necessary to remove some add-ons, eg. Ask Toolbar, to avoid these being included in the print (see <https://support.google.com/cloudprint/?hl=en>).

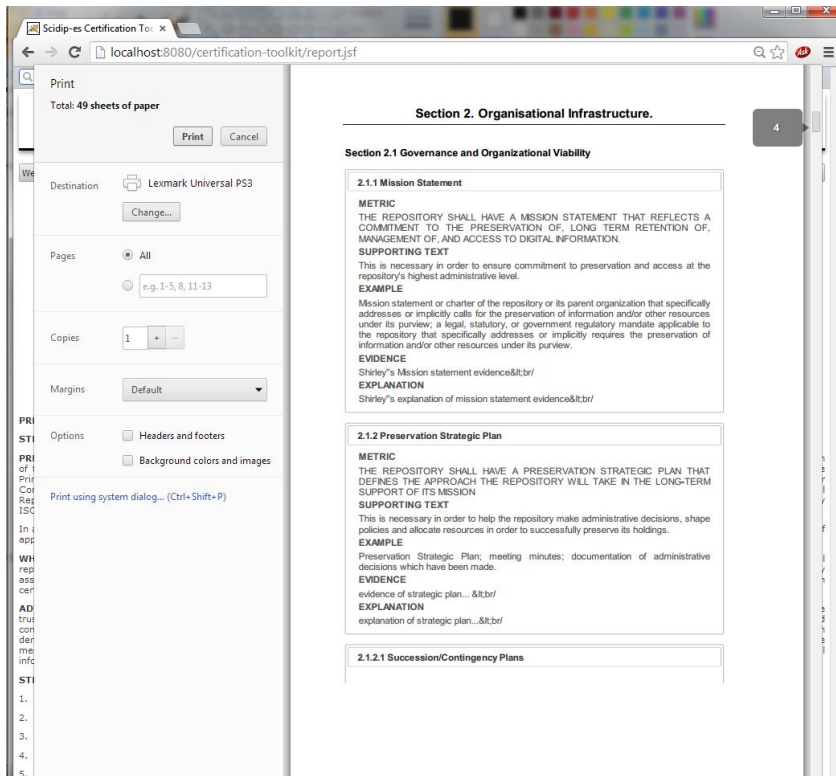


Figure 15: Preview of Section 2 of the printable assessment form

5 Reference Manual

5.1 Keyboard shortcuts

N/A

5.2 Command-line commands

N/A

5.3 Public APIs

None available.

6 Troubleshooting Common Issues

6.1 Tomcat Deployment Error

If Tomcat deploy fails on the following error:

```
java.lang.NoSuchMethodException: org.apache.catalina.deploy.WebXml addServlet
```

check that you have configured Tomcat to permit the loading of delegates. Make sure that your <Tomcat>/conf/context.xml file contains the following element:

```
<Loader delegate="true" />
```

6.2 Session Timeouts

The user session will time out if the application is left unattended for a predefined duration. It is recommended that user should save changes frequently, rather than complete the entire form first and then save at the end.

6.3 Navigation

Please avoid using the browser's back button to navigate between pages to avoid getting staled information.

6.4 Unexpected Toolbar Widgets in Printed Version

If you are using Chrome, it may be necessary to remove some add-ons, eg. Ask Toolbar, to avoid these being included in the print (see <https://support.google.com/cloudprint/?hl=en>). Alternatively, try using Internet Explorer.

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Annex B. Terminology

ACRONYM	DESCRIPTION
JSF	Java Server Faces
DDL	Data Definition Language
ES	Earth Science
KB	Knowledge Base