

# Software Engineering Project (2IP40)

Project Group 1

## Acceptance Test Plan

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# Abstract

This document describes the Acceptance Test Plan (ATP) for the SPINGRID system and was made according to the software engineering standard provided by the European Space Agency described in [ESA]. The projects acceptance test for the product is described here. This project is one of seven assignments for the course 2IP40 at Eindhoven University of Technology.

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# Document Status Sheet

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# Chapter 1

## Introduction

### 1.1 Purpose

This document describes the plan for testing the developed SPINGRID software against the user requirements as defined in [URD]. The purpose of this acceptance test is to make sure that the system developed during the SPINGRID project complies with the requirements of URD. These tests should be executed in the Acceptance Test (AT) phase of the SPINGRID project.

### 1.2 Scope

The software implements a computational grid. This grid is able to execute jobs when it receives an application accompanied by a set of data files. By hiding the complexity of grid technology the system will be easy to use. Usability is also increased by offering a web-based front-end for users to access the system.

## 1.3 List of definitions and abbreviations

### 1.3.1 Definitions

|                       |   |
|-----------------------|---|
| Agent                 | Application that is used by a resource provider to retrieve and execute jobs.   |
| Application           | A non-interactive data processing application consisting of executables, scripts and/or auxiliary data files that reads one or more input data files and writes one or more output files. |
| Application Provider  | An application provider can offer a set of applications to the SPINGRID system. They can restrict access for projects and for resource providers to their applications.                   |
| Client                | Application that is used by all the users except the resource provider who uses the agent application.  |
| Computational Grid    | A hardware and software infrastructure that enables coordinated resource sharing within dynamic organizations consisting of individuals, institutions and resources.                      |
| Customer              | Dutch Space B.V.  |
| Data Provider         | A data provider can offer a set of datafiles to the SPINGRID system. They can restrict access for projects and for resource providers to their datafiles.                                 |
| Dispatcher            | A dispatcher acts like a server and manages the distribution of jobs over the computational grid.   |
| Job                   | Specification of application, configuration data, input and/or output data files and scheduler specific data (priority, preferred resource, etc).   |
| Job Provider          | Job providers are users that offer a job to a project. They have to be a member of that particular project.   |
| Project               | A collection of jobs with specified access rights to which users (project members) can be assigned.   |
| Project Administrator | The project administrators administrate projects and can assign and remove job providers, configure a project and restrict access for resource providers.                                 |
| Resource Provider     | Resource providers are users that offer time on their computers to the SPINGRID system. They can restrict access to their computer for application providers and projects.                |
| Role                  | The actions and activities assigned to a person.  |
| SPINGRID              | A computational grid using SPINGRID software.   |
| SPINGRID Software     | Software developed by Dutch Space and TU/e to build computational grids for distributed data processing.  |
| SPINGRID System       | The full name of the entire system.   |
| System Administrator  | The system administrator oversees the entire SPINGRID system and has the right to configure the system, to create and remove projects and assign and remove project administrators.       |



### 1.3.2 Abbreviations

|     |                             |
|-----|-----------------------------|
| ATP | Acceptance Test Plan        |
| ESA | European Space Agency       |
| JRE | Java Runtime Environment    |
| NAT | Network Address Translation |
| URD | User Requirements Document  |

## 1.4 Documents

### 1.4.1 Reference Documents

|        |  |
|--------|--|
| [BSSC] | <i>BSSC 2005 Java Coding Standard</i> , Issue 1.0, March 2005  |
| [ESA]  | <i>ESA Software Engineering Standards (ESA PSS-05-0 Issue 2)</i> , ESA Board for Software Standardization and Control (BSSC), 1991 |
| [JSDL] | <i>Job Submission Description Language (JSDL) Specification</i> , Version 1.0, November 2005                                       |
| [STD]  | <i>Software Transfer Document</i> , SPINGRID team, TU/e, Version 0.0.1, May 2006   |
| [SUM]  | <i>Software User Manual</i> , SPINGRID team, TU/e, Version 0.0.1, May 2006   |
| [SVVP] | <i>Software Verification and Validation Plan</i> , SPINGRID team, TU/e, Version 0.1.2, March 2006                                  |

### 1.4.2 Applicable Documents

|       |  |
|-------|--|
| [URD] | <i>User Requirements Document</i> , SPINGRID team, TU/e, version 1.0.0, February 2006  |
| [SRD] | <i>Software Requirements Document</i> , SPINGRID team, TU/e, version 1.0.1, March 2006 |

## 1.5 Overview

In the second chapter the items to be tested are mentioned. A specification for each test case is given in the third chapter. The fourth chapter specifies the procedures for these test cases.

35 In the fifth chapter the reports for all test cases are presented.

# Chapter 2

## Test plan

### 2.1 Test items

40 The software to be tested is the SPINGRID system. The user requirements can be found in [URD].

### 2.2 Features to be tested

The SPINGRID system will adhere to the requirements, which are documented in chapter 4 of the URD.

### 2.3 Test deliverables

45 The following items must be delivered before testing begins:

- The Software Verification and Validation Plan [SVVP].
- The Software Requirements Document [SRD].
- The User Requirements Document [URD].
- The Software Transfer Document [STD].
- 50 • Chapters 1, 2, 3 and 4 of this Acceptance Test Plan.
- Acceptance Test input data.
- Software to be tested.

The following items must be delivered when the testing is finished:

- Acceptance test report.

- 55
- Acceptance test output data.
  - Problem reports (if necessary).

## 2.4 Testing tasks

The following tasks are necessary for preparing and performing the acceptance tests:

- Designing the acceptance tests.
- 60 • Ensuring that all environmental needs are satisfied for the acceptance tests.
- Performing the acceptance tests.

## 2.5 Environmental needs

The environmental requirements in [URD] only describe that the SPINGRID system runs on Windows XP, Mac OS or Linux. The environmental requirements are described in more  
65 detail in [SRD]. The requirements in [SRD] are taken instead of the requirements in [URD] because the URD does not describe the environment sufficient.

General Requirements:

- 1 dispatcher
- 40 agents
- 70 • 10 clients

Dispatcher:

- Intel Pentium IV 2 GHz or equivalent
- 2 GB RAM
- 2 MBit/s network
- 75 • dedicated server
- Linux 2.4 (or higher)
- Sun JRE 1.4.2 or 1.5
- MySQL 5.0
- MySQL Connector/J JDBC driver (libmysql-java)
- 80 • IP-tables

Agent:

- Intel Pentium II 300 MHz or equivalent, G4 700 MHz or equivalent
- 128 MB RAM
- 256 MB Available Harddisk Space
- 85 • Windows XP, Mac OS X or Linux 2.4 (or higher)
- Sun JRE 1.4.2 or 1.5

Client:

- Windows XP, Mac OS X or Linux 2.4 (or higher)
- Sun JRE 1.4.2 or 1.5

## 90 2.6 Test case pass/fail criteria

Every test should describe the criteria that should be met to pass that specific test.

## Chapter 3

# Test case specifications

In this chapter the test cases for all the user requirements are listed. If for specific tests any  
95 extra environmental needs are needed then they are mentioned in the test specification.

There are a couple user requirements that don't have an acceptance test. The user requirements below don't have an acceptance test because it is not clear how to test these user requirements:

- 100     • UR\_0010
- UR\_0060
- UR\_0070
- UR\_2010

The user requirements below don't have an acceptance test because the requirements are not  
105 implemented in the SPINGRID system:

- UR\_2140
- UR\_3010
- UR\_3020
- UR\_3030
- 110     • UR\_3040
- UR\_3060
- UR\_3062
- UR\_3072
- UR\_3074

- 115      • UR\_4040
- UR\_4060
- UR\_5050
- UR\_5052
- UR\_5054
- 120      • UR\_6040
- UR\_6042
- UR\_7040
- UR\_7050
- UR\_7052
- 125      • UR\_7090
- UR\_7100
- UR\_7110

The user requirements below don't have an acceptance test because they are trivial. This is because there is only one dispatcher in the SPINGRID system:

- 130      • UR\_8010
- UR\_8020

### 3.1 General Requirements Acceptance Tests

#### TC\_0020 acceptance test

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_0020   |
| <b>Test Item(s)</b>         | This test case verifies whether the SPINGRID system provides an English interface     |
| <b>Input Specification</b>  | This test case is verified by performing all acceptance tests in sections 3.2 to 3.8. |
| <b>Output Specification</b> | Check if the interface of the SPINGRID system is English                              |
| <b>Environmental Needs</b>  | None  |

**TC\_0030 acceptance test**

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_0030  |
| <b>Test Item(s)</b>         | This test case verifies whether all users can interact with a command-line interface in the SPINGRID system        |
| <b>Input Specification</b>  | This test case is verified by performing all acceptance tests in sections 3.2 to 3.8 in the command-line interface |
| <b>Output Specification</b> | Check if all acceptance tests can be done with the command-line interface  |
| <b>Environmental Needs</b>  | None   |

**TC\_0040 acceptance test**

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_0040   |
| <b>Test Item(s)</b>         | This test case verifies whether all users can interact with a web-based interface in the SPINGRID system        |
| <b>Input Specification</b>  | This test case is verified by performing all acceptance tests in sections 3.2 to 3.8 in the web-based interface |
| <b>Output Specification</b> | Check if all acceptance tests can be done with the web-based interface  |
| <b>Environmental Needs</b>  | None  |

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**TC\_0050 acceptance test**

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_0050  |
| <b>Test Item(s)</b>         | This test case verifies whether the SPINGRID system can handle at least 40 executing jobs  |
| <b>Input Specification</b>  | <ul style="list-style-type: none"> <li>• Perform TC_7020</li> <li>• Perform TC_7010 40 times in a short time</li> <li>• Perform TC_7060 for those jobs when they are finished</li> </ul> |
| <b>Output Specification</b> | Check if the output of all 40 jobs is expected   |
| <b>Environmental Needs</b>  | None   |

**TC\_0080 acceptance test**

145

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_0080  |
| <b>Test Item(s)</b>         | This test case verifies whether the SPINGRID system provide a trust model as described in [URD, section 2.4.2] |
| <b>Input Specification</b>  | This test case is verified by applying for each user all actions described in [URD, appendix A]                |
| <b>Output Specification</b> | Check if all allowed actions for each user succeed and all other actions for that user fails                   |
| <b>Environmental Needs</b>  | None   |

## 3.2 Job Requirements Acceptance Tests

### TC\_1010 acceptance test

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_1010  |
| <b>Test Item(s)</b>         | This test case verifies whether the SPINGRID system only accepts a job description written in a language who is a standardized one or one proposed for standardization           |
| <b>Input Specification</b>  | This test case is verified by creating a job using the description language JSDL (described in [JSDL]) and offering it to the SPINGRID system (perform TC_7020 and then TC_7010) |
| <b>Output Specification</b> | Check if the SPINGRID system accepts the job description   |
| <b>Environmental Needs</b>  | None   |

### TC\_1020a acceptance test

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_1020a   |
| <b>Test Item(s)</b>         | This test case verifies whether jobs can only be offered to the SPINGRID system by using a job description   |
| <b>Input Specification</b>  | This test case is verified by creating a job using the description language JSDL (described in [JSDL]) and offering it to the SPINGRID system (perform TC_7020 and then TC_7010) |
| <b>Output Specification</b> | Check if the SPINGRID system accepts the job description   |
| <b>Environmental Needs</b>  | None   |

### TC\_1020b acceptance test

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_1020b   |
| <b>Test Item(s)</b>         | This test case verifies whether jobs can only be offered to the SPINGRID system by using a job description   |
| <b>Input Specification</b>  | This test case is verified by creating a job using a description language that is not standardized and is not proposed for standardization and offering it to the SPINGRID system (perform TC_7020 and then TC_7010 but with the file "testjobfail.jsdl" instead of "testjob.jsdl".) |
| <b>Output Specification</b> | Check if the SPINGRID system rejects the job description   |
| <b>Environmental Needs</b>  | None   |



**TC\_1030 acceptance test**

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_1030  |
| <b>Test Item(s)</b>         | This test case verifies whether the job description contains all the necessary information for the SPINGRID system to handle the job               |
| <b>Input Specification</b>  | <ul style="list-style-type: none"> <li>• Perform TC_7020</li> <li>• Perform TC_7010</li> <li>• Perform TC_7060 when the job is finished</li> </ul> |
| <b>Output Specification</b> | Check if the SPINGRID system accepts the job and if the job is executed correctly  |
| <b>Environmental Needs</b>  | None   |

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**3.3 System Admin Requirements Acceptance Tests****TC\_2020 acceptance test**

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_2020  |
| <b>Test Item(s)</b>         | This test case verifies whether the system admin can authorize a user to become an application provider  |
| <b>Input Specification</b>  | <ul style="list-style-type: none"> <li>• Open the file "options" in the main directory of the client</li> <li>• Type as password "systemadmin"</li> <li>• Type as username "systemadmin"</li> <li>• Type as dispatcher_address the address of the dispatcher</li> <li>• Save the file</li> <li>• Type "java -jar sgclient.jar as rol:sysadmin add user testuser testpassword"</li> <li>• Type "java -jar sgclient.jar assign rol:appprov to usr:testuser"</li> </ul> |
| <b>Output Specification</b> | Check if the user has application provider rights  |
| <b>Environmental Needs</b>  | None   |

## 165 TC\_2100 acceptance test

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_2100   |
| <b>Test Item(s)</b>         | This test case verifies whether the system admin can change system settings   |
| <b>Input Specification</b>  | <ul style="list-style-type: none"> <li>• Open the file "options" in the directory of the dispatcher</li> <li>• Type as database_address the address of the database</li> <li>• Type as http_port the port that the dispatcher should listen to</li> <li>• Type as max_connections the maximal connections with the clients and agents</li> <li>• Save the file</li> </ul> |
| <b>Output Specification</b> | Check if the system settings work correctly   |
| <b>Environmental Needs</b>  | None  |

## TC\_2030 acceptance test

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_2030   |
| <b>Test Item(s)</b>         | This test case verifies whether the system admin can authorize a user to become a data provider |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar assign rol:datprov to usr:testuser"                                |
| <b>Output Specification</b> | Check if the user has data provider rights  |
| <b>Environmental Needs</b>  | None  |

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## TC\_2050 acceptance test

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_2050  |
| <b>Test Item(s)</b>         | This test case verifies whether the system admin can remove the role of application provider from a user |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar unassign rol:appprov from usr:testuser"                                     |
| <b>Output Specification</b> | Check if the user has no longer application provider rights  |
| <b>Environmental Needs</b>  | None   |

## TC\_2060 acceptance test

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_2060   |
| <b>Test Item(s)</b>         | This test case verifies whether the system admin can remove the role of data provider from a user |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar unassign rol:datprov from usr:testuser"                              |
| <b>Output Specification</b> | Check if the user has no longer data provider rights  |
| <b>Environmental Needs</b>  | None  |

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## TC\_2080 acceptance test

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_2080   |
| <b>Test Item(s)</b>         | This test case verifies whether the system admin can add a project to the system                              |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar add project testproject with usr:testuser"                                       |
| <b>Output Specification</b> | Check if the project is added to the SPINGRID system and if the user has project admin rights for the project |
| <b>Environmental Needs</b>  | None  |

## 180 TC\_2040 acceptance test

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_2040   |
| <b>Test Item(s)</b>         | This test case verifies whether the system admin can authorize a user to become a project admin of a project  |
| <b>Input Specification</b>  | <ul style="list-style-type: none"> <li>• Type "java -jar sgclient.jar as rol:sysadmin add user testuser2 testpassword"</li> <li>• Type "java -jar sgclient.jar assign rol:projadmin to usr:testuser2 in pro:testproject"</li> </ul> |
| <b>Output Specification</b> | Check if the user has project admin rights for the specified project  |
| <b>Environmental Needs</b>  | None  |

## TC\_2114 acceptance test

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_2114   |
| <b>Test Item(s)</b>         | This test case verifies whether the system admin can view a list of all project admins of a project |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar list users having rol:projadmin"                                       |
| <b>Output Specification</b> | Check if the output gives a list of project admins of the specified project                         |
| <b>Environmental Needs</b>  | None  |

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## TC\_2070a acceptance test

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_2070a   |
| <b>Test Item(s)</b>         | This test case verifies whether the system admin can remove the role of project admin from a user if that project does not violate UR_4010 |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar unassign rol:projadmin from usr:testuser2 in pro:testproject"   |
| <b>Output Specification</b> | Check if the user has no longer project admin rights for the specified project   |
| <b>Environmental Needs</b>  | None   |

## TC\_2070b acceptance test

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_2070b   |
| <b>Test Item(s)</b>         | This test case verifies whether the system admin can remove the role of project admin from a user if that project does not violate UR_4010 |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar unassign rol:projadmin from usr:testuser in pro:testproject"  |
| <b>Output Specification</b> | Check if an error message is returned because the project has only one project admin   |
| <b>Environmental Needs</b>  | None   |

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## TC\_2090 acceptance test

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_2090  |
| <b>Test Item(s)</b>         | This test case verifies whether the system admin can remove a project from the system                                |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar remove pro:testproject"   |
| <b>Output Specification</b> | Check if the project does not exist in the SPINGRID system and if there are no users who still belong to the project |
| <b>Environmental Needs</b>  | None   |

## 195 TC\_2110 acceptance test

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_2110   |
| <b>Test Item(s)</b>         | This test case verifies whether the system admin can view a list of all jobs in the SPINGRID system |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar as rol:sysadmin list jobs"   |
| <b>Output Specification</b> | Check if the output gives a list of all jobs in the SPINGRID system                                 |
| <b>Environmental Needs</b>  | None  |

**TC\_2120 acceptance test**

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_2120  |
| <b>Test Item(s)</b>         | This test case verifies whether the system admin can view a list of all trusted application providers in a project   |
| <b>Input Specification</b>  | <ul style="list-style-type: none"> <li>• Type "java -jar sgclient.jar as rol:sysadmin list users having rol:approv"</li> <li>• Type "java -jar sgclient.jar info usr:applicationprovider"</li> </ul> |
| <b>Output Specification</b> | Check if the output gives a list of all trusted application providers in the specified project   |
| <b>Environmental Needs</b>  | None   |

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**TC\_2130 acceptance test**

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_2130   |
| <b>Test Item(s)</b>         | This test case verifies whether the system admin can view a list of all trusted data providers in a project   |
| <b>Input Specification</b>  | <ul style="list-style-type: none"> <li>• Type "java -jar sgclient.jar as rol:sysadmin list users having rol:datprov"</li> <li>• Type "java -jar sgclient.jar info usr:dataprovder"</li> </ul> |
| <b>Output Specification</b> | Check if the output gives a list of all trusted data providers in the specified project   |
| <b>Environmental Needs</b>  | None  |

**TC\_2150 acceptance test**

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_2150  |
| <b>Test Item(s)</b>         | This test case verifies whether the system admin can work on a machine running Windows XP, Linux or Mac OS |
| <b>Input Specification</b>  | Perform all test cases of the system admin   |
| <b>Output Specification</b> | Check if no test cases fail  |
| <b>Environmental Needs</b>  | The machine is running on Windows XP, Linux or Mac OS  |

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### 3.4 Resource Provider Requirements Acceptance Tests

#### TC\_3070a acceptance test

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_3070a   |
| <b>Test Item(s)</b>         | This test case verifies whether the installation of the SPINGRID software should not require a computer expert |
| <b>Input Specification</b>  | Install the agent software as described in [SUM] by a person that is not a computer expert                     |
| <b>Output Specification</b> | Check if the installation is successful  |
| <b>Environmental Needs</b>  | The SPINGRID software is not installed   |

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#### TC\_3050 acceptance test

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_3050  |
| <b>Test Item(s)</b>         | This test case verifies whether a resource provider can see on which projects his resource is working on |
| <b>Input Specification</b>  | Type "list projects"   |
| <b>Output Specification</b> | Check if the projects, which the resource is working on, is returned                                     |
| <b>Environmental Needs</b>  | None   |

#### TC\_3070b acceptance test

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_3070b  |
| <b>Test Item(s)</b>         | This test case verifies whether the de-installation of the SPINGRID software should not require a computer expert |
| <b>Input Specification</b>  | Uninstall the agent software as described in [SUM] by a person that is not a computer expert                      |
| <b>Output Specification</b> | Check if the de-installation is successful  |
| <b>Environmental Needs</b>  | The SPINGRID software is installed  |

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#### TC\_3080 acceptance test

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_3080   |
| <b>Test Item(s)</b>         | This test case verifies whether the resource provider can work on a machine running Windows XP, Linux or Mac OS |
| <b>Input Specification</b>  | Perform all test cases of the resource provider   |
| <b>Output Specification</b> | Check if no test cases fail   |
| <b>Environmental Needs</b>  | The machine is running on Windows XP, Linux or Mac OS   |

### 3.5 Project Admin Requirements Acceptance Tests

#### TC\_4010 acceptance test

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_4010   |
| <b>Test Item(s)</b>         | This test case verifies whether the SPINGRID system has at least one project admin assigned to every project at all times   |
| <b>Input Specification</b>  | <ul style="list-style-type: none"> <li>• Perform TC_2020</li> <li>• Perform TC_2080</li> <li>• Perform TC_2040</li> <li>• Perform TC_2070a</li> <li>• Perform TC_2070b</li> </ul> |
| <b>Output Specification</b> | Check if all acceptance tests are successful  |
| <b>Environmental Needs</b>  | None  |

#### TC\_4050a acceptance test

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_4050a  |
| <b>Test Item(s)</b>         | This test case verifies whether a project admin can select which applications or application providers he trusts  |
| <b>Input Specification</b>  | <ul style="list-style-type: none"> <li>• Open the file "options" in the main directory of the client</li> <li>• Type as password "projectadmin"</li> <li>• Type as username "projectadmin"</li> <li>• Type as dispatcher_address the address of the dispatcher</li> <li>• Save the file</li> <li>• Type "java -jar sgclient.jar trust usr:applicationprovider as rol:approv for pro:project"</li> </ul> |
| <b>Output Specification</b> | Check if the application provider and all applications of the application provider are trusted for the project  |
| <b>Environmental Needs</b>  | None  |

#### TC\_4050b acceptance test

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_4050b  |
| <b>Test Item(s)</b>         | This test case verifies whether a project admin can select which applications or application providers he trusts  |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar distrust usr:applicationprovider as rol:approv for pro:project"                      |
| <b>Output Specification</b> | Check if the application provider and all applications of the application provider are distrusted for the project |
| <b>Environmental Needs</b>  | None  |

230 **TC\_4020 acceptance test**

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_4020   |
| <b>Test Item(s)</b>         | This test case verifies whether the project admin can authorize a user to become a job provider (in the project admin' project) |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar assign rol:jobprov to usr:testuser in pro:project"   |
| <b>Output Specification</b> | Check if the user has job provider rights in the project  |
| <b>Environmental Needs</b>  | None  |

**TC\_4030 acceptance test**

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_4030   |
| <b>Test Item(s)</b>         | This test case verifies whether the project admin can remove the role of job provider from a user (in the project admin' project) |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar unassign rol:jobprov from usr:testuser in pro:project"   |
| <b>Output Specification</b> | Check if the user no longer has job provider rights   |
| <b>Environmental Needs</b>  | None  |

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**TC\_4042a acceptance test**

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_4042a  |
| <b>Test Item(s)</b>         | This test case verifies whether a project admin can select which data sources (either a data provider or a dataset) he trusts   |
| <b>Input Specification</b>  | <ul style="list-style-type: none"> <li>• Open the file "options" in the main directory of the client</li> <li>• Type as password "systemadmin"</li> <li>• Type as username "systemadmin"</li> <li>• Type "java -jar sgclient.jar assign rol:datprov to usr:testuser"</li> <li>• Open the file "options" in the main directory of the client</li> <li>• Type as password "projectadmin"</li> <li>• Type as username "projectadmin"</li> <li>• Type "java -jar sgclient.jar trust usr:testuser as rol:datprov for pro:project"</li> </ul> |
| <b>Output Specification</b> | Check if the user is trusted as data provider for the project   |
| <b>Environmental Needs</b>  | None  |



**TC\_4042b acceptance test**

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_4042b  |
| <b>Test Item(s)</b>         | This test case verifies whether a project admin can select which data sources (either a data provider or a dataset) he trusts |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar distrust usr:testuser as rol:datprov for pro:project"  |
| <b>Output Specification</b> | Check if the user is not trusted anymore as data provider for the project   |
| <b>Environmental Needs</b>  | None  |

**TC\_4080 acceptance test**

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_4080  |
| <b>Test Item(s)</b>         | This test case verifies whether the project admin can view a list of all jobs in the project admin' project  |
| <b>Input Specification</b>  | <ul style="list-style-type: none"> <li>• Perform TC_7020</li> <li>• Perform TC_7010</li> <li>• Open the file "options" in the main directory of the client</li> <li>• Type as password "projectadmin"</li> <li>• Type as username "projectadmin"</li> <li>• Type as dispatcher_address the address of the dispatcher</li> <li>• Save the file</li> <li>• Type "java -jar sgclient.jar as rol:projadmin list jobs"</li> </ul> |
| <b>Output Specification</b> | Check if the output gives a list of jobs in the project admin' project   |
| <b>Environmental Needs</b>  | None   |

**TC\_4070 acceptance test**

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_4070   |
| <b>Test Item(s)</b>         | This test case verifies whether a project admin can remove a job from his project |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar as rol:projadmin remove job:testjob"                 |
| <b>Output Specification</b> | Check if the job is removed from the project                                      |
| <b>Environmental Needs</b>  | While the dispatcher is performing a job  |

**TC\_4090 acceptance test**

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_4090   |
| <b>Test Item(s)</b>         | This test case verifies whether the project admin can work on a machine running Windows XP, Linux or Mac OS |
| <b>Input Specification</b>  | Perform all test cases of the project admin   |
| <b>Output Specification</b> | Check if no test cases fail   |
| <b>Environmental Needs</b>  | The machine is running on Windows XP, Linux or Mac OS   |

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**3.6 Application Provider Requirements Acceptance Tests****TC\_5010 acceptance test**

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_5010   |
| <b>Test Item(s)</b>         | This test case verifies whether an application provider can add applications to the SPINGRID system   |
| <b>Input Specification</b>  | <ul style="list-style-type: none"> <li>• Open the file "options" in the main directory of the client</li> <li>• Type as password "applicationprovider"</li> <li>• Type as username "applicationprovider"</li> <li>• Type as dispatcher_address the address of the dispatcher</li> <li>• Save the file</li> <li>• Type "java -jar sgclient.jar add app fil:testapp.xml as testapp this is a test application"</li> </ul> |
| <b>Output Specification</b> | Check if the application is added in the SPINGRID system  |
| <b>Environmental Needs</b>  | None  |

**TC\_5030a acceptance test**

255

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_5030a   |
| <b>Test Item(s)</b>         | This test case verifies whether an application provider can select for which projects his applications may be used |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar trust app:testapp for pro:project"  |
| <b>Output Specification</b> | Check if the application is trusted for the project  |
| <b>Environmental Needs</b>  | None   |

**TC\_5030b acceptance test**

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_5030b   |
| <b>Test Item(s)</b>         | This test case verifies whether an application provider can select for which projects his applications may be used |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar distrust app:testapp for pro:project"   |
| <b>Output Specification</b> | Check if the application is distrusted for the project   |
| <b>Environmental Needs</b>  | None   |

260

**TC\_5040 acceptance test**

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_5040   |
| <b>Test Item(s)</b>         | This test case verifies whether an application provider can see on which projects his applications are used |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar as rol:approv list jobs"   |
| <b>Output Specification</b> | Check if the output gives a list of projects who have used applications from the application provider       |
| <b>Environmental Needs</b>  | None  |

**TC\_5042 acceptance test**

265

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_5042  |
| <b>Test Item(s)</b>         | This test case verifies whether an application provider can see which applications he provides |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar as rol:approv list apps"  |
| <b>Output Specification</b> | Check if the output gives a list of applications provided by the application provider          |
| <b>Environmental Needs</b>  | None   |

**TC\_5012 acceptance test**

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_5012  |
| <b>Test Item(s)</b>         | This test case verifies whether an application provider can remove applications from the SPINGRID system |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar remove app:testapp"   |
| <b>Output Specification</b> | Check if the application is removed from the SPINGRID system   |
| <b>Environmental Needs</b>  | None   |

270

**TC\_5020 acceptance test**

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_5020  |
| <b>Test Item(s)</b>         | This test case verifies whether an application provider can provide applications for Windows XP, Linux or Mac OS X             |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar add app fil:testapp.xml as testapp this is a test application for Windows XP, Linux and Mac OS X" |
| <b>Output Specification</b> | Check if the three applications are added to the SPINGRID system   |
| <b>Environmental Needs</b>  | None   |

**TC\_5060 acceptance test**

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_5060   |
| <b>Test Item(s)</b>         | This test case verifies whether an application provider can work on a machine running Windows XP, Linux or Mac OS |
| <b>Input Specification</b>  | Perform all test cases of the application provider  |
| <b>Output Specification</b> | Check if no test cases fail   |
| <b>Environmental Needs</b>  | The machine is running on Windows XP, Linux or Mac OS   |

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**3.7 Data Provider Requirements Acceptance Tests****TC\_6010 acceptance test**

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_6010   |
| <b>Test Item(s)</b>         | This test case verifies whether a data provider can add data files to the SPINGRID system   |
| <b>Input Specification</b>  | <ul style="list-style-type: none"> <li>• Open the file "options" in the main directory of the client</li> <li>• Type as password "dataprovder"</li> <li>• Type as username "dataprovder"</li> <li>• Type as dispatcher_address the address of the dispatcher</li> <li>• Save the file</li> <li>• Type "java -jar sgclient.jar add data fil:testdata.txt testdata<br/>This is a tets dataset"</li> </ul> |
| <b>Output Specification</b> | Check if the data is added in the SPINGRID system   |
| <b>Environmental Needs</b>  | None  |

**280 TC\_6020a acceptance test**

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_6020a   |
| <b>Test Item(s)</b>         | This test case verifies whether a data provider can select for which projects his data may be used |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar trust dat:testdata for pro:project"                                   |
| <b>Output Specification</b> | Check if the dataset is trusted for the project  |
| <b>Environmental Needs</b>  | None   |

**TC\_6020b acceptance test**

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_6020b   |
| <b>Test Item(s)</b>         | This test case verifies whether a data provider can select for which projects his data may be used |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar distrust dat:testdata for pro:project"                                |
| <b>Output Specification</b> | Check if the dataset is distrusted for the project   |
| <b>Environmental Needs</b>  | None   |

285

**TC\_6030 acceptance test**

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_6030  |
| <b>Test Item(s)</b>         | This test case verifies whether a data provider can see on which projects his data is used |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar as rol:datprov list projects"                                 |
| <b>Output Specification</b> | Check if the output gives a list of projects who have used data from the data provider     |
| <b>Environmental Needs</b>  | None   |

**TC\_6032 acceptance test**

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_6032  |
| <b>Test Item(s)</b>         | This test case verifies whether a data provider can see which data he provides |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar as rol:datprov list data"                         |
| <b>Output Specification</b> | Check if the output gives a list of data provided by the data provider         |
| <b>Environmental Needs</b>  | None   |

290

**TC\_6012 acceptance test**

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_6012  |
| <b>Test Item(s)</b>         | This test case verifies whether a data provider can remove data files from the SPINGRID system |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar remove dat:testdata"  |
| <b>Output Specification</b> | Check if the provided data is removed from the SPINGRID system                                 |
| <b>Environmental Needs</b>  | None   |

295

**TC\_6050 acceptance test**

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_6050   |
| <b>Test Item(s)</b>         | This test case verifies whether a data provider can work on a machine running Windows XP, Linux or Mac OS |
| <b>Input Specification</b>  | Perform all test cases of the data provider   |
| <b>Output Specification</b> | Check if no test cases fail   |
| <b>Environmental Needs</b>  | The machine is running on Windows XP, Linux or Mac OS   |

### 3.8 Job Provider Requirements Acceptance Tests

#### TC\_7020 acceptance test

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_7020  |
| <b>Test Item(s)</b>         | This test case verifies whether a job provider can request a list of all applications available to him   |
| <b>Input Specification</b>  | <ul style="list-style-type: none"> <li>• Open the file "options" in the main directory of the client</li> <li>• Type as password "jobprovider"</li> <li>• Type as username "jobprovider"</li> <li>• Type as dispatcher_address the address of the dispatcher</li> <li>• Save the file</li> <li>• Type "java -jar sgclient.jar as rol:jobprov list apps"</li> </ul> |
| <b>Output Specification</b> | Check if the output gives a list of applications available to the job provider   |
| <b>Environmental Needs</b>  | None   |

#### TC\_7010 acceptance test

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_7010  |
| <b>Test Item(s)</b>         | This test case verifies whether a job provider can offer testjob.jsdl to the SPINGRID system |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar add job fil:testjob.jsdl to pro:project"                        |
| <b>Output Specification</b> | Check if the job is added in the SPINGRID system   |
| <b>Environmental Needs</b>  | None   |

#### TC\_7080 acceptance test

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_7080   |
| <b>Test Item(s)</b>         | This test case verifies whether a job provider can see a list of his jobs |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar as rol:jobprov list jobs"                    |
| <b>Output Specification</b> | Check if the output gives a list of jobs provided by the job provider     |
| <b>Environmental Needs</b>  | None  |

#### TC\_7070 acceptance test

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_7070  |
| <b>Test Item(s)</b>         | This test case verifies whether a job provider can remove his jobs |
| <b>Input Specification</b>  | Type "java -jar sgclient.jar as rol:jobprov remove job:testjob"    |
| <b>Output Specification</b> | Check if the job is removed from the SPINGRID system               |
| <b>Environmental Needs</b>  | None   |

**TC\_7082 acceptance test**

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_7082  |
| <b>Test Item(s)</b>         | This test case verifies whether a job provider can inform the SPINGRID system of the characteristics that their jobs require   |
| <b>Input Specification</b>  | <ul style="list-style-type: none"> <li>• Create a JSDL file (test2job.jsdl) with the required characteristics of the job as described in [SUM]</li> <li>• Type "java -jar sgclient.jar add job fl:test2job.jsdl to pro:project"</li> </ul> |
| <b>Output Specification</b> | Check if the provided job is accepted by the SPINGRID system   |
| <b>Environmental Needs</b>  | None   |

**TC\_7120 acceptance test**

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_7120  |
| <b>Test Item(s)</b>         | This test case verifies whether a job provider can work on a machine running Windows XP, Linux or Mac OS |
| <b>Input Specification</b>  | Perform all test cases of the job provider   |
| <b>Output Specification</b> | Check if no test cases fail  |
| <b>Environmental Needs</b>  | The machine is running on Windows XP, Linux or Mac OS  |

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**3.9 Extrafunctional Requirements Acceptance Tests****TC\_8030 acceptance test**

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_8030  |
| <b>Test Item(s)</b>         | This test case verifies whether the SPINGRID system has the following property: if one of the resources disappears while it was performing a job, the SPINGRID system should requeue the job |
| <b>Input Specification</b>  | Disconnect a resource from the SPINGRID system when it is calculating a job  |
| <b>Output Specification</b> | Check if the job is requeued   |
| <b>Environmental Needs</b>  | None   |

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**TC\_8040 acceptance test**

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_8040   |
| <b>Test Item(s)</b>         | This test case verifies whether the SPINGRID system has the following property: a job will be declared failed after it has been requeued for a configurable number of times |
| <b>Input Specification</b>  | Perform TC_8030 for the configurable number times with the same job   |
| <b>Output Specification</b> | Check if the job is declared failed   |
| <b>Environmental Needs</b>  | None  |

**TC\_8050 acceptance test**

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_8050  |
| <b>Test Item(s)</b>         | This test case verifies whether the SPINGRID system has the following property: the functionality of the system should not be restricted when computers of users are behind a firewall (which does not restrict traffic over port 80) and/or NAT |
| <b>Input Specification</b>  | Perform all test cases   |
| <b>Output Specification</b> | Check if all test cases are successful   |
| <b>Environmental Needs</b>  | All or some computers in the SPINGRID system are behind a firewall and/or NAT  |

325

**TC\_8060 acceptance test**

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_8060  |
| <b>Test Item(s)</b>         | This test case verifies whether the SPINGRID system has the following property: the SPINGRID software shall be implemented in Java according to (a tailored version of ) the BSSC Java Coding Standards [BSSC] |
| <b>Input Specification</b>  | The source code of the SPINGRID system   |
| <b>Output Specification</b> | Check if it is implemented in Java according to the BSSC Java Coding Standards   |
| <b>Environmental Needs</b>  | None   |



## 330 TC\_8070 acceptance test

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_8070  |
| <b>Test Item(s)</b>         | This test case verifies whether the SPINGRID system has the following property: the SPINGRID system shall be able to run for at least a week on the test environment without interruption. |
| <b>Input Specification</b>  | Run the SPINGRID system on the test environment (as described in chapter 2) for a week   |
| <b>Output Specification</b> | Check if the system is still running   |
| <b>Environmental Needs</b>  | None   |

## TC\_8080 acceptance test

|                             |  |
|-----------------------------|--|
| <b>Test Case Identifier</b> | TC_8080  |
| <b>Test Item(s)</b>         | This test case verifies whether the SPINGRID system has the following property: all applications in the SPINGRID system should log what they are doing   |
| <b>Input Specification</b>  | <ul style="list-style-type: none"> <li>• Perform all test cases</li> <li>• Open the "log" and "error" file in the main directory of the agent</li> <li>• Open the "log" and "error" file in the main directory of the client</li> <li>• Open the "log" and "error" file in the main directory of the dispatcher</li> </ul> |
| <b>Output Specification</b> | Check if everything was logged   |
| <b>Environmental Needs</b>  | None   |

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## TC\_8090 acceptance test

|                             |   |
|-----------------------------|---|
| <b>Test Case Identifier</b> | TC_8090   |
| <b>Test Item(s)</b>         | This test case verifies whether the SPINGRID system has the following property: the total time in which no dispatcher responses should not exceed one hour a day during the acceptance test on the test environment |
| <b>Input Specification</b>  | Perform all test cases in the test environment (as described in chapter 2)  |
| <b>Output Specification</b> | Check if the total time in which no dispatcher responds does not exceed one hour a day  |
| <b>Environmental Needs</b>  | None  |

## Chapter 4

# Test procedures

As general prerequisite, all required hardware and software is assumed to be present, installed and running error free. Therefore the customer is responsible to have an environment as described in chapter 2. The test procedure must be run in this environment. Also, the dispatcher should have the database as described in "test.sql", the client should have "testjob.jsdl", "testjobfail.jsdl", "testapp.xml" and "testdata.dat". After performing a test procedure the database of the dispatcher should be reset to "test.sql".

### 4.1 Test procedure for system admin

|            |  |
|------------|--|
| Identifier | TP1  |
| Purpose    | To test if the system admin can perform all actions as described in [URD, section 4.3]   |
| Steps      | Perform TC_2020, TC_2100, TC_2030, TC_2050, TC_2060, TC_2080, TC_2040, TC_2114, TC_2070a, TC_2070b, TC_2090, TC_2110, TC_2120, TC_2130 and TC_2150 |

### 4.2 Test procedure for resource provider

|            |  |
|------------|--|
| Identifier | TP2  |
| Purpose    | To test if the resource provider can perform all actions as described in [URD, section 4.4]              |
| Steps      | Perform TC_3070a, TC_3030a, TC_3050, TC_3030b, TC_3060a, TC_3060b, TC_3074a, 3074b, TC_3070b and TC_3080 |

### 4.3 Test procedure for project admin

|            |   |
|------------|---|
| Identifier | TP3   |
| Purpose    | To test if the project admin can perform all actions as described in [URD, section 4.5]                                     |
| Steps      | Perform TC_4010, TC_4050a, TC_4050b, TC_4020, TC_4060a, TC_4060b, TC_4030, TC_4042a, TC_4042b, TC_4080, TC_4070 and TC_4090 |

### 4.4 Test procedure for application provider

|            |  |
|------------|--|
| Identifier | TP4  |
| Purpose    | To test if the application provider can perform all actions as described in [URD, section 4.6] |
| Steps      | Perform TC_5010, TC_5030a, TC_5030b, TC_5040, TC_5042, TC_5012, TC_5020 and TC_5060            |

### 355 4.5 Test procedure for data provider

|            |  |
|------------|--|
| Identifier | TP5  |
| Purpose    | To test if the application provider can perform all actions as described in [URD, section 4.7] |
| Steps      | Perform TC_6010, TC_6020a, TC_6020b, TC_6030, TC_6032, TC_6012 and TC_6050                     |

### 4.6 Test procedure for job provider

|            |  |
|------------|--|
| Identifier | TP6  |
| Purpose    | To test if the job provider can perform all actions as described in [URD, section 4.8] |
| Steps      | Perform TC_7020, TC_7010, TC_7060, TC_7080, TC_7070, TC_7082 and TC_7120               |

### 4.7 Other test procedures

|            |  |
|------------|--|
| Identifier | TP7  |
| Purpose    | To test if the SPINGRID system has the properties described in [URD, section 4.1, 4.2 and 4.9]   |
| Steps      | Perform TC_0020, TC_0030, TC_0040, TC_0050, TC_0080, TC_1010, TC_1020, TC_1030, TC_8030, TC_8040, TC_8050, TC_8060, TC_8070, TC_8080 and TC_8090 |

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## Chapter 5

# Test report

The results of the acceptance tests can be found in [STD].