Software User Manual

HPSDB
Product Code: 460000

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DOCUMENT STATUS SHEET

Version	Date	Pages	CHANGE(S)	Approval
1.0	18/07/03	77	First version	
1.1	15/08/03	91	Second version: Contains the changes agreed during the CDR held at GMV on the 29th – 31st of July of 2003: RID *PDR-HPSDB-PG-0001* The following sections have been affected to cover this rid: ▪ Section 2.1.1 – UPDATED ▪ Section 2.1.2 – UPDATED ▪ Section 2.2.3 – UPDATED ▪ Section 2.2.4 – UPDATED ▪ Section 2.3 – NEW ▪ ANNEX D – NEW RID *PDR-HPSDB-DL-0005* The following sections have been updated to cover this RID: ▪ Section 3.3.3.1.2 ▪ Section 3.3.3.2.2 ▪ Section 3.3.3.4.2 ▪ Section 3.3.3.5.2 ▪ Section 3.4.3.1.2 ▪ Section 3.4.3.2.2 ▪ Section 3.4.3.3.2 ▪ Section 3.4.3.4.1 ▪ Section 3.4.4.2.1 ▪ Section 3.4.5.1.2 ▪ Section 3.4.5.3.1 ▪ Section 3.4.6.1.2 ▪ Section 3.4.6.2.2 ▪ Section 3.4.6.3.1 ▪ Section 3.4.7.1.2 ▪ Section 3.5.1.1.2 ▪ Section 3.5.1.2.2 ▪ Section 3.5.1.3.2 ▪ Section 3.5.2.1.2 ▪ Section 3.5.2.2.2 ▪ Section 3.5.2.3.2 RID *PDR-HPSDB-DL-0007* Product code has been inserted in the cover page. RID *PDR-HPSDB-DS-0002* The following sections have been added	

Version	Date	Pages	CHANGE(S)	Approval
			to cover this RID: ▪ Section 3.5.1.2.3 ▪ Section 3.5.1.2.4 RID *PDR-HPSDB-DS-0003* The following sections have been updated to cover this RID: ▪ Section 3.3 ▪ Section 3.3.1 RID *PDR-HPSDB-DS-0004* Section 3.3.3.4.1 has been updated to cover this RID	
2.0	20/01/04	161	Document needed for the second delivery, where the real data part is added. The new functionalities included are: - Real data management - Input file processing - Item/box printing - Item reset Also the format of the XML files that can be ingested into HPSDB is given in Annex E.	
2.1	29/03/04	161	New version created for the training sessions in Alenia. It includes the tables with the meaning of all labels from the MMI.	
2.2	15/09/04	165	The following RIDs from CDR2 have been considered: - CDR-HPSDB-CL-0001 - CDR-HPSDB-DS-0003 - CDR-HPSDB-ED-0001 The following functions have been described: - Mirror site activities - TM parameter and TC verification - Real element ON/OFF status.	
2.3	22/09/04	172	The bridge file loading operation has been described in detail including a sub-section for the configuration files.	
2.4	27/10/04	190	- Mirror site hardware configuration and procedure installation added. - Software functions have up to version 3.0 have been added.	
2.5	03/12/04	196	The following sections have been added: - 3.1.1: HPSDB Areas - 3.1.2: HPSDB Objects Classification - 3.1.3: HPSDB Central/Mirror Sites	

Version	Date	Pages	CHANGE(S)	Approval
			- 3.2.4: Selection Date - 3.4.4: Files Management - 3.4.10: Central/Mirror Sites Interface operations The following sections have been updated: - 3.3.3.6: Delete Schema/Manager - 3.4.5: Bridge Files operations - 3.4.5.1: Bridge File Loading - 3.4.5.2: Bridge File Generation - 3.4.8: Validation	
2.6	15/09/05	202	The major changes due to this release are referred to the following functionalities: inclusion of the logical instantiation functionality: - Logical instantiation o Function to logically instantiate items o Operations to be performed upon items logically instantiated. - “Where is referenced” tool	

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1. INTRODUCTION

1.1 INTENDED READERSHIP

This Software User Manual is intended for the user community to adequately manage the HPSDB HMI. All the information contained in this document is applicable to understand how to execute the HPSDB application.

1.2 APPLICABILITY STATEMENT

This document explains the usage of the HPSDB Software**.** As the application is mainly MMI driven, this user manual does not strictly follow the table of contents for this type of document, listed in [AD.1.].

The document is divided into 3 main sections:

- Introduction, this one.
- HPSDB Pre-Execution describing the procedure to set up HPSDB.
- Man Machine Interface, describing the navigation through the web Interface.

Within the Man Machine Interface, every operation is described with the following convention:

- Functional Description: Main purpose of the operation.
- Example: Illustrated example of the operation.
- Cautions and warnings: List of some pre-conditions or aspects to be aware of.
- Probable errors and possible causes: List of expected errors if the user does not take care of the cautions and warnings.

1.3 PURPOSE

The present document has been produced by GMV within the frame of the HPSDB project and represents the Software User Manual for the HPSDB tool.

1.4 HOW TO USE THIS DOCUMENT

This document applicability begins with the hardware and software requirements that derive to a correct installation of the system, and covers the operability of the HPSDB tool. However, it is aimed to support only those users that are authorised to access the application.

1.5 RELATED DOCUMENTS

1.5.1 Applicable Documents

Reference	Title	Code
[AD.1.]	Guide to the detailed design phase	PSS-05-05

Reference	Title	Code
[AD.2.]	HPSDB Software Requirement Document	H-P-1-GMV-SR-2171
[AD.3.]	HPSDB Architectural Design Document	H-P-1-GMV-ADD-2732
[AD.4.]	Naming Convention Specification	H-P-1-ASPI-SP-0141
[AD.5.]	SCOS-2000 Database import ICD	S2K-MCS-ICD-0001-TOS-GCI

1.5.2 Reference Documents

[RD.1.]	CCS & SCOS 2000 TO HPSDB & MOIS ICD	H-P-1-ASP-ID-0569

1.6 CONVENTIONS

The following conventions shall be used throughout the document:

- Name of windows and labels within the MMI shall be written using an Arial font to differentiate them from the explanatory text.
- Names or labels represented in *italics* indicate variable names such as box object identifier or user name.
- Name of files shall be written using a **`bold Courier`** font.
- Extracts from files shall be indicated using a `courier` font.
- Commands to be typed in a shell shall be written using a `courier` font.
- Name of processes shall be written using an `UPPERCASE COURIER` font.

2. HPSDB PRE-EXECUTION

This section describes the activities that are needed prior to the execution of the HPSDB application. They relate to the acquisition of the hardware and software environment chosen for the project, the procedure to perform the appropriate installation of these components, and finally the set-up and configuration of the application itself.

2.1 HW AND SW ENVIRONMENT

2.1.1 Hardware

HPSDB hardware environment is constituted by the following elements:

2.1.1.1 Central Site

- Compaq/HP Proliant DL 380 G3 PXEON 2,8GHz, including:
  - 1Gb RAM
  - 2 Ultra 320 SCSI 146Gb hard disk drives
  - NC 31123 PCI 10/100 WOLL ALL
  - 12” server to switch cable

2.1.1.2 Mirror Sites

- Dell Precision 650 SMT Xeon 2,8GHz, including:
  - Intel Xeon 2,8GHz processor with 512 MB cache
  - 1024 MB ECC RAM
  - 146 GB SCSI hard disk

2.1.2 Software

The software environment is the same for the central and mirror sites.

- Microsoft Windows 2000 professional operating system
  - The size of the virtual memory recommended is 1.5 Gb (1.5 * RAM Size).
  - No Windows 2000 component is required for the installation.
  - A list of the Windows services needed for the correct working of the tool is provided in the ANNEX D.
- Database: Oracle 9i Release 2 (9.2.0.1.0) Standard Edition for Microsoft Windows NT/2000.
- Application Server: Oracle9iAS Release 2 (9.0.3) for Microsoft Windows NT/2000
- Web Browsers

Some problems might arise in visualisation aspects due to Internet browser configurations and presence of firewalls. Browsers differ in their support of features. The Web browsers accepting the technology used in HPSDB are:

- Microsoft Internet Explorer 5 as minimum
- Netscape Navigator 7.0

The browser recommended is the Microsoft Internet Explorer 5.5, since the treatment of JavaScript technology by Netscape is not as optimised as in IE5.5.

2.2 INSTALLATION

Prior to the installation of the software components the following statements must be satisfied:

- Windows 2000 is installed with the Service pack 1
- The machine is associated to a network domain, such as hpsdb.gmv.es.

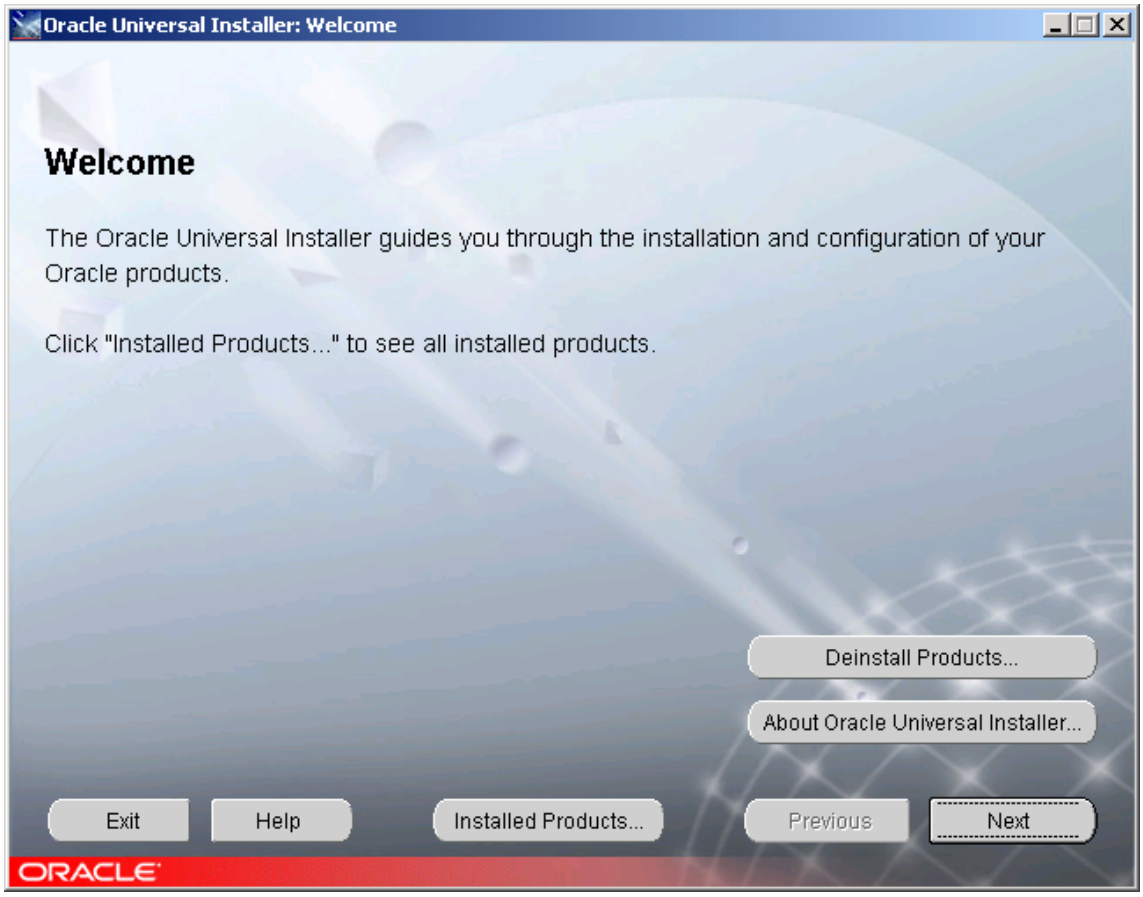
In general terms the installation of the software needed to run HPSDB consists of the items listed below:

1. Installation of the ORACLE RDBMS.
2. Installation of the Application Server.
3. Creation of the HPSDB database.
4. Deployment of the HPSDB application.

All of these steps are described in detail in the following sub-sections. The installation procedure is the same for the central and mirror sites except for certain points where the differences will be explicitly described.

2.2.1 Installation of the Oracle RDBMS

The installation of the Oracle 9i Relational Database Management System is as simple as to follow the instructions given when running the Oracle Universal Installer. However, in order to make the appropriate configuration settings, the complete sequence of windows that appear during the installation are presented below. Please follow it carefully.


Oracle Universal Installer: Welcome
Welcome
The Oracle Universal Installer guides you through the installation and configuration of your Oracle products.
Click "Installed Products..." to see all installed products.
Deinstall Products...
About Oracle Universal Installer...
Exit
Help
Installed Products...
Previous
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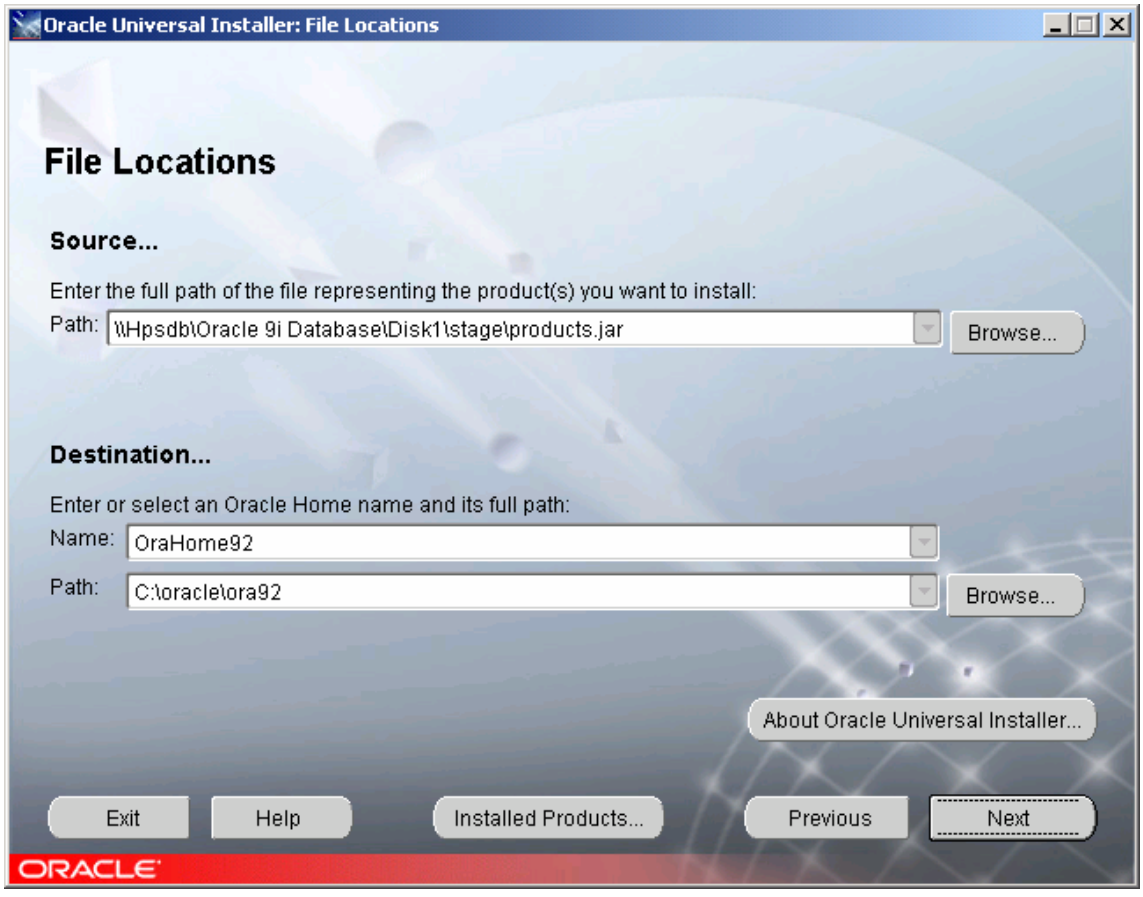
ORACLE


Oracle Universal Installer: File Locations
File Locations
Source...
Enter the full path of the file representing the product(s) you want to install:
Path: \\Hpsdb\Oracle 9i Database\Disk1\stage\products.jar
Browse...
Destination...
Enter or select an Oracle Home name and its full path:
Name: OraHome92
Path: C:\oracle\ora92
Browse...
About Oracle Universal Installer...
Exit
Help
Installed Products...
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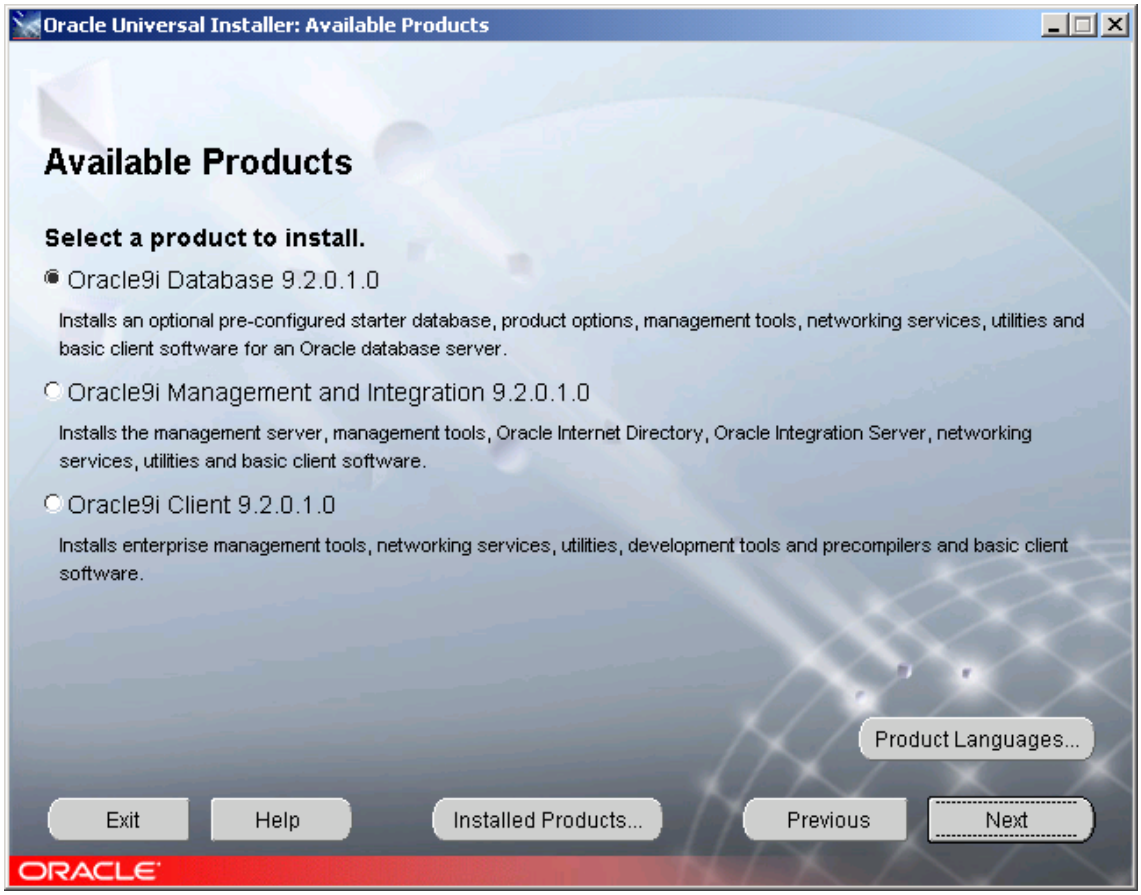
ORACLE


Oracle Universal Installer: Available Products
Available Products
Select a product to install.
Oracle9i Database 9.2.0.1.0
Installs an optional pre-configured starter database, product options, management tools, networking services, utilities and basic client software for an Oracle database server.
Oracle9i Management and Integration 9.2.0.1.0
Installs the management server, management tools, Oracle Internet Directory, Oracle Integration Server, networking services, utilities and basic client software.
Oracle9i Client 9.2.0.1.0
Installs enterprise management tools, networking services, utilities, development tools and precompilers and basic client software.
Product Languages...
Exit
Help
Installed Products...
Previous
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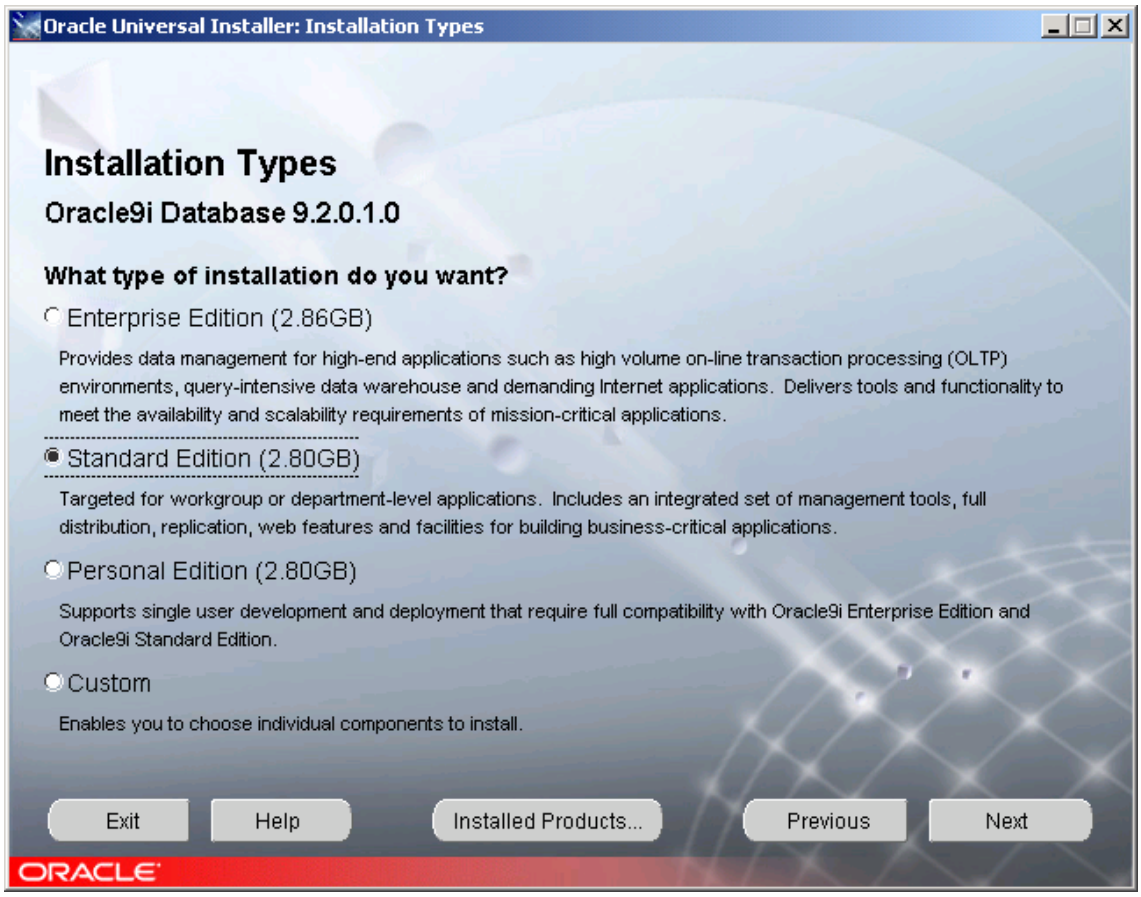
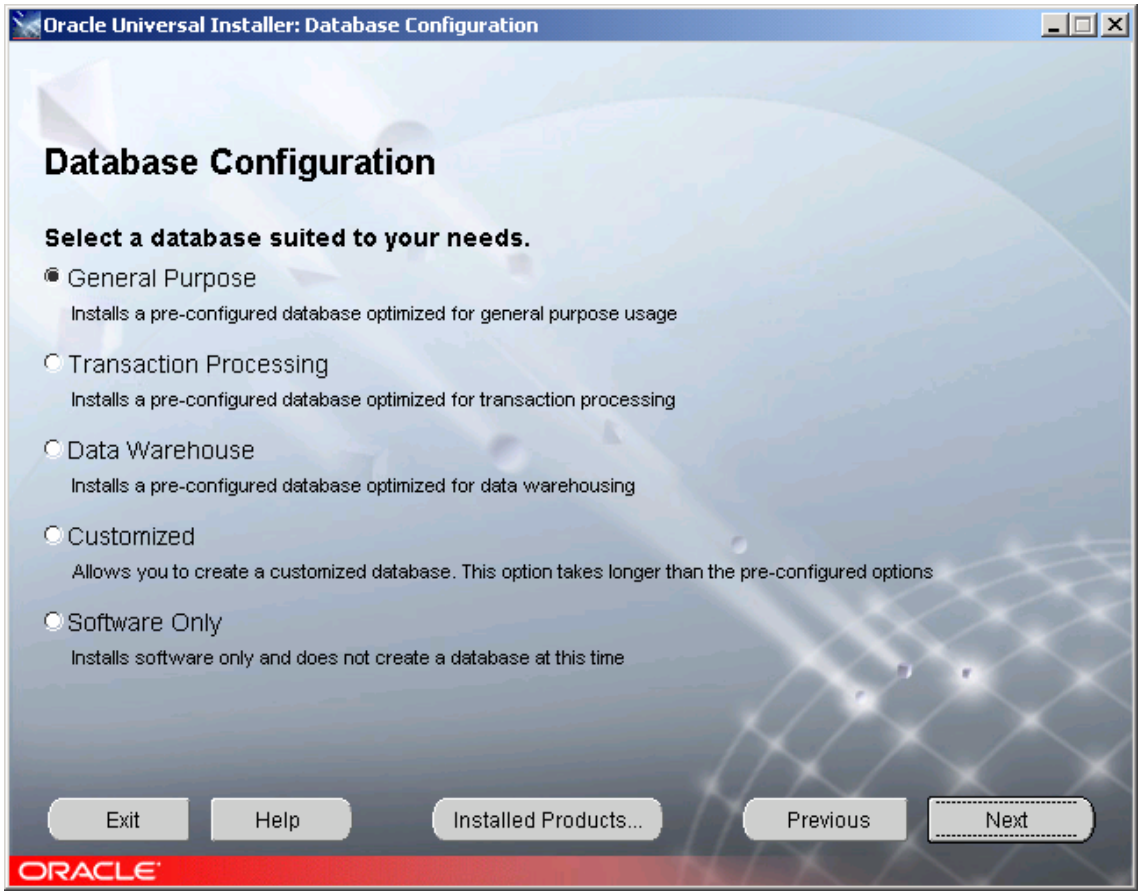
ORACLE


Oracle Universal Installer: Installation Types
Installation Types
Oracle9i Database 9.2.0.1.0
What type of installation do you want?
Enterprise Edition (2.86GB)
Provides data management for high-end applications such as high volume on-line transaction processing (OLTP) environments, query-intensive data warehouse and demanding Internet applications. Delivers tools and functionality to meet the availability and scalability requirements of mission-critical applications.
Standard Edition (2.80GB)
Targeted for workgroup or department-level applications. Includes an integrated set of management tools, full distribution, replication, web features and facilities for building business-critical applications.
Personal Edition (2.80GB)
Supports single user development and deployment that require full compatibility with Oracle9i Enterprise Edition and Oracle9i Standard Edition.
Custom
Enables you to choose individual components to install.
Exit
Help
Installed Products...
Previous
Next
ORACLE


Oracle Universal Installer: Database Configuration
Database Configuration
Select a database suited to your needs.
General Purpose
Installs a pre-configured database optimized for general purpose usage
Transaction Processing
Installs a pre-configured database optimized for transaction processing
Data Warehouse
Installs a pre-configured database optimized for data warehousing
Customized
Allows you to create a customized database. This option takes longer than the pre-configured options
Software Only
Installs software only and does not create a database at this time
Exit
Help
Installed Products...
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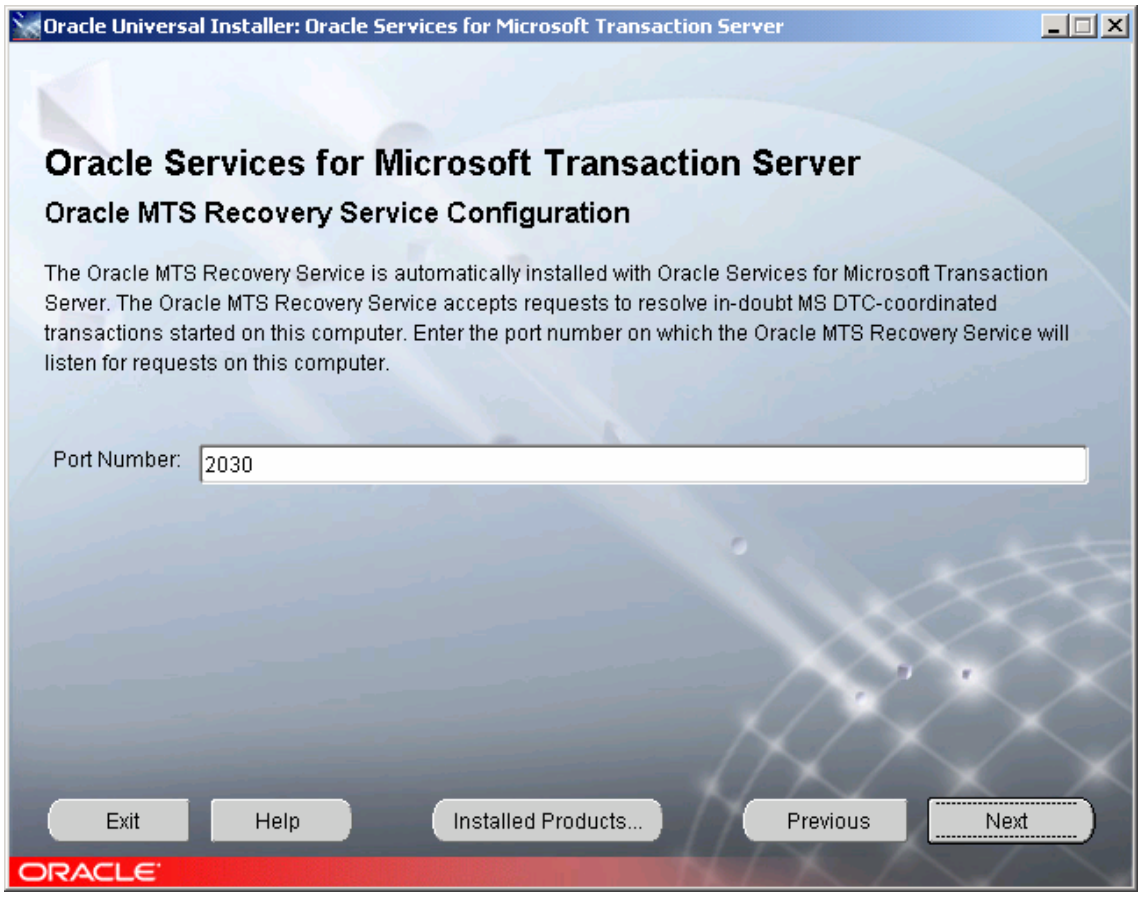
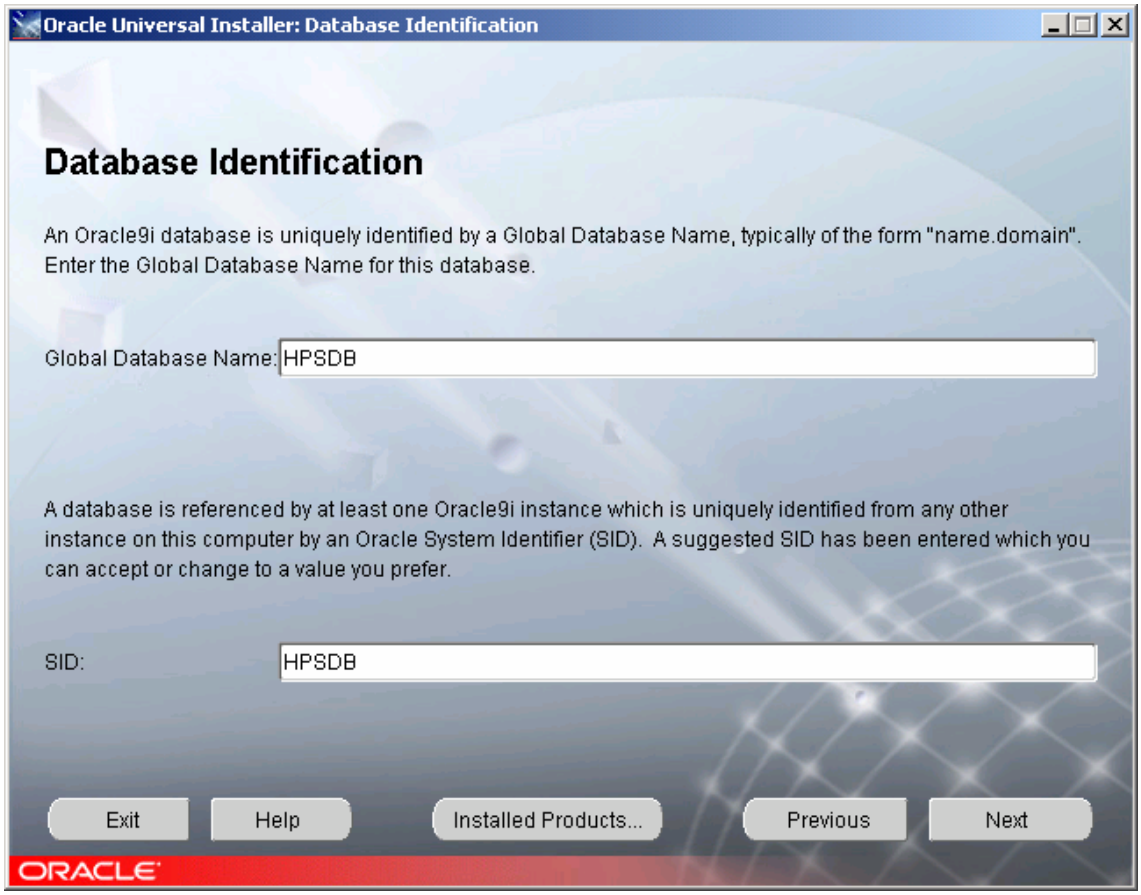
ORACLE


Oracle Universal Installer: Oracle Services for Microsoft Transaction Server
Oracle Services for Microsoft Transaction Server
Oracle MTS Recovery Service Configuration
The Oracle MTS Recovery Service is automatically installed with Oracle Services for Microsoft Transaction Server. The Oracle MTS Recovery Service accepts requests to resolve in-doubt MS DTC-coordinated transactions started on this computer. Enter the port number on which the Oracle MTS Recovery Service will listen for requests on this computer.
Port Number:
2030
Exit
Help
Installed Products...
Previous
Next
ORACLE


Oracle Universal Installer: Database Identification
Database Identification
An Oracle9i database is uniquely identified by a Global Database Name, typically of the form "name.domain". Enter the Global Database Name for this database.
Global Database Name: HPSDB
A database is referenced by at least one Oracle9i instance which is uniquely identified from any other instance on this computer by an Oracle System Identifier (SID). A suggested SID has been entered which you can accept or change to a value you prefer.
SID: HPSDB
Exit
Help
Installed Products...
Previous
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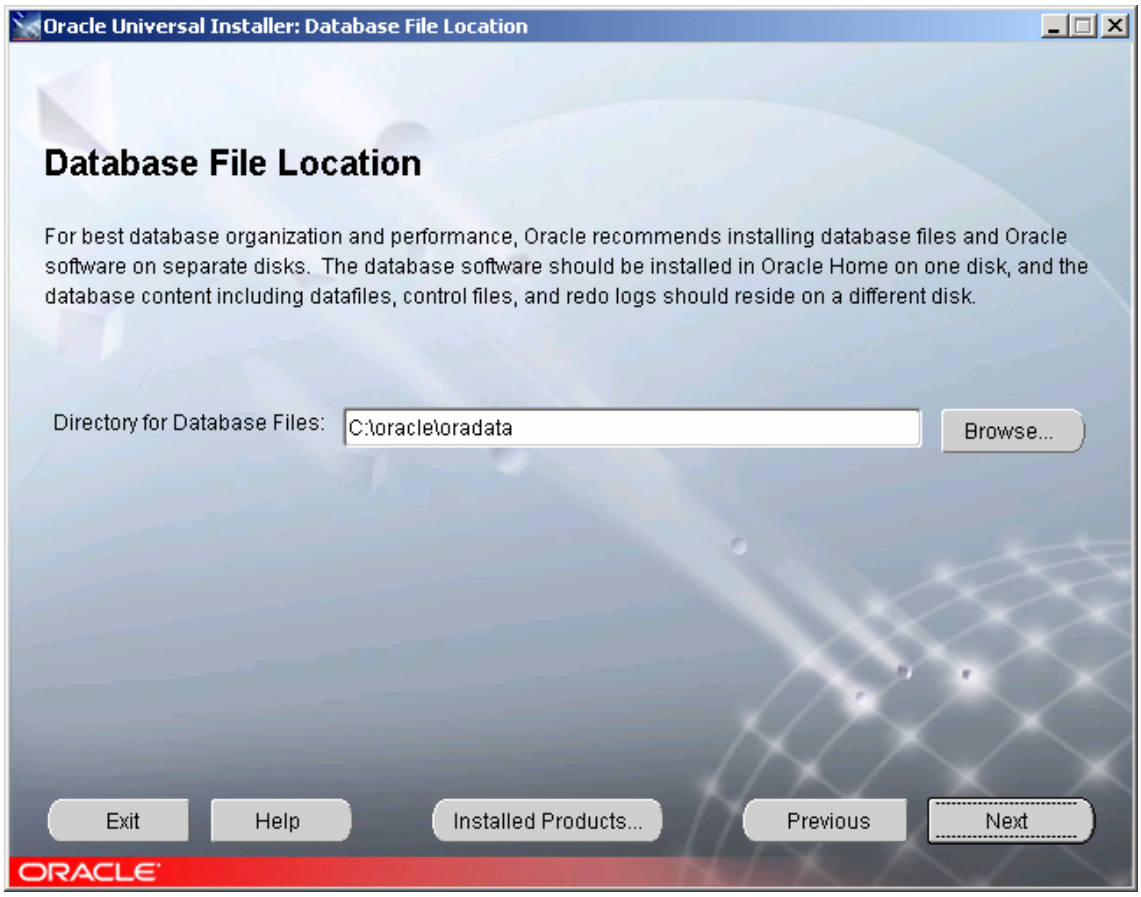
ORACLE


Oracle Universal Installer: Database File Location
Database File Location
For best database organization and performance, Oracle recommends installing database files and Oracle software on separate disks. The database software should be installed in Oracle Home on one disk, and the database content including datafiles, control files, and redo logs should reside on a different disk.
Directory for Database Files: C:\oracle\oradata
Browse...
Exit
Help
Installed Products...
Previous
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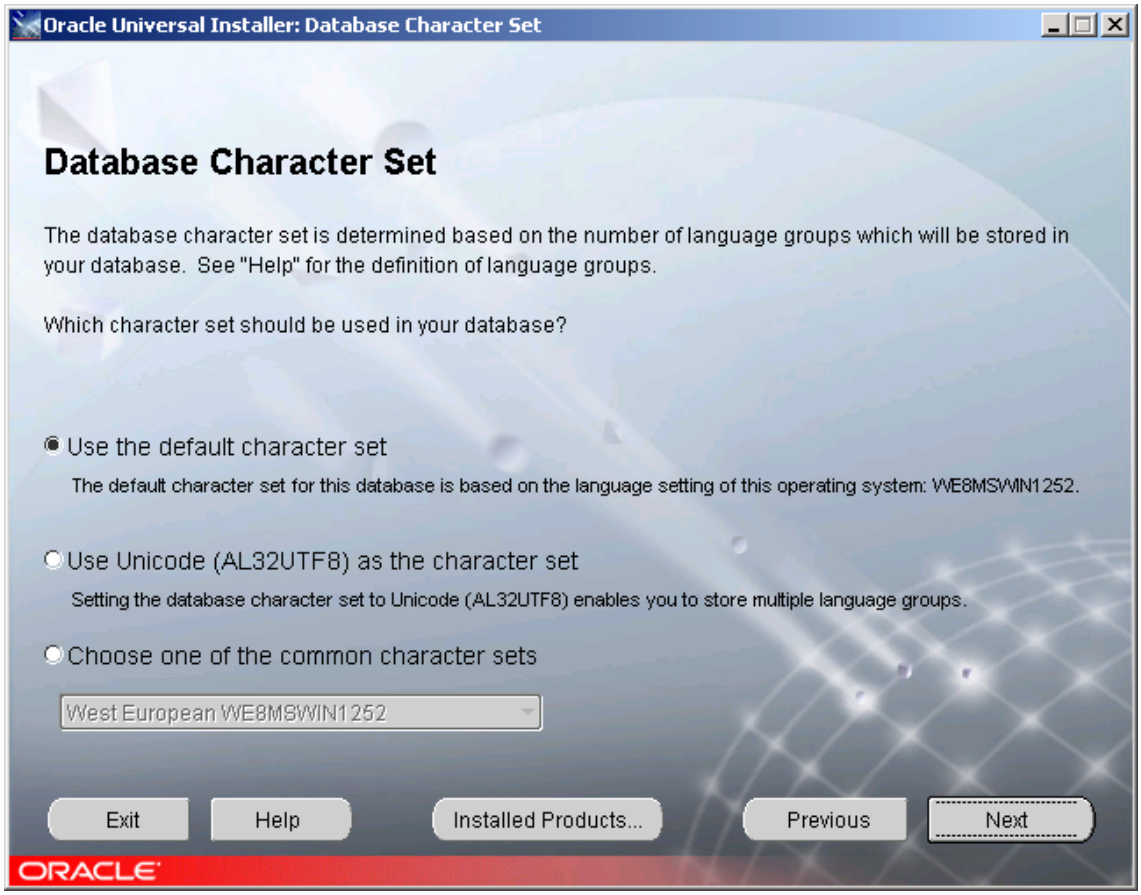
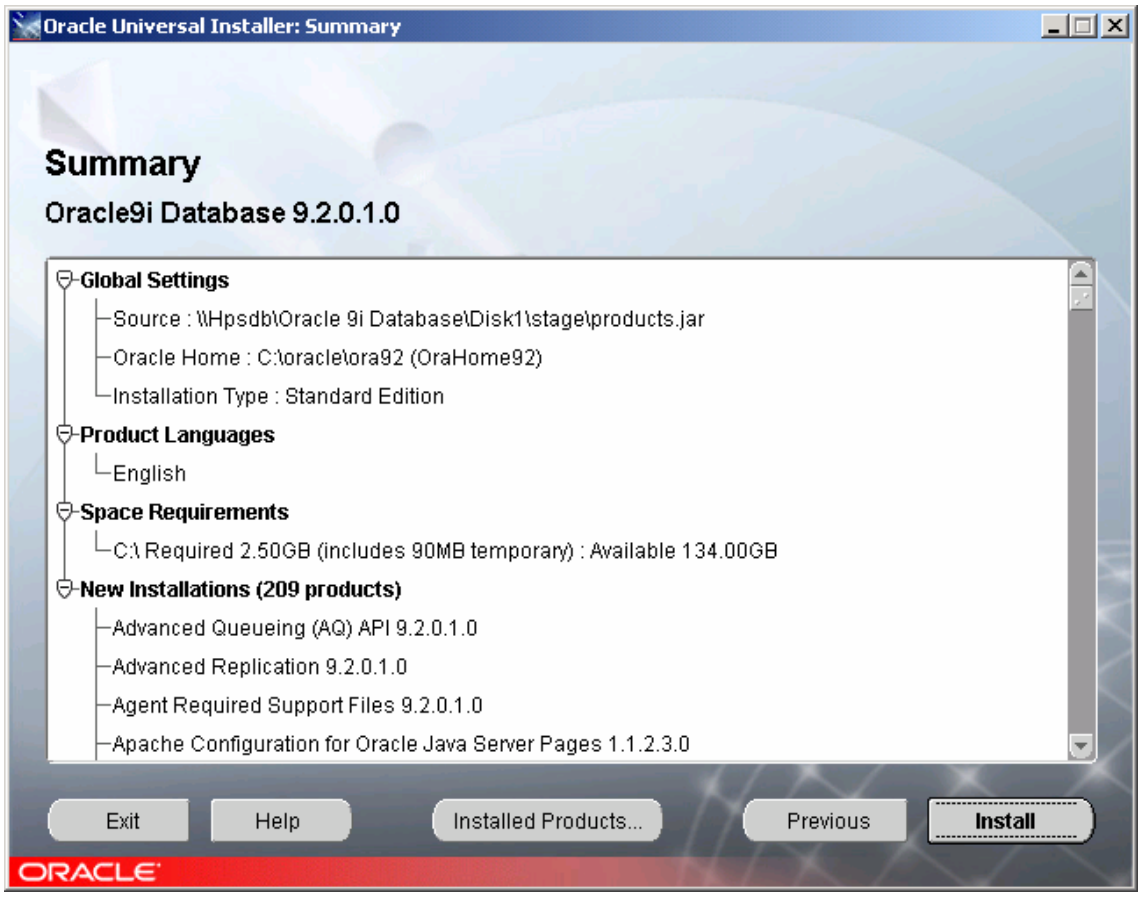
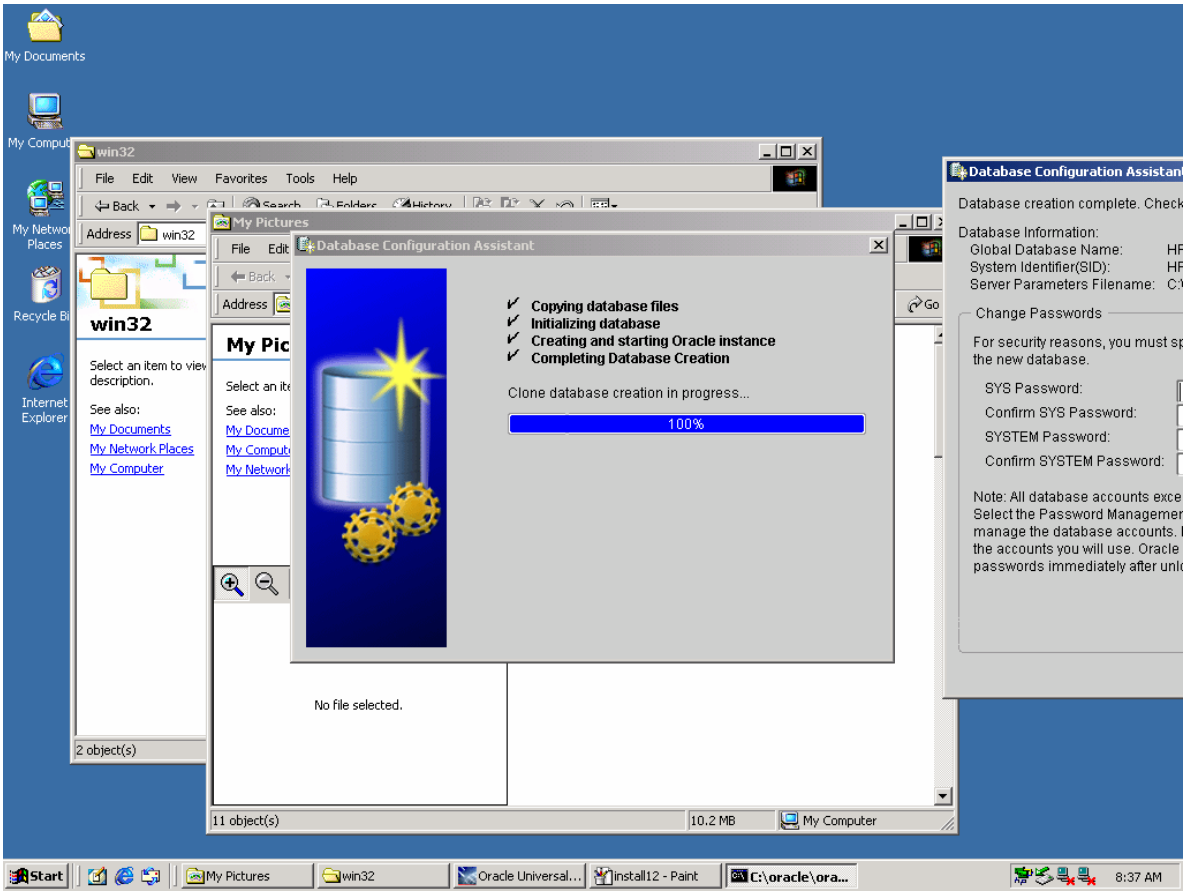
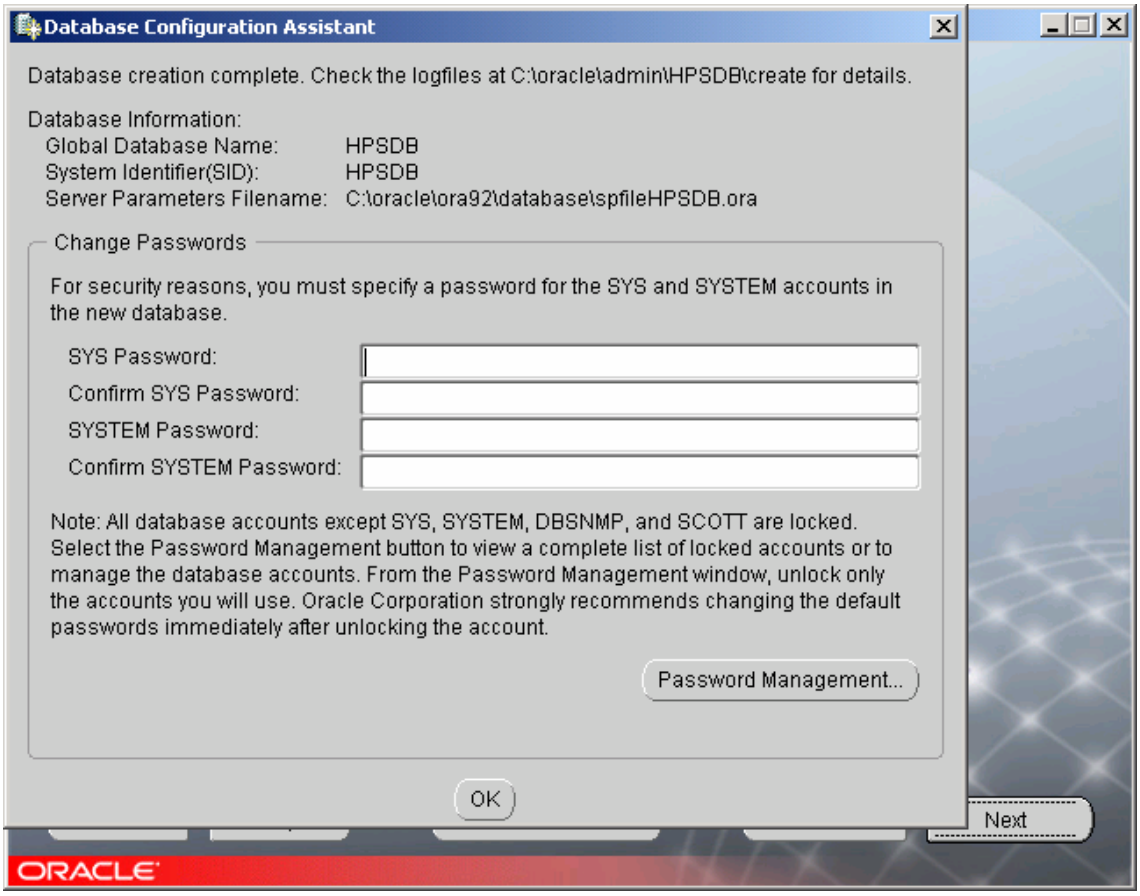
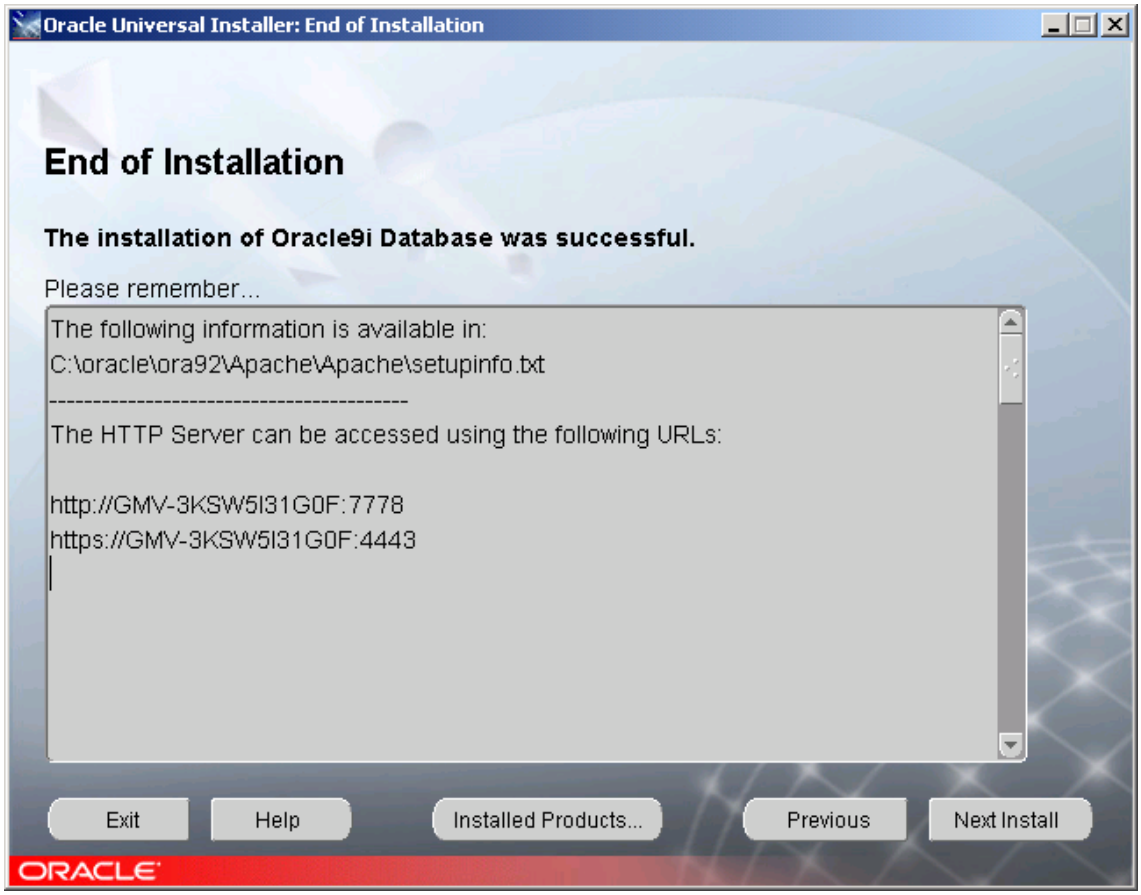
ORACLE


Oracle Universal Installer: Database Character Set
Database Character Set
The database character set is determined based on the number of language groups which will be stored in your database. See "Help" for the definition of language groups.
Which character set should be used in your database?
Use the default character set
The default character set for this database is based on the language setting of this operating system: WE8MSWIN1252.
Use Unicode (AL32UTF8) as the character set
Setting the database character set to Unicode (AL32UTF8) enables you to store multiple language groups.
Choose one of the common character sets
West European WE8MSWIN1252
Exit
Help
Installed Products...
Previous
Next
ORACLE


Oracle Universal Installer: Summary
Summary
Oracle9i Database 9.2.0.1.0
Global Settings
Source : \\Hpsdb\Oracle 9i Database\Disk1\stage\products.jar
Oracle Home : C:\oracle\ora92 (OraHome92)
Installation Type : Standard Edition
Product Languages
English
Space Requirements
C:\ Required 2.50GB (includes 90MB temporary) : Available 134.00GB
New Installations (209 products)
Advanced Queueing (AQ) API 9.2.0.1.0
Advanced Replication 9.2.0.1.0
Agent Required Support Files 9.2.0.1.0
Apache Configuration for Oracle Java Server Pages 1.1.2.3.0
Exit
Help
Installed Products...
Previous
Install
ORACLE

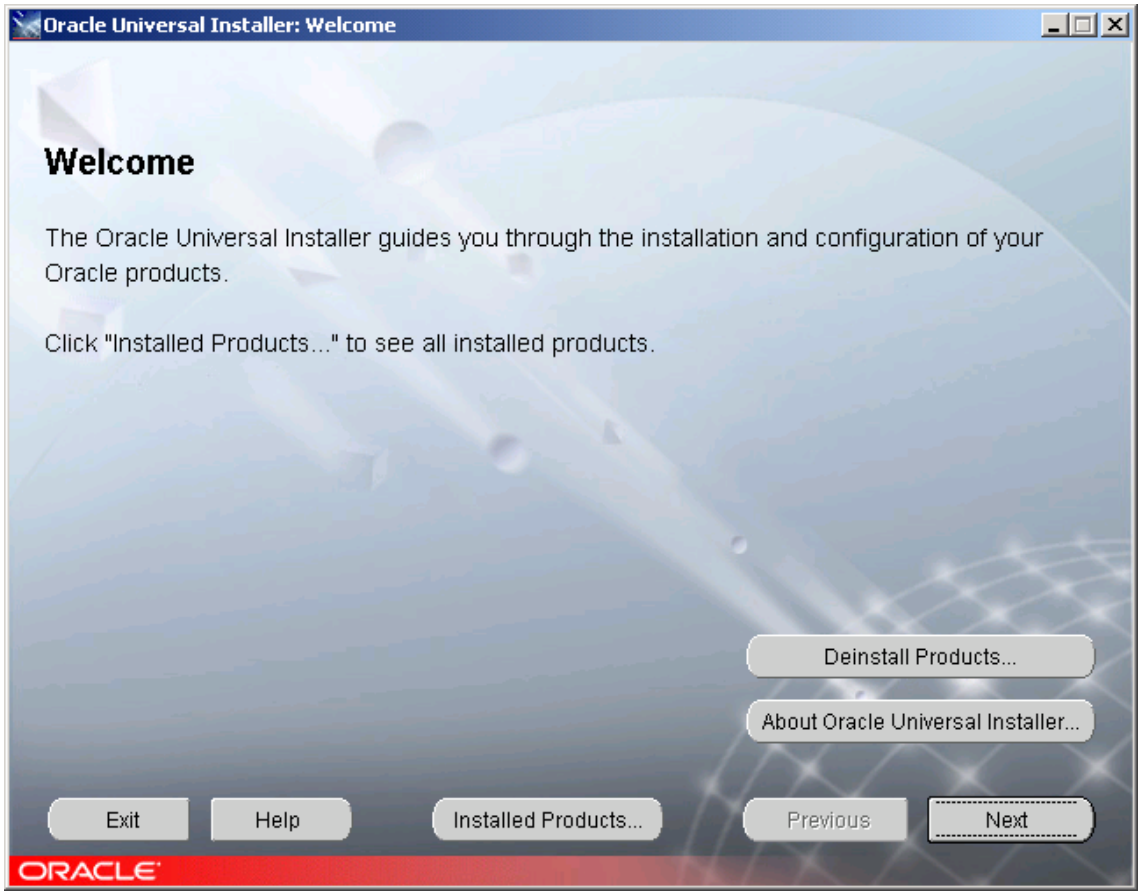

Database Configuration Assistant
Copying database files
Initializing database
Creating and starting Oracle instance
Completing Database Creation
Clone database creation in progress...
100%
No file selected.


Database Configuration Assistant
Database creation complete. Check the logfiles at C:\oracle\admin\HPSDB\create for details.
Database Information:
Global Database Name: HPSDB
System Identifier(SID): HPSDB
Server Parameters Filename: C:\oracle\ora92\database\spfileHPSDB.ora
Change Passwords
For security reasons, you must specify a password for the SYS and SYSTEM accounts in the new database.
SYS Password:
Confirm SYS Password:
SYSTEM Password:
Confirm SYSTEM Password:
Note: All database accounts except SYS, SYSTEM, DBSNMP, and SCOTT are locked. Select the Password Management button to view a complete list of locked accounts or to manage the database accounts. From the Password Management window, unlock only the accounts you will use. Oracle Corporation strongly recommends changing the default passwords immediately after unlocking the account.
Password Management...
OK
Next
ORACLE



2.2.2 Installation of the Application Server

Following the same approach as for the database installation, please follow the installation settings provided in the sequence of windows that shall appear during the installation of the Application Server.


Oracle Universal Installer: Welcome
Welcome
The Oracle Universal Installer guides you through the installation and configuration of your Oracle products.
Click "Installed Products..." to see all installed products.
Deinstall Products...
About Oracle Universal Installer...
Exit
Help
Installed Products...
Previous
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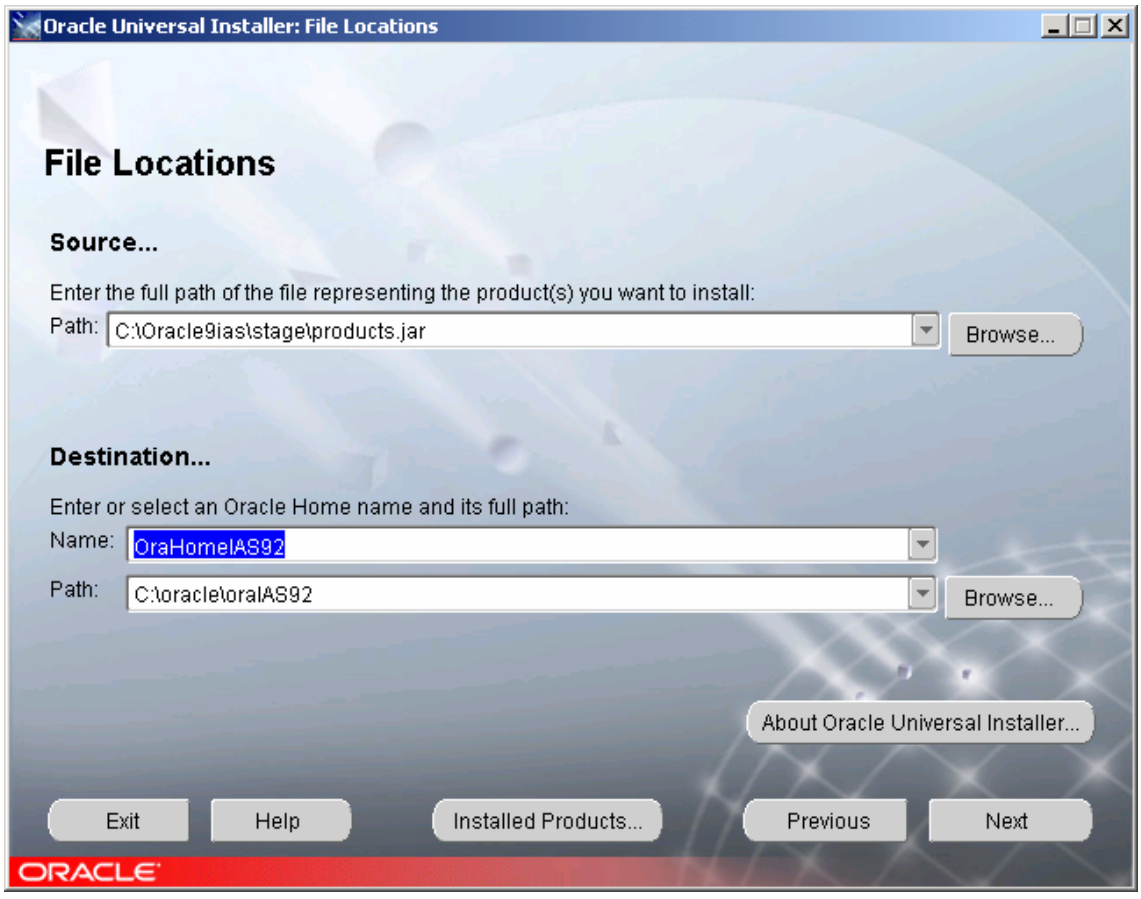
Oracle Universal Installer: File Locations
File Locations
Source...
Enter the full path of the file representing the product(s) you want to install:
Path: C:\Oracle9ias\stage\products.jar
Browse...
Destination...
Enter or select an Oracle Home name and its full path:
Name: OraHomeIAS92
Path: C:\oracle\oraIAS92
Browse...
About Oracle Universal Installer...
Exit
Help
Installed Products...
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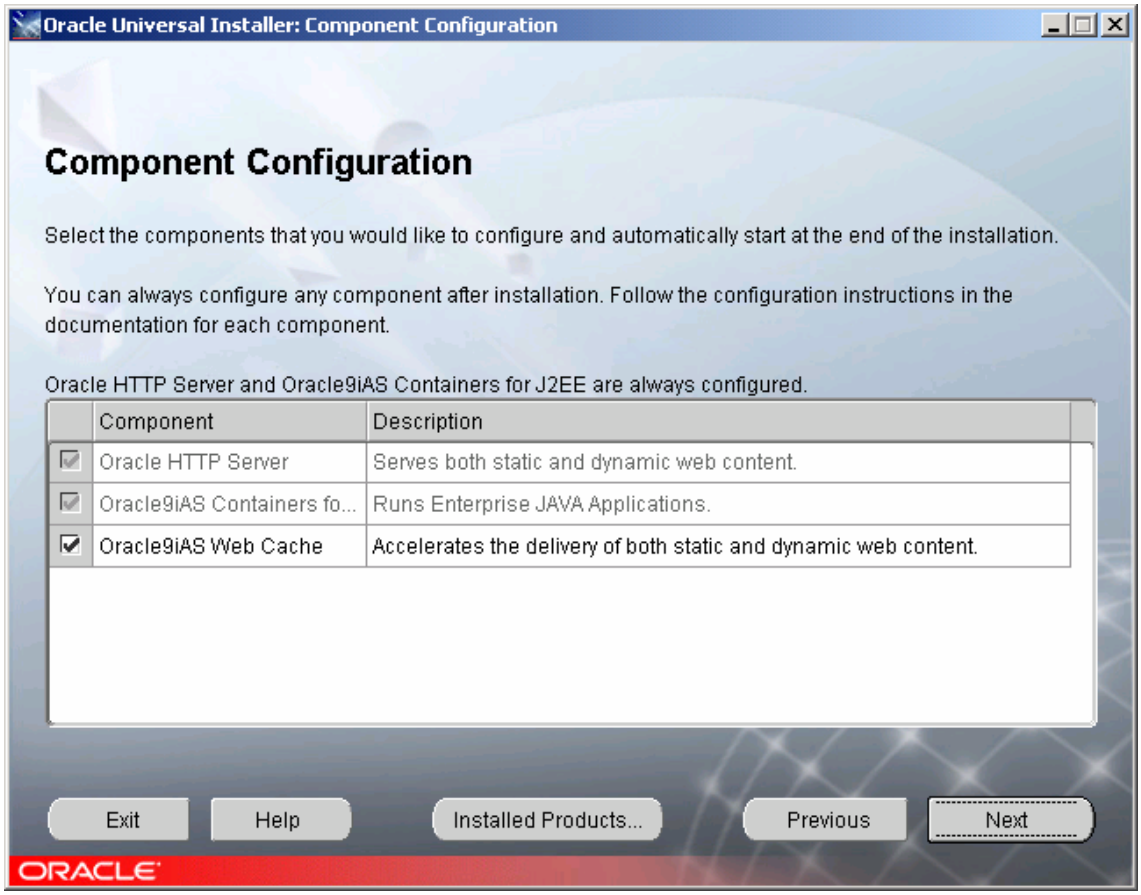
Oracle Universal Installer: Component Configuration
Component Configuration
Select the components that you would like to configure and automatically start at the end of the installation.
You can always configure any component after installation. Follow the configuration instructions in the documentation for each component.
Oracle HTTP Server and Oracle9iAS Containers for J2EE are always configured.
Component
Description
Oracle HTTP Server
Serves both static and dynamic web content.
Oracle9iAS Containers fo...
Runs Enterprise JAVA Applications.
Oracle9iAS Web Cache
Accelerates the delivery of both static and dynamic web content.
Exit
Help
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Oracle Universal Installer: Oracle9iAS Infrastructure Use
Oracle9iAS Infrastructure Use
To use Clustering or Single Sign-On with J2EE Applications, you need an existing Oracle9iAS Infrastructure. If you do not specify an Infrastructure now, you may do so after installation. If you want to specify an Infrastructure now, you must identify the Infrastructure by specifying the Single Sign-On Host and Port. This is required even if you only intend to use Clustering.
Do you want to specify an Infrastructure at this time?
No
Yes
Single Sign-on Host Name:
Single Sign-on Port Number:
7777
Exit
Help
Installed Products...
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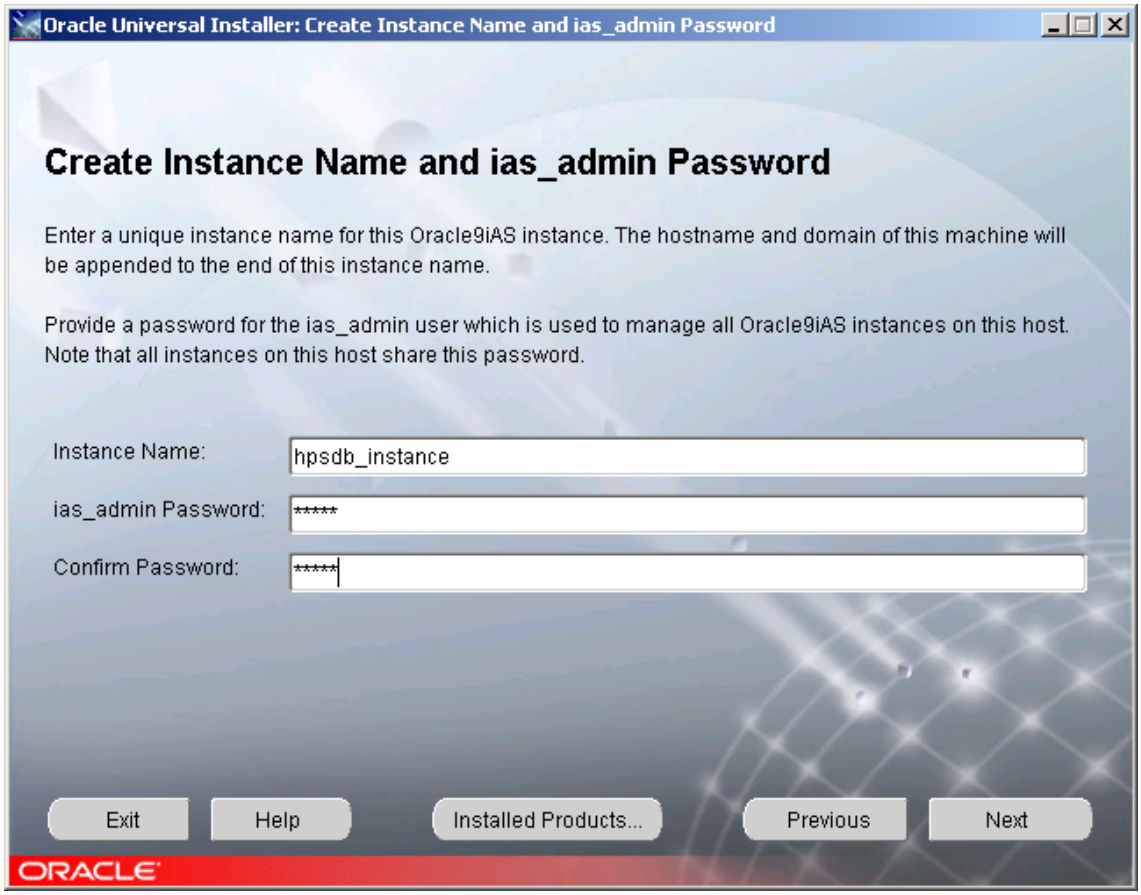
Oracle Universal Installer: Create Instance Name and ias_admin Password
Create Instance Name and ias_admin Password
Enter a unique instance name for this Oracle9iAS instance. The hostname and domain of this machine will be appended to the end of this instance name.
Provide a password for the ias_admin user which is used to manage all Oracle9iAS instances on this host. Note that all instances on this host share this password.
Instance Name:
hpsdb_instance
ias_admin Password:
*****
Confirm Password:
*****
Exit
Help
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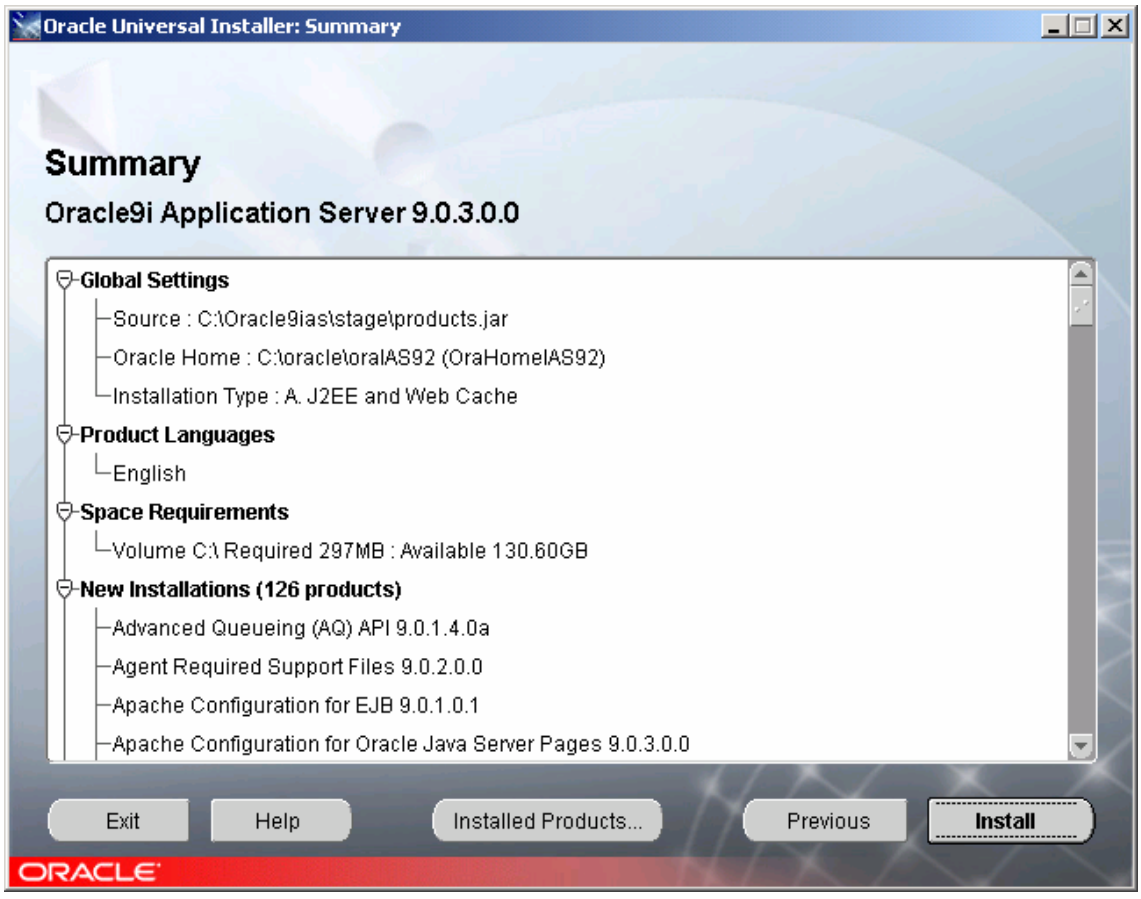
Oracle Universal Installer: Summary
Summary
Oracle9i Application Server 9.0.3.0.0
Global Settings
Source : C:\Oracle9ias\stage\products.jar
Oracle Home : C:\oracle\oraIAS92 (OraHomeIAS92)
Installation Type : A. J2EE and Web Cache
Product Languages
English
Space Requirements
Volume C:\ Required 297MB : Available 130.60GB
New Installations (126 products)
Advanced Queueing (AQ) API 9.0.1.4.0a
Agent Required Support Files 9.0.2.0.0
Apache Configuration for EJB 9.0.1.0.1
Apache Configuration for Oracle Java Server Pages 9.0.3.0.0
Exit
Help
Installed Products...
Previous
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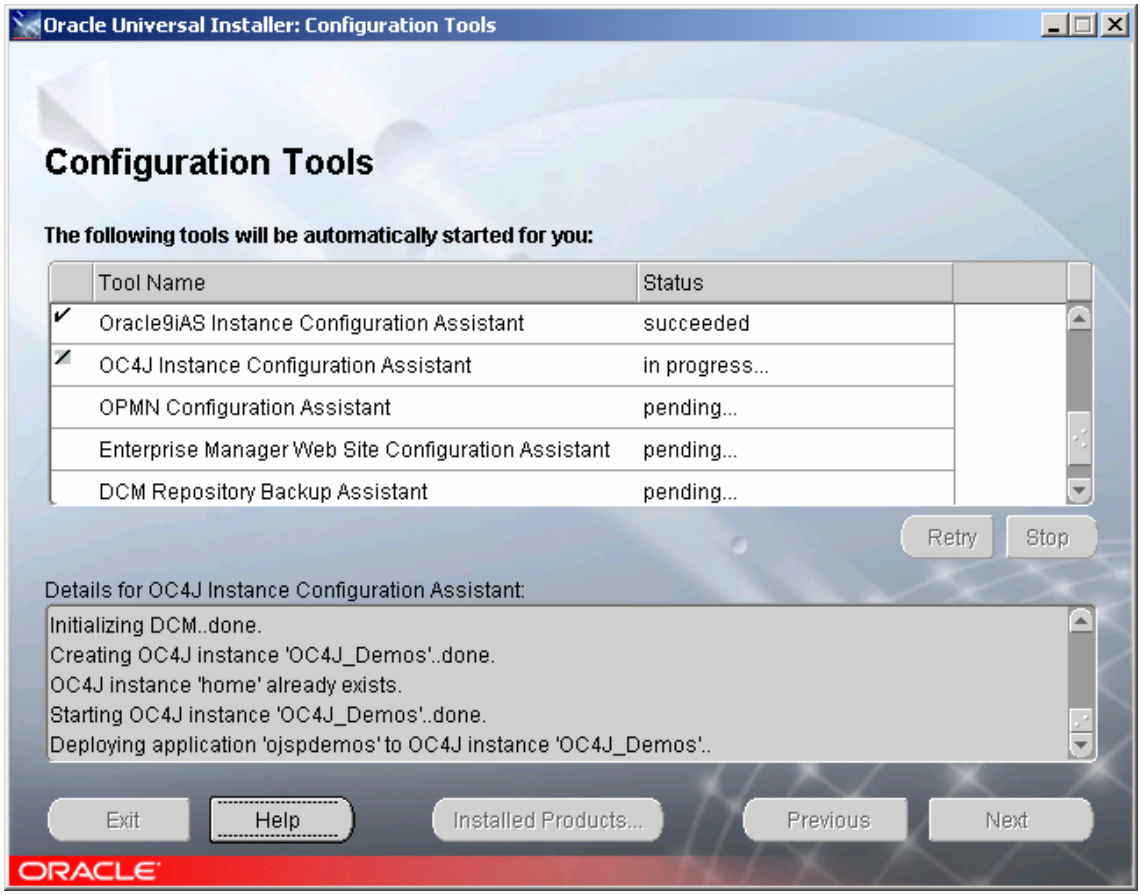
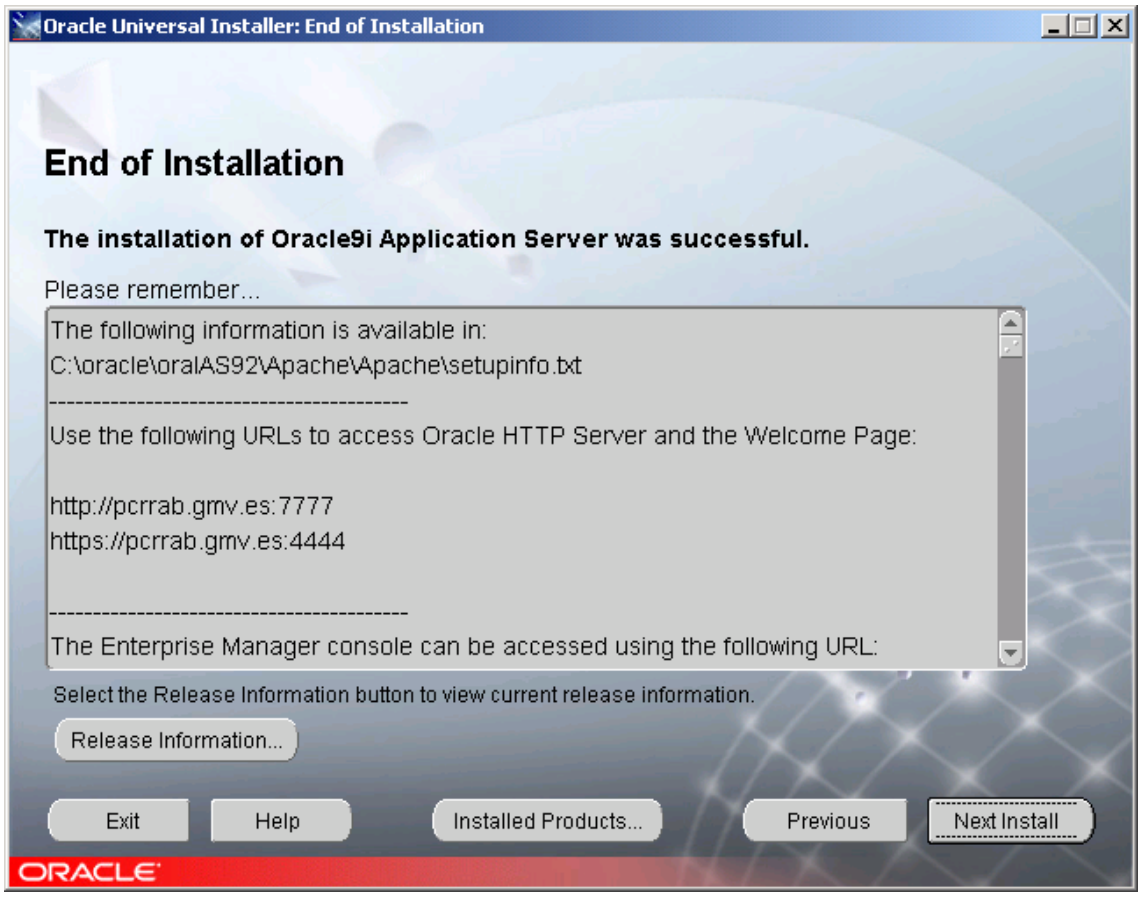

Oracle Universal Installer: Configuration Tools
Configuration Tools
The following tools will be automatically started for you:
Tool Name
Status
Oracle9iAS Instance Configuration Assistant
succeeded
OC4J Instance Configuration Assistant
in progress...
OPMN Configuration Assistant
pending...
Enterprise Manager Web Site Configuration Assistant
pending...
DCM Repository Backup Assistant
pending...
Retry
Stop
Details for OC4J Instance Configuration Assistant:
Initializing DCM..done.
Creating OC4J instance 'OC4J_Demos'..done.
OC4J instance 'home' already exists.
Starting OC4J instance 'OC4J_Demos'..done.
Deploying application 'ojspdemos' to OC4J instance 'OC4J_Demos'..
Exit
Help
Installed Products...
Previous
Next
ORACLE


Oracle Universal Installer: End of Installation
End of Installation
The installation of Oracle9i Application Server was successful.
Please remember...
The following information is available in:
C:\oracle\oraIAS92\Apache\Apache\setupinfo.txt

Use the following URLs to access Oracle HTTP Server and the Welcome Page:
http://pcrrab.gmv.es:7777
https://pcrrab.gmv.es:4444

The Enterprise Manager console can be accessed using the following URL:
Select the Release Information button to view current release information.
Release Information...
Exit
Help
Installed Products...
Previous
Next Install
ORACLE

2.2.3 Creation of the HPSDB database

1. Copy the following files in the %ORACLE_HOME%\bin directory:

```
installAD.sql
createAD.sql
setupSite.sql
createADTables.sql
createADTableTriggers.sql
createADProcs.sql
fillADTables.sql
createProcs.sql
install.bat
ListUtils.class
NamConv.class
TextUtil.class
NamingConvention.class
```

2. Connect to the interactive sql tool (SQLPlus) as “sys as sysdba” and execute the createAD script. This is:

```
sqlplus /nolog
SQLPLUS>connect sys/”password” as sysdba
SQLPLUS>@createAD
```

3. Connect to the interactive sql tool (SQLPlus) as HP_AD and execute the installAD script.

   This step is different for central and mirror sites.

   At a certain point, the script will ask for the site type and the site name. The site type can be ‘C’ for central and ‘M’ for mirror (‘C’ is the default value if you just press <Enter>). The site name can be anything up to 100 characters (‘CENTRAL’ is the default if you just press <Enter>).

4. Execute the install.bat command file from the command line with the following options:

```
install.bat HP_AD HP_AD HPSDB
```

2.2.4 Deployment of the HPSDB application

1. Switch off the Enterprise Manager web site. For this, the following command should be executed at the `%IASHOME%/bin` directory:

```
%IAS_HOME%\bin>emctl.bat stop
```

   A password shall be requested. The same password as the one given in the Application Server installation (section 2.2.2) must be entered.

2. Copy to the %IASHOME%\dcm\bin directory the files named webapp.ear and deploy.dcm.

3. Execute at the command line from the %IAS_HOME%\dcm\bin directory the following command:

```
%IAS_HOME%\dcm\bin>dcmctl shell -f deploy.dcm
```

4. Configure the virtual memory of the HPSDB component in the Application Server to 512Mb. To do this, follow these steps:

   - Modify the %IASHOME%\opmn\conf\opmn.xml file adding the following line "<java-option value="-Xmx512M "/>" in order to leave the file contents as follows :

```
…
<oc4j maxRetry="3" instanceName="hpsdb_component" gid="hpsdb_component" numProcs = "1" >
    <config-file path="C:\oracle\oraias92\j2ee\hpsdb_component\config\server.xml"/>
    <java-option value="-Xmx512M "/>
    <oc4j-option value="-properties"/>
    <port ajp="3001-3100" jms="3201-3300" rmi="3101-3200"/>
</oc4j>
…
```

   - Restart the Application Server and update the configuration executing the following commands:

```
%IAS_HOME%\dcm\bin>dcmctl shell
dcmctl> updateconfig
dcmctl> shutdown
dcmctl> start
```

5. Check the status of the components installed executing the following command:

```
%IAS_HOME%\dcm\bin>dcmctl shell
dcmctl> getstate -v
```

6. Create the temporary directories C:/TEMP/ tmpS2Kgen and C:/TEMP/ tmpS2Kload in the server.

7. Check that the application is started when invoked from a Web browser with the following URL:

   http://<host_name>:<port>/HPSDB/user/Main.jsp

   where <host_name> is the name of the machine where the application has been installed and <port> is the port where the Apache server is listening (7777).

2.3 DE-INSTALLATION OF THE HPSDB APPLICATION

The procedure to follow for installing a new version or updating a version of the software will be included in the delivery pack of the corresponding patch or version of the tool.

3. HPSDB MAN MACHINE INTERFACE

3.1 INTRODUCTION

This section contains the general description of the HPSDB MMI. The application shows different views depending on the type of user who accesses. It is also important to mention that all users, regardless of their type (Administrator, Manager and the different roles of Normal users), have a set of permissions and rights that shall enable them to perform certain activities.

A description of the main particularities of the HPSDB application is given in the following sub-sections of this introduction.

3.1.1 HPSDB Areas

This section describes how the data is organised in HPSDB. This organisation is an important matter for the user, since he/she will be able to configure the areas where the data to work with will be extracted.

The HPSDB objects the user is going to access are stored in three areas: Working Area, Reference Area and Archive Area.

These areas allow keeping separated the data being modified, the valid data and the old data. A short description of each area is given below:

- The **working area** is the place where the objects can be modified, deleted, downloaded from other sites, etc… All the normal users can access in write mode to this area.
- The **reference area** is the place where all the validated objects are located. The manager is the only user that can modify the content of this area via the validation operation.
- Finally, the **archive area** is the place where the old validated data are stored.

As a help to understand the use of the areas, a short description of the main operations allowing the users to transfer objects from one area to another is given below:

1. Creation: Allows to add new objects to the working area.
2. Checkout: Allows to make a copy in the working area of a valid object belonging to the reference area. The copy of the working area can then be modified by the users.
3. Deletion. Allows to make a copy in the working area of a valid object belonging to the reference area, but this time the copy is marked for deletion.
4. Validation: Allows to transfer from the working area into the reference area the objects ‘created’ (point 1), the objects ‘copied to be modified’ (point 2) and the objects ‘copied to be deleted’ (point 3). The objects ‘created’ will just be moved to the reference area. The objects ‘copied to be modified’ will replace the old copies existing in the reference area, and these old copies will be automatically moved to the archive area. For the objects ‘copied to be deleted’, nothing is left in the working and reference area and they are moved directly to the archive area.
5. Discard: Allows to remove physically the copy of an object belonging to the working area.

These operations are more detailed in the related chapters of this document. A graphic of the three areas is depicted in the following picture.

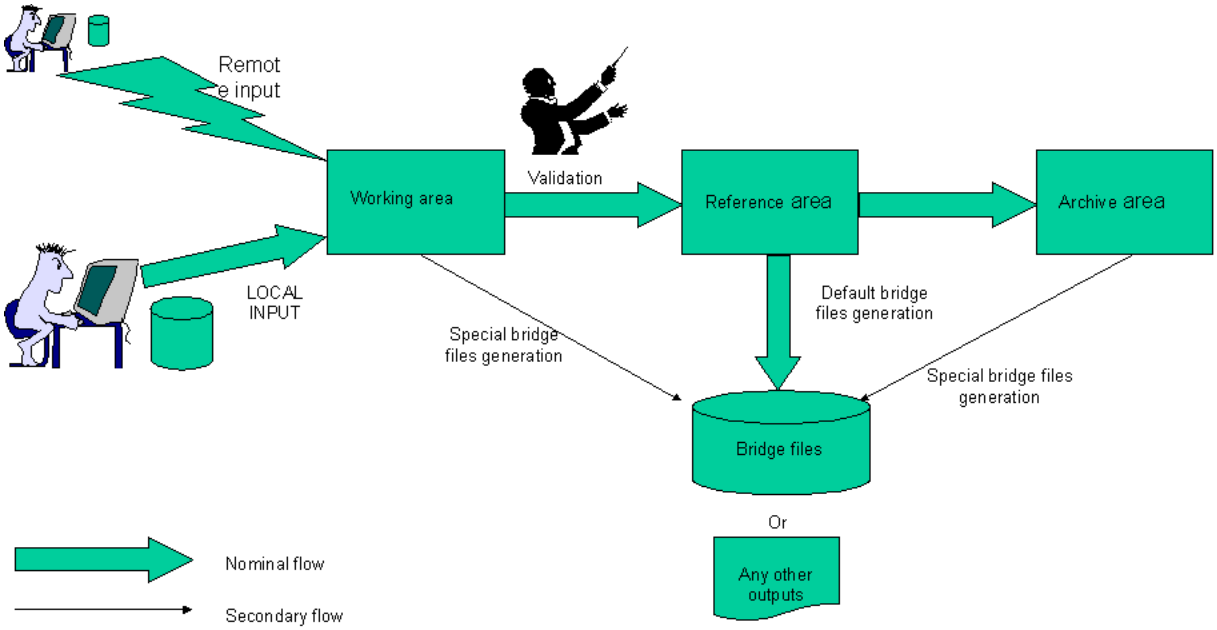


Figure 3-1: Areas transitions sample

3.1.2 HPSDB objects classification

This section describes the classification defined in HPSDB for the objects the user is going to access and work with.

In HPSDB there are two kinds of objects:

- Box objects: The box objects are classified in Elements, Subsystems or Models. There is also another special box object, called Generic box object, which is unique. The box objects are containers for the item objects. In addition to this relationship with the item objects, the box objects can be associated between themselves: a model can contain several subsystems, and a subsystem can contain several elements.
- Item objects: The item objects are also classified in different types: TM packets, TC packets, parameters, curves, etc… Each item object is defined inside a box object.

Two additional classifications with special characteristics are applied to the HPSDB objects (except for the Generic ones):

1. **Physical classification**: The HPSDB objects are separated into theoretical and real objects. The real box objects are always created from a theoretical box object (box object physical instantiation). The real item objects can be created from theoretical item objects (item object physical instantiation) and can be directly created without relationship with any theoretical item object (item object direct definition).
2. **Item Logical classification**: Each item object is defined inside a box object. The type of box object identifies the logical level at which the item is defined (Element, Subsystem or Model). However, when a subsystem contains an element, the user can see the items of the element via the subsystem. The same happens for the items of the subsystems associated to a model.

The instantiation operations and other operations related to the physical classification are more detailed in the related chapters of this document.

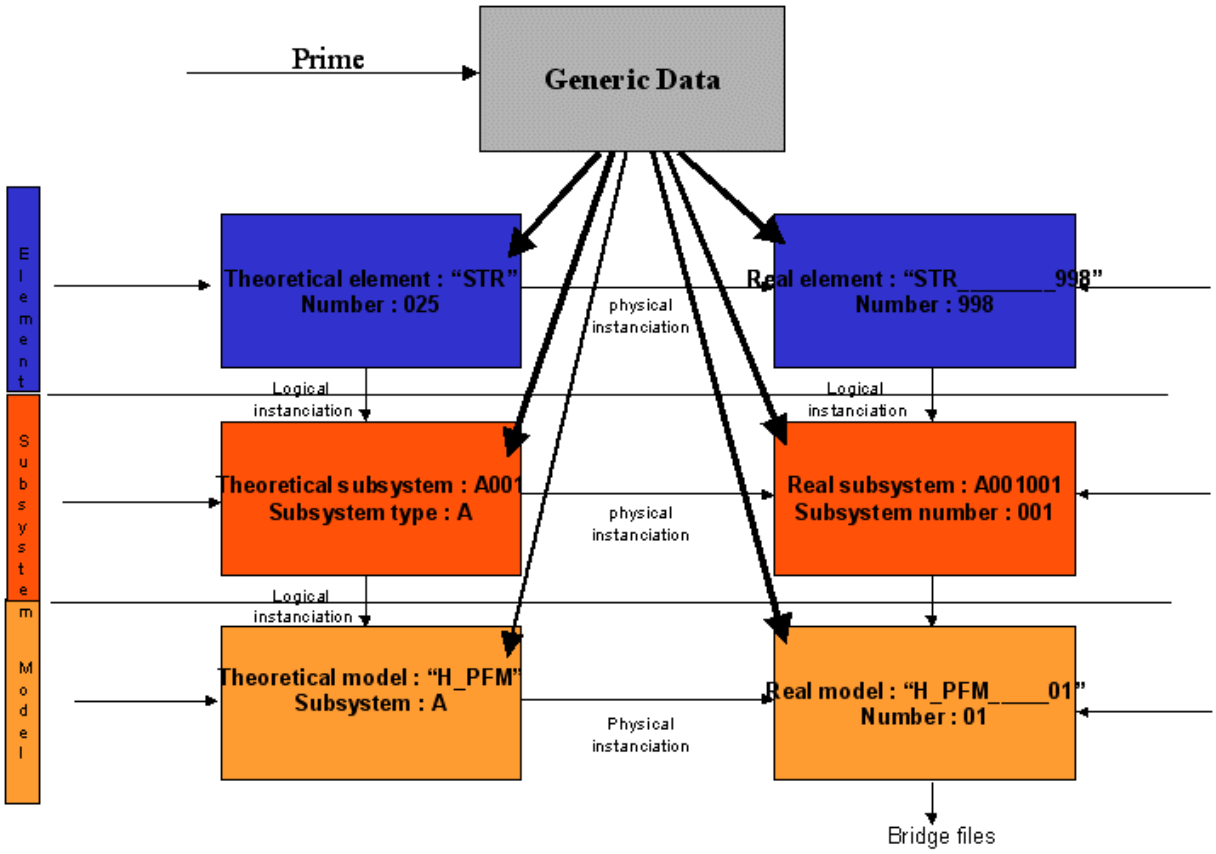


Figure 3-2: Seven boxes sample

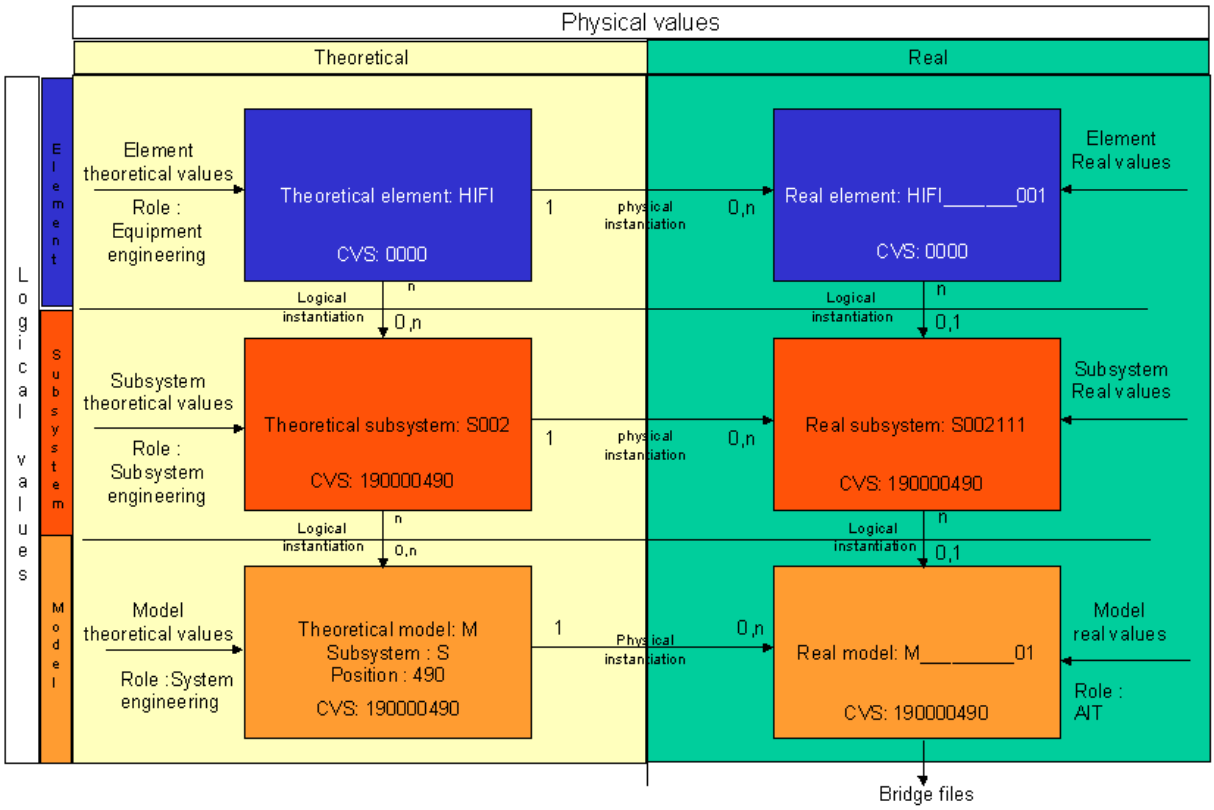


Figure 3-3: Physical instantiation sample

3.1.3 HPSDB Central/Mirror Sites

This Central/Mirror Sites section describes the two possible configurations that can be defined for the HPSDB application. These configurations are set in the installation of the HPSDB application.

1. **Central Site**.

   This is the site where all the valid objects are stored, and the one that traces the whole evolution of the HPSDB data.

   The central site is unique.

   In this site, the users can modify any kind of data depending on their user role and rights.

   The central site manager is the major responsible for the valid objects at the central site.

2. **Mirror Site**.

   Several mirror sites can exist working at the same time on the HPSDB data. The central site shall have transferred to the mirror sites a first set of data to allow the mirror users to work with. In the mirror sites only the Real objects can be modified (the theoretical and generic objects cannot be created/updated/deleted). The modifications performed upon these objects at the mirror site shall be transferred at a moment to the central site, in order to validate them and keep trace of the changes. Otherwise, the changes performed at the mirror site will be lost.

   The mirror site manager is the major responsible for the modifications performed at the corresponding mirror site.

3. **Data exchanges between sites**.

Specific operations have been defined in HPSDB to allow the exchanges of data between the central and the mirror sites:

- Transfer File Generation
- Transfer File import
- Log File generation
- Log File Download

These file exchanges shall be done with care by the users of both sites, because no direct communication (synchronisation) between sites is provided. This means that the central and the mirror sites can work independently for an interval of time and the changes performed in both sites (specially the central site) can make the work done at both sites (specially at the mirror sites) become useless. For example, a deletion of a theoretical box at the central site can imply that the real boxes modified at the mirror site will not have sense.

The operations “Transfer File Generation” and “Log File Download” are thought to be executed only at the central site, and the operations “Transfer File import” and “Log File generation” are thought to be executed only at the mirror sites. However, all the operations are available in all the sites.

The interface between sites is done in all the cases via XML files. The following scenario depicts how the HPSDB application allows to perform these file exchanges:

1. The source site manager executes the operation to generate the desired file at the source site.
2. The source site manager saves the generated file from the source site to its own machine.
3. The target site manager uploads the generated file from the user machine to the target site.
4. The target site manager executes the operation to load the content of the file in the target site.

Since there is no direct communication between sites in HPSDB, the way to transfer the file from the source site manager to the target site manager is not covered by HPSDB.

These operations are detailed in the corresponding section of this document.

In the following picture a graphic with the different sites interfaces is depicted.

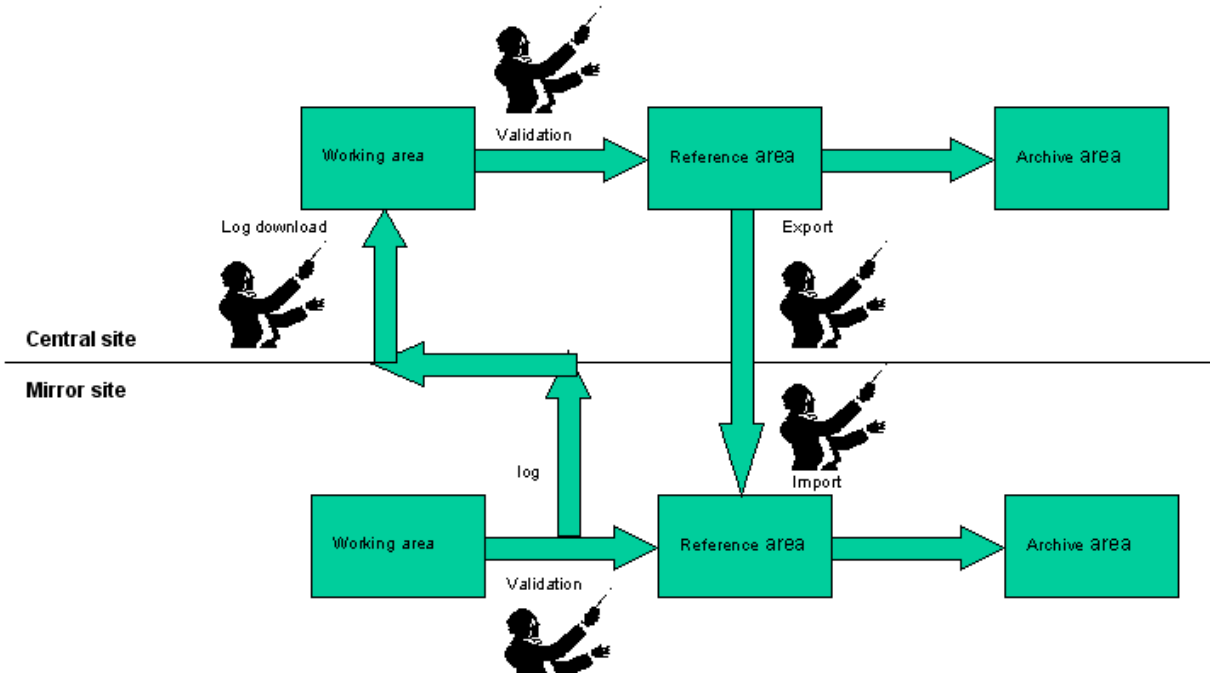


Figure 3-4: Central/Mirror sites interfaces

3.2 GENERAL CONSIDERATIONS

This section gives some general considerations of the MMI that are applicable to all users and/or most of the pages that are part of the HPSDB application. They are here detailed in order to avoid the repetition of the same description throughout the rest of the document.

3.2.1 Page layout

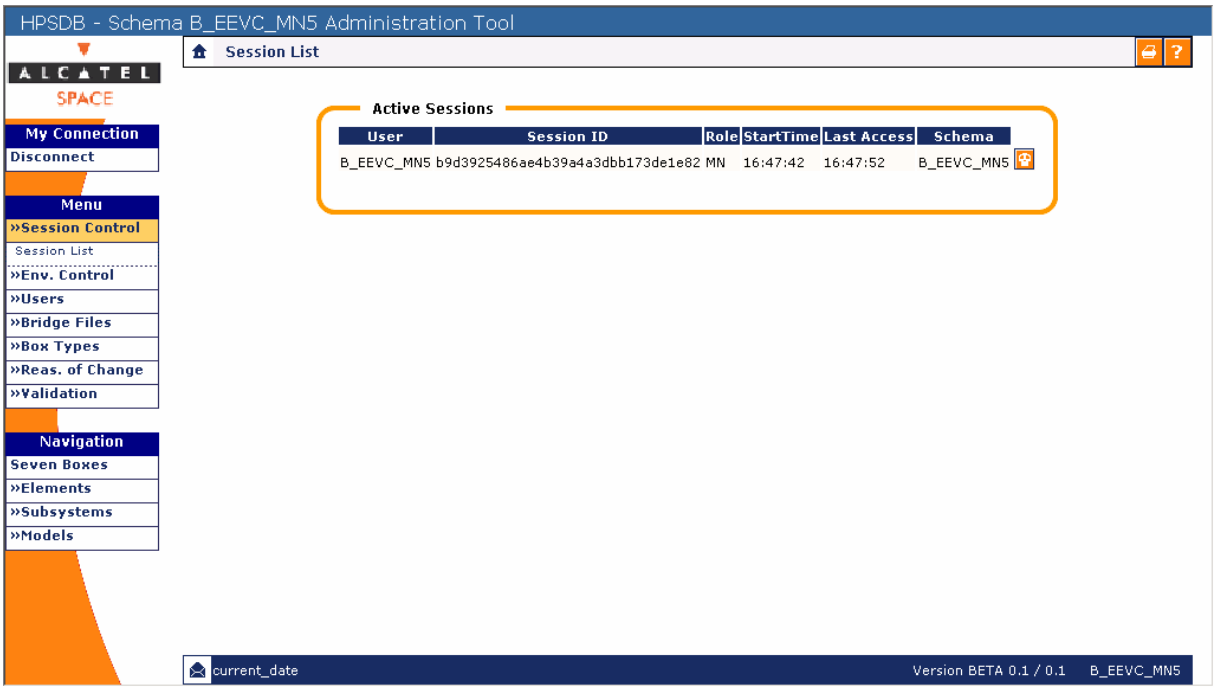


Figure 3-5: Page layout

Once an authorised user has successfully logged the application, the Web pages that appear shall be constituted by 4 different parts or frames, each of them containing clearly identified information as it is shown in the figure above. These are:

- Top frame: It includes the title of the application. Depending on the user type the title shall be: the name of the main (right) frame and two buttons indicating the following specific actions:
  - HPSDB - Site Administration Tool for administrators.
  - HPSDB - Schema Administration Tool for managers.
  - HPSDB Application for normal users.
- Left frame: Main functionality associated to the user. It is composed by three different menus named as indicated below:
  - My connection. This menu is common to all pages. It contains only one item/option dealing with the capability to disconnect the HPSDB application. When clicking on this option, the user shall be disconnected and the HPSDB home or log page shall be displayed.
  - Menu. It groups the dedicated list of actions corresponding to the type of user. A detailed description of each activity can be found in sections xx, xx and xx for the administrator, manager and normal user respectively.
  - Navigation. This menu presents 4 submenus for the navigation thorough the different box levels. The options in the submenus shall be available according to the user role. The submenus are:
    - **Elements**: for elements visualization.
    - **Subsystems**: for subsystems visualization.
    - **Models**: for models visualization.
    - **Seven boxes**: this option presents a seven boxes chart from which the user can select the box level to work with.
- Right frame: This is the major frame and it is decomposed in three areas:
  - **Top Area**. It includes the title of the right frame and three buttons/links indicating specific actions. These are:

     Home. Go directly to the user's home page.

     Print. Print the contents of the right frame.

     Help. Links to the HPSDB user manual (i.e. this document).

     Date Selection. Presents the Selection Date Window.
  - **Data Area**. The Data Area contains the detailed information and operations users can perform upon the data they have accessed. The different contents displayed here are initiated by clicking a specific option from the left frame.
  - **Bottom Area**, including the following fields:

Administrator contact. Users can contact the administrator of the site sending an e-mail indicating any problem or consult they may have.

Date This field shows the selection date given by the user.

Version Version of the HPSDB database being used.

User Id Identifier of the user accessing the application.

NOTE: The convention used for naming the labels in the MMI may be changed in future versions.

3.2.2 List operations

HPSDB uses lists to present sets of information of the same kind to users. Attached to these lists are some operations that are utilised to configure the visualisation and contents of the lists and one for the validation selection. These are:

This option allows selecting the precise set of data field to be displayed as columns in the list.

This option permits to filter the number of rows that are included in the list. There are several criteria to delimit the data the user is interested about, permitting each field presented the utilisation of wildcard characters.

Many of the lists have the option to create a new instance of a new element belonging to the list. The selection of this option leads to display the corresponding form where the user can enter the data fields corresponding to the new element.

This option permits to add the selected boxes/items to the validation basket.

3.2.3 Login – Access to the main page

3.2.3.1.1 Functional Description

HPSDB users must successfully login to the system to have access to the functionality provided by the application. Obviously all type of users gets access to the same login page.

3.2.3.1.2 Example

Figure 3-6 shows the HPSDB login page. Authorised users must enter their user/password couples, and click on the "Login" button to gain access to the application.

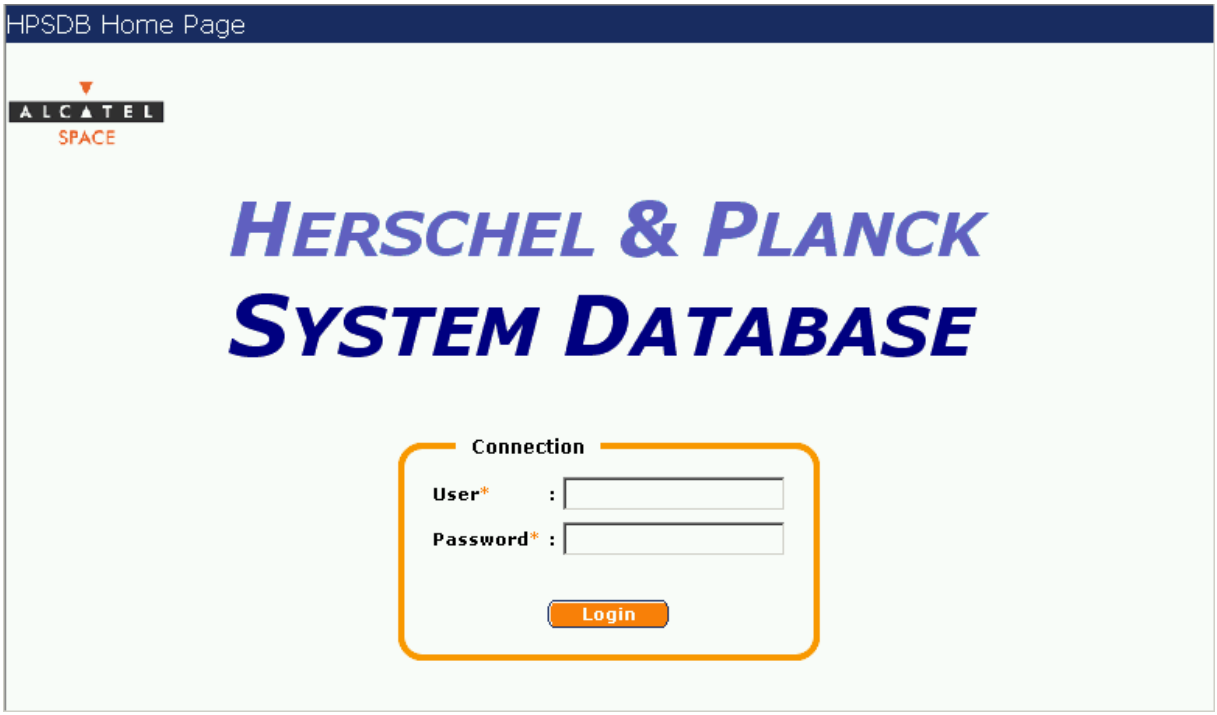


Figure 3-6: HPSDB home page

Upon a successful login the user shall access to the main page where the functionality associated to the user type is displayed and shall be described throughout the whole document.

3.2.3.1.3 Cautions and warnings

- Two HPSDB sessions run by the same user at the same time could lead to inconsistencies with the user-related information stored in the data repository.
- For the sake of data consistency, it is strongly recommended to have one session per user at a given time. Otherwise, problems could arise when different selection dates are introduced.

3.2.3.1.4 Probable errors and possible causes

Error	Possible cause
Unauthorized operation	The user is unauthorised or has made a mistake when entering the user id and/or password.

3.2.4 Selection Date

3.2.4.1.1 Functional Description

This functionality allows the user to configure the data that he/she wants to work with in HPSDB. Depending on this selection the user will see at most one copy of each object. The write permissions are different depending on the date selected.

The following steps shall be performed to select the desired date:

1. **Selection Date operation**. The user shall click on the selection date button  appearing at the Top Area of the right frame page (see section 3.2.1). This action will display the selection date page.
2. **Selection Date Page**. A new page will be displayed with three options :
   - Current Date. The copies of the box/item objects to be displayed in the rest of pages will be a mixture of the copies found in the Working and Reference Areas:
     i. For the objects having a copy in the Working area, this will be the copy displayed.
     ii. If no copy of the object is found in the Working area, the copy of the Reference Area is displayed.

     This is the only selection that allows write permission upon the objects of the working area displayed.
   - Last Validation Date. Only the copies of the objects in the Reference Area will be displayed in the rest of pages. The objects belonging to the Working Area and not belonging to the Reference Area will not be displayed.

     This selection turns automatically to read-only mode the permissions upon the displayed objects. Only the operations not implying modification of data will be allowed.
   - Reference Area in Date. An old date shall be selected to retrieve the data that belonged to the reference area at that date. The copies of the objects existing at the Archive Area whose validation date matches the date introduced will be the ones displayed.

   Once that the user has performed the desired selection, he/she shall confirm the selection by clicking on the button  .
3. **Intermediate information**. A new page is displayed informing the user about the areas where the displayed objects will be retrieved. The user shall click on the  button. This action configures automatically the rest of pages according to the selection performed, and redirects the user to the Seven Boxes Page.

3.2.4.1.2 Example

An example of the Selection Date Page is shown below:

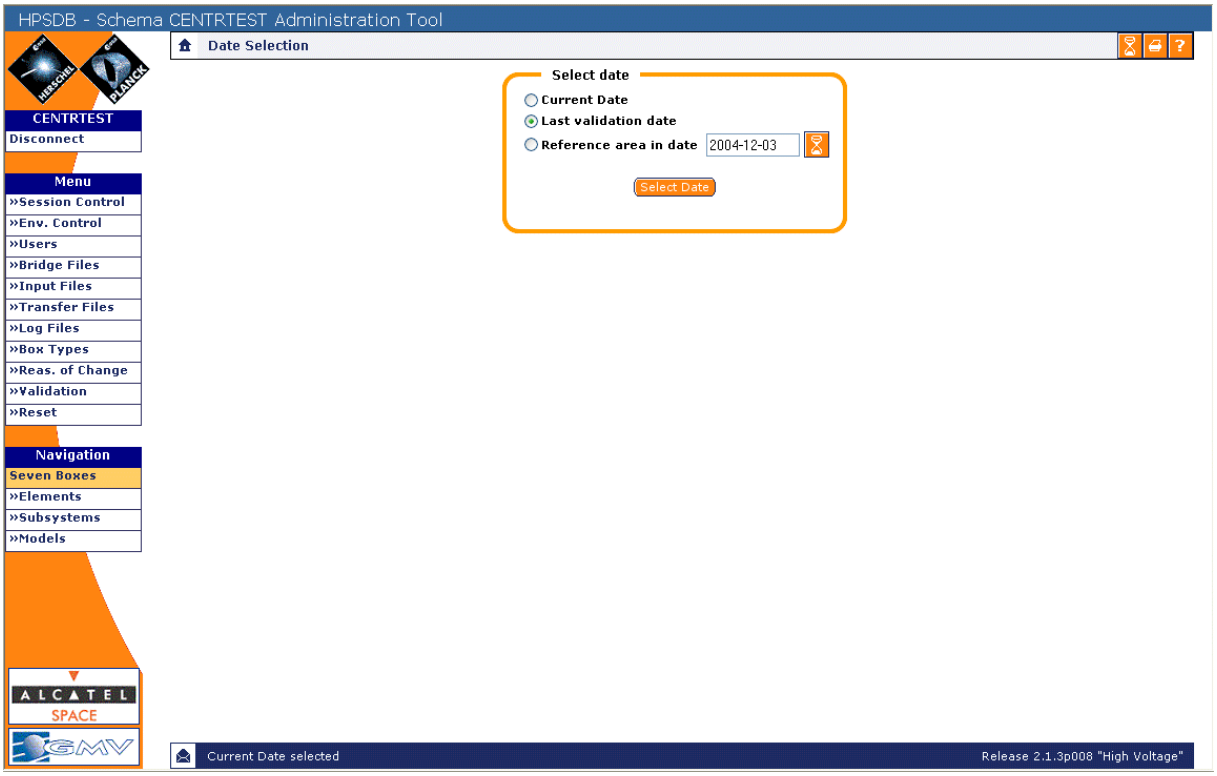


Figure 3-7: Selection Date Page

3.2.4.1.3 Cautions and warnings

- The selection date option in the Top Area only appears and applies for those pages displaying objects through the existing boxes.

3.2.4.1.4 Probable errors and possible causes

NA

3.2.5 Disconnect – Exit HPSDB

3.2.5.1.1 Functional Description

Connected users should exit the HPSDB application when finish to work to prevent unauthorized accesses. This is possible clicking on the Disconnect option from the My Connection menu located in the left frame.

3.2.5.1.2 Example

Figure 3-6 shows the page that HPSDB displays when users have disconnected. Users have no longer access to the application unless they login again.

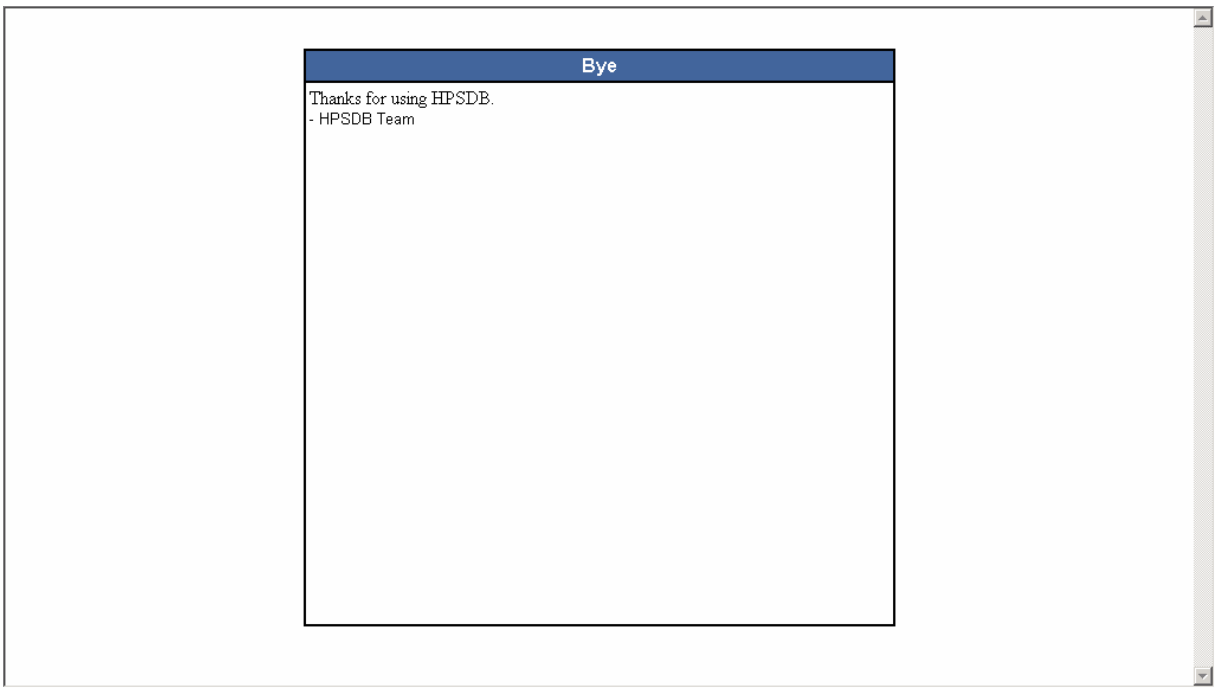


Figure 3-8: Disconnection page

3.2.5.1.3 Cautions and warnings

- The user is strongly required to disconnect from HPSDB when finish work for security reasons.

3.2.5.1.4 Probable errors and possible causes

NA

3.3 ADMINISTRATION ACCESS

The objective of this section is to identify and provide a full description of the activities allocated to the HPSDB administrators. These are part of the Menu list of the left frame:

- **Session control**, dedicated to the management of the different sessions associated to the site.
- **Site control**, that includes the operations to lock and unlock the site, and
- **Schema management**, which performs the management activities upon the different schemas belonging to the site.

The HTML page depicted in Figure 3-9 is displayed as soon as an HPSDB administrator has successfully logged the application. The home page includes the list of active sessions in the Data Area of the right frame, where basic information is displayed per session such as the user, the role of the user and so on. Further description of the session list and activities associated to the different sessions for which the administrator is responsible for can be found in the next sub-section, as part of the Session Control activity.

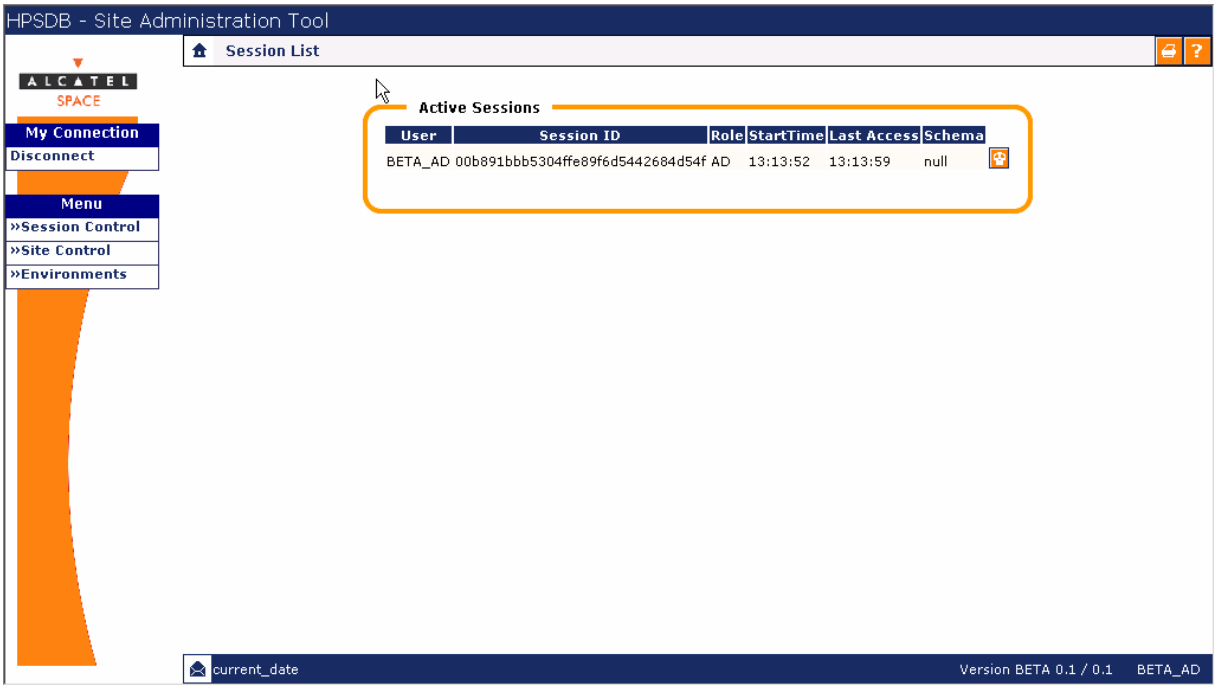


Figure 3-9: Administrator main page

3.3.1 Session control

The session control activities allow visualising the list of active sessions belonging to the site the administrator is responsible for.

The list of sessions is displayed as part of the administrator's home page, although it can be also accessed by clicking the Session List option of the Session Control menu at the left frame.

An example of the list of sessions available in a given site is shown in the figure above. Each row contains enough information to permit the administrator recognise and identify the user/session without further navigation/access. The user information that appears in this list is described below:

- *User*. User identifier that initiated the session.
- *Role*. HPSDB role of the user. These are identified as follows:
  - AD – Administrator
  - MN – Schema manager
  - EF – Equipment Fabricator
  - EE – Equipment Engineer
  - SF – Subsystem Fabricator
  - SE – Subsystem Engineer
  - ME – Model Engineer
  - AIT – AIT
- *Start Time.* Connection time for the user.
- *Last Access.* Last time the user accessed the application.

- *Schema*. Environment to which the user belongs.
- **Actions**. In this case there is only one action associated to each session item:

  Kill Kill the session.

3.3.1.1 Site session deletion

3.3.1.1.1 Functional description

The administrator is capable to kill any of the sessions belong to the site. Once the kill option has been pressed, the system requests a confirmation. The confirmation shall proceed to kill the HTTP session and therefore the user shall have no longer access to the application.

The session deletion is activated by clicking the icon upon the desired session from the site session list.

3.3.1.1.2 Example

NA

3.3.1.1.3 Cautions and warnings

- This operation should be performed when special problems appear on the affected session and the user operating it is fully aware of the situation. It can cause for the user to lose data editions.
- The administrator can kill his/her own session. It would be desirable to use the Disconnect option from the My Connection menu instead.

3.3.1.1.4 Probable errors and possible causes

NA

3.3.2 Site control

3.3.2.1 Lock site

3.3.2.1.1 Functional description

The Lock Site option from the Site Control menu leads to the lock of the site so that users belonging to the site have restricted the access to the HPSDB application until the unlock operation is invoked.

3.3.2.1.2 Example

The figure below shows the page that is displayed as a response to the Lock Site action.

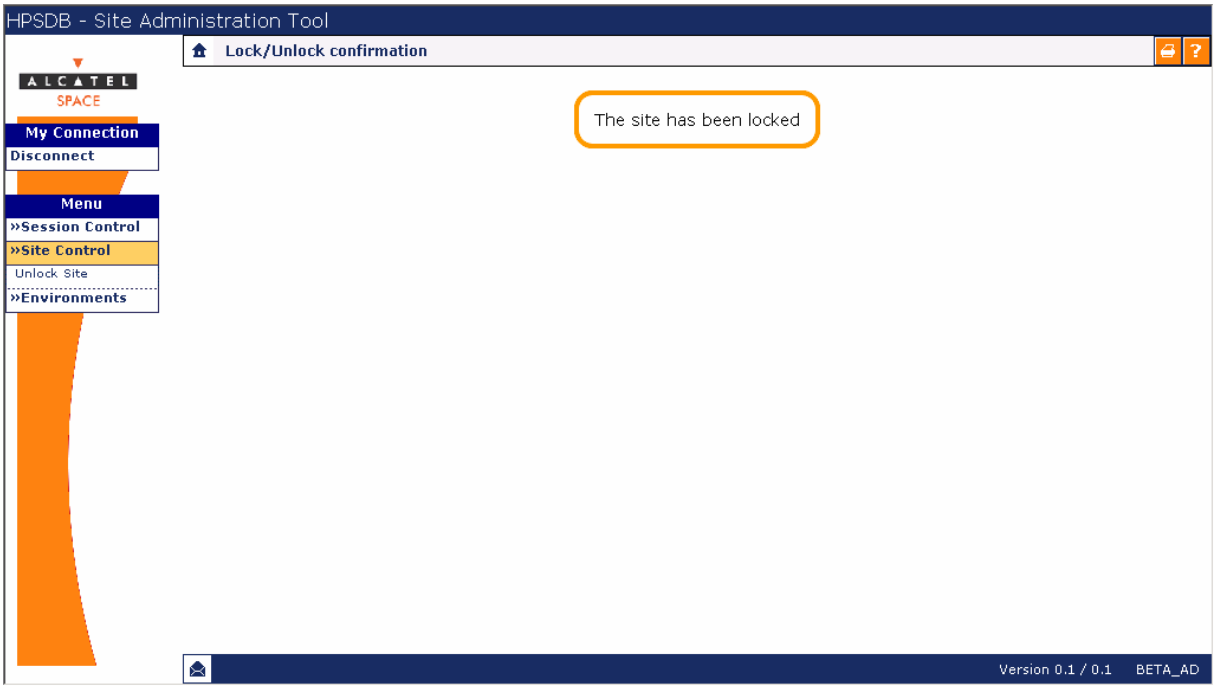


Figure 3-10: Lock site page

3.3.2.1.3 Cautions and warnings

- This operation is available only when the system is unlocked, this is HPSDB is fully operative.
- This operation is useful in case the administrator needs to perform a database management activity, such as a backup or restore. Therefore, the database must be locked to ensure that no access shall be carried out during the necessary operation(s).
- The administrator must be sure that no user is performing any important operation that may cause problems.
- During the lock of the site the user sessions can expire causing the user to re-connect.

3.3.2.1.4 Probable errors and possible causes

NA

3.3.2.2 Unlock site

3.3.2.2.1 Functional description

The Unlock Site option from the Site Control menu permits the system to be accessible to users after a lock period.

3.3.2.2.2 Example

The figure below shows the page that is displayed as a response to the Unlock Site action.

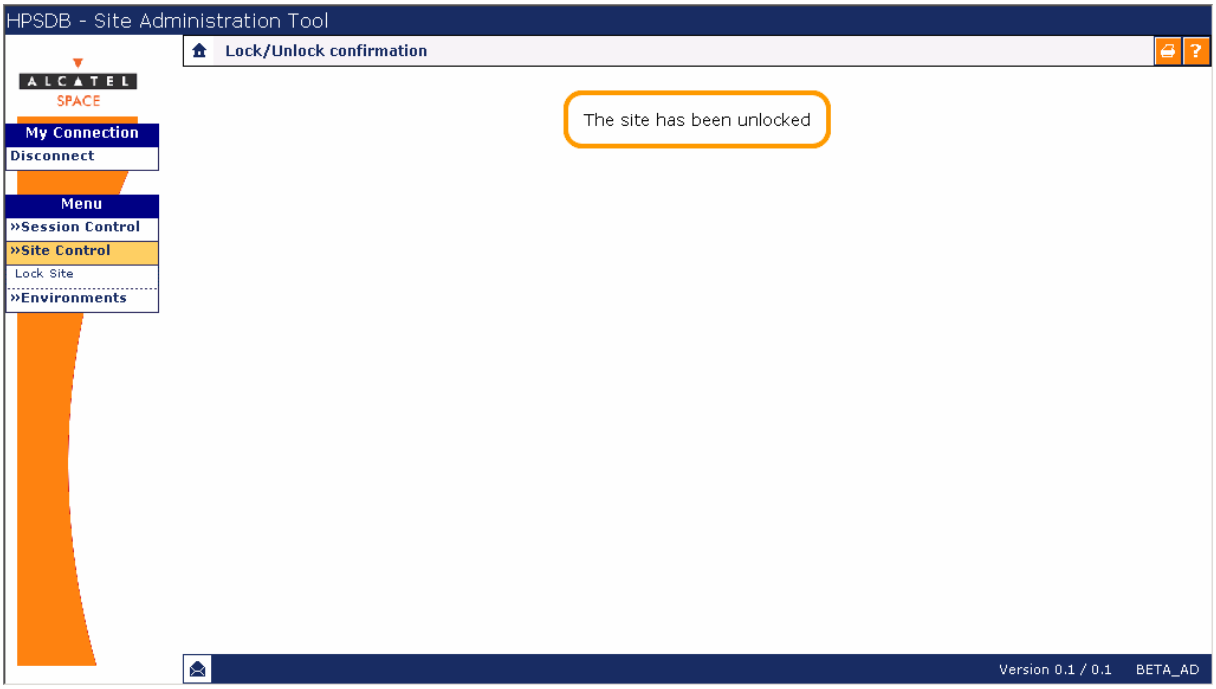


Figure 3-11: Unlock site page

3.3.2.2.3 Cautions and warnings

- This operation is available only when the system is locked.

3.3.2.2.4 Probable errors and possible causes

NA

3.3.3 Schema management

The schema control activities are related to the creation and deletion of database schemas needed for different specific purposes within HPSDB. For example this mechanism allows separating the testing data management activities from those considered used for an operational environment. In fact these two schemas represent the initial configuration of the schemas within HPSDB.

It is important to remark that there is a total dependency between a database schema and a manager, meaning that both concepts are created at the same time, and that the deletion of one of them implies the automatic deletion of the other.

The activation of the Schema List option of the Schema Control menu leads to present the list of existing schemas belonging to the site. An example is depicted in Figure 3-12.

Each schema in the list row contains enough information to permit the administrator recognise and identify the user/session without further navigation/access. The user information that appears in this list is described below:

- *EnvName*. Name of the schema or user identifier of the manager in charge of the schema. As mentioned before, the schema and the manager who created it are linked to each other. A manager cannot exist without a schema and vice versa.
- *Description*. Text describing the purpose of the schema.

- *Family Name*. Complete name of the schema manager.
- *Organisation*. Name of the organisation of the manager.
- *Email*. E-mail address of the manager.
- *Phone*. Contact phone number of the manager.
- **Actions**. The list of actions associated to each schema/manager.

Edit schema	Change the description of the schema.
Tablespace info	Show information about the objects contained in the tablespace of the schema.
Edit manager	Change some attributes of the manager, such as the email, organisation and so on. All fields can be modified except the user identifier and password.
Change password	Change the password of the manager.
Delete schema/manager	Remove the schema and manager from the site.

These actions shall be further described in the following sub-section, together with the action to create a new schema/manager.

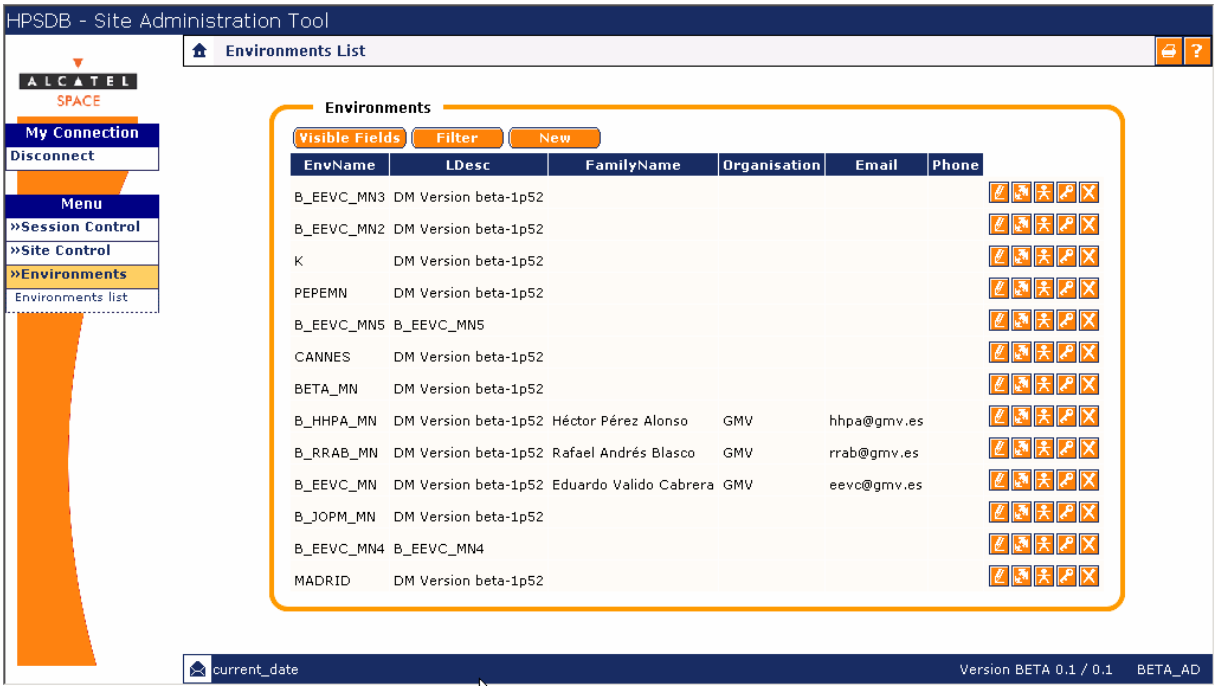


Figure 3-12: List of schema/manager page

3.3.3.1 Create schema/manager

3.3.3.1.1 Functional description

The HPSDB administrator(s) is granted with the capability of creating new schemas/managers into the site infrastructure. The following fields constitute the information needed to create both concepts:

- *Name*. Up to 10 characters string used to identify the new schema and manager responsible for its management. This field represents therefore the user identifier for login the system. It is mandatory and must be unique within the whole site. It cannot be null and cannot contain blanks.
- *Password*. 4 to 8 characters string. This field is mandatory and is used for the manager to login the system.
- *Retype new password*. Repetition of the previous field in order to avoid mistakes in the field entrance.
- *Description*. Up to 255 characters string used to describe the purpose of the new schema.

As explained above, there are more data fields corresponding to the user, such as the organisation to where the manager belongs, email and so on. These appear in the user modification option described in section 3.4.3.3.

3.3.3.1.2 Example

The figure below shows the page that is displayed when creating a new schema/manager. Once the administrator enters the data field information and presses the Create button, the new schema/manager is created into the system, i.e. changes are committed into the HPSDB database.

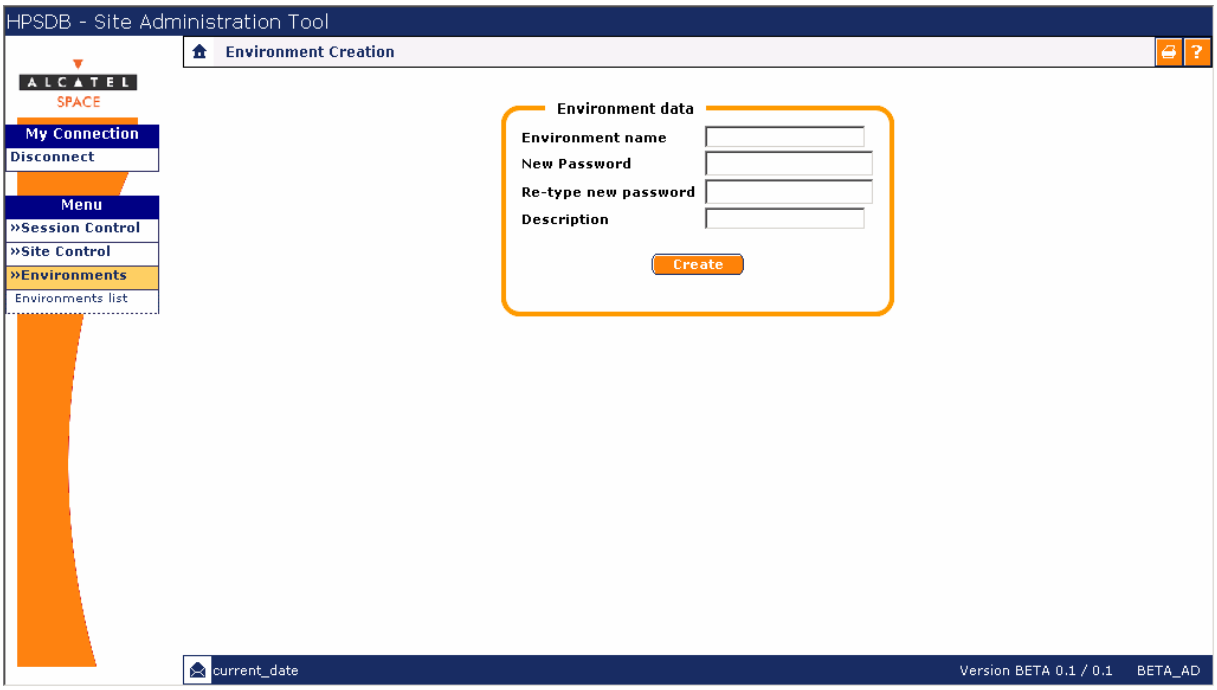


Figure 3-13: Schema/manager creation page

3.3.3.1.3 Cautions and warnings

- Only alphabetic, numerical and some special characters (“-“, “_”) should be entered in order to make the password field. The password should combine both alphabetic and numeric characters in both upper and lower case for security reasons.

- All fields are mandatory.

3.3.3.1.4 Probable errors and possible causes

Error	Possible cause
Empty field	All of the fields are mandatory. None of them can be left blank.
Schema/manager already exists	The schema/manager name already exists in the site. A unique name must be re-entered.
Invalid inputs	The username or password does not complain the minimum and maximum length.
Invalid password re-typing	The re-typed password does not match with the new one.

3.3.3.2 Edit schema

3.3.3.2.1 Functional description

The edition of an existing schema provides the possibility of changing the description associated to the schema. This is because the modification of any other item would cause strong implications and changes in many of the tables attached to the schema.

3.3.3.2.2 Example

The figure below shows the page that is displayed when the  icon (Edit schema) is clicked. The two buttons of the page indicate to perform the modification (implying a database commit), whereas Reset indicates to keep the description as it was.

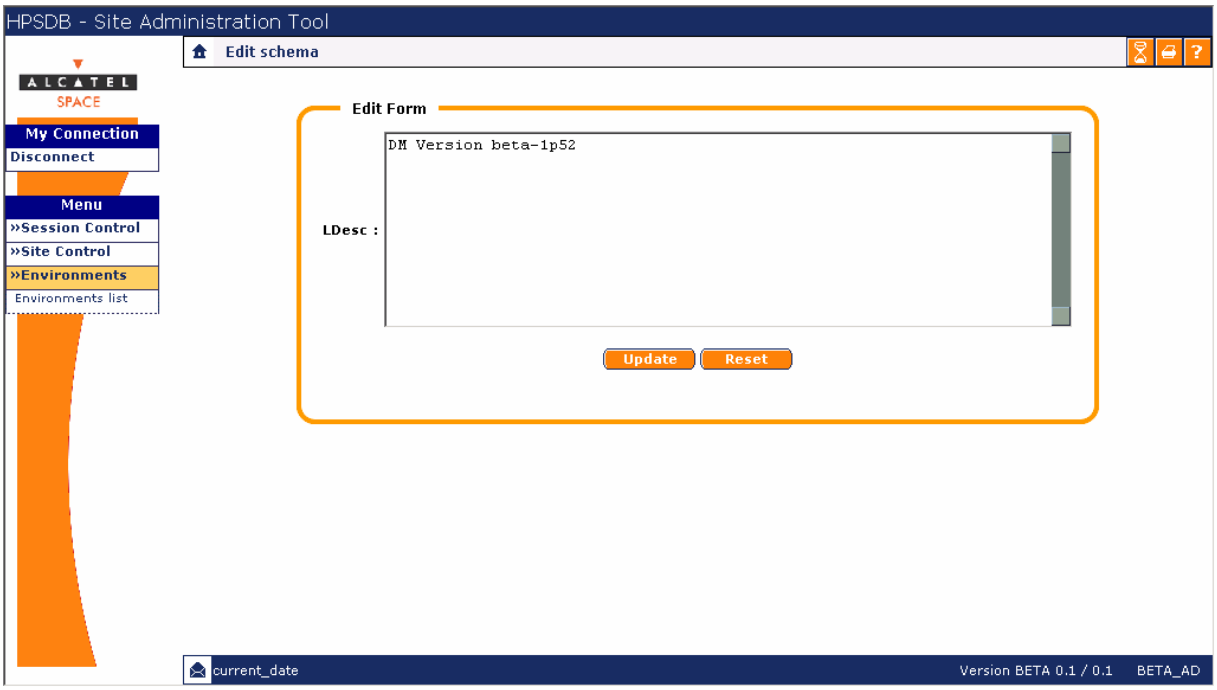


Figure 3-14: Schema edition page

3.3.3.2.3 Cautions and warnings

NA

3.3.3.2.4 Probable errors and possible causes

NA

3.3.3.3 View tablespace information

3.3.3.3.1 Functional description

A table including the different database objects is presented to the administrator in a read-only view. The following information for each object is given:

- *Tablespace name*. Name of the tablespace where the object is stored. Initially HPSDB shall store all object in one tablespace named USERS.
- *Segment name*. Name of the object.
- *Segment type*. Type of the object. The tablespace can contain different objects such as tables, views, indexes, stored procedures and so on.
- *Bytes*. Size of the disk space allocated to the object.
- **Actions**. In this case there is only one action associated to each object item:

   Statistics Show the statistic data corresponding to the tablespace where the object is stored.

This information is initiated clicking the  icon upon the desired item from the list of schemas available in the site.

3.3.3.3.2 Example

The appearance of the HTML page showing the table space information corresponding to an existing schema is depicted below.

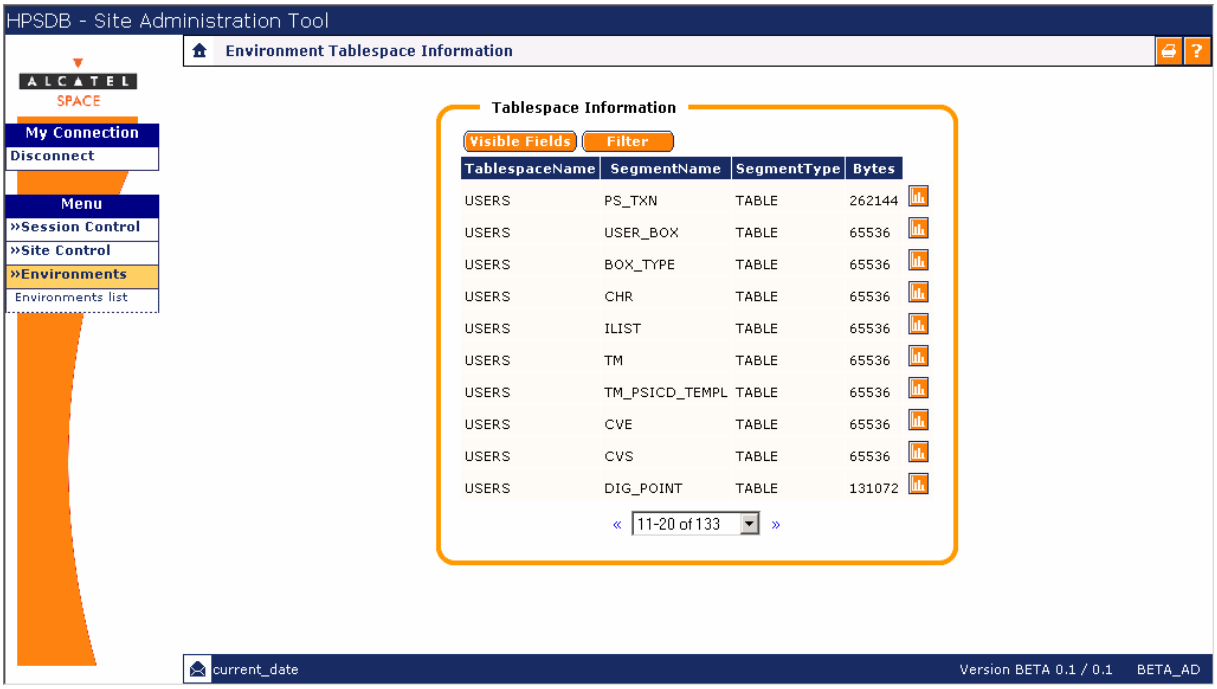


Figure 3-15: Tablespace information page

When the  icon is pressed, a page like the one shown below is presented to the user regarding size allocation values associated to the tablespace: name of the tablespace, location and name of corresponding dbf file, total size of the tablespace measured in Kbytes.

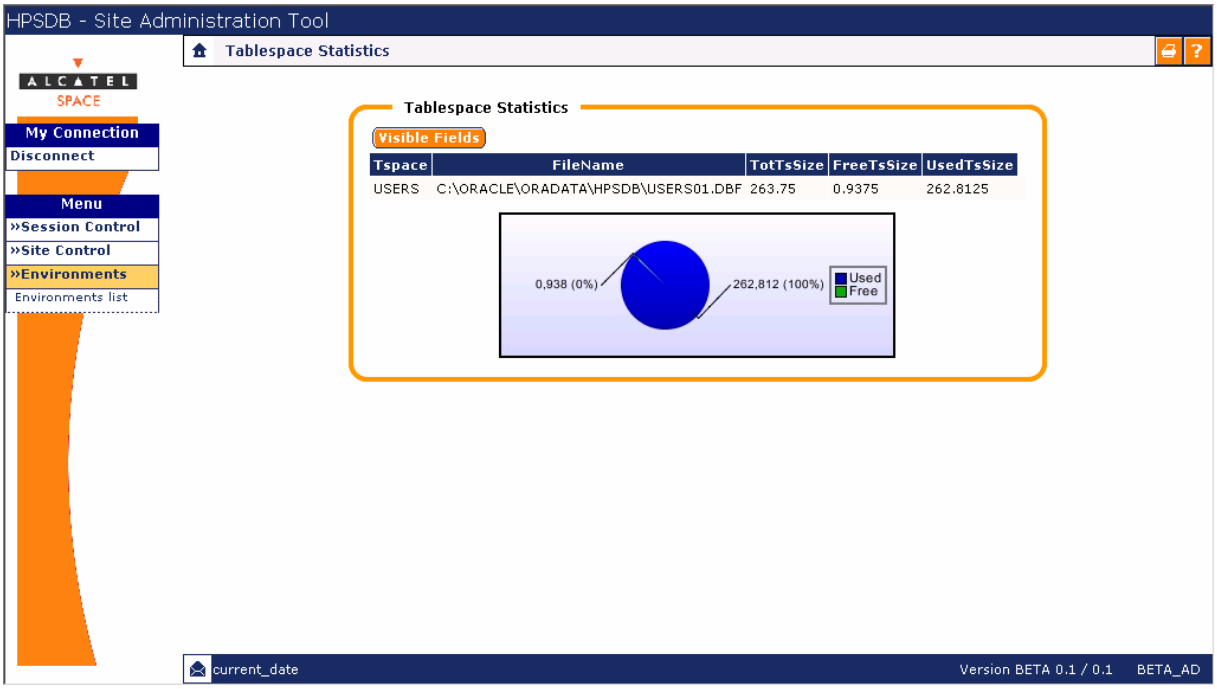


Figure 3-16: Tablespace statistics page

3.3.3.3.3 Cautions and warnings

None

3.3.3.3.4 Probable errors and possible causes

None

3.3.3.4 Edit manager

3.3.3.4.1 Functional description

The edition of a manger allows setting the data allocated to the manager that was not provided at the manager creation time. All fields shown in Figure 3-12 can be set/modified except the user identifier, which also identifies the name of the database schema.

The form that appears contains the following data fields:

- *User identifier*. Identifier of both the manager and schema. It is displayed in read-only mode.
- *Email*. Up to 80 characters string used to describe the email address of the manager.
- *Name*. Up to 100 characters string used to describe the complete name of the manager.
- *Organisation*. Up to 100 characters string used to describe the organisation to where the manager belongs.
- *Phone*. Up to 50 characters string used to describe the telephone number of the manager within the organisation to be used in case he/she must be contacted for any reason.

3.3.3.4.2 Example

The figure below shows the page that is displayed when the  icon (Edit manager) is clicked. As in the schema edition page, the two buttons of the page indicate to perform the modification (implying a database commit), whereas Reset indicates to keep the data fields as they were before.

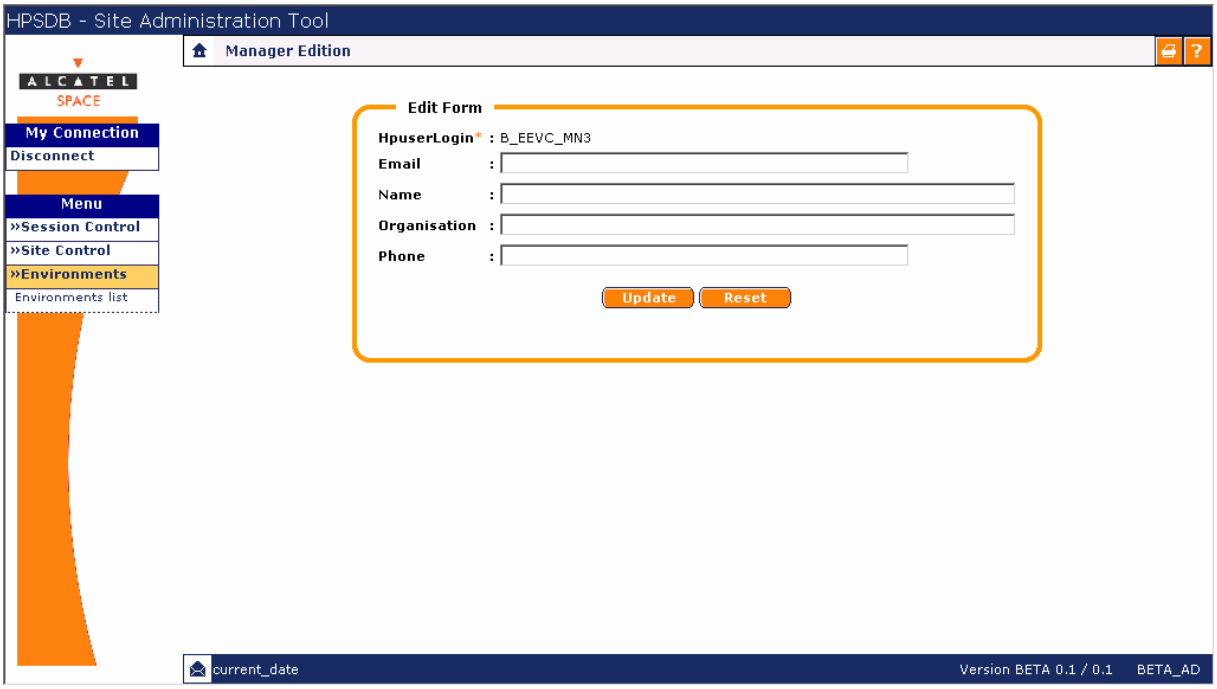


Figure 3-17: Manager edition page

3.3.3.4.3 Cautions and warnings

NA

3.3.3.4.4 Probable errors and possible causes

NA

3.3.3.5 Change password

3.3.3.5.1 Functional description

The password of a manager is changed.

3.3.3.5.2 Example

The figure below shows the page that is displayed when the  icon (Change password) is clicked. The Update button confirms the password modification of the manager into the HPSDB database.

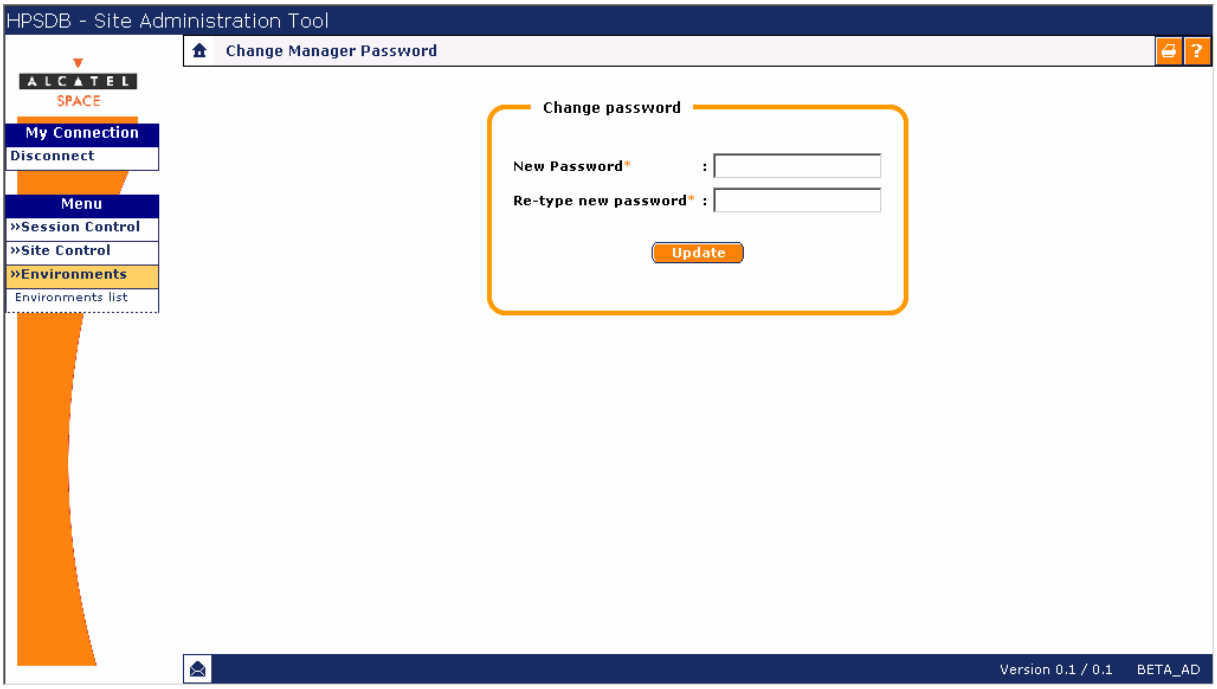


Figure 3-18: Password change page

3.3.3.5.3 Cautions and warnings

- Only alphabetic, numerical and some special characters ("-", "_") should be entered in order to make the password field. The password should combine both alphabetic and numeric characters in both upper and lower case for security reasons.
- The same string literal should be provided at the two data fields.

3.3.3.5.4 Probable errors and possible causes

Error	Possible cause
Empty field	Both password fields are mandatory. None of them can be left blank.
Invalid password re-typing	The values entered in the two editing fields are different
Invalid password	The value of the password field does not complain the constraints.

3.3.3.6 Delete schema/manager

3.3.3.6.1 Functional description

The database schema is removed, having the following consequences:

- The contents of the schema are permanently deleted.
- The manager responsible for the schema is also removed.

This is a very critical operation. The schema no longer exists in the system and no traces are left, meaning that all data and users belonging to it are permanently removed.

3.3.3.6.2 Example

The figure below shows the page that is displayed when the icon (Delete schema/manager) is clicked. Due to the strong implications of the operation, a confirmation is requested. The conformation leads to remove all the data associated to the schema in the database (i.e. leading to a database commit).

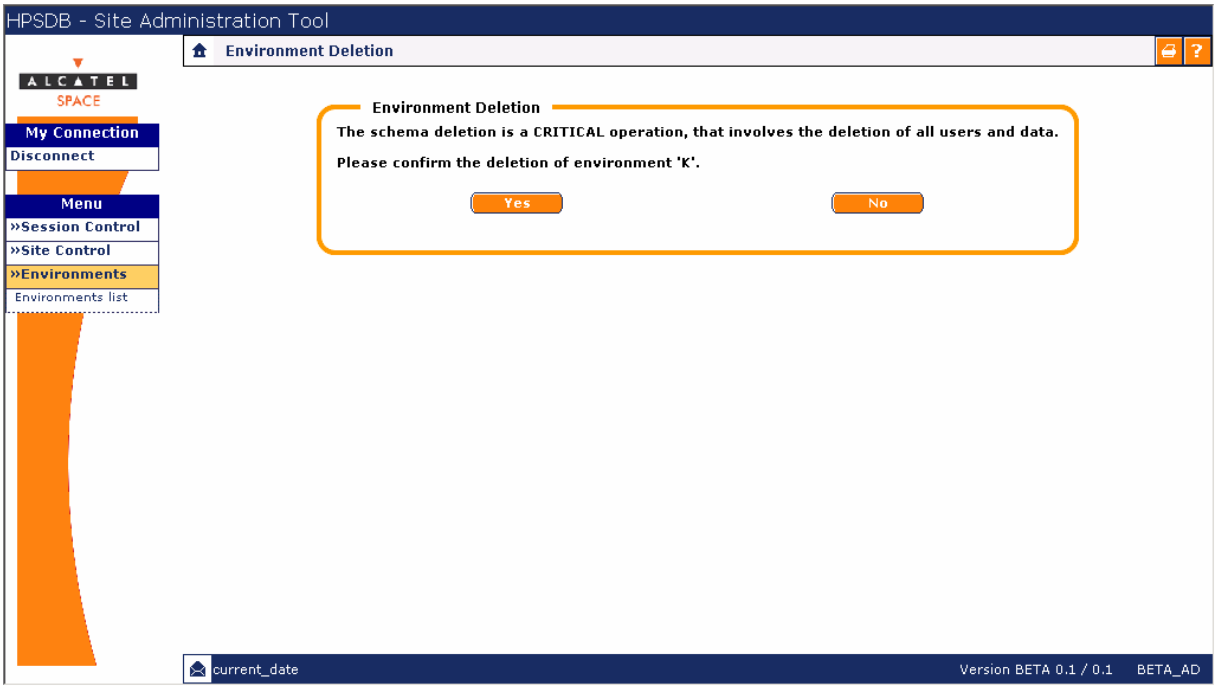


Figure 3-19: Schema/manager deletion page

3.3.3.6.3 Cautions and warnings

- The site should be locked prior to perform this operation. Otherwise, other users may be simultaneously handling data contained in the schema. Therefore, users belonging to the schema to delete should be warned.
- The deletion of the schema implies not only the removal of the manager but also the users belonging to that schema and all the associated data.
- When a schema is removed by the HPSDB administrator the application will kill the session of any user connected to the schema. If it succeeds then the schema is removed from the list of the environments of the administrator. If it does not succeed in killing the session (sometimes it is needed to wait some time) the process will show a message asking the user to try again later. In any case, the schema users (including the manager) will not be able to work on the schema that is being deleted.

3.3.3.6.4 Probable errors and possible causes

Error	Possible cause

Error	Possible cause
Connected users	It is not possible to delete a schema whilst a user is connected to Oracle.

3.3.4 Backup and restore mechanisms

TBD: To be described in a future release of the document.

3.4 MANAGER ACCESS

This section describes the list of activities that are authorised for HPSDB managers. Please note that only the specific tasks allocated to managers are here covered, since the normal user activities, also accessible by managers, are detailed in section 3.5.

The left frame of the manager access provides the functionality, structured in three different menus:

1. My Connection. The description of this menu can be found in section 3.2.1.
2. Menu. It contains the following functionality:
   - **Session control**. This is very similar to the site session control performed by administrators. In this case it is referred to the management of the different sessions associated to the schema for which the manager is responsible.
   - **Environment control**, which includes the operations to lock and unlock the schema. Section 3.4.2 deals with this capability.
   - **User management**, which performs the administration tasks upon the list of users belonging to the schema. User administration is treated in section 3.4.3.
   - **Bridge files**. Managers are the only type of users that can load bridge files into the schema. They can also generate bridge files with a dedicated usage. These operations are described in section 3.4.4.
   - **Box types**. This option refers to the box type management. Box types are described in section 3.4.6.
   - **Reason of change**. The details related to this concept are explained in section 3.4.7.
   - **Validation**, which refers to ability to validate the box/item objects selected in the validation basket. Refer to section 3.4.8 for more information.
3. Navigation. This menu collects the tasks related to the box/item management, which is the core of the normal user access. Please refer to section 3.5 for further information.

3.4.1 Session control

The session control activities are the same as those regarding the administration described in section 3.3.1 but in this case are referred to the active sessions belonging to the manager's database schema.

The list of sessions is displayed as part of the manager's home page, although it can be also accessed by clicking the Session List option of the Session Control menu at the left frame.

An example of the list of sessions available in a given site is shown in Figure 3-20. Each row contains enough information to permit the manager recognise and identify the user/session without further navigation/access. The user information that appears in this list is described below:

- *User*. User identifier that initiated the session.
- *Session Id*. Identifier of the http session. It is useful for the administrator when there is a need to access the log files generated by the http server in case of problems.
- *Role*. HPSDB role of the user within the schema. These are identified as follows:
  - MN – Schema manager
  - EF – Equipment Fabricator
  - EE – Equipment Engineer
  - SF – Subsystem Fabricator
  - SE – Subsystem Engineer
  - ME – Model Engineer
  - AIT – AIT
- *Start Time.* Connection time for the user.
- *Last Access.* Last time the user accessed the application.
- *Schema.* Environment to which the user belongs.
- **Actions**. In this case there is only one action associated to each session item:

   Kill Kill the session.

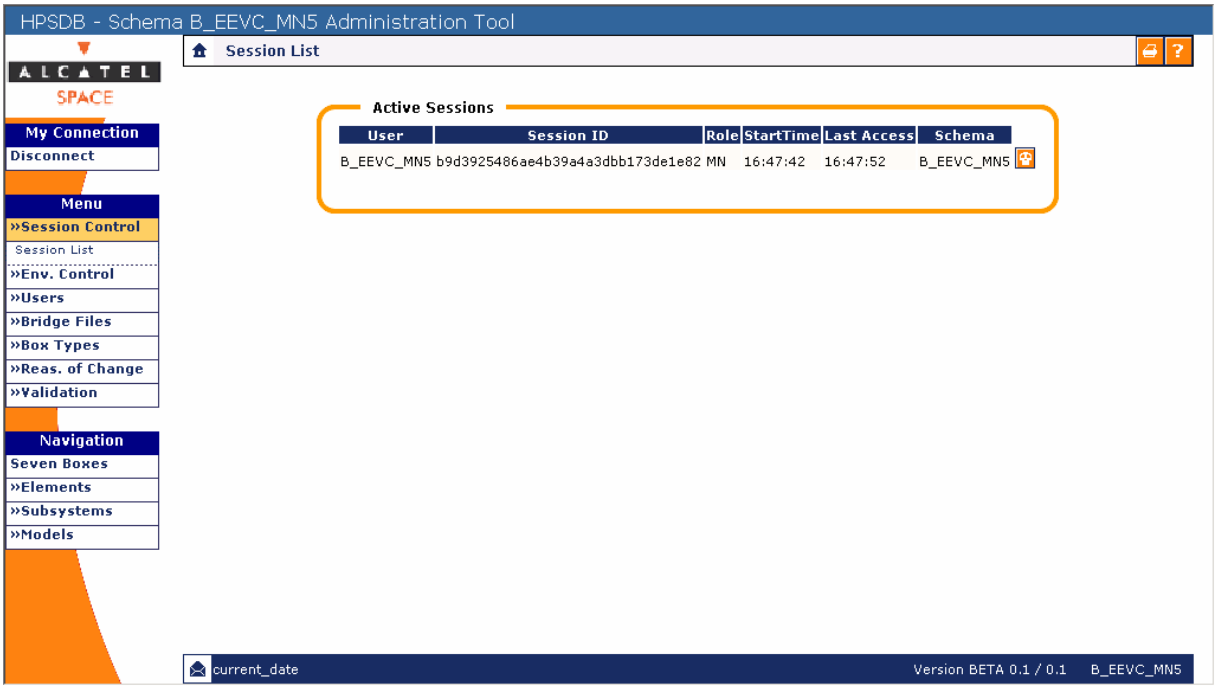


Figure 3-20: Manager main page

3.4.1.1 Schema session deletion

3.4.1.1.1 Functional description

The manager is capable to kill any of the sessions belonging to the schema. Once the kill option has been pressed, the system requests a confirmation. The confirmation shall proceed to kill the http session and therefore the user shall have no longer access to the application.

The schema session deletion is activated by clicking the  icon upon the desired session from the schema session list.

3.4.1.1.2 Example

NA

3.4.1.1.3 Cautions and warnings

- This operation should be performed when special problems appear on the affected session and the user operating it is fully aware of the situation.
- The manager can kill his/her own session. It would be desirable to use the Disconnect option from the My Connection menu instead.

3.4.1.1.4 Probable errors and possible causes

N/A

3.4.2 Schema control

3.4.2.1 Lock schema

3.4.2.1.1 Functional description

The Lock Schema option from the Schema Control menu leads to the lock of the schema so that users belonging to that schema have restricted the access to the HPSDB application until its unlocked operation is invoked.

3.4.2.1.2 Example

The figure below shows the page that is displayed as a response to the Lock Schema action.

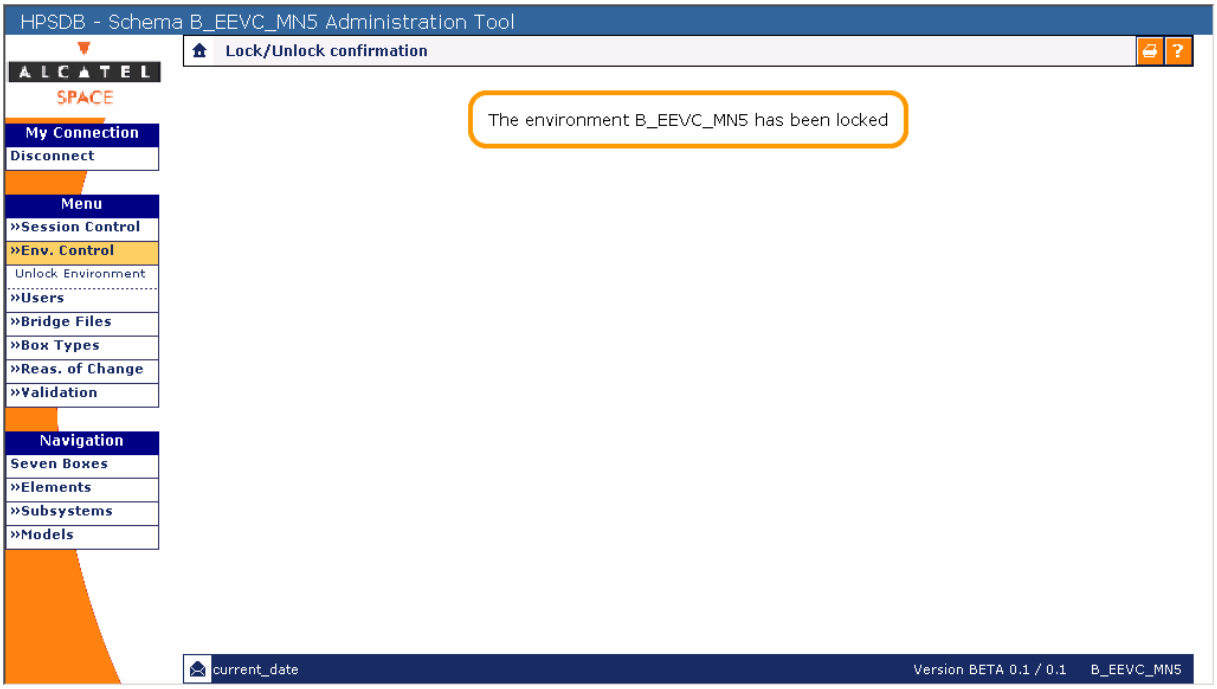


Figure 3-21: Lock schema page

3.4.2.1.3 Cautions and warnings

- This operation is available only when the schema is unlocked, this is the database schema is fully operative.
- This operation is useful in case the manager needs to perform an operation that has strong implications on the database, and therefore, the access must be restricted. Operations of this nature are the export/import, or log download. Therefore, the database schema must be locked to ensure that no access shall be carried out during the necessary operation(s).
- The manager must be sure that no user is performing any important operation that may cause problems.
- The lock can cause the user sessions to expire if it takes more than the session time. In that case the user should re-connect.

3.4.2.1.4 Probable errors and possible causes

NA

3.4.2.2 Unlock schema

3.4.2.2.1 Functional description

The Unlock Schema option from the Schema Control menu permits the database schema to be accessible to users after a lock period.

3.4.2.2.2 Example

The figure below shows the page that is displayed as a response to the Unlock Schema action.

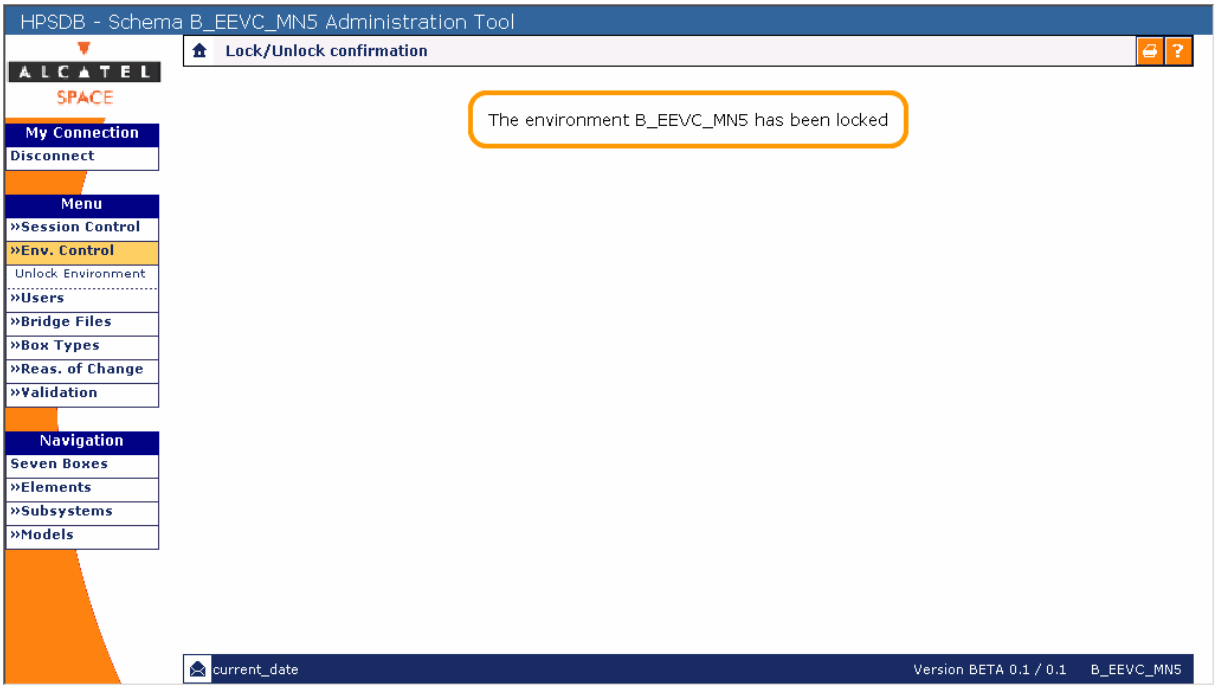


Figure 3-22: Unlock schema page

3.4.2.2.3 Cautions and warnings

- This operation is available only when the database schema is locked.

3.4.2.2.4 Probable errors and possible causes

NA

3.4.3 User management

The manager is charged with the responsibility to perform the user management upon his/her database schema.

The activation of the User List option of the Users menu leads to present the list of existing users belonging to the manager's schema. An example is depicted in Figure 3-23.

Each user in the list contains enough information to permit the manager recognise and identify the user without further navigation/access. The user information that appears in this list is described below:

- *User login*. User identifier.
- *Role*. User role within the schema.
- *CfCode*. Category flag the user has access to.
- *Name*. Complete name of the user.
- *Organisation*. Name of the organisation to where the user belongs.
- *Email*. E-mail address of the user.
- *Phone*. Contact phone number of the user.

- **Actions**. The list of actions associated to each schema/manager.

	Edit user	Change the information of the normal user.
	Change password	Change the password of the normal user.
	Delete user	Remove the normal user from the schema.

These actions shall be further described in the following sub-sections, together with the action to create a new user.

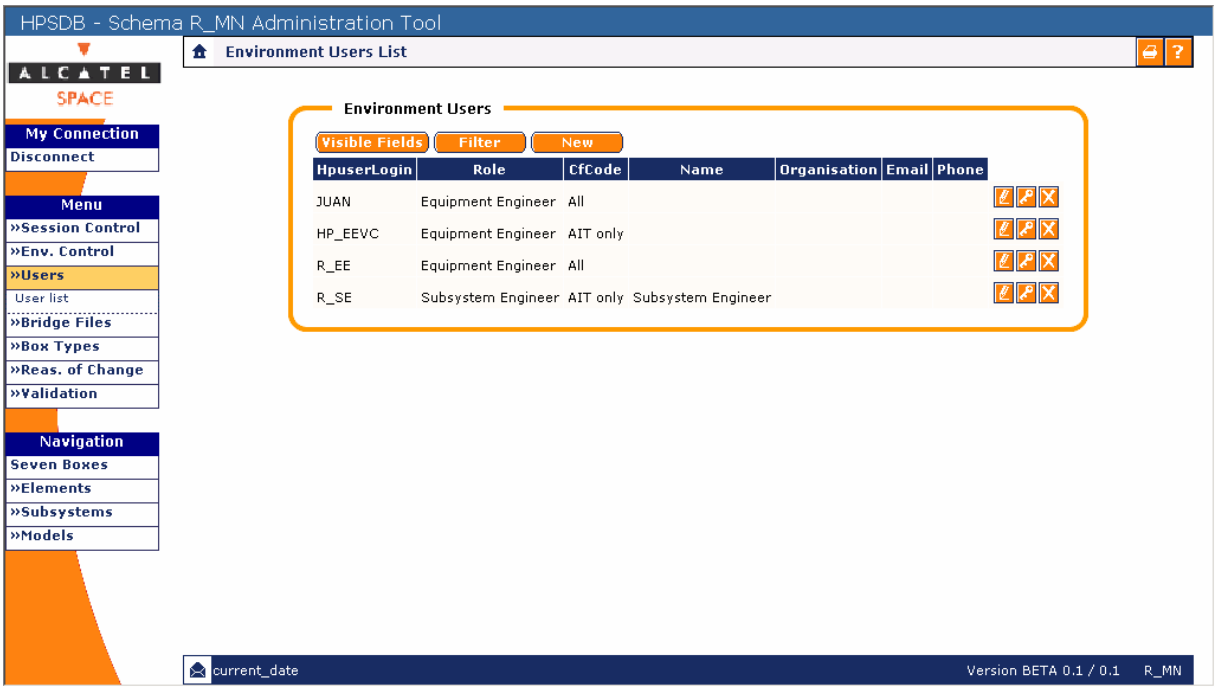


Figure 3-23: User list page

3.4.3.1 Create user

3.4.3.1.1 Functional description

The user creation functionality is carried out in two steps:

1. User basic information

The information needed to create the user's basic information is constituted by the following fields:

- *Name*. Up to 10 characters string used to identify the normal user. This field represents therefore the user identifier for login the system. It is mandatory and must be unique within the whole schema. It cannot be null and cannot contain blanks.
- *Password*. 4 to 8 character string. This field is mandatory and is used for the user to login the system.
- *Role*. Type of user or role that the normal user will take during the operation of HPSDB. Possible roles are:

- Equipment Fabricator
- Equipment Engineer
- Equipment Consultant
- Subsystem Fabricator
- Subsystem Engineer
- Subsystem Consultant
- Model Engineer
- AIT
- Model Consultant

- *Category flag code*. Category flag code associated to the user. This means that the user shall only be allowed to handle items with that category flag. Possible category flag codes are:
  - Operations
  - OB – On-board software
  - AIT
  - All – All the above
- *Retype new password*. Repetition of the previous field in order to avoid mistakes in the field entrance.
- *Name*. Up to 100 characters string to enter the Full name of the user.
- *Organisation*. Up to 100 characters string to define the user's organisation name.
- *Email*. Up to 50 characters string to define e-mail address of the user.
- *Phone*. Up to 50 characters used to define the contact phone number of the user.

2. User data association

This user data must be entered after defining the basic information, since the data that appears here depends on the user role that has been selected. Thus, the manager must define the list of boxes the user can manage. Therefore, from the list of Available box types for the role the manager must select the ones corresponding to the user in the Assigned list.

3.4.3.1.2 Example

The figures below show the two pages corresponding to the two stages that are needed to create a user, as explained above. The Create button on the last page implies to store the user in the database and perform a commit operation.

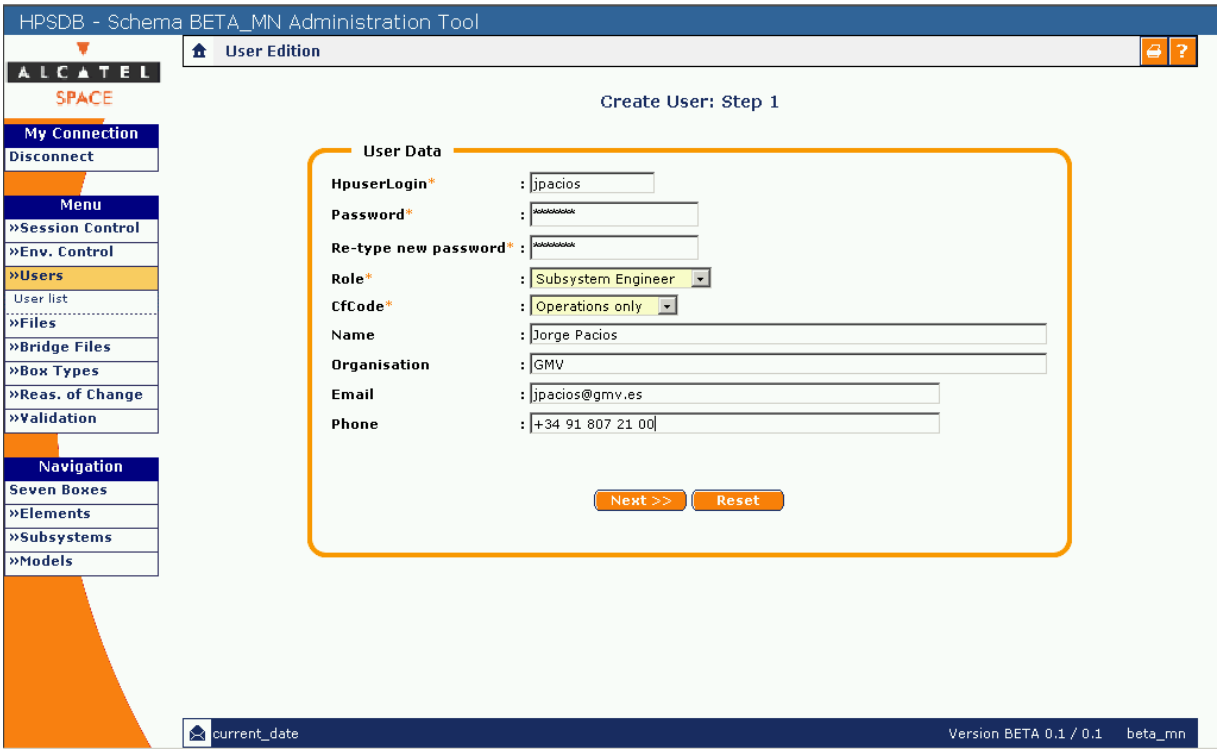


Figure 3-24: User creation page (I)

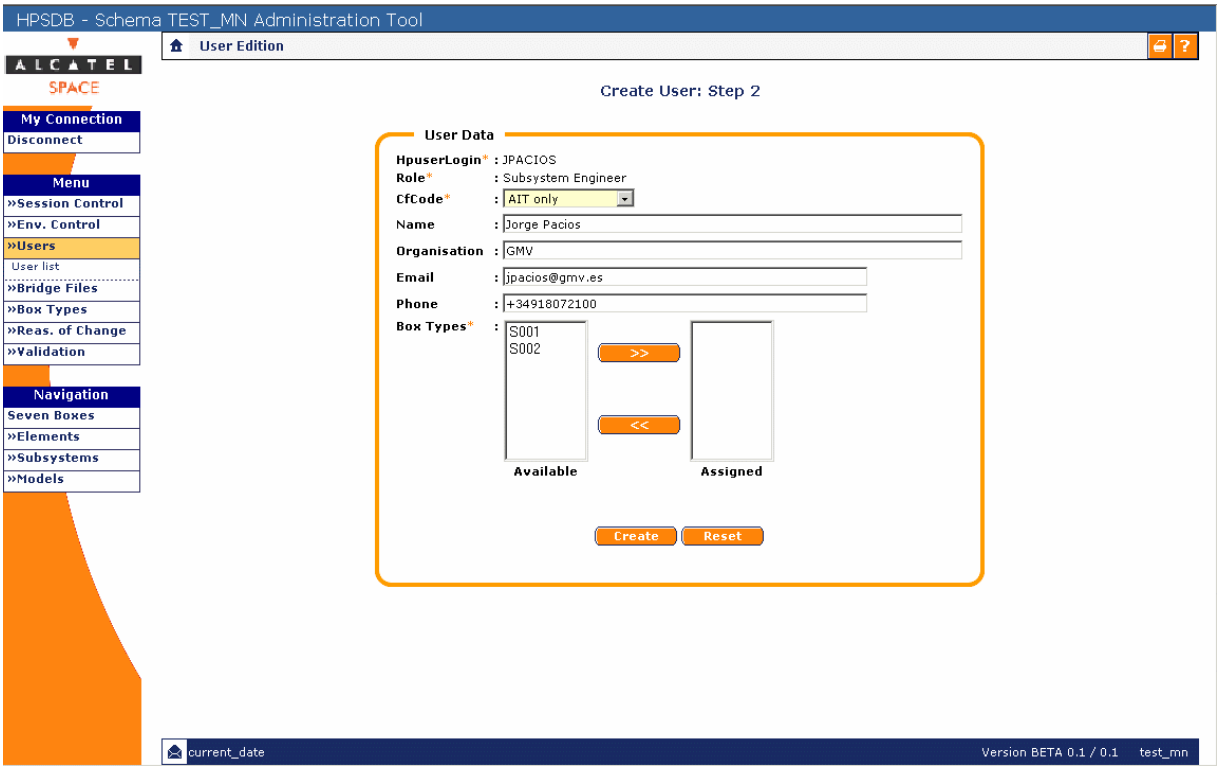


Figure 3-25: User creation page (II)

3.4.3.1.3 Cautions and warnings

- Only alphabetic, numerical and some special characters ("-", "_") should be entered in order to make the password field. The password should combine both alphabetic and numeric characters in both upper and lower case for security reasons.
- The mandatory fields are marked with the * character.
- At least one box type must be selected. Otherwise, the user has accessibility to no data at all.

3.4.3.1.4 Probable errors and possible causes

Error	Possible cause
Empty field	Some of the mandatory fields have been left blank.
User already exists	The normal user name already exists in the site. A unique name must be re-entered.
No box type	No box type has been selected.

3.4.3.2 Edit user

3.4.3.2.1 Functional description

The edition of a user allows the manger to modify the data allocated to the user, with the exception of the user identifier and the user role.

3.4.3.2.2 Example

The figure below shows the page that is displayed when the  icon (Edit user) is clicked. The Update and Reset buttons of the page indicate to perform the modification (i.e. database change + commit) or to keep the data fields as they were before respectively.

As can be seen in the figure, the user login identifier and the role cannot be changed. This allows that all fields that were split in two windows during the user creation can be presented here in only one page.

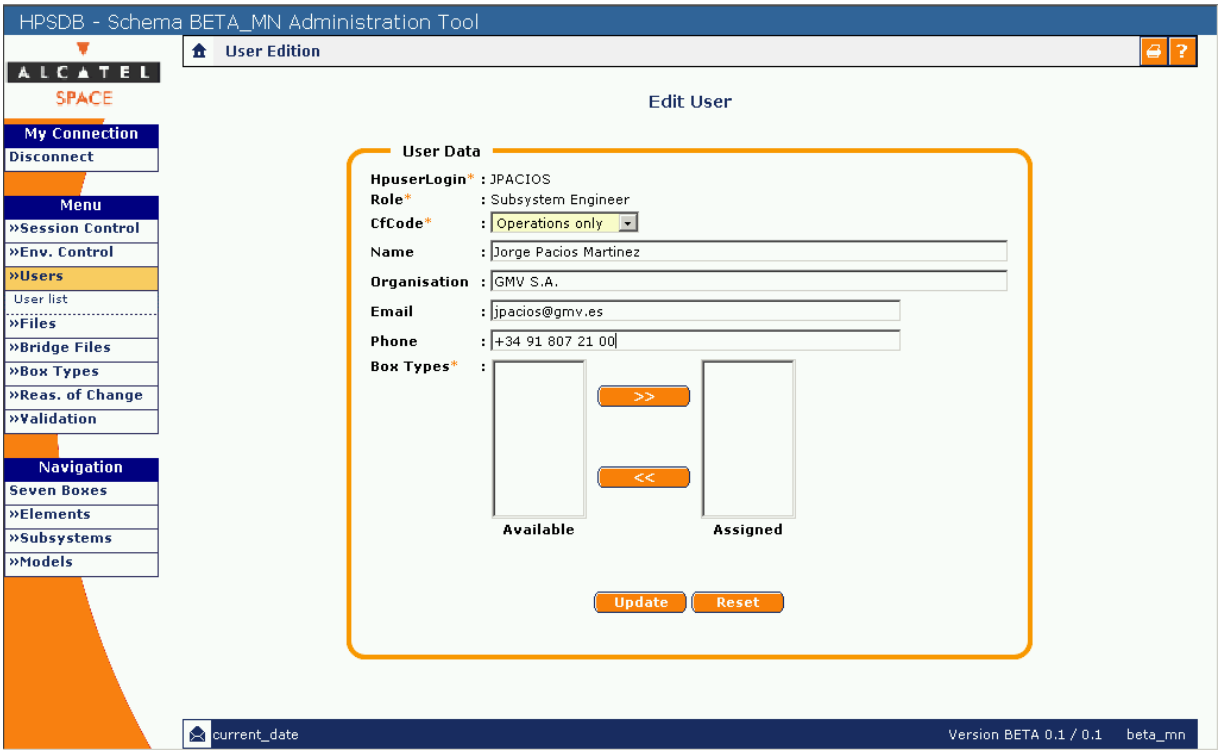


Figure 3-26: User edition page

3.4.3.2.3 Cautions and warnings

- The user should have at least one box type assigned. Otherwise, the user has accessibility to no data at all. This is the case of the example shown above.

3.4.3.2.4 Probable errors and possible causes

Error	Possible cause
No box type	No box type has been selected.

3.4.3.3 Change password

3.4.3.3.1 Functional description

The password of a normal user is changed.

3.4.3.3.2 Example

The figure below shows the page that is displayed when the  icon (Change password) is clicked. The Update button confirms the password modification of the normal user and the database commit.

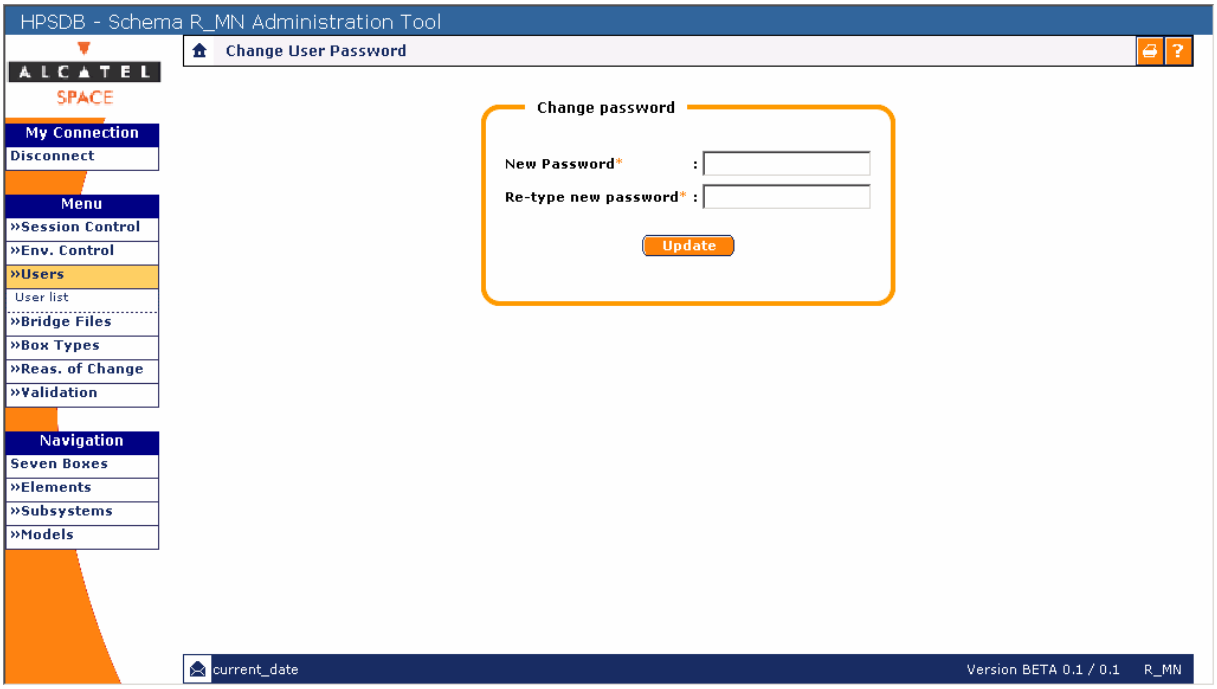


Figure 3-27: Password change page

3.4.3.3.3 Cautions and warnings

- Only alphabetic, numerical and some special characters ("-", "_") should be entered in order to make the password field. The password should combine both alphabetic and numeric characters in both upper and lower case for security reasons.
- The same string literal should be provided at the two data fields.

3.4.3.3.4 Probable errors and possible causes

Error	Possible cause
Empty field	Both password fields are mandatory. None of them can be left blank.
Invalid password re-typing	The values entered in the two editing fields are different
Invalid password	The entered password does not complain the field constraints.

3.4.3.4 Delete user

3.4.3.4.1 Functional description

This operation deletes an existing user from the manager's schema.

The operation is initiated by clicking the icon (Delete user) upon the desired box type. The system presents a confirmation message before performing the operation.

Please note that this operation has the following implications:

- The Oracle user is deleted from the database. This operation is performed together with a database commit.
- The HPSDB user still remains in order to keep the possible traces with the box/item objects created by the user.

3.4.3.4.2 Example

NA

3.4.3.4.3 Cautions and warnings

- Due to the reasons mentioned above, it shall not be possible to create a new user with the same user identifier as a user that has been deleted in the schema.

3.4.3.4.4 Probable errors and possible causes

Error	Possible cause
Connected user	It is not possible to delete a user whilst the user is connected to Oracle.

3.4.4 File management

This section describes three operations:

- how to proceed to upload a file from the user local machine to the HPSDB application
- how to download the available files from HPSDB to the user local machine
- how to delete files from the files list

These operations can be accessed through the menu options once that a page containing a list of files of the desired type has been reached. The path to follow in the main menu for each different file type is depicted in the following schema:

- Bridge Files (Menu) → SCOS Bridge files (Menu) → SCOS Bridge Files List (Page)
- Bridge Files (Menu) → CCS Bridge files (Menu) → CCS Bridge Files List (Page)
- Input Files (Menu) → Xml Input Files (Menu) → Xml Input Files List (Page)
- Input Files (Menu) → Xml Update Files (Menu) → Xml Update Files List (Page)
- Input Files (Menu) → On/Off Files (Menu) → On/Off Files List (Page)
- Transfer Files (Menu) → Transfer Files (Menu) → Transfer Files List (Page)
- Log Files (Menu) → Log Files (Menu) → Log Files List (Page)

As soon as the user has accessed to the desired Files List Page, the list of files that have already been loaded into the system appear in the main frame. Each row identifies a file that is in one of the following situations:

1. Uploaded in the server side but not loaded into the system
2. Uploaded in the server side and loaded into the HPSDB database

3. Generated from the HPSBD tool (if the type of file allows the generation).

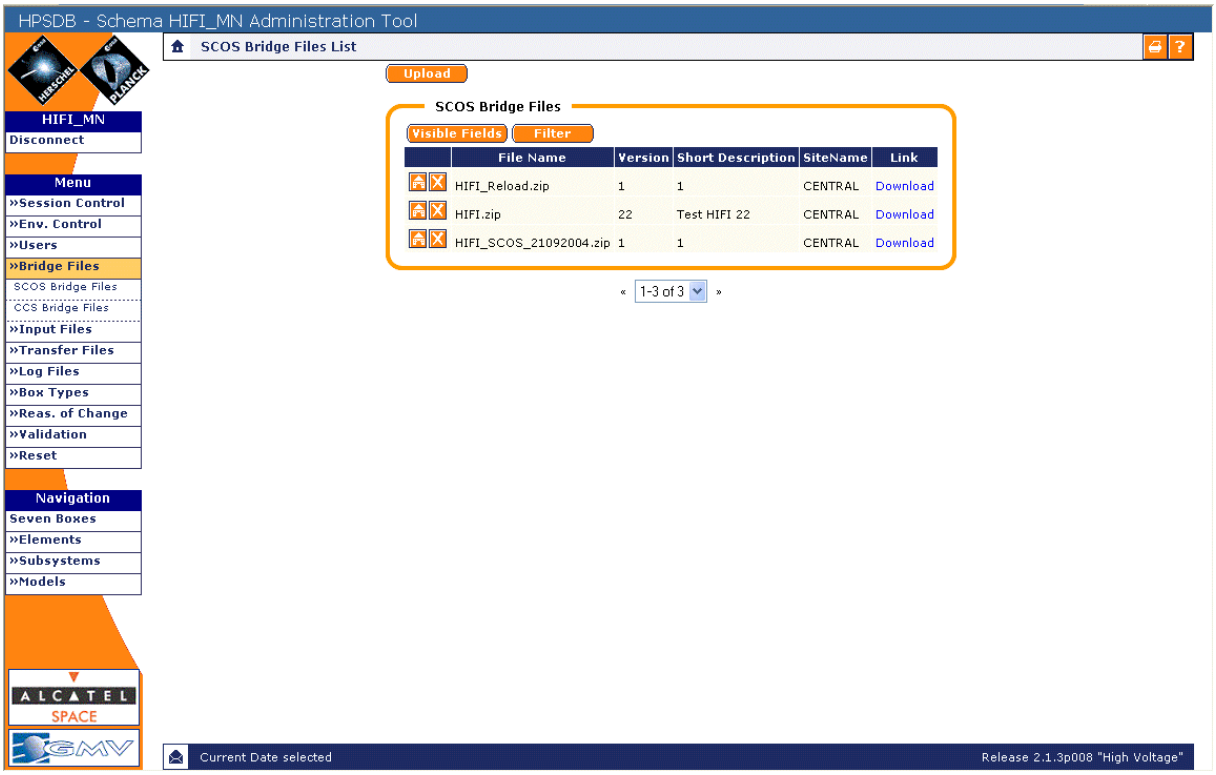


Figure 3-28: Page containing a list of files (SCOS Bridge files)

3.4.4.1 Upload files

3.4.4.1.1 Functional description

This operation allows uploading a file of a specific type from the user's machine to the server side. The file uploaded is stored in the database.

Once that the user has accessed to the desired page containing the list of files (as explained in the introduction to the section 3.4.4), a button Upload is displayed at the top of the page. The user shall click this button to acces to the upload page. This page shows the fields needed to define the characteristics of the file.

A short description of each field is given below:

- *File date*. The manager can specify here a date according to the user needs. By default, the date is the current date (uploading date).
- *File name*. Selection of the file to be uploaded to the server side.
- *User name*. Name of the user responsible for the file. Please note that this user does not have to be an HPSDB user.
- *Site name*. Identifier of a site or place according to the user needs. As above, this identifier does not need to be one of the central/mirror sites of HPSDB.
- *Version*. Version of the file, if applicable.

- *Short description*. Short description of the file.
- *Long description*. Long description of the file.
- *Change reason*. One of the reasons of change available shall be selected.

Once that the mandatory and the desired non-mandatory fields have been filled, the user shall click on the button Upload appearing at the bottom of the page, as a confirmation to launch the operation.

The file will be automatically inserted in the database and the list of files will be displayed again, this time showing the new file inside.

3.4.4.1.2 Example

The figure below shows the page that is displayed when the Upload button is clicked.

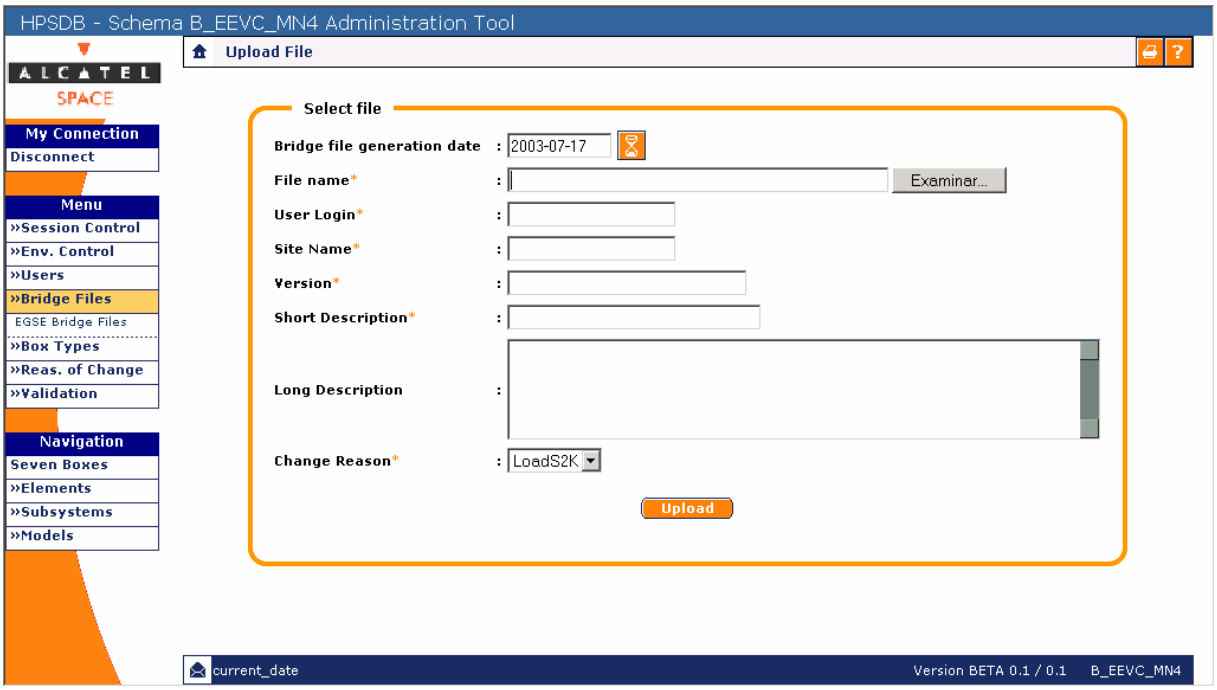


Figure 3-29: Upload page

3.4.4.1.3 Cautions and warnings

- IMPORTANT NOTE: Depending on the file type to upload (Bridge Files, Input Files, …) a specific format can be required (ZIP file, XML file, …). This format constraints for each file type are described in the corresponding sections of this document specifying the different file type loading (Bridge File Loading, XML File Ingestion, Log File Download, etc).
- The mandatory fields are marked with the * character.

3.4.4.1.4 Probable errors and possible causes

NA

3.4.4.2 Download files

3.4.4.2.1 Functional description

This operation allows downloading a file of a specific type from the application to the user local machine.

Once that the user has accessed to the desired page containing the list of files (as explained in the introduction to the section 3.4.4), a link Download is displayed for each file appearing in the list.

A click on this link with the left button of the mouse will be received by the browser as a command to open the file. If the file format is recognised by the browser (e.g, XML file), the browser will open the file directly on the page. If the file cannot be opened by the browser a standard dialog box will be displayed asking to store the file in the user machine or to select a different application to open the file.

A click on this link with the right button of the mouse displays a standard context menu where the user is allowed to select the option to save the file in the local machine.

All these file dialogs are browser dependent.

3.4.4.2.2 Example

N/A

3.4.4.2.3 Cautions and warnings

N/A

3.4.4.2.4 Probable errors and possible causes

NA

3.4.4.3 Delete file

3.4.4.3.1 Functional description

This is the capability to delete a file from the list of files displayed.

Once that the user has accessed to the desired page containing the list of files (as explained in the introduction to the section 3.4.4), a button  is displayed for each file appearing in the list.

A click on this button will launch automatically the deletion of the file and a pop-up message will inform the user that the file has been correctly deleted.

3.4.4.3.2 Example

N/A

3.4.4.3.3 Cautions and warnings

N/A

3.4.4.3.4 Probable errors and possible causes

NA

3.4.5 Bridge files operations

This section describes the functionality related to the bridge file loading and generation.

3.4.5.1 Load bridge files (SCOS/CCS)

3.4.5.1.1 Functional description

This is the capability to load the contents of a set of bridge files (previously uploaded into the HPSDB server) into the Working area of the HPSDB system. It is important to remark that the only type of files that are susceptible to be loaded are those corresponding to SCOS 2000 and CCS bridge files.

Upon a successful load of the SCOS 2000 or CCS bridge files, the data can be accessed and manipulated through the HPSDB MMI, since changes have been automatically committed into the database.

Several things have to be pointed out before executing this operation:

- A set of configuration files is needed to avoid the differences between the SCOS data model and the HPSDB data model. The most important ones allow to define the subsystem, the elements and the positions where the items of the bridge files will be allocated. All the necessary configuration files are described in the next section.
- The bridge files to be loaded and the configuration files shall be collected in a zip file by the user.

The steps to follow to load a set of bridge files are the following:

1. **Bridge Files List Page.** The user shall access to the Transfer Files List page, clicking on the main menu options Bridge Files → SCOS Bridge Files, or Bridge Files → CCS Bridge Files.
2. **Upload Bridge Files.** From this page the user is able to upload the desired Bridge Files from his/her local machine to the HPSDB application (this shall be done via the Upload operation described in section 3.4.4.1).
3. **Launch the Bridge File Loading.** Once that the file has been uploaded, the user can launch the Bridge File loading clicking on the button  appearing at the left of the desired file. This action launches directly the operation.

Once that the operation has been launched, the page will display the evolution of the process file by file, and the time taken by each file processing. At the end of the processe the previous evolution messages will be completed with a message indicating the successful end of the process, or the reason for the failure.

3.4.5.1.2 Configuration files description

The configuration files defined for the bridge file loading are the following:

- S2K_EL.txt

This file specifies the elements that will be assigned to the positions of the subsystem.

The processing of one line of this file will always load in the database a real element with that information. A theoretical element will also be created if the processed element is not a redundant one. This implies that if two redundant elements are loaded in different positions, only one theoretical element will be created for both of them, and it will contain the same data as the first real element processed.

Field Nr	Field Name	Field Type	Description	Ma/Def
1*	EL_ID	Char(14)	NMCVT identifier of the real element (see [AD.4.]): element boxtype concatenated with the real element number.	M
2	EL_NUMBER	Number(3)	Theoretical element number according to NMCVT (see [AD.4.]). In the case of redundant elements, the theoretical element number in both lines shall be the same (it corresponds to the same theoretical element for both real elements).	M
3	EL_TYPE	Char(2)	Type of the element: 'SW' – Software 'HW' – Hardware	M
4	EL_DESC	Char(32)	Textual description of the element.	M
5	PTI	Number(10)	Product Tree Identifier for the Theoretical element. In the case of redundant elements, the theoretical element number in both lines shall be the same (it corresponds to the same theoretical element for both real elements).	M

- S2K_SUB.txt

  This file specifies the information for the subsystems (theoretical and real) and the positions of the subsystems.

  The first line defines the theoretical and real subsystems. After this line is processed, a theoretical subsystem and a real subsystem are loaded in the database with the data contained in the file. The format of the first line is the following:

Field Nr	Field Name	Field Type	Description	Ma/Def
1*	SUB_ID	Char(7)	NMCVT identifier of the real subsystem (see [AD.4.]): subsystem boxtype concatenated with the subsystem real number.	M
2	SUB_DESC	Char(32)	Textual description of the subsystem.	M
3	PSEUDO_POS	Number(3)	Pseudo position for this subsystem. This value allows to associate items	M

			directly to the subsystem via the naming convention.	
4	PSEUDO_EL_NUMBER	Number(3)	Pseudo element number for this subsystem. This value allows to associate items directly to the subsystem via the naming convention.	M

The positions for the subsystem are defined in **the rest of lines of the file**. A theoretical position and a real position are loaded in the database once that one of these lines is processed. The format is the following:

Field Nr	Field Name	Field Type	Description	Ma/Def
1*	SUB_POS	Number(3)	Position of the element in the subsystem.	M
2	SUB_ACC_BC	Char(1)	ACC BC flag: 'Y' – Yes 'N' – No	M
3	SUB_CDMU_BC	Char(1)	CDMU BC flag: 'Y' – Yes 'N' – No	M
4*	SUB_EL_ID	Char(20)	NMCVT identifier of the real element allocated to this position (see [AD.4.]) matching with EL_ID in table S2K_EL.	M
5	SCOE	Char(10)	The name of the machine where the equipment runs.	M
6	PORT	Number(5)	The port number where the equipment is listening.	M

- S2K_TM.txt

  The first column of this file represents the naming convention identifier for the TM packets, and the rest of fields correspond exactly to the SCOS definition of the TM packets (PID file). To produce this file, the user only needs to make a copy of the PID file, renaming the copy with S2K_TM.txt, and add at the beginning of the new file a new column with the TM packet naming convention identifiers. Therefore, fields 2 to 17 correspond to fields 1 to 16 in the MIB ICD ([AD.5.]).

  The bridge file loading operation will read the TM packets data from the S2K_TM.txt file, instead of the PID file.

Field Nr	Field Name	Field Type	Description	Ma/Def
1	TM_ID	Char(20)	NMCVT Identifier of the TM packet (see [AD.4.]).	M

Field Nr	Field Name	Field Type	Description	Ma/Def
2	TM_TYPE	Number(3)	Type of the source TM packet. Integer number in the range of (0..255)	M
…	…	…	…	
17	TM_EVID	Char (17)	An alphanumeric string used by the telemetry packetiser as Event ID for the generation of the SCOS-2000 Event Packet. Associating an Event ID to a TM Source Packet can be useful in order to control the recipients of the SCOS-2000 Event Packet and to trigger a specified action on reception of this packet. This field contains the Event ID proper (used for controlling the distribution of the Event) and optionally also the Action ID (used in order to trigger a specified action) in the following format: [Application Event id]:[Application Action ID] This field is optional and only relevant for packets triggering the generation of a SCOS-2000 Event Packet (i.e. if TM_EVENT is not set to 'N').	

- S2K_CUR.txt

  This configuration file is defined as specified by the [RD.1.].
  The configuration file "S2K_CUR.txt" shall provide the list of input SCOS-2000 curve the user wants to associate to HPSDB generic curves with the line format as follows (sorted by SCOS curve identifier):

Field Nr	Field Name	Field Type	Description	Ma/Def
1	CURV_ID	Number(4)	SCOS 2000 identifier of the generic curve. Integer is limited to 0999 for HPSDB compliance.	M
2	NMCURV_ID	Char(8)	NMCVT identifier of the generic curve according to NMCVT (see [AD.4.]).	M

- S2K_CVS.txt

  This configuration file is defined as specified by the [RD.1.].

The configuration file "S2K_CVS.txt" shall provide the list of input SCOS-2000 command verification stages the user wants to associate to HPSDB generic command verification stages with the line format as follows (sorted by SCOS command verification stage identifier):

Field Nr	Field Name	Field Type	Description	Ma/Def
1	CVS_ID	Number(5)	SCOS 2000 identifier of the generic command verification stage. Integer is limited to 09999 for HPSDB compliance.	M
2	NMCVS_ID	Char(9)	NMCVT identifier of the generic command verification stage according to NMCVT (see [AD.4.]).	M

- S2K_PRF.txt

This configuration file is defined as specified by the [RD.1.].
The configuration file "S2K_PRF.txt" shall provide the list of input SCOS-2000 parameter range sets the user wants to associate to HPSDB generic parameter range sets with the line format as follows (sorted by SCOS parameter range set identifier):

Field Nr	Field Name	Field Type	Description	Ma/Def
1	PRF_ID	Number(4)	SCOS 2000 identifier of the generic parameter range set. Integer is limited to 09999 for HPSDB compliance.	M
2	NMPRF_ID	Char(8)	NMCVT identifier of the generic parameter range set according to NMCVT (see [AD.4.]).	M

3.4.5.1.3 Example

An example of the Bridge file list page is displayed in section 3.4.4.

An example of each type of configuration file is depicted below:

- Example of **S2K_EL.txt** with 5 single elements and two redundant elements (SPIRE):

```
ICU________001  190  HW   HIFI ELEMENT1   001
FCU________002  191  HW   HIFI ELEMENT2   002
LCU________005  194  HW   HIFI ELEMENT3   005
SPIRE______006  196  SW   SPIRE ELEMENT1  006
SPIRE______007  196  HW   SPIRE ELEMENT2  00
```

The objects created in the database would be:

- theoretical element ICU, real element ICU________001

- theoretical element FCU, real element FCU________001

- theoretical element LCU, real element LCU_____001
- theoretical element SPIRE, real element SPIRE_____006
real element SPIRE_____007

- Example of **S2K_SUB.txt** for the elements defined above:

```
H001001    SubSystemName H001   289  289
190  Y     N     ICU_____001  aaaa 190
191  N     Y     FCU_____002  bbbb 191
194  Y     N     LCU_____005  eeee 194
196  Y     N     SPIRE_____006  ffff 196
197  N     Y     SPIRE_____007  gggg 197
```

The objects created in the database would be:

- theoretical subsystem H001, real subsystem H001001
- th pos 190 with th. el. ICU, real pos 190 with re. el. ICU_____001
- th pos 191 with th. el. FCU, real pos 191 with re. el. FCU_____002
- th pos 194 with th. el. LCU, real pos 194 with re. el. LCU_____001
- th pos 196 with th. el. SPIRE, real pos 196 with re. el. SPIRE_____006
- th pos 197 with th. el. SPIRE, real pos 196 with re. el. SPIRE_____007

- Example of **S2K_TM.txt**:

```
289TMPKA000289  17   2    1024 0    0    080000289 …
289TMPKA001289  3    25   1026 1    0    080001289 ...
289TMPKA002289  3    25   1026 16   0    080002289 ...
```

- Example of **S2K_CUR.txt**:

```
900   000900
0901  000901
905   000905
```

This means that the curves 900, 901 and 905 found in the SCOS bridge files shall be interpreted by HPSDB as the generic curves 000900, 000901 and 000905.

- Example of **S2K_CVS.txt**:

```
09000 079000000
```

This means that the command verification stage 9000 found in the SCOS bridge files shall be interpreted by HPSDB as the generic command verification stage 079000000.

- Example of **S2K_PRF.txt**:

```
0000 GR000000
```

This means that the parameter range set 000 found in the SCOS bridge files shall be interpreted by HPSDB as the generic parameter range set GR000000.

3.4.5.1.4 Cautions and warnings

- The schema should be locked to prevent from parallel creations of the same boxes by other users.
- Only those bridge files corresponding to SCOS 2000 and CCS files shall be loaded into HPSDB.
- No boxtype can be created in HPSDB via the bridge file loading operation. The boxtypes needed for the subsystem and elements shall exist already in the database.
- No generic item can be created in HPSDB via the bridge file loading operation. The needed generic items shall exist already in the HPSDB database.
- The bridge file loading operation is not a SCOS bridge file validator.
- The files that are not strictly necessary for the process can be missing in the zip file. A warning message will be displayed in that case in the operation progress.
- Once that the progress is being refreshed in the page, it is recommended that the user does not change of page until the operation has finished. Otherwise the application will not be able to inform the user about the end of the process and about the error raised in case of failure.
- In the case that the bridge files contain derived parameters, the OL expression files shall be also included in the zip file.

3.4.5.1.5 Probable errors and possible causes

Error	Possible cause

Error	Possible cause
Input files data error	There are two types of data errors in the bridge file loading: ▪ **File or data format errors**: These errors will show the file name, the line where the error has appeared, and the message describing what has happened. ▪ **Reference check errors**: These errors will show the type and name of the item where the wrong reference has been found, and the item type, item name and the position that has generated the error. For example: *Error: Error in box BOX1. The item (type: PAR, item name: M002, position: 190) referenced by the object A035 of type DISPLAY was not found.* means that the display A035 contains an invalid reference to the parameter M002 located at the element of the position 190. Two reasons can produce these reference errors: 1. The item referenced does not exist in the files (nor in the database). 2. The position of the referenced item cannot be reached from the parent item (this would be the case of a reference from an element position to another element position).

3.4.5.2 Generate bridge files

3.4.5.2.1 Functional description

This operation allows to generate a set of bridge files from a box object selected.

Several steps shall be accomplished to launch this operation:

1. **Access to a Box Object List.** Once this selection has been done, the user shall access to the lists of boxes (please refer to section 3.5.1).
2. **Box object selection.** The button to generate Bridge Files appears at the end of the sets of buttons available for each box object. The user shall click on the Generate Bridge File button corresponding to the desired box object:  .
3. **Bridge File generation Page.** The following set of fields is displayed in a new page, and shall be filled in by the user:
   - *File Type*. Type of bridge file to be generated: SCOS or CCS.
   - *Zip File Name*. Name of the file to be generated (it will be a zip file, so it is recommended to append it with the extension '.zip').
   - *User Category*. User category for which the files will be generated (this is only applicable for the manager).

- *Version*. Version of the generated file.
- *Short description*. Short description of the generated file.
- *Long description*. Long description of the generated file.
- *Change reason*.The desired reason of change shall be selected from the combo list.

4. **Launch the generation of Bridge Files.** The user shall click on the button Generate Bridge File appearing at the bottom of the page. Once that this is done, the operation is launched.

Once that the operation has been launched, the page will display the evolution of the process file by file or set of files, and the time taken by each file processing. At the end of the process the previous evolution messages will be completed with a message indicating the successful end of the process, or the reason for the failure.

The bridge file generated will be added to thelist of the Bridge Files List Page. To get to this page the user shall click on the main menu options Bridge Files → SCOS Bridge Files or Bridge Files → CCS Bridge Files.

The user can download/watch the file generated via the Download operation described in section 3.4.4.2.

3.4.5.2.2 Example

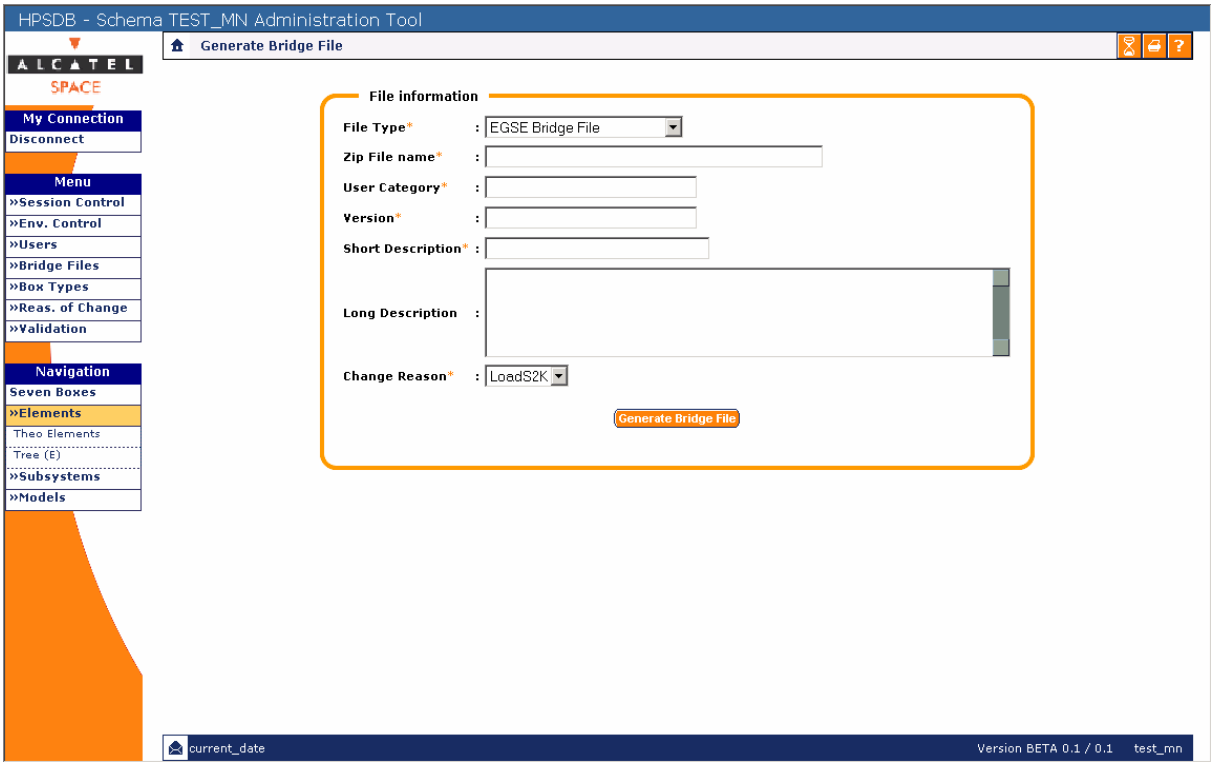


Figure 3-30: Bridge files generation page

3.4.5.2.3 Cautions and warnings

- The schema should be locked to prevent from modifications during bridge files generation, especially when generating bridge files from the Working area.

3.4.5.2.4 Probable errors and possible causes

Error	Possible cause
Unable to create file in the temporary directory	The temporary directory for bridge files creation does not exist.

3.4.6 Box type management

The manager is responsible for the management of box types applicable for the corresponding database schema.

The activation of the Box Type List option of the Box Types menu leads to present the list of existing box types belonging to the manager's schema. An example of the list of box types is given in Figure 3-31.

Each item in the list contains enough information to permit the manager recognise and identify the box type without further navigation/access. The data fields that appear in this list is described below:

- *Item name*. Name of the box type.
- *Box applicability*. Box types exist for all types of boxes. This field identifies the scope (element, subsystem or model) of the box type.
- **Actions**. The list of actions associated to each schema/manager.

   Edit box type — Change the information of the box type.

   Delete box type — Remove the box type from the schema.

These actions shall be further described in the following sub-sections, together with the action to create a new box type.

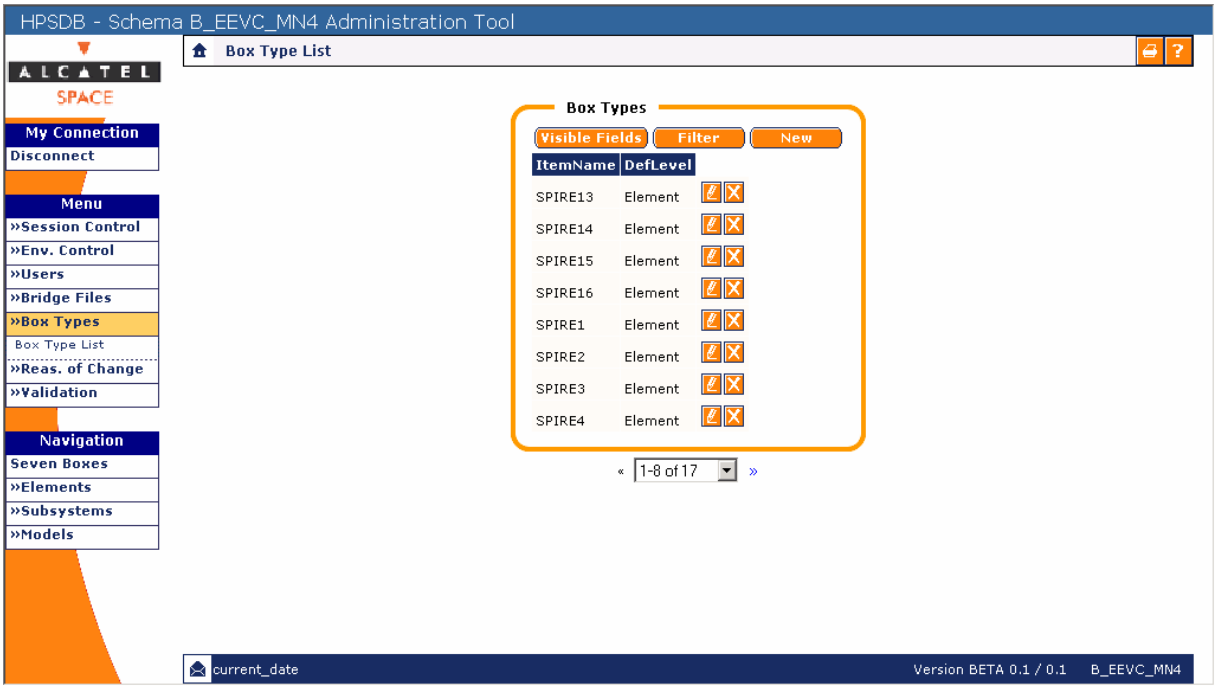


Figure 3-31: Box type list page

3.4.6.1 Create box type

3.4.6.1.1 Functional description

This operation creates a new box type that shall be applicable to normal users. The box type creation requires the definition of only two fields:

- *Name*. Up to 20 characters string used to identify the new box type. It is mandatory and must be unique for the box level (see below) within the whole schema. It cannot be null and cannot contain blanks.
- *Box level*. This field identifies the applicability of the box type. It can either be Element, Subsystem or Model. This field is mandatory.

3.4.6.1.2 Example

The figure below shows the form presented to create a new box type. Only the name of the new box type and the corresponding box level applicability must be provided. Once the manager has entered a unique name for the box level selected and pressed the Create button, changes shall be automatically saved and committed in the HPSDB database.

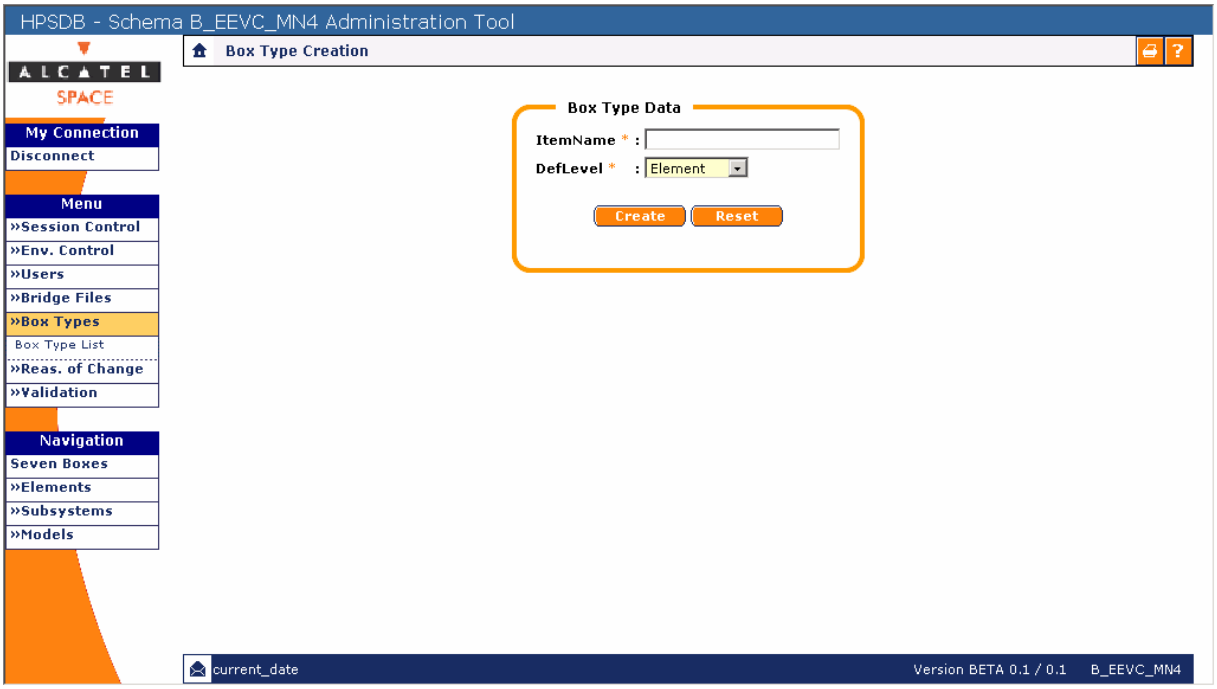


Figure 3-32: Box type creation page

3.4.6.1.3 Cautions and warnings

- The mandatory fields are marked with the * character.

3.4.6.1.4 Probable errors and possible causes

Error	Possible cause
Empty field	Some of the mandatory fields have been left blank.
Box type already exists	The box type already exists in the schema for the same box level. A unique name must be re-entered.
Bad NMCVT	The box type name does not comply the NMCVT.

3.4.6.2 Edit box type

3.4.6.2.1 Functional description

The edition of a box type allows the manger to modify the two data fields allocated to a box type. The operation shall be successfully carried out depending on whether the box type is being referenced by other box objects or not.

3.4.6.2.2 Example

The figure below shows the page that is displayed when the  icon (Edit box type) is clicked. The Update and Reset buttons of the page indicate to perform the modification (i.e. database change + commit) or to keep the data fields as they were before the edition respectively.

Both fields of the box type can be changed.

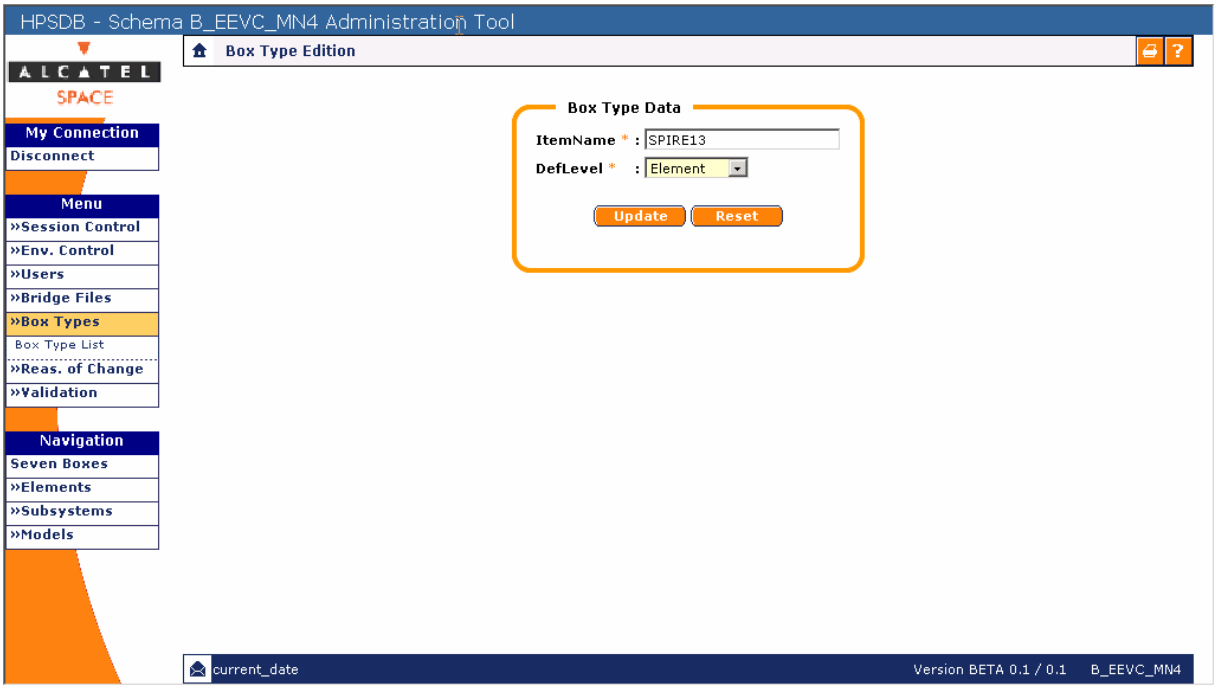


Figure 3-33: Box type edition page

3.4.6.2.3 Cautions and warnings

- The edition shall be permitted only if the box type has not been assigned to any box object within the schema.

3.4.6.2.4 Probable errors and possible causes

Error	Possible cause
Empty field	Some of the mandatory fields have been left blank.
Box type already exists	The box type already exists in the schema for the same box level. A unique name must be re-entered.
Bad NMCVT	The box type name does not comply the NMCVT.

3.4.6.3 Delete box type

3.4.6.3.1 Functional description

This operation deletes an existing box type from the manager's schema. As in the edition case, the operation shall be performed only if any box object within the schema is not referencing the box type.

The operation is initiated by clicking the  icon (Delete box type) upon the desired box type. The system requests a confirmation before performing the operation. A confirmation shall lead to delete the box type from the database and perform a commit.

3.4.6.3.2 Example

NA

3.4.6.3.3 Cautions and warnings

- The deletion shall be permitted only when no box object within the schema references the box type.

3.4.6.3.4 Probable errors and possible causes

Error	Possible cause
Box type references	Some box objects references the box type.

3.4.7 Reason of change management

The manager is responsible for the management of the reason of change items applicable for the corresponding database schema.

Reasons of change items are used to associate certain events available in the system to the same purpose or reason. Examples of some of these events could be the edition of items, the validation of a set of object/item objects or the bridge file generation.

The activation of the RoC List option of the Reason of Change menu displays the list of existing reason of change belonging to the manager's schema. An example of the list of reason of change items can be seen below.

Each item in the list contains enough information to permit the manager recognise and identify the box type without further navigation/access. The data fields that appear in this list is described below:

- *Ncr*. Identifier of the reason of change.
- *Reason of change*. Description of the reason of change.
- *Item name*. Reason of change identifier according to NMCVT.
- **Actions**. The list of actions associated to each schema/manager.

 Edit reason of change — Change the information of the reason of change.

 Delete reason of change — Remove the reason of change.

These actions shall be further described in the following sub-sections, together with the action to create a new reason of change.

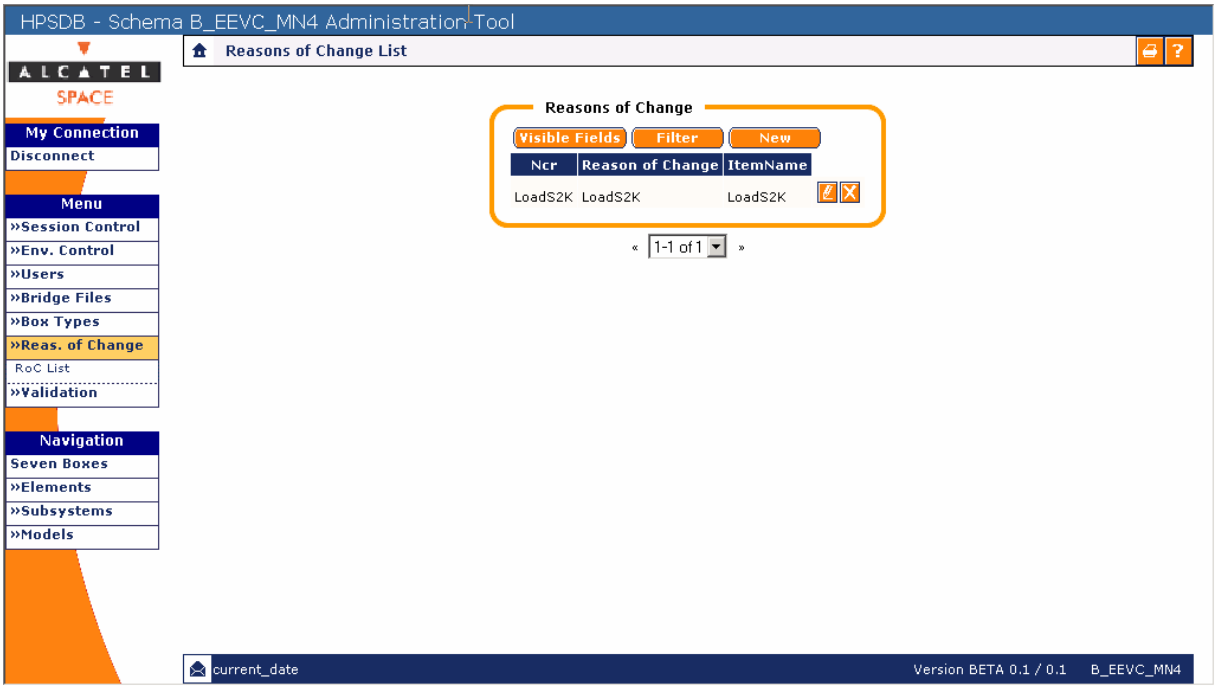


Figure 3-34: Reason of change list page

3.4.7.1 Create reason of change

3.4.7.1.1 Functional description

A new reason of change is to be created and shall be available to all users belonging to the schema.

A reason of change is defined by three fields:

- *Ncr*. 32-length character string used to identify the new reason of change. It is mandatory and must be unique for the schema. It cannot be null and cannot contain blanks.
- *Reason of change*. Description of the reason of change.
- *Item name*. Reason of change identifier according to NMCVT.

3.4.7.1.2 Example

The figure below shows the form presented to the manager to create a new reason of change. The Create button leads to save and commit the information into the database.

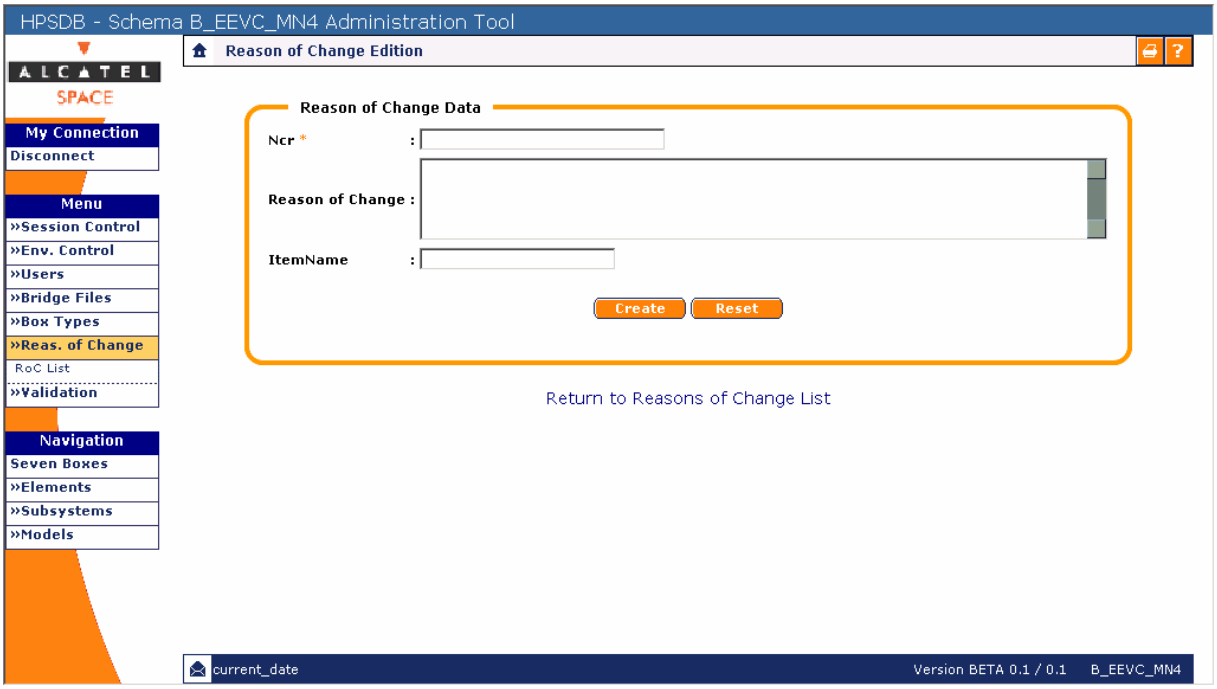


Figure 3-35: Reason of change creation page

3.4.7.1.3 Cautions and warnings

- Only alphabetic, numerical and some special characters ("-", "_") should be entered in order to make the reason of change.
- The mandatory fields are marked with the * character.

3.4.7.1.4 Probable errors and possible causes

Error	Possible cause
Empty field	Some of the mandatory fields have been left blank.
Reason of change already exists	The reason of change already exists in the schema. A unique name must be re-entered.
Bad NMCVT	The box type name does not comply the NMCVT.

3.4.7.2 Edit reason of change

3.4.7.2.1 Functional description

The edition of a reason of change allows the manger to modify the information associated to a reason of change. The same fields defined at creation time can be changed.

3.4.7.2.2 Example

The figure below shows the page that is displayed when the  icon (Edit reason of change) is clicked. It is to be observed that it is exactly the same as for the reason of change creation The

Update and Reset buttons indicate to perform the modification (i.e. database change + commit) or to keep the data fields as they were before the edition respectively.

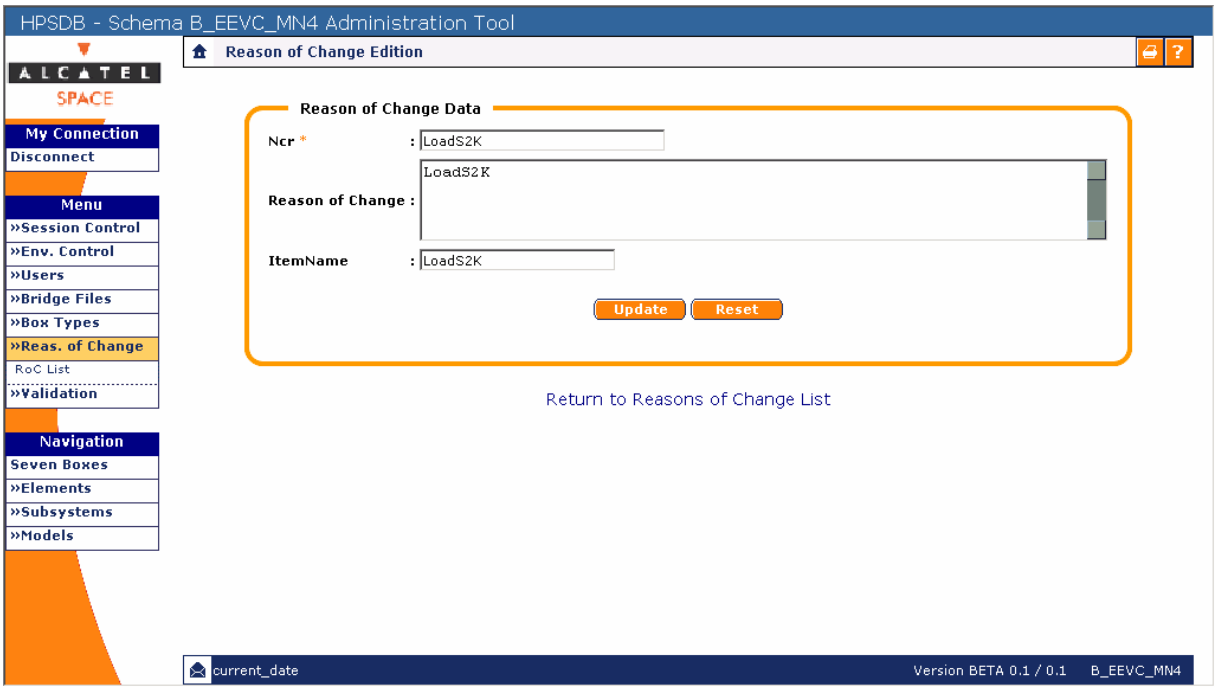


Figure 3-36: Reason of change edition page

3.4.7.2.3 Cautions and warnings

- The reason of change 'LoadS2K' should not be modified.

3.4.7.2.4 Probable errors and possible causes

Error	Possible cause
Empty field	Some of the mandatory fields have been left blank.
Reason of change already exists	The reason of change already exists in the schema. A unique name must be re-entered.
Bad NMCVT	The box type name does not comply the NMCVT.

3.4.7.3 Delete reason of change

3.4.7.3.1 Functional description

This operation deletes an existing reason of change from the manager's schema.

The operation is initiated by clicking the  icon (Delete reason of change) upon the desired reason of change item from the list. The system requests a confirmation before performing the operation. A confirmation shall lead to delete the reason of change from the database and perform a commit.

3.4.7.3.2 Example

NA

3.4.7.3.3 Cautions and warnings

- Referenced reasons of change cannot be deleted.
- The RoC 'LoadS2K' should not be deleted.

3.4.7.3.4 Probable errors and possible causes

Error	Possible cause
RoC references	The RoC is referenced by one or several item/box objects.

3.4.8 Validation

3.4.8.1.1 Functional description

The validation operation represents the way to confirm the work that has been performed upon a list of selected box objects from the Working area. Once validated, the selected box objects and the subjacent item objects that have been modified shall appear in the Reference area and therefore, shall disappear from the Working area. Besides, the selected box objects and the item objects that were marked for deletion in the working area will disappear from the Working and Reference area.

The validation is performed in the following steps:

1. **Access to the Validation Basket.** The manager shall click on the menu options Validation → Validation Cart to access to the validation basket page.
2. **Validation basket page.** This page displays the box objects being in the working area or containing items in the working area. At the bottom of the page it is also asked to fill in the Short description and the Long description associated to this validation.

   The manager shall select the desired box objects via the checkboxes beside each box object, and fill in the description values. Once that this is done the user shall click on the button 

to launch the operation.

3.4.8.1.2 Example

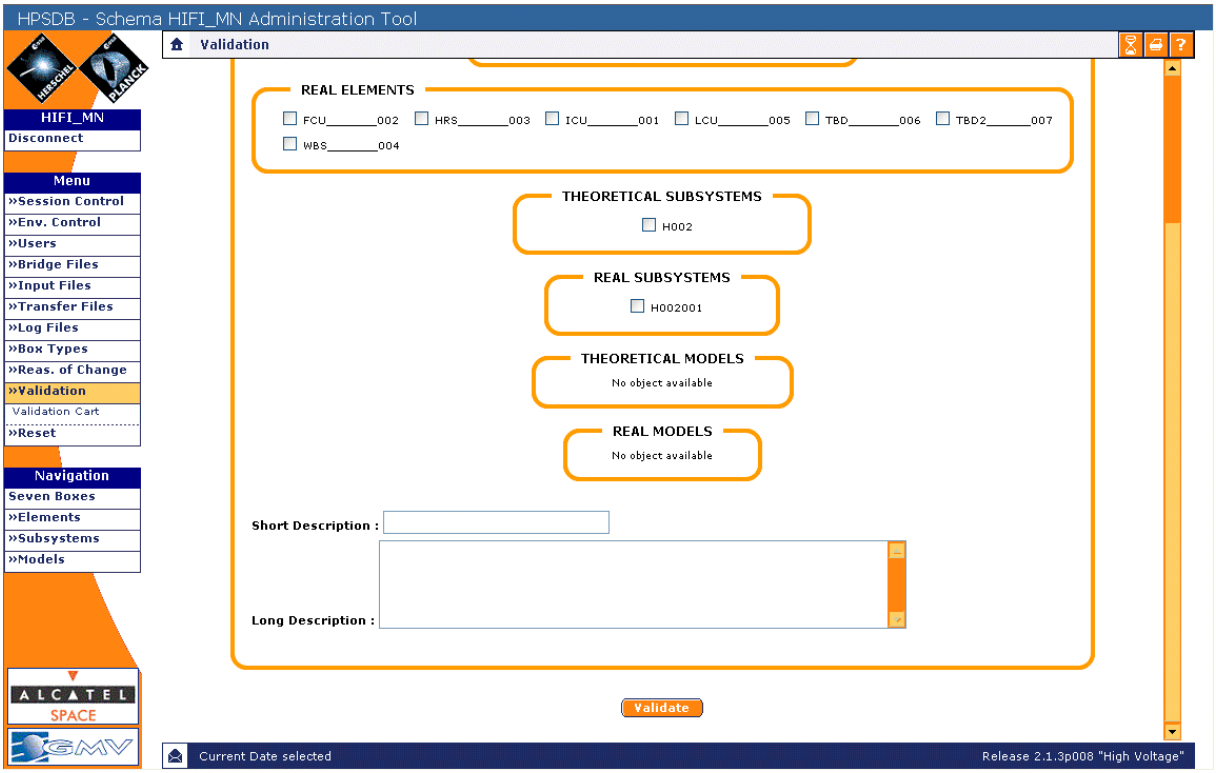


Figure 3-37: Validation basket page

3.4.8.1.3 Cautions and warnings

- It is not possible to validate objects with references to other objects verifying the following situation:
  - The referenced object does not belong to the reference area
  - The referenced object is not selected for validation
  - The referenced object is deleted by the validation
  - In case of having downloaded objects in the working area, the validation process is in charge of deciding what objects will be passed to the reference area and which ones will be archived. This decision is based on the calculation of the more recent copies, taking into account the validation date of the local copies, and the mirror site validation date for the downloaded copies. At the end of the validation only one copy of each object will be passed to the reference area (if the copy was not marked for deletion), and the rest will be transferred to the archive area.

3.4.8.1.4 Probable errors and possible causes

Error	Possible cause
Error message: An object referenced has not been found in the reference area.	The object referenced does not exist, has not been selected for validation, or has been selected for validation but it is marked for deletion.

Error	Possible cause
Error message: A theoretical object has not been found in the reference area.	A real object has been selected for validation and the corresponding theoretical object does not exist, has not been selected for validation, or has been selected for validation but it is marked for deletion.

3.4.9 Generic data management

The generic box is a special box with no other data associated than the lists of items. This special box object is introduced for the definition of generic data in HPSDB. This box cannot be instantiated nor edited.

The generic box is made up of a list of *generic items*. Generic items are items that could be referenced by any box or item within HPSDB. Nevertheless, these generic items can only refer to another generic items (i.e. TC, TM, Displays, etc. can only refer generic parameters). Not every item object could be generic. Only the following ones could be defined at generic level:

- Display
- Command Verification Sequence
- Telecommand
- Telemetry packet
- Parameter
- SCOS Telemetry Packet
- Telecommand header
- Tm Standard Template
- Tm Pseudo ICD Template
- Telecommand Structure
- Telemetry Packet Structure

The generic data can be accessed through the '*Generics*' box in the Seven Boxes option from the Navigation menu. The figure below shows the main page for Generic Data.

The operations that can be performed on these generic items are the same as for the Theoretical box items except for the instantiation. These operations shall be performed as if they were theoretical item objects.

The only differences between generic and non-generic items are:

- Generic items do not belong to any box.
- Generic items can only refer to another generic items.
- Generic items cannot be instantiated.

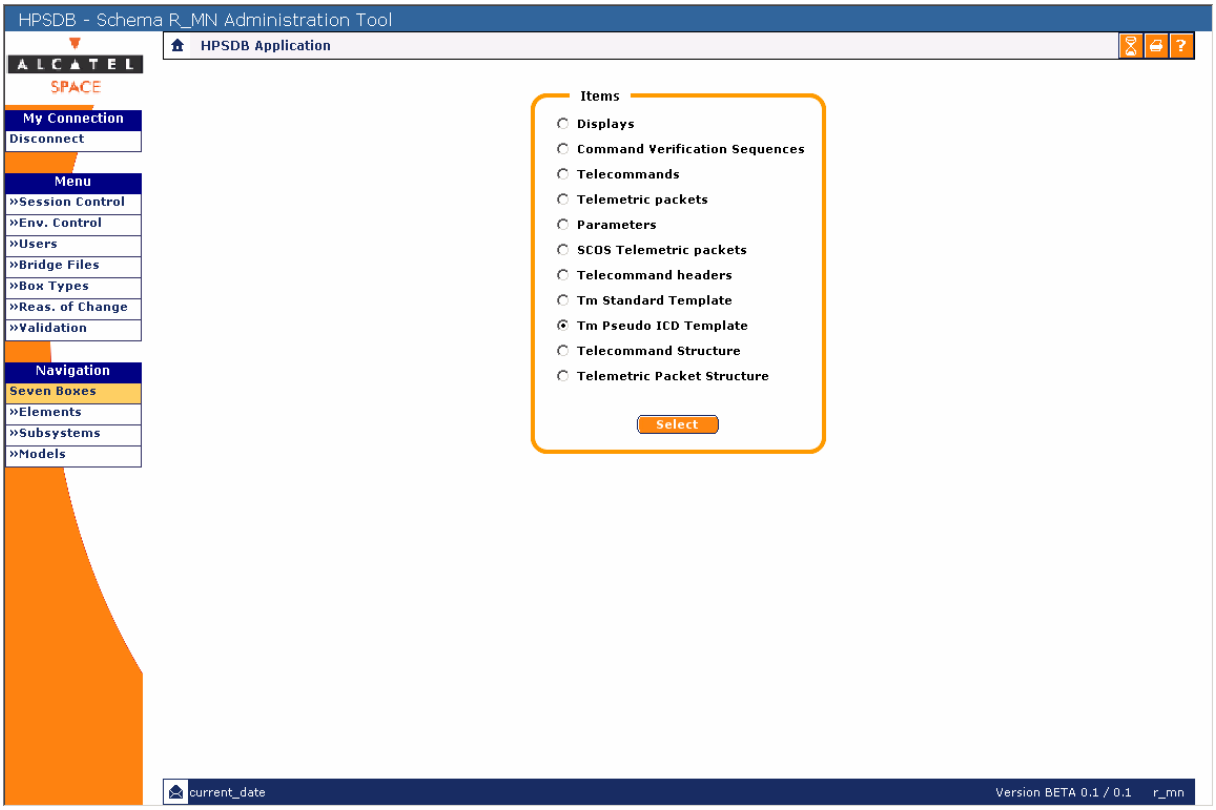


Figure 3-38: Generic box main page

3.4.9.1 Create generic item object

Please refer to section 3.5.2.1.

3.4.9.2 Edit generic item object

Please refer to section 3.5.2.2.

3.4.9.3 Delete generic item object

Please refer to section 3.5.2.3.

3.4.9.4 Checkout generic item object

Please refer to section 3.5.2.4.

3.4.9.5 Discard generic item object

Please refer to section 3.5.2.5.

3.4.10 Central/Mirror site interface operations

This section describes the functionality related to the central/mirror site data exchanges.

3.4.10.1 Generate Transfer File

3.4.10.1.1 Functional description

The Transfer File Generation is the operation that allows to extract the desired data from the central site into a file that will be afterwards exported to the corresponding mirror site. The only user with access to this operation is the central site manager.

Several steps shall be accomplished to launch this operation:

1. **Current Date Selection.** The user shall have selected the 'Current Date' option in the selection Date page (please refer to section 3.2.4).
2. **Access to a Box Object List.** Once this selection has been done, the user shall access to the lists of boxes (please refer to section).
3. **Box object selection.** The button to generate a Transfer File appears at the end of the sets of buttons available for each box object, but only for those box objects of the Reference Area. The user shall click on the Export button corresponding to the desired box object:  .
4. **Transfer File generation Page.** The following set of fields is displayed in a new page, and shall be filled in by the user:
   - *Version*. Version of the generated file.
   - *Short description*. Short description of the generated file.
   - *Long description*. Long description of the generated file.
   - *Change reason*.The desired reason of change shall be selected from the combo list.
5. **Launch the generation of Transfer File.** The user shall click on the button 

appearing at the bottom of the page. Once that this is done, the operation is launched.

When the file has been generated, a message will be displayed in the page with the following information: the start time, the end time and the duration of the operation.

The message will also show the name that has been assigned to the file, following the pattern 'Export_CENTRAL_<BOX>_<BOX_NMCVT>_<DATE>_<TIME>.xml' (example: 'Export_CENTRAL_EL_DPU_02_12_2004_15_33_50.xml'), and the place where it can be retrieved, this is, the Transfer Files List Page. To get to this page the user shall click on the main menu options Transfer Files → Transfer Files.

The user can download/watch the file generated via the Download operation described in section 3.4.4.2.

3.4.10.1.2 Example

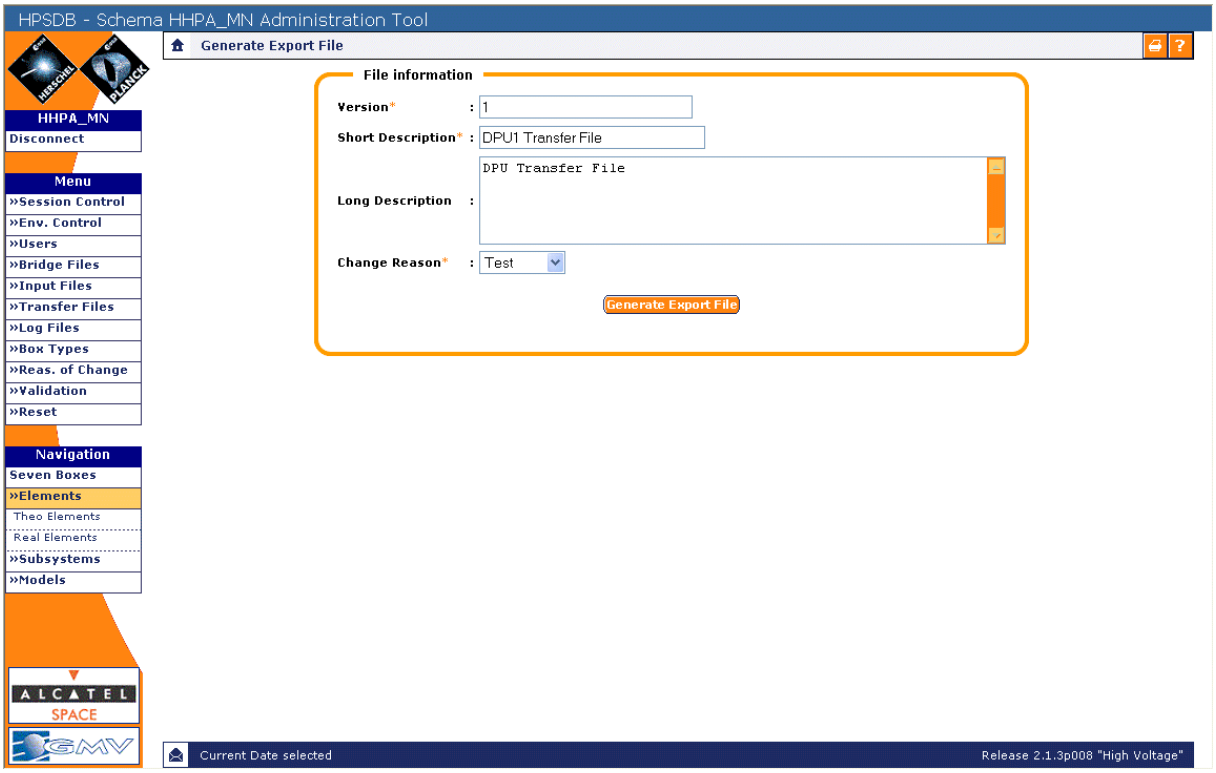


Figure 3-39: Transfer File generation page

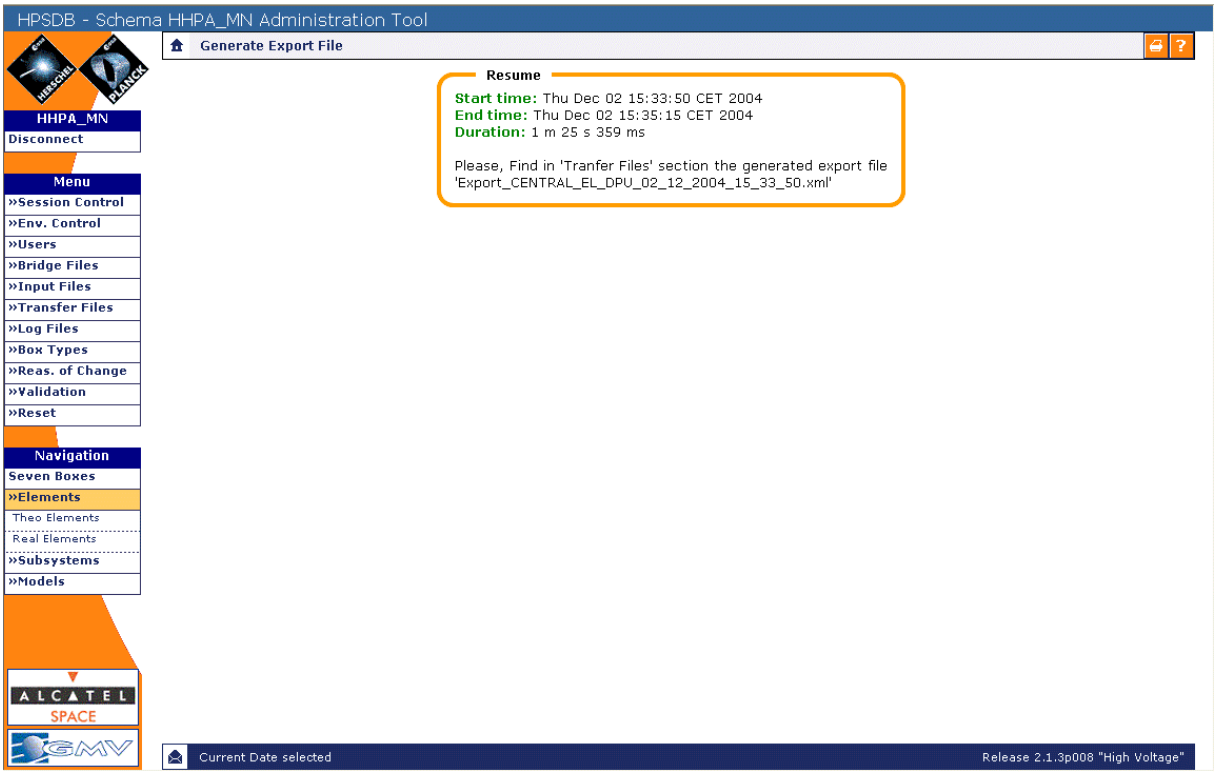


Figure 3-40: Transfer File generation message

3.4.10.1.3 Cautions and warnings

- The selection of a higher level box object will imply that the lower level box objects or associated will also be selected to be included in the transfer file. For example, the selection of a subsystem implicitly selects also the elements associated to the positions of the subsystem.
- The selection of a real box object will imply that the corresponding theoretical box object will also be selected to be included in the transfer file.
- The transfer file generated will contain the boxtypes and change reasons needed by the box objects included in the file.

3.4.10.1.4 Probable errors and possible causes

NA

3.4.10.2 Import Transfer File

3.4.10.2.1 Functional description

The Transfer File Import is the operation that allows to load the data of a Transfer File into a mirror site. The only user with access to this operation is the corresponding mirror site manager.

The steps to follow to import a transfer file to a mirror site are the following:

1. **Transfer Files List Page.** The user shall access to the Transfer Files List page, clicking on the main menu options Transfer Files → Transfer Files.
2. **Upload Transfer File.** From this page the user is able to upload the desired Transfer File from his/her local machine to the HPSDB application (this shall be done via the Upload operation described in section 3.4.4.1).
3. **Launch the Transfer File Import.** Once that the file has been uploaded, the user can launch the Transfer File import clicking on the button  appearing at the left of the desired file. This action launches directly the operation.

Once that the import of the Transfer File has been finished, a message will be displayed in the page with the following information: the start time, the end time and the duration of the operation.

A resume of the objects created/instantiated in the database will also be displayed in the same page.

3.4.10.2.2 Example

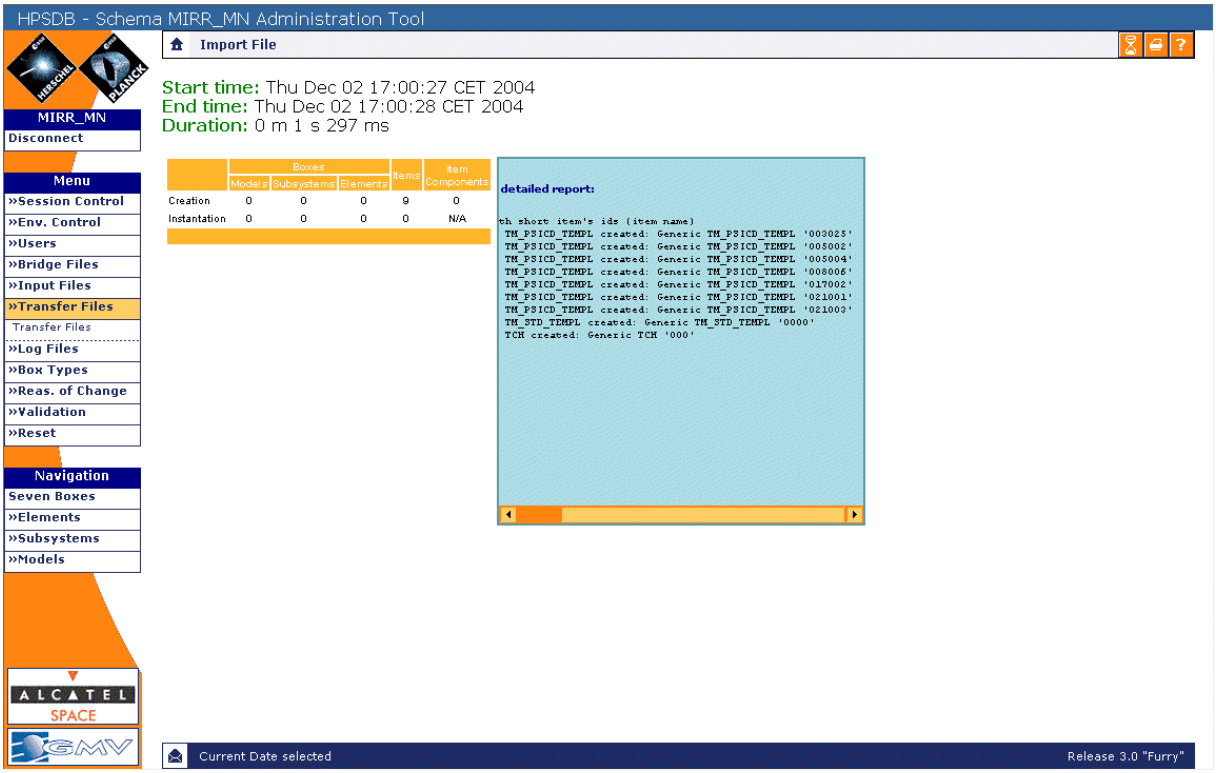


Figure 3-41: Transfer File import message

3.4.10.2.3 Cautions and warnings

- The content of the three areas (Working, Reference and Archive) existing at the mirror site schema where the file is imported is automatically deleted by this operation.
- The objects imported from the file are created directly in the reference area of the mirror site.
- It is strongly recommended not to modify the Transfer Files manually. Any change done manually by a user in these files can lead to corrupt the mirror site database when the import is performed.

3.4.10.2.4 Probable errors and possible causes

NA

3.4.10.3 Generate Log File

3.4.10.3.1 Functional description

The Log File Generation is the operation that allows to generate a file with the real objects validated in the mirror site, to be transferred afterwards to the central site. The only user with access to this operation is the corresponding mirror site manager.

Since a Transfer File has been imported into the mirror site, the manager can perform as many Log File generations as he/she wants. The first log file generated will cover the validations performed since the Transfer File import, and the rest of log files generated will cover the validations inside the interval of time between the last log file generation and the current time.

The log file names will be automatically generated following the pattern 'LOG_CENTRAL_<DATE>_<TIME>.xml.zip'.

Several steps shall be accomplished to launch this operation:

1. **Log Files List Page.** The user shall access to the Log Files List page, clicking on the main menu options Log Files → Log Files. At the top of this page, the user shall click on the button Generate Log File.
2. **Log File generation page.** The following set of fields is displayed in a new page, and shall be filled in by the user:
   - *Version*. Version of the generated file.
   - *Short description*. Short description of the generated file.
   - *Long description*. Long description of the generated file.
   - *Change reason*.The desired reason of change shall be selected from the combo list.
3. **Launch the generation of Log File.** The user shall click on the button Generate Log File appearing at the bottom of the page. Once that this is done, the operation is launched.

When the file has been generated, a message will be displayed in the page with the following information: the start time, the end time and the duration of the operation.

The message will also show the name that has been assigned to the file, following the pattern 'LOG_<MIRROR_SITE_NAME>_<DATE>_<TIME>.xml.zip'. (example: 'LOG_MIRROR1_13_08_2004_18_05_14.xml.zip'), and the place where it can be retrieved, this is, the Log Files List Page. To get to this page the user shall click on the main menu options Log Files → Log Files.

The user can download the file generated via the Download operation described in section 3.4.4.2.

3.4.10.3.2 Example

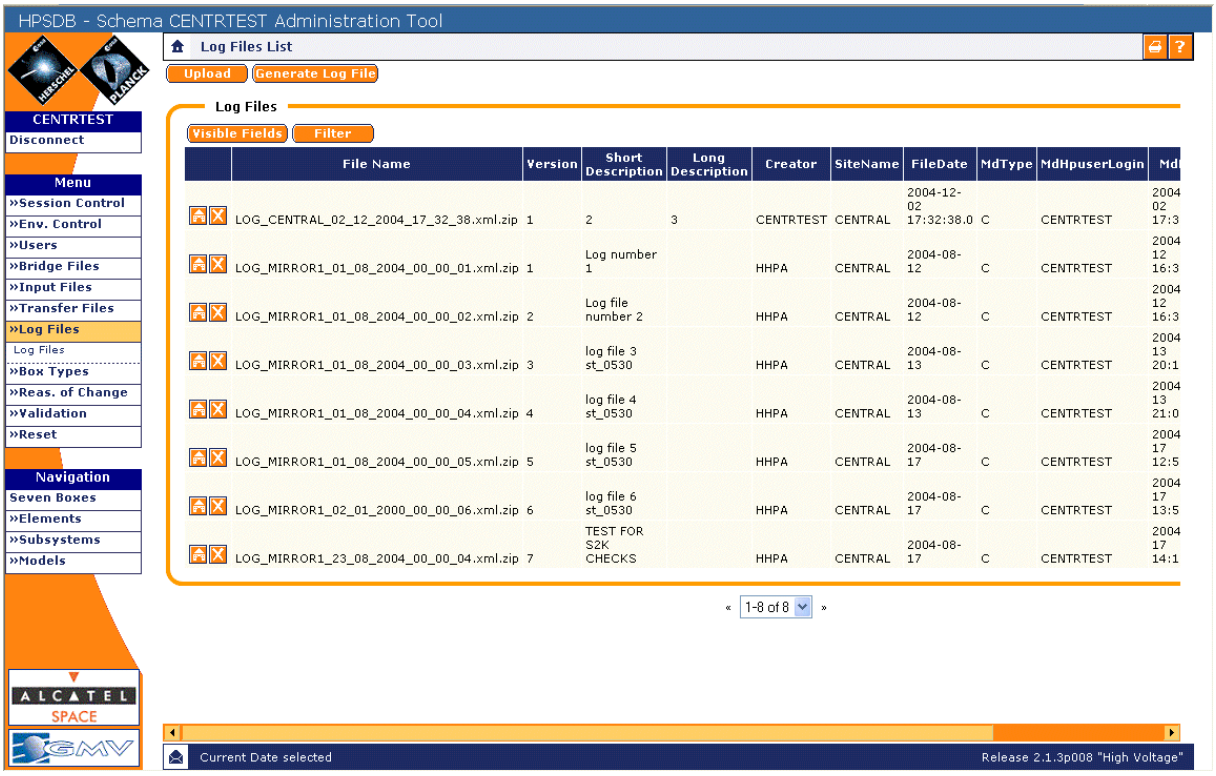


Figure 3-42: Log Files List page

The Log File Generation Page and the Log File Generation Message snapshots are very similar to the Transfer File Generation snapshots, therefore they are not included in this section.

3.4.10.3.3 Cautions and warnings

NA

3.4.10.3.4 Probable errors and possible causes

Error	Possible cause
Error message: No validation has been performed since the previous log file generation.	It is not possible to generate a log file if no validation has been performed in the schema since the last log file generation.

3.4.10.4 Download Log File

3.4.10.4.1 Functional description

The Log File Download is the operation that allows to load the mirror site validations included in a Log File into the central site. The only user with access to this operation is the central site manager.

The steps to follow to download a Log File into the central site are the following:

4. **Log Files List Page.** The user shall access to the Log Files List page, clicking on the main menu options Log Files → Log Files.
5. **Upload Log File.** From this page the user is able to upload the desired Log File from his/her local machine to the HPSDB application (this shall be done via the Upload operation described in section 3.4.4.1).
6. **Launch the Log File Download.** Once that the file has been uploaded, the user can launch the Log File Download clicking on the button appearing at the left of the desired file. This action launches directly the operation.

Once that the download of the Log File has been finished, a message will be displayed in the page with the following information: the start time, the end time and the duration of the operation.

A resume of the objects created/instantiated in the database will also be displayed in the same page.

3.4.10.4.2 Example

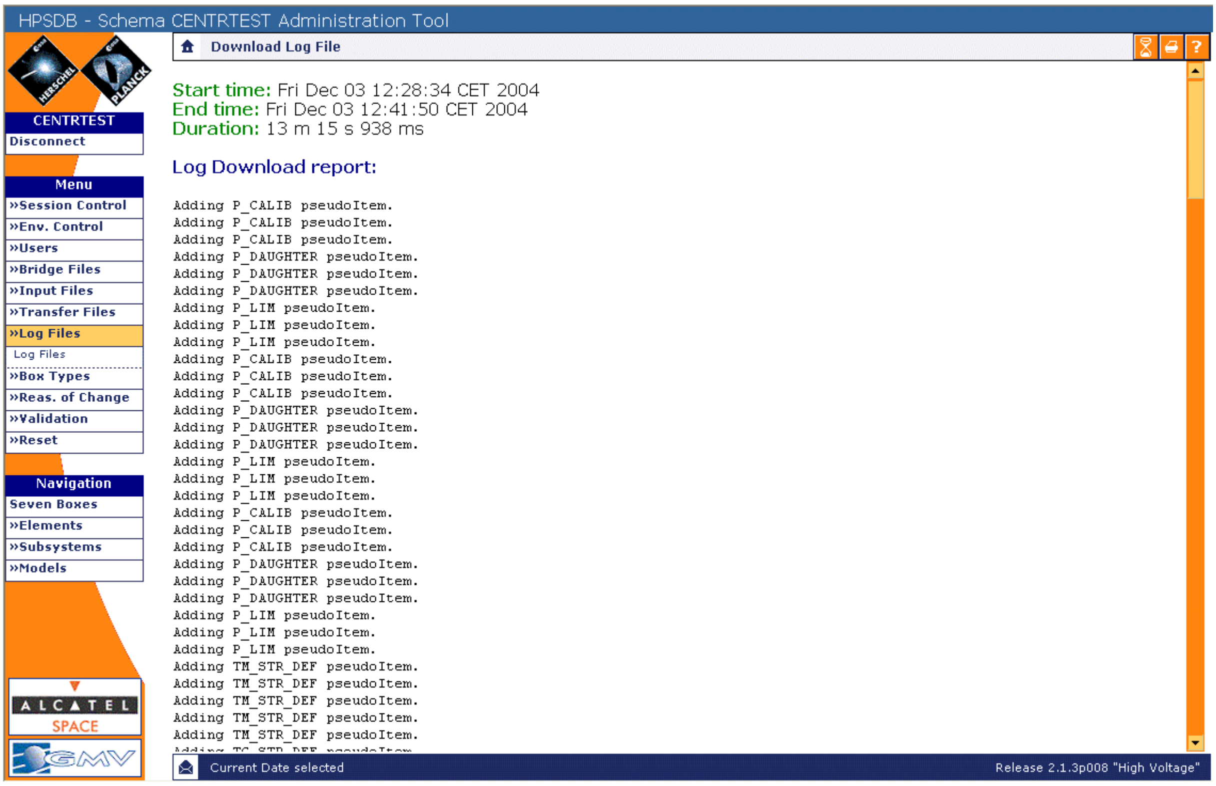


Figure 3-43: Log File download message

3.4.10.4.3 Cautions and warnings

- The objects downloaded from the file are created directly in the working area of the central site.
- The objects downloaded in the central site will be marked as "Downloaded", and no user will be able to modify them. The only operation that can be performed upon these Downloaded objects is a validation.

- The download of a log file in the central site is the only situation that can produce the duplication of objects in the Working area. In this case the interface will display the duplicated objects (downloaded instances and local instance) in the same object list. These duplications will be solved by the validation process (for more information about this process please refer to the validation chapter 3.4.8).
- The log files shall be chronologically downloaded in the central site. Otherwise an error will be displayed.
- It is strongly recommended not to modify the Log Files manually. Any change done manually by a user in these files can lead to corrupt the central site database when the download is performed.

3.4.10.4.4 Probable errors and possible causes

Error	Possible cause
Error message: Needed theoretical object not found in the central site.	The theoretical box/item objects whose real objects come inside the log file shall exist in the central site.
Error message: The chronological order has not been respected.	The log file downloaded does not respect the chronological order. The previous log file downloaded in the central site was generated later than the current one.

3.5 USER ACCESS

This section contains the description of the activities that normal users can access through the use of the HPSDB tool.

The left frame provides the functionality accessible to normal users, structured in three different menus:

1. My Connection. The description of this menu can be found in section 3.2.1.
2. Menu. It contains the following functionality:
   - **Bridge files**. Normal users are allowed to generate bridge files from the boxes they have access to. However the operations are exactly the same as those applicable to managers, described in section 3.4.5.2.
   - **Reason of change**. The reason of change management activities are the same as those for managers, described in section 3.4.7.
3. Navigation. This menu collects the tasks related to the box/item management. Depending on the type of normal user accessing HPSDB, the contents of vary as follows:
   - **Equipment engineer and Equipment fabricator**. These users have visibility only upon the elements of the system. Thus, the options available shall be:
     – Seven boxes
     – Elements

- **Subsystem engineer and Subsystem fabricator**. These users have access to the subsystems. As subsystems are composed of elements, these are also visible. The options available shall be:
  - Seven boxes
  - Elements
  - Subsystems
- **Systems engineer and AIT**. These users have access to all boxes:
  - Seven boxes
  - Elements
  - Subsystems
  - Models

The Seven boxes option leads to display the seven boxes (Generic, Theoretical and Real element, subsystem and models), where the boxes available to the users shall be graphically distinguished from those inaccessible. A click on an available box has the same behaviour as the selection of the same box type from the left frame.

An example of the seven boxes display is shown in the figure below.

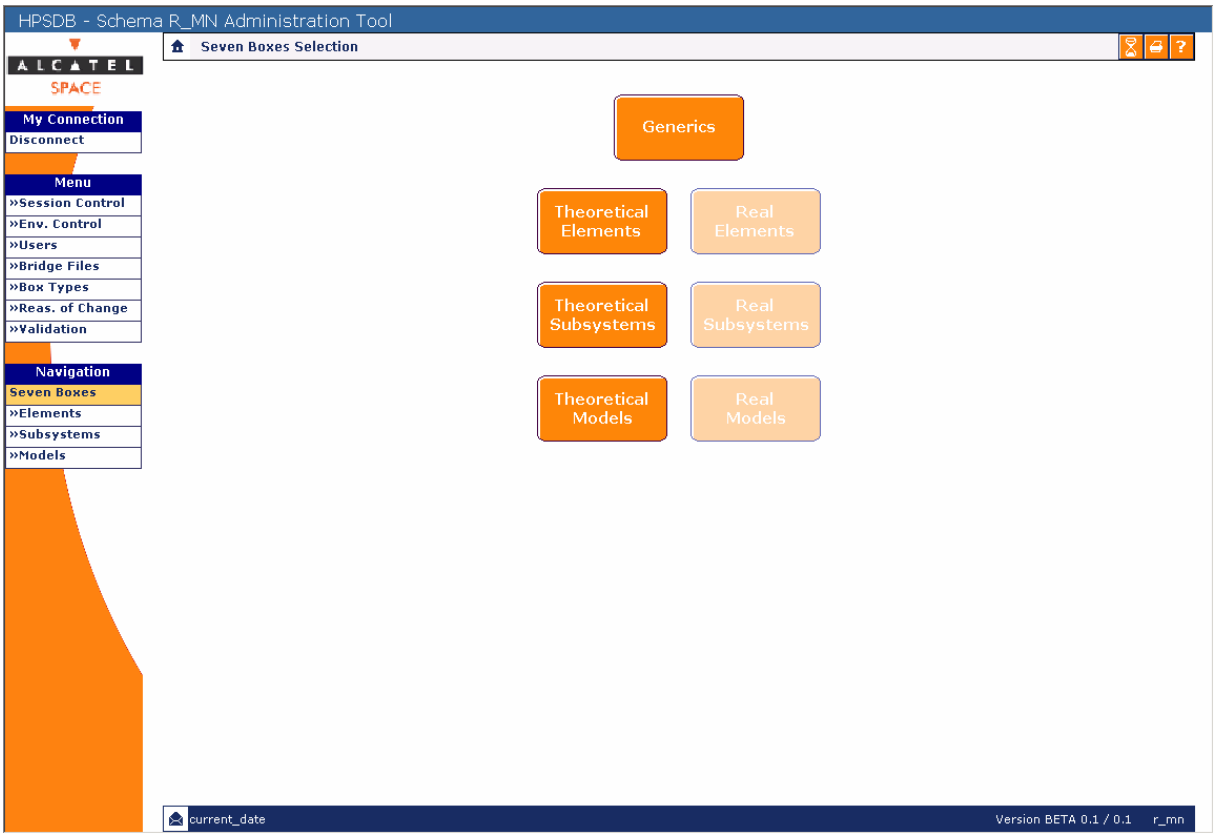


Figure 3-44: Seven box selection page

3.5.1 Theoretical box object management

This section describes the set of operations relative to the three different types of theoretical box objects available in the system:

- **Elements**. The activation of the Theoretical Element List option of the Elements menu displays the list of existing theoretical elements available to the user. In case of a manager, the full list of theoretical elements belonging to the schema shall be listed, whereas if an equipment engineer is accessing, only those elements belonging to the box type associated to the user shall be presented.
- **Subsystems**. Clicking on the Theoretical Subsystem List option of the Subsystems menu displays the list of existing theoretical subsystems available to the user. In case of a manager, the full list of subsystems belonging to the schema shall be listed. On the other hand, when a subsystem engineer is accessing, only those subsystems belonging to the box type associated to the user shall be shown.
- **Models**. The list of models shall be presented once the Theoretical Model List option of the Models menu is selected. For the manager, the complete list of models present in the schema is shown; in turn for a model engineer user, only those models belonging to the box type associated to the user shall be displayed.

The operations have the same behaviour for all theoretical box objects. What differs is the contents of the list that appear when accessing each type of theoretical box object. The specific information that defines each box can be found in ANNEX A.

An example of a page including the list of theoretical elements is illustrated in Figure 3-45. The actions that are associated to each box object present in the list are:

Edit	Modify or visualise the information of the theoretical box object. The difference resides on whether the theoretical box object belongs to the Working or Reference areas respectively.
Instantiate	Create a real box derived from the theoretical one. This operation is described in the real box management, in section 3.5.3.1.
Generate bridge files	Generate the set of bridge files from the theoretical box object.
Checkout	Checkout the theoretical box object from the Reference area to the Working area. Thus, the box object can be modified.
Discard	This option leads to discard the edition that has been carried out upon the box object. This option is only applicable to theoretical box objects belonging to the Working area.
Delete	Delete the theoretical box object. This option is only applicable to theoretical box objects belonging to the Reference area.

Select for validation	A click on this editable field causes the box object to be selected for validation, this is, it is added to the validation basket. Obviously, this field only appear for those box objects residing in the Working area.

These actions shall be further described in the following sub-sections, together with the action to create a new box object element.

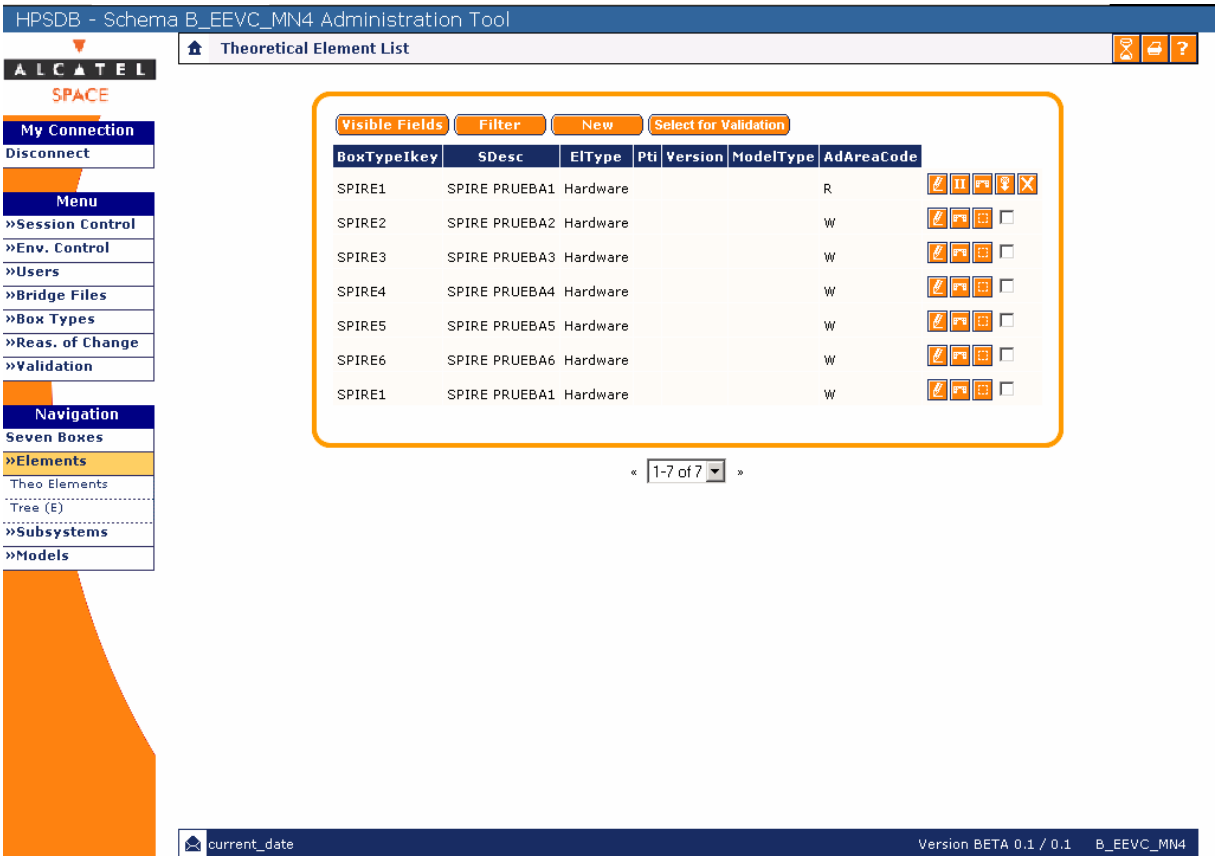


Figure 3-45: Theoretical element list page

3.5.1.1 Create theoretical box object

3.5.1.1.1 Functional description

This operation enables the creation of a new theoretical box object. It can be performed by different user roles, depending on the box object to create:

Theoretical box object	User role
Element	Manager and Equipment engineer
Subsystem	Manager and Subsystem engineer
Model	Manager and System engineer

There is ample information associated to each theoretical box object; all of the data fields do not need to be entered at creation time. The data fields for the definition of each theoretical box object shall be described further ahead in ANNEX A.

3.5.1.1.2 Example

The figure below shows the form presented to the equipment engineer to create a new theoretical element. As in the previous cases, a successful creation leads to save and commit the new information in the database.

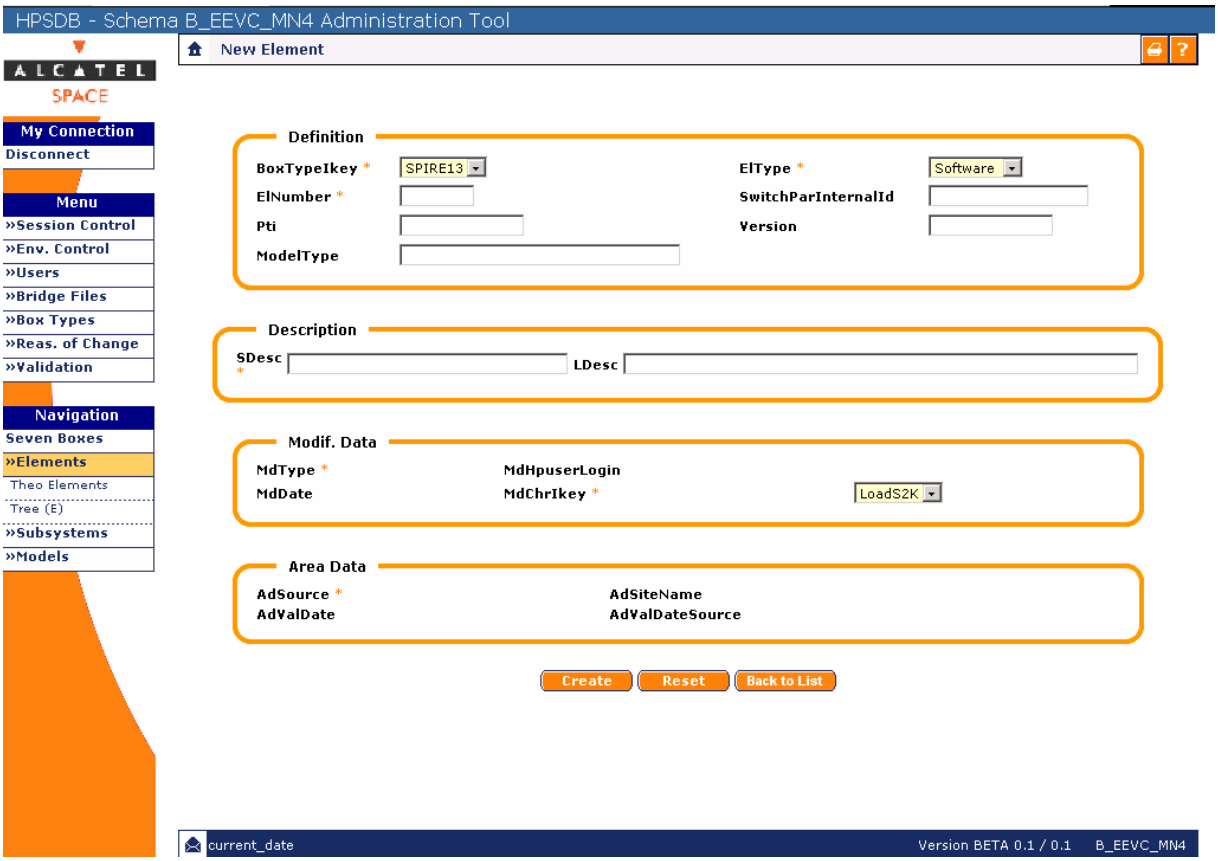


Figure 3-46: Theoretical element creation page

3.5.1.1.3 Cautions and warnings

- The mandatory fields are marked with the * character.
- In case of theoretical elements, the element number field must follow the naming convention for elements. The naming convention descriptions can be found in [AD.4.].

3.5.1.1.4 Probable errors and possible causes

Error	Possible cause
Empty field	Some of the mandatory fields have been left blank.

Error	Possible cause
Theoretical box object already exists	The theoretical box object already exists in the schema. In case of elements a unique box type/element number couple must be re-entered. For subsystems and models, a non-created box type must be selected.

3.5.1.2 Edit theoretical box object

3.5.1.2.1 Functional description

The edition of an existing theoretical box object allows the manger to modify the data allocated to the object, with the exception of those fields that identify the object in the rest of the system, and therefore cannot be changed.

3.5.1.2.2 Example 1: Theoretical element

The figure below shows an example of the page that is displayed when the  icon (Edit theoretical element) is clicked upon the list of theoretical elements. The Update and Reset buttons of the page indicate to perform the modification (i.e. database change + commit) or to keep the data fields as they were before respectively. The Back to List button leads to discard the edition returning to the list of theoretical elements.

It is to be noted that the data fields in the example are in write mode; this means that the theoretical element currently belongs to the Working area, and therefore, the user may perform the modification. Otherwise. When the theoretical element is in the Reference area, the information would be displayed in read mode. If a modification is needed a checkout operation is required first. This is done clicking on the  option.

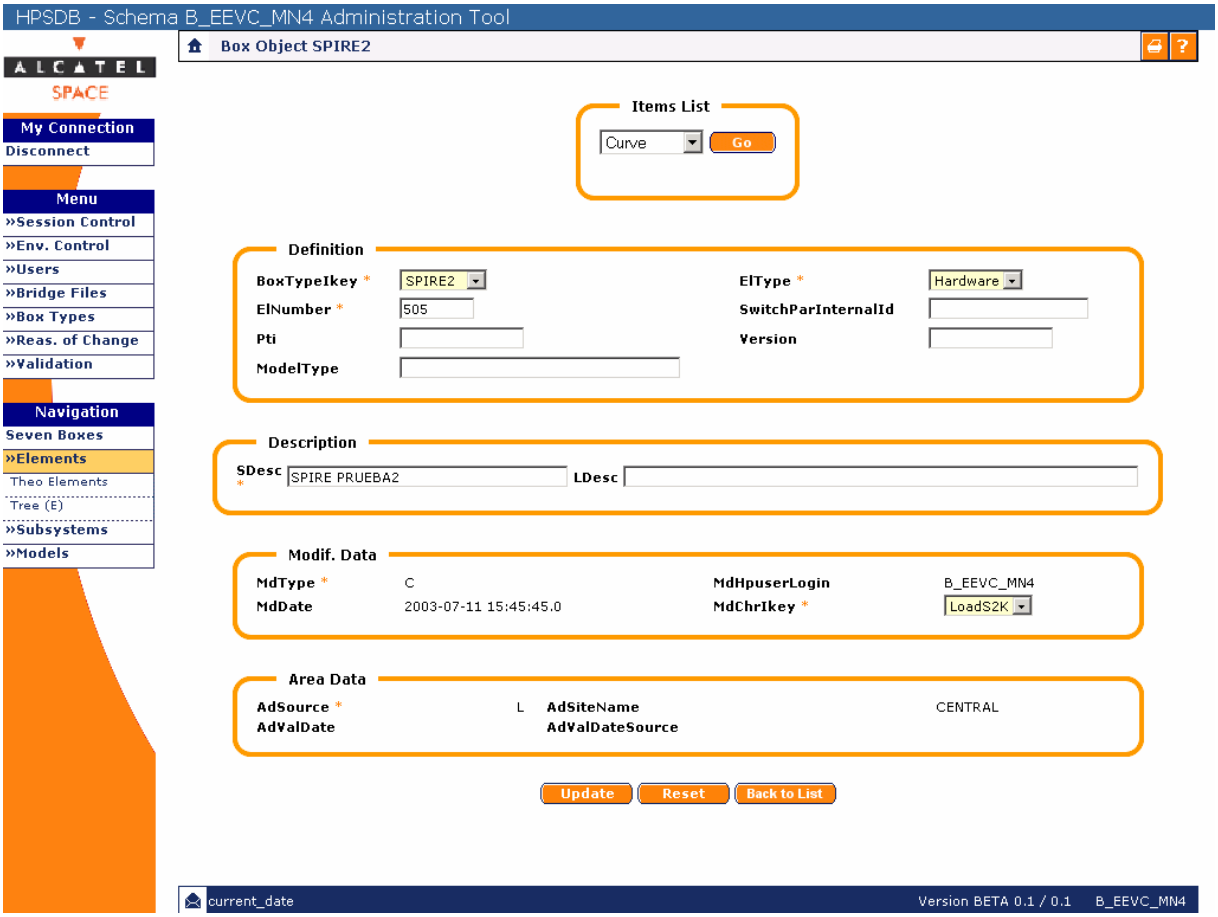


Figure 3-47: Theoretical element edition page

3.5.1.2.3 Example 2: Theoretical subsystem

In this example, the steps to edit a subsystem are described. Apart form the basic data defining a subsystem what is important to highlight, since it represents a new aspect with respect to the element definition seen above, is the way to manage the list of elements that composes the subsystem.

The figure below shows the subsystem edition main page where the subsystem basic data is modified. However, within the Items List panel, the user can define lists of elements and items associated to the subsystem.

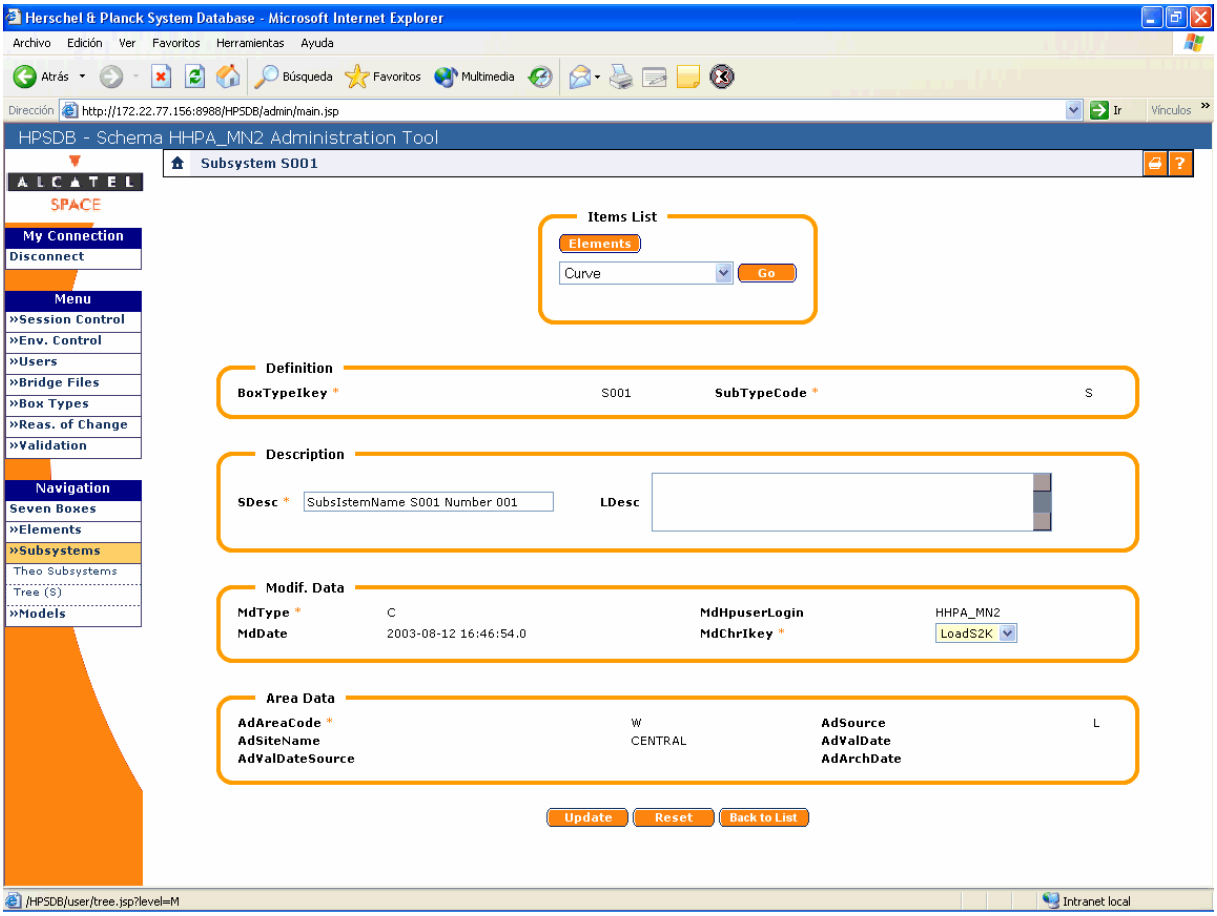


Figure 3-48: Theoretical subsystem edition page

Thus, whenever the user wishes to change the element composition of the subsystem, the Elements button should be pressed, leading the system to present a page similar to the one shown in Figure 3-49. The current list of elements belonging to the subsystem is displayed. The user is enabled to add new positions/elements to the list by means of clicking the New button at the top of the page. The remaining options refer to each particular element and are described below:

Edit	Modify or visualise the information associated to the position of the subsystem. Information such as the position data and the reference to the theoretical element can be changed from here.
Delete	Delete the position identifier from the subsystem. As a position is always linked to a theoretical element object, the reference to this element is lost.
Go	Edit the theoretical element. This option permits to perform directly modifications upon the theoretical element. Please note that this operation could cause severe consequences on other parts of the system, since the theoretical element can be used in different subsystems and also can have several real elements instantiated from it.

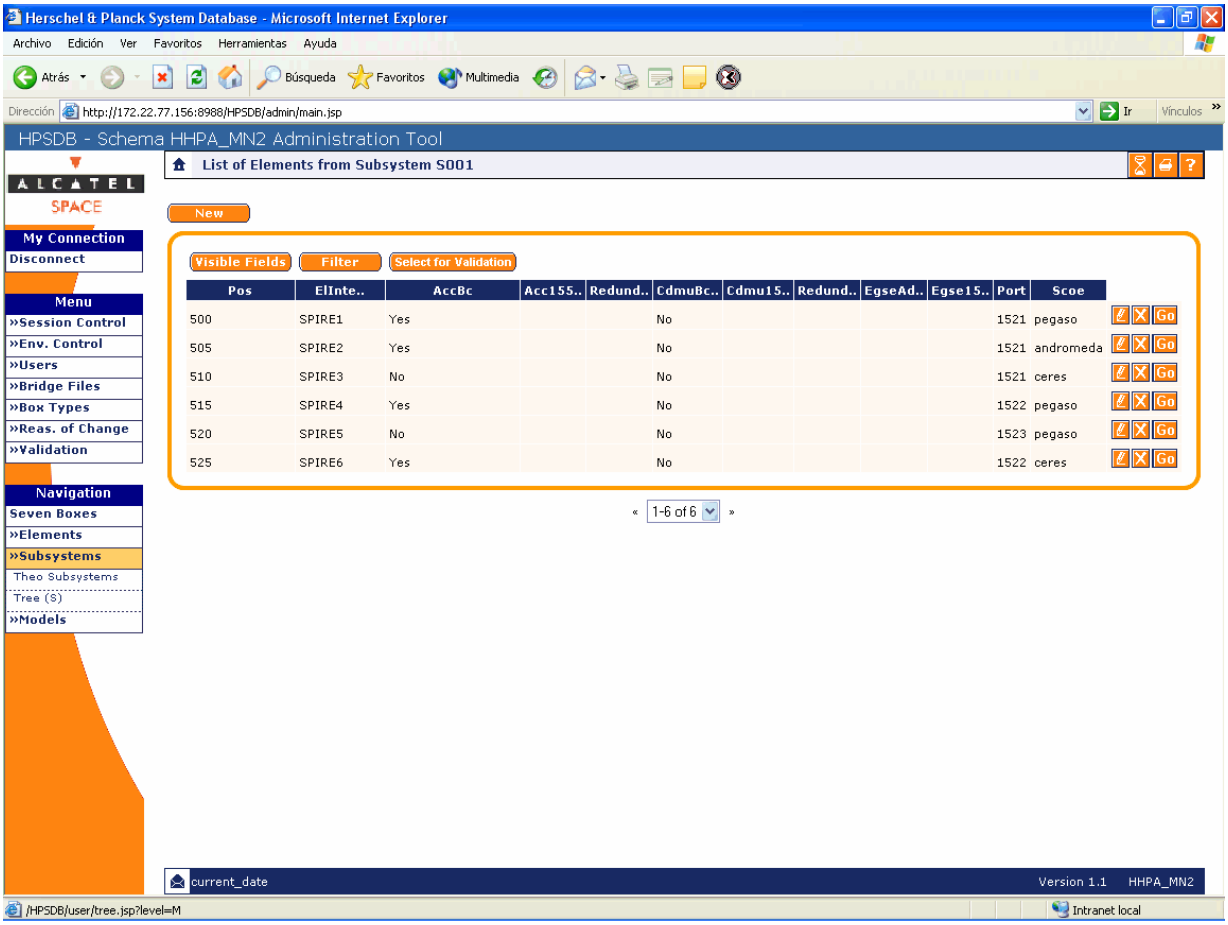


Figure 3-49: Theoretical subsystem element list page

3.5.1.2.4 Example 1: Theoretical model

Similarly to the subsystem, the edition of the model covers not only the basic information of the model but also the list of items and subsystem it is composed of.

The figure below shows the model edition main page where apart from the general data, the user can edit the lists of subsystems and items associated to the model.

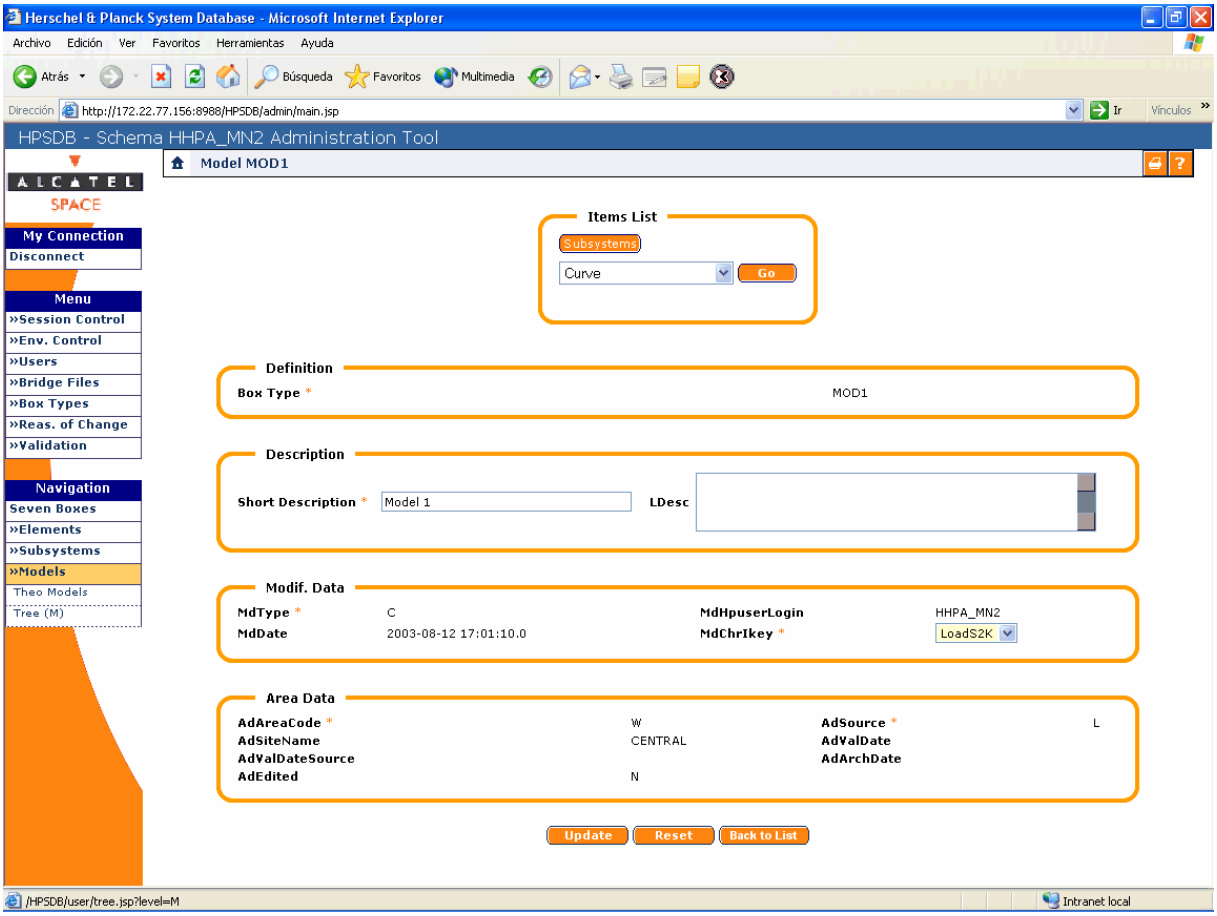


Figure 3-50: Theoretical model edition page

Whenever the user wishes to change the subsystem composition of the model, the Subsystems button from the Items List panel should be pressed. A page similar to the one shown in Figure 3-51 showing the current list of subsystems belonging to the model is displayed. The user is enabled to add new subsystems to the list by means of clicking the New button at the top of the page. The remaining options refer to each particular subsystem and are described below:

Edit	Modify or visualise the information associated to the position of the model. Information such as the position data fields and the reference to the theoretical subsystem can be changed from here.
Delete	Delete the subsystem from the model. This means that the reference to this subsystem is no longer kept within the model.
Go	Edit the theoretical subsystem. This option permits to perform directly modifications upon the theoretical subsystem. Please note that this operation could cause severe consequences on other parts of the system, since the theoretical subsystem can be used in different models and also can have several real subsystems instantiated from it.

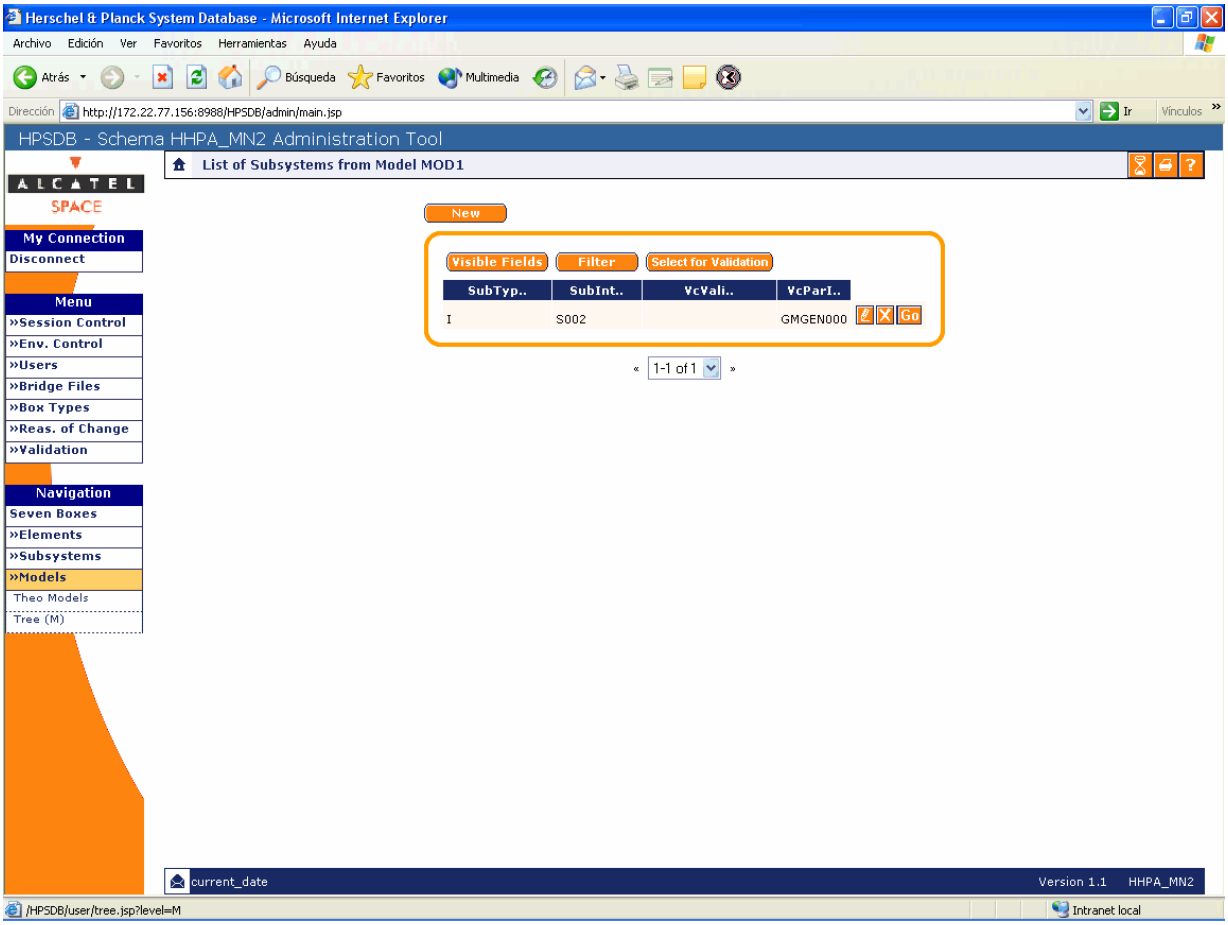


Figure 3-51: Theoretical model subsystem list page

3.5.1.2.5 Cautions and warnings

- The theoretical box object could have real objects derived from it. Therefore, it may occur that the modifications performed on the theoretical box object are translated or not to them.
- The modified real box objects derived from the theoretical shall not be aware of new items creation nor deletion.

3.5.1.2.6 Probable errors and possible causes

NA

3.5.1.3 Delete theoretical box object

3.5.1.3.1 Functional description

This operation deletes an existing theoretical box from the manager's schema.

3.5.1.3.2 Example

The delete box object operation is initiated by clicking the  icon (Delete box object) upon the desired row from the list of theoretical box objects. As shown in Figure 3-52, the system presents

a confirmation message before performing the operation. A confirmation shall lead to delete the theoretical box object from the database and perform a commit.

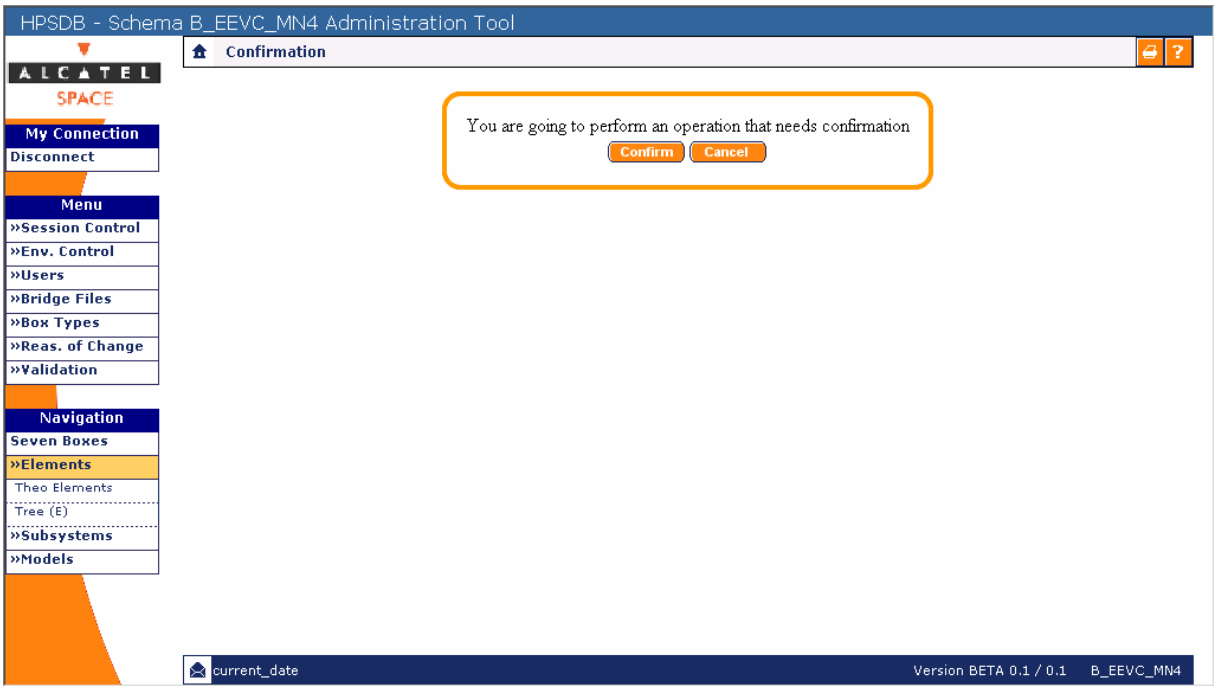


Figure 3-52: Theoretical box object deletion confirmation page

3.5.1.3.3 Cautions and warnings

- The delete option is only applicable to those theoretical box objects belonging to the Reference area.
- The theoretical box object could have real objects derived from it. The confirmation of the deletion of the object implies to delete all these real box objects.
- The theoretical box object could be integrated in an upper level box object.
- The theoretical box object is not physically deleted, but marked as deleted and placed in the Working area. The deletion of the theoretical box object is completed in the validation process, where each box object marked as deleted must be selected for validation.

3.5.1.3.4 Probable errors and possible causes

Error	Possible cause
Theoretical box object is referenced	One or several real boxes reference the theoretical box object. On or several box objects from a upper level reference the box (subsystem or model).

3.5.1.4 Checkout theoretical box object

3.5.1.4.1 Functional description

This operation transfers an existing theoretical box object from the Reference area to the Working area.

The operation is initiated by clicking the  icon (Checkout box object) upon the desired theoretical box object from the corresponding list. As a result it should be noticed that the theoretical box object is placed in the Working area (W in the Area Code field) and has the corresponding operations available.

3.5.1.4.2 Example

NA

3.5.1.4.3 Cautions and warnings

- There can be only one local copy of a box object in the Working area. It is not possible to make a checkout more than one time.

3.5.1.4.4 Probable errors and possible causes

Error	Possible cause
Local box object copy in the Working area	The box object has already been checked out.

3.5.1.5 Generate bridge files from a theoretical box object

Please refer to section 3.4.5.2.

3.5.1.6 Discard theoretical box object

3.5.1.6.1 Functional description

This option leads to discard all modifications performed upon the theoretical box object in the Working area placing it back in the Reference area.

The operation is initiated by clicking the  icon (Discard box object) upon the desired row from the list of theoretical box objects.

This operation is a critical operation. All the new items created in the box to discard since the last validation will be physically deleted. A lot of work can be thrown out if a box is discarded by mistake. Discarded boxes are not archived.

3.5.1.6.2 Example

NA

3.5.1.6.3 Cautions and warnings

- This operation is only available for those theoretical box objects belonging to the Working area.

- In case the theoretical box object was created in the Working area - this is, there is no reference of the box object in the Reference area - the discard operation will lead to remove it and all the attached items from the database schema.
- If the box is new created, i.e. no copy exists in the Reference area, all the information will be lost. The box and all the attached items will be physically removed without archiving.

3.5.1.6.4 Probable errors and possible causes

NA

3.5.2 Theoretical item object management

This section describes the set of operations relative to the items associated to theoretical box objects.

The operations have the same behaviour for all items. What differs is the contents of the lists that appear when accessing each type of item. The specific information that defines each item can be found in ANNEX B.

An example of a page including the list of parameters attached to a theoretical element is illustrated in Figure 3-45. The actions that are associated to each item object present in the list are the following:

Edit	Modify or visualise the information of the theoretical item object. The difference resides on whether the item object belongs to the Working or Reference areas respectively.
Instantiate	Create a real item derived from the theoretical one. This operation is described in the real item management, in section 3.5.2.3.
Checkout	Checkout the theoretical item object from the Reference area to the Working area. Thus, the item object can be modified. This option is only applicable to item objects belonging to the Reference area.
Discard	This option leads to discard the edition that has been carried out upon the theoretical item object. This option is only applicable to items belonging to the Working area.
Delete	Delete the theoretical item object. This option is only applicable to item objects belonging to the Reference area.
Select for validation	A click on this editable field causes the item object to be selected for validation, this is, it is added to the validation basket. Obviously, this field only appear for those items residing in the Working area.

These actions shall be further described in the following sub-sections, together with the action to create a new item.

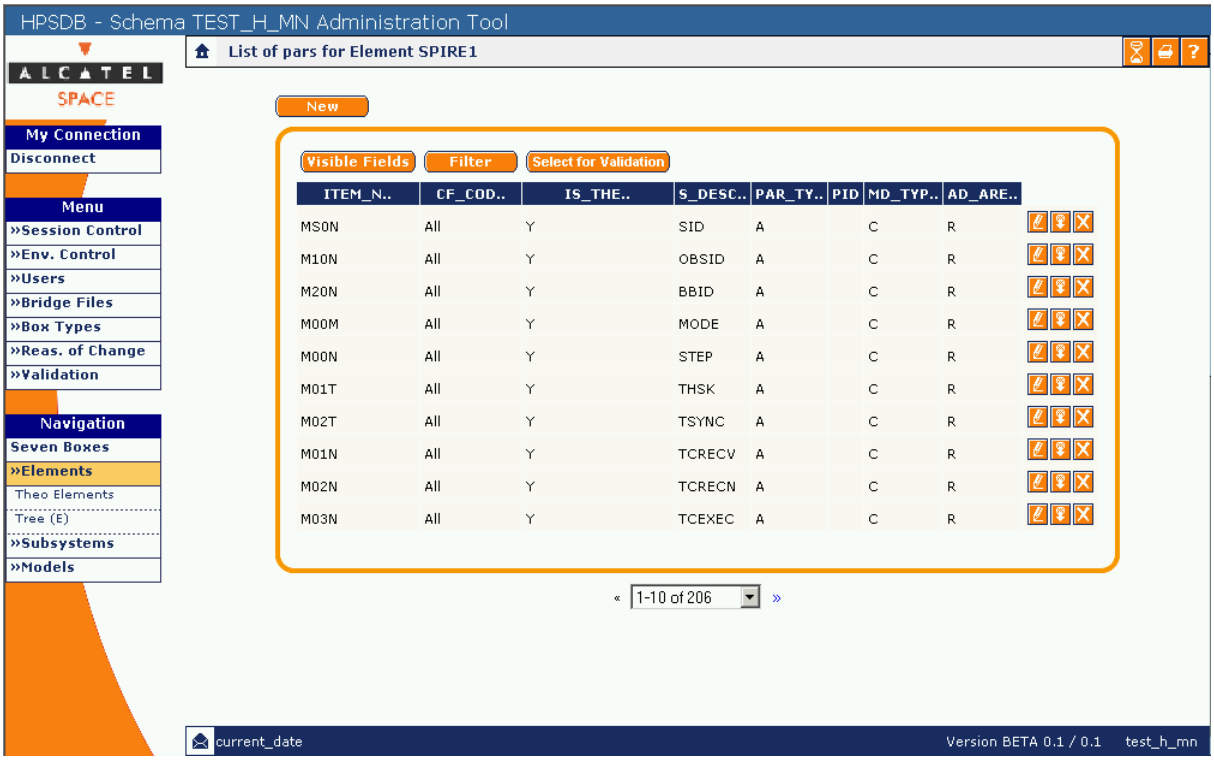


Figure 3-53: List of parameters of a theoretical element

3.5.2.1 Create theoretical item object

3.5.2.1.1 Functional description

This operation enables the creation of a new item associated to a theoretical box object. It can be performed by different user roles, depending on the involved box object:

Theoretical box object	User role
Element	Manager and Equipment engineer
Subsystem	Manager and Subsystem engineer
Model	Manager and System engineer

This operation shall be available if the box is in the Working area. It is not possible to create a new item object for a box residing in the Reference area since it involves the modification of the box items lists.

There is ample information associated to each item. The list of data fields for the definition of each item object can be found in ANNEX B.

3.5.2.1.2 Example

The figure below shows the form presented to the user to create a new item object, in this case a curve. Once the information is filled and the Create button pressed, a successful creation will lead to save and commit the new theoretical item in the database.

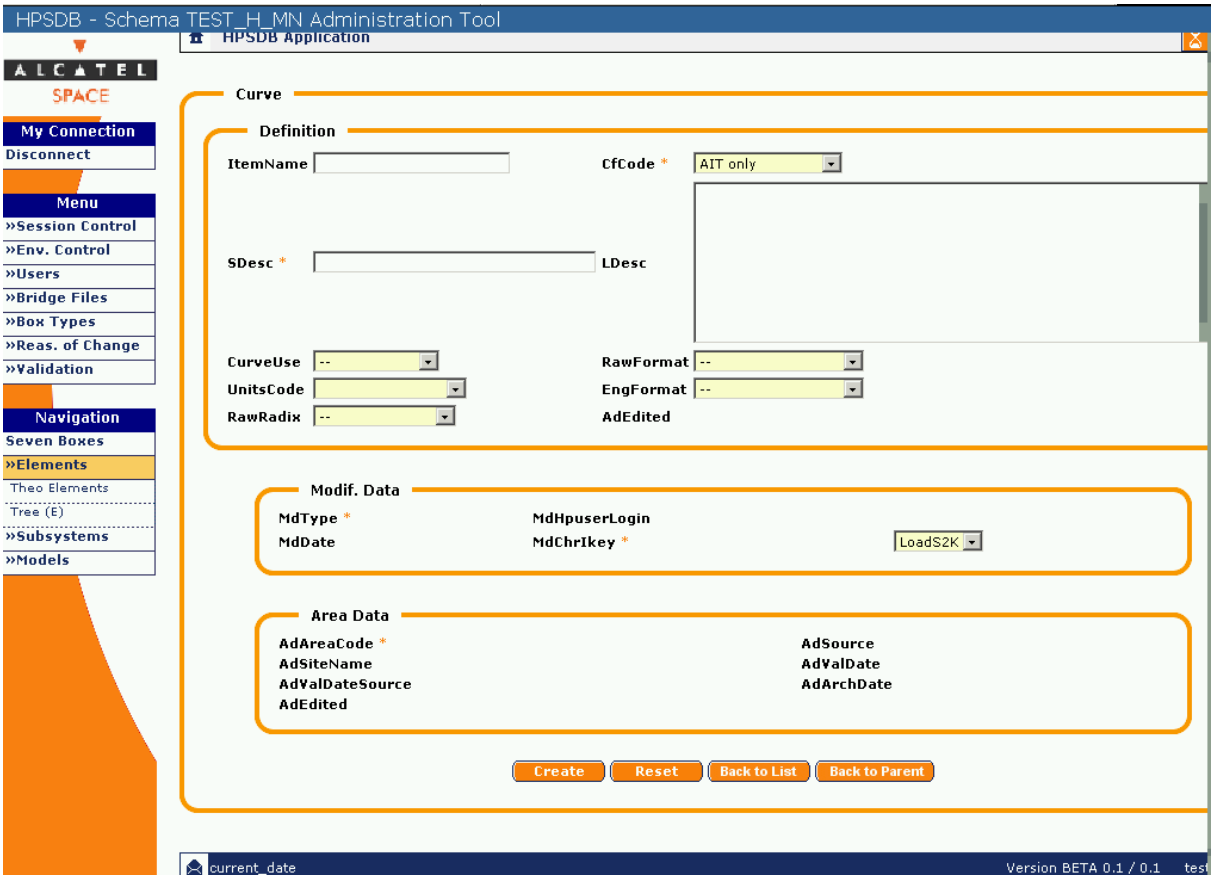


Figure 3-54: Item creation page

3.5.2.1.3 Cautions and warnings

- The mandatory fields are marked with the * character.

3.5.2.1.4 Probable errors and possible causes

Error	Possible cause
Empty field	Some of the mandatory fields have been left blank.
Item object already exists	The item object already exists.
Bad NMCVT	The item name does not comply the NMCVT.

3.5.2.2 Edit theoretical item object

3.5.2.2.1 Functional description

The edition of an existing item object allows the user to modify the data allocated to the object, with the exception of those fields that identify the object in the rest of the system, and therefore cannot be changed.

3.5.2.2.2 Example

The figure below shows an example of the page that is displayed when the icon (Edit item) is clicked upon the desired item from the corresponding list.

It is to be noted that two different pages are presented depending on the area where the item resides. In case the item belongs to the Reference area, the data shall be presented in read-only mode. On the other hand, whenever the item is placed in the Working area, the page shown in Figure 3-54 with the data fields filled shall appear so that user can modify the information as needed. In addition, two buttons are available: Update and Reset. The former indicates to perform the modification (i.e. database change + commit), whereas the latter keeps the data fields as they were before the edition operation was invoked.

As can be observed the figure represents the case where the item is placed in the Reference area meaning that the edition is not permitted. If a modification is needed a checkout operation is required first. This is done clicking on the option.

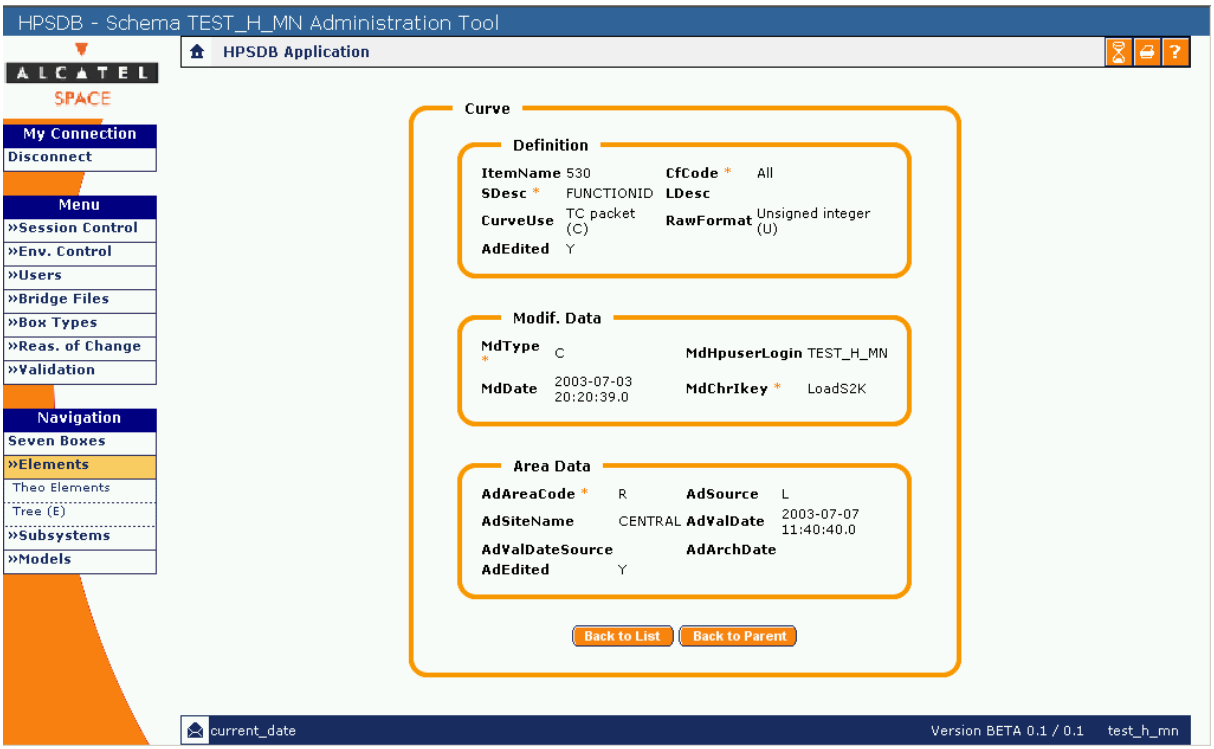


Figure 3-55: Item visualisation page

3.5.2.2.3 Cautions and warnings

- The mandatory fields are marked with the * character.

3.5.2.2.4 Probable errors and possible causes

Error	Possible cause
Empty field	Some of the mandatory fields have been left blank.
Item object already exists	The item object already exists.
Bad NMCVT	The item name does not comply the NMCVT.

3.5.2.3 Instantiate real item object

3.5.2.3.1 Functional description

This operation enables the creation of a new item associated to a real box object derived from the selected theoretical item. It can be performed by different user roles, depending on the involved box object:

Theoretical box object	User role
Element	Manager and Equipment engineer
Subsystem	Manager and Subsystem engineer
Model	Manager and System engineer

This operation shall be available if the box is in the Working area. It is not possible to create a new item object for a box residing in the Reference area since it involves the modification of the box items lists.

There is ample information associated to each item. The list of data fields for the definition of each item object can be found in ANNEX B.

3.5.2.3.2 Example

An instantiation is initiated clicking the  upon the desired item object from the theoretical item list. This directly derives in the creation of the real item in the database without any further action or information. In case a modification of the new real item's contents is required the Edit item option (see section 3.5.4.1) must be invoked.

3.5.2.3.3 Cautions and warnings

N/A

3.5.2.3.4 Probable errors and possible causes

N/A

3.5.2.4 Delete theoretical item object

3.5.2.4.1 Functional description

This operation deletes an existing theoretical element from the manager's schema.

3.5.2.4.2 Example

The delete box object operation is initiated by clicking the  icon (Delete item object) upon the desired row from the list of item objects. The system presents a confirmation page before performing the operation. A confirmation shall lead to delete the theoretical item object from the database and perform a commit.

3.5.2.4.3 Cautions and warnings

- The delete option is only applicable to item objects belonging to the Reference area.
- The theoretical item object is not physically deleted, but marked as deleted and placed in the Working area. The deletion of the theoretical item object is completed in the validation process, where each item object marked as deleted must be selected for validation.

3.5.2.4.4 Probable errors and possible causes

Error	Possible cause
Theoretical item referenced	The item to be deleted is referenced in one or several real box objects. The item to be deleted is referenced in one or several other items (TC, TM, Displays, etc.). The item to be deleted is referenced in one or several box objects from upper level (subsystem or model).

3.5.2.5 Checkout theoretical item object

3.5.2.5.1 Functional description

This operation copies an existing theoretical item object from the Reference area to the Working area.

The operation is initiated by clicking the  icon (Checkout item object) upon the desired item object from the corresponding list. As a result it should be noticed that the item is placed in the Working area (W in the Area Code field) and has the corresponding operations available.

3.5.2.5.2 Example

NA

3.5.2.5.3 Cautions and warnings

- This operation is only applicable for item objects in the Reference area.
- N/A There can be only one local copy of an item object in the Working area. It is not possible to make a checkout more than one time.

3.5.2.5.4 Probable errors and possible causes

Error	Possible cause
Local item object copy in the Working area	The item object has already been checked out.

3.5.2.6 Discard theoretical item object

3.5.2.6.1 Functional description

This option leads to discard all modifications performed upon an item object associated to a theoretical box object in the Working area placing it back in the Reference area.

This operation is a critical operation. All the new structures created as a part of the definition of the item since the last validation will be physically deleted. A lot of work can be thrown out if an item is discarded by mistake. Discarded items are not archived.

The operation is initiated by clicking the  icon (Discard item object) upon the desired row from the list of theoretical item objects.

3.5.2.6.2 Example

This operation requires a confirmation from the user. The page that appears displays the common message to all confirmation requests.

3.5.2.6.3 Cautions and warnings

- This operation is only available for those theoretical item objects belonging to the Working area.
- In case the theoretical item object was created in the Working area - this is, there is no reference of the item object in the Reference area - the discard operation will lead to remove it from the database schema without archiving.

3.5.2.6.4 Probable errors and possible causes

NA

3.5.3 Real box object management

This section provides the description of the operations related to real model, subsystem and element objects.

The operations have the same behaviour for all real box objects. What differs is the content of the list that appear when accessing each type of real box object. The specific information that defines each box can be found in ANNEX A.

The actions associated to real box objects are a subset of those presented for the theoretical box objects, each of them with the exact function. The only missing operation is the Instantiate operation.

3.5.3.1 Instantiate real box object

3.5.3.1.1 Functional description

This operation enables the creation of a new real box object derived from a theoretical box object. It can be performed by different user roles, depending on the type of real box object to create:

Theoretical box object	User role
Element	Manager and Equipment fabricator
Subsystem	Manager and Subsystem fabricator
Model	Manager and AIT

There is ample information associated to each real box object; all of the data fields do not need to be entered at creation time. The data fields for the definition of each real box object shall be described further ahead in ANNEX A.

3.5.3.1.2 Example

The operation is initiated by clicking on the  icon associated to the theoretical box object from where an instantiation is required. A simple form shall be presented to the user requesting only the real object number, which needs to be different from the theoretical value. The operation shall be completed as soon as the Create button is pressed, which leads to save and commit the new information in the database. From this point, the real object can be accessed from the corresponding real object menu at the left frame, so if some information needs to be changed, it must be done using the Edit function.

The example below shows the form that is needed to instantiate a real element.

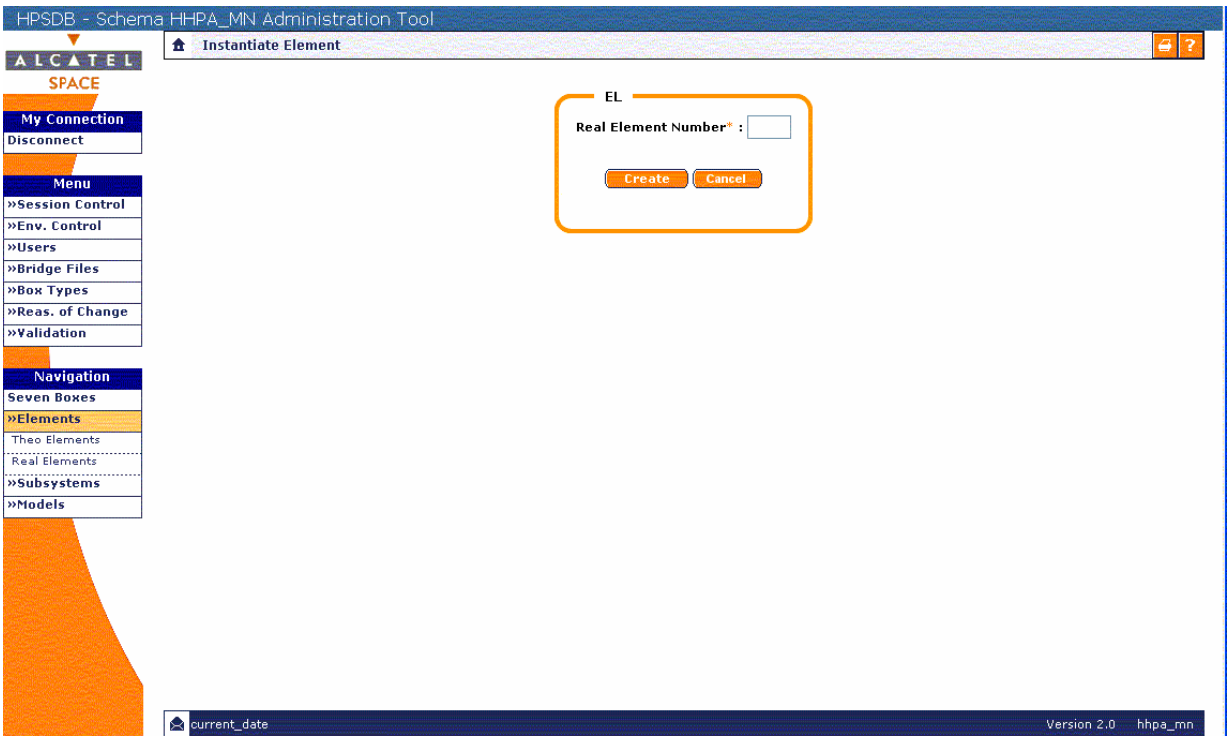


Figure 3-56: Real element instantiation page

3.5.3.1.3 Cautions and warnings

- When instantiating a real element, initially it shall include the list of theoretical items associated to the theoretical element from which it is derived.
- For subsystems, apart from the list of theoretical items, it also inherits the list of theoretical elements the theoretical subsystem is composed of.
- For models, apart from the list of theoretical items, it also inherits the list of theoretical subsystems the theoretical model is composed of.

3.5.3.1.4 Probable errors and possible causes

Error	Possible cause
Empty field	Some of the mandatory fields have been left blank.
Real box object already exists	The real box object already exists in the schema. In case of elements a unique box type/element number couple must be re-entered. For subsystems and models, a non-created box type must be selected.

3.5.3.2 Edit real box object

3.5.3.2.1 Functional description

The edition of an existing real box object allows the manger and the corresponding user roles to modify the data allocated to the object, with the exception of those fields that identify and define the object in the rest of the system, and therefore cannot be changed. Examples are the real box name and the theoretical box from which it is derived.

3.5.3.2.2 Example 1: Real element

The figure below shows an example of the page that is displayed when the  icon (Edit) is clicked upon one of the real elements of the list. Notice that the Theoretical element the real element is derived from appears as part of the Definition granule in read-mode. This is the major difference with respect to the Theoretical element edition page. The Update and Reset buttons of the page indicate to perform the modification (i.e. database change + commit) or to keep the data fields as they were before respectively. The Back to List button leads to discard the edition returning to the list of real elements.

It is to be noted that the data fields in the example are in write mode; this means that the theoretical element currently belongs to the Working area, and therefore, the user may perform the modification. Otherwise, when the real element is in the Reference area, the information would be displayed in read mode. If a modification is needed a checkout operation is required first. This is done clicking on the  option.

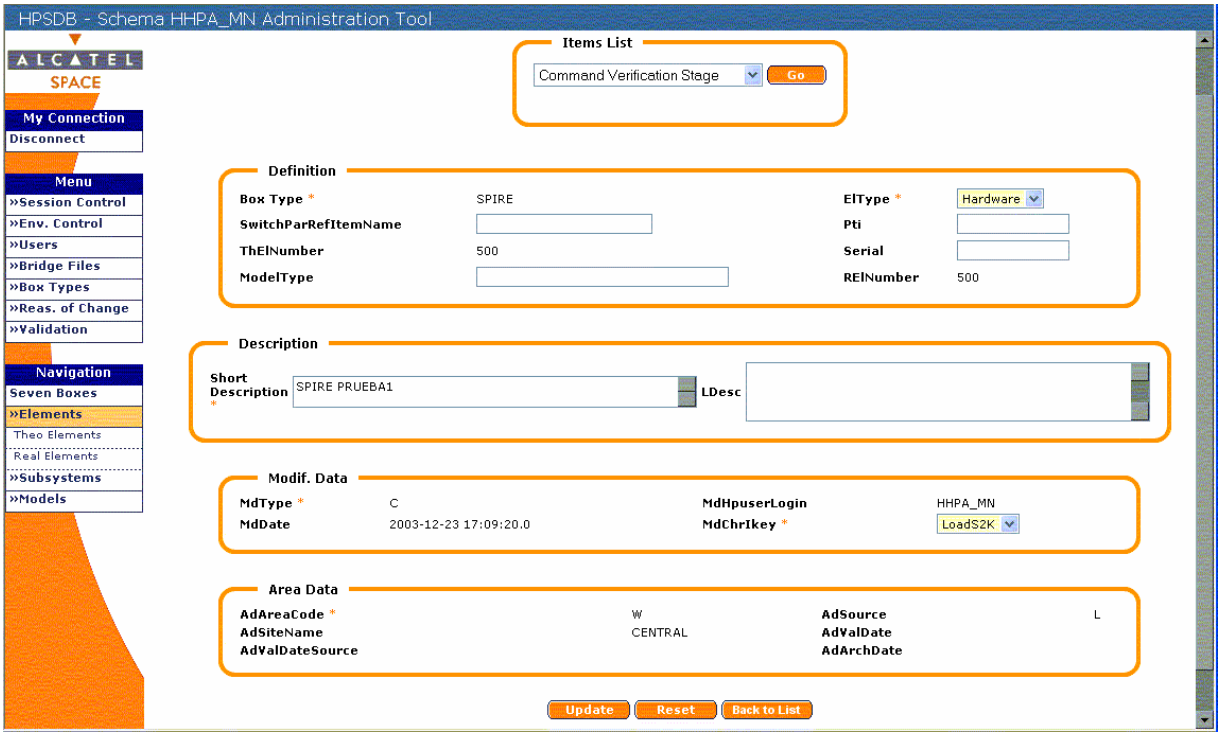


Figure 3-57: Real element edition page

3.5.3.2.3 Example 2: Real subsystem

The figure below shows the different groups of information contained in a real subsystem. As for the real element edition, the Theoretical subsystem the real subsystem is derived from appears at the top of the page in read-mode.

As for the theoretical case, a real subsystem normally comprises a list of elements. Therefore the mechanisms to manage the different elements composing the subsystem are included here. Access to the elements is given through the Elements button within the Items List panel. The activation provokes the system to present a page similar to the one shown for the theoretical subsystem in Figure 3-49. However, the major difference with theoretical subsystems relies in the fact that real subsystems may contain either real or theoretical elements.

The Items List panel includes also the definition of the items associated to the subsystem.

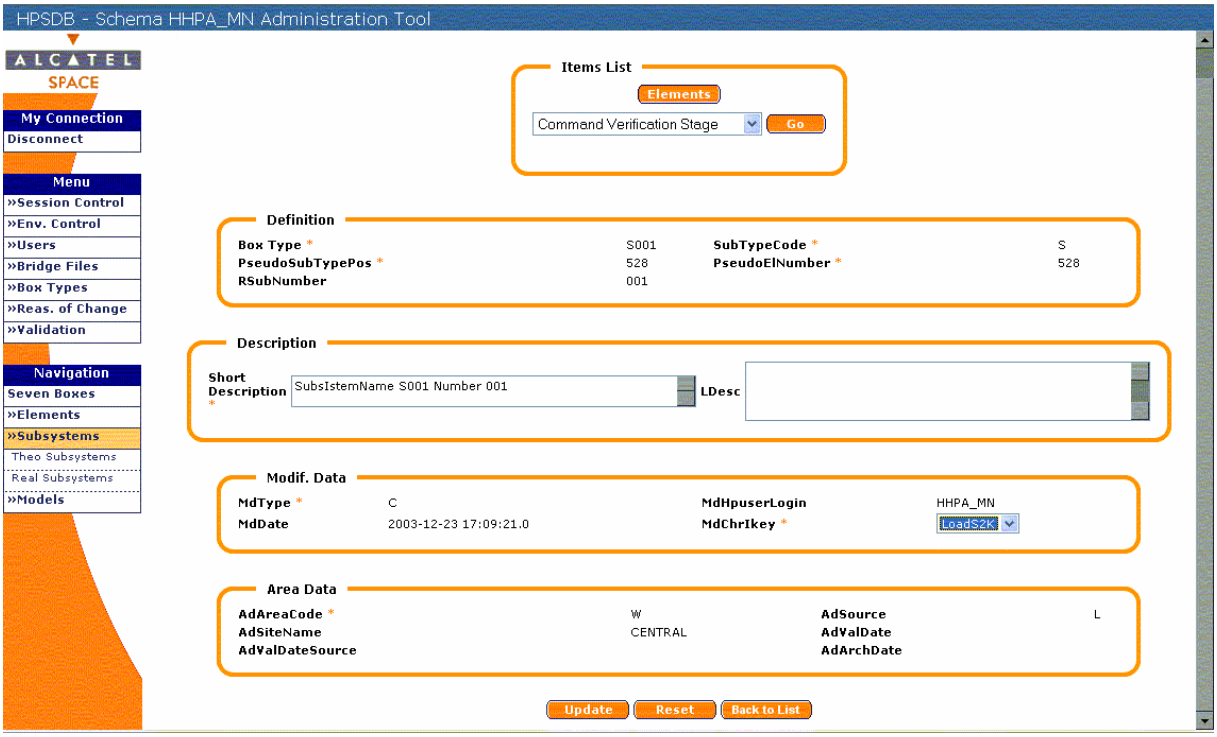


Figure 3-58: Real subsystem edition page

3.5.3.2.4 Example 3: Real model

Similarly to subsystems, the edition of a real model covers not only the basic information of the model but also the list of items and subsystems it is composed of.

The figure below shows the model edition main page where apart from the general data, the user can edit the lists of subsystems and items associated to the model. As for the previous cases, the Theoretical model the real model is derived from appears at the top of the page in read-mode.

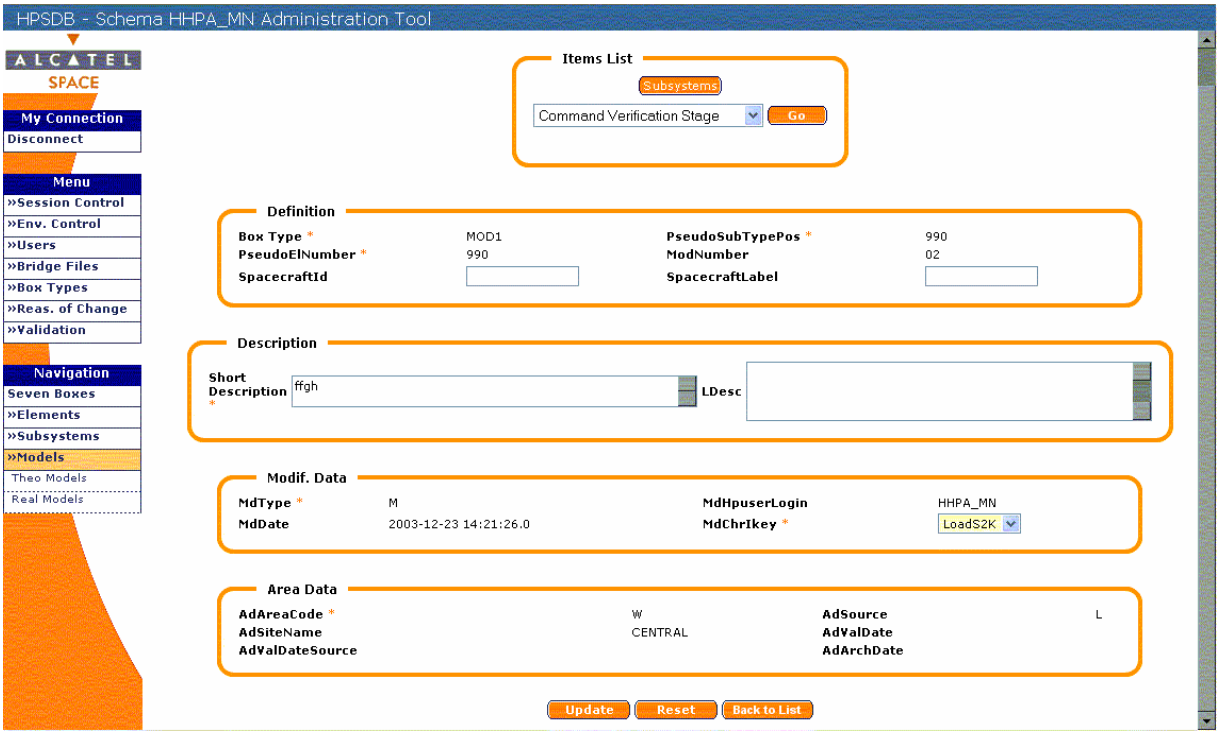


Figure 3-59: Real model edition page

Whenever the user wishes to change the subsystem composition of the model, the Subsystems button from the Items List panel should be pressed. A page similar to the one shown for the theoretical model in Figure 3-51 is presented listing the current list of subsystems belonging to the model is displayed. As for the subsystems, the constituents of this list can be either real or theoretical subsystems.

3.5.3.2.5 Cautions and warnings

- As soon as any of the fields of a granule is changed, the inheritance with the theoretical box object is cut for that granule.
- For subsystems, as soon as the item or element lists are changed, the inheritance from the theoretical model is cut.
- For models, as soon as the item or subsystem lists are changed, the inheritance from the theoretical model is cut.

3.5.3.2.6 Probable errors and possible causes

NA

3.5.3.3 Delete real box object

3.5.3.3.1 Functional description

This operation deletes an existing real box from the manager's schema.

3.5.3.3.2 Example

The delete box object operation is initiated by clicking the  icon (Delete box object) upon the desired row from the list of real box objects. The system presents a confirmation message before performing the operation. A confirmation shall lead to delete the real box object from the database and perform a commit.

3.5.3.3.3 Cautions and warnings

- The delete option is only applicable to those real box objects belonging to the Reference area.
- The real box object could be part of an upper level box object; this is a real element may be part of a subsystem.
- The real box object is not physically deleted, but marked as deleted and placed in the Working area. The deletion is completed in the validation process, where each box object marked as deleted must be selected for validation.

3.5.3.3.4 Probable errors and possible causes

Error	Possible cause
Real box object is referenced	One or several real boxes from an upper level reference the real box object (subsystem or model).

3.5.3.4 Checkout real box object

3.5.3.4.1 Functional description

This operation transfers an existing real box object from the Reference area to the Working area.

The operation is initiated by clicking the  icon (Checkout box object) upon the desired real box object from the corresponding list. As a result it should be noticed that the real box object is placed in the Working area (W in the Area Code field) and has the corresponding operations available.

3.5.3.4.2 Example

NA

3.5.3.4.3 Cautions and warnings

- There can be only one local copy of a box object in the Working area. It is not possible to make a checkout more than once.

3.5.3.4.4 Probable errors and possible causes

Error	Possible cause
Local box object copy in the Working area	The box object has already been checked out.

3.5.3.5 Generate bridge files from a real box object

Please refer to section 3.4.5.2.

3.5.3.6 Discard real box object

3.5.3.6.1 Functional description

This option leads to discard all modifications performed upon the real box object in the Working area placing it back in the Reference area.

The operation is initiated by clicking the  icon (Discard box object) upon the desired row from the list of real box objects.

This operation is a critical operation. All the new items created in the box to discard since the last validation will be physically deleted. A lot of work can be thrown out if a box is discarded by mistake. Discarded boxes are not archived.

3.5.3.6.2 Example

NA

3.5.3.6.3 Cautions and warnings

- This operation is only available for those real box objects belonging to the Working area.
- In case the real box object was created in the Working area - this is, there is no Reference of the box object in the Reference area - the discard operation will lead to remove it and all the attached items from the database schema.
- If the box is new created, i.e. no copy exists in the Reference area, all the information will be lost. The box and all the attached items will be physically removed without archiving.

3.5.3.6.4 Probable errors and possible causes

NA

3.5.4 Real item object management

This section describes the set of operations relative to the items associated to real item objects.

The operations have the same behaviour for all items. What differs is the contents of the lists that appear when accessing each type of item. The specific information that defines each item can be found in ANNEX B.

The actions associated to real items are presented below. They include new functions referred to the Reset operations on both sides. Besides, the only missing operation with respect to theoretical items is the Instantiate operation.

 Edit	Modify or visualise the information of the real item object. The difference resides on whether the item object belongs to the Working or Reference areas respectively.
 Checkout	Checkout the real item object from the Reference area to the Working area. Thus, the item object can be modified. This option is only applicable to item objects belonging to the Reference area.

	Discard	This option leads to discard the edition that has been carried out upon the real item object. This option is only applicable to items belonging to the Working area.
	Delete	Delete the real item object. This option is only applicable to item objects belonging to the Reference area.
	Reset theoretical item	Reset the theoretical item from where the real item is derived with the contents of the real item data.
	Reset real item	Reset the real item with the contents of the parent theoretical item data.
	Select for validation	A click on this editable field causes the item object to be selected for validation, this is, it is added to the validation basket. Obviously, this field only appear for those items residing in the Working area.

3.5.4.1 Edit real item object

3.5.4.1.1 Functional description

The edition of an existing item object allows the user to modify the data allocated to the object, with the exception of those fields that identify the object in the rest of the system, and therefore cannot be changed. Typical examples are the item name and the theoretical item it is derived from.

3.5.4.1.2 Example

The figure below shows an example of the page that is displayed when the  icon (Edit item) is clicked upon the desired item from the corresponding list.

It is to be noted that two different pages are presented depending on the area where the item resides. In case the item belongs to the Reference area, the data shall be presented in read-only mode. On the other hand, whenever the item is placed in the Working area, the page shown in Figure 3-54 with the data fields filled shall appear so that user can modify the information as needed. In addition, two buttons are available: Update and Reset. The former indicates to perform the modification (i.e. database change + commit), whereas the latter keeps the data fields as they were before the edition operation was invoked.

As can be observed the figure represents the case where the item is placed in the Reference area meaning that the edition is not permitted. If a modification is needed a checkout operation is required first. This is done clicking on the  option.

3.5.4.1.3 Cautions and warnings

- The mandatory fields are marked with the * character.

3.5.4.1.4 Probable errors and possible causes

Error	Possible cause

Error	Possible cause
Empty field	Some of the mandatory fields have been left blank.
Item object already exists	The item object already exists.
Bad NMCVT	The item name does not comply the NMCVT.

3.5.4.2 Delete real item object

3.5.4.2.1 Functional description

This operation deletes an existing real element from the manager's schema.

3.5.4.2.2 Example

The delete box object operation is initiated by clicking the  icon (Delete item object) upon the desired row from the list of item objects. The system presents a confirmation page before performing the operation. A confirmation shall lead to delete the real item object from the database and perform a commit.

3.5.4.2.3 Cautions and warnings

- The delete option is only applicable to item objects belonging to the Reference area.
- The real item object is not physically deleted, but marked as deleted and placed in the Working area. The deletion of the real item object is completed in the validation process, where each item object marked as deleted must be selected for validation.

3.5.4.2.4 Probable errors and possible causes

Error	Possible cause
Real item referenced	The item to be deleted is referenced one or more times in the same real box objects. The item to be deleted is referenced in one or several other items (TC, TM, Displays, etc.). The item to be deleted is referenced in one or several box objects from upper level (subsystem or model).

3.5.4.3 Checkout real item object

3.5.4.3.1 Functional description

This operation copies an existing real item object from the Reference area to the Working area.

The operation is initiated by clicking the  icon (Checkout item object) upon the desired item object from the corresponding list. As a result it should be noticed that the item is placed in the Working area (W in the Area Code field) and has the corresponding operations available.

3.5.4.3.2 Example

NA

3.5.4.3.3 Cautions and warnings

- This operation is only applicable for item objects in the Reference area.
- There can be only one local copy of an item object in the Working area. It is not possible to make a checkout more than one time.

3.5.4.3.4 Probable errors and possible causes

Error	Possible cause
Local item object copy in the Working area	The item object has already been checked out.

3.5.4.4 Discard real item object

3.5.4.4.1 Functional description

This option leads to discard all modifications performed upon an item object from the Working area. Therefore, only the item exists only in the Reference area.

This operation is a critical operation. All the new structures created as a part of the edition of the item since the last validation will be physically deleted. A lot of work can be thrown out if an item is discarded by mistake. Discarded items are not archived.

The operation is initiated by clicking the  icon (Discard item object) upon the desired row from the list of real item objects.

3.5.4.4.2 Example

NA

3.5.4.4.3 Cautions and warnings

- This operation is only available for those real items belonging to the Working area.
- In case the real item object was created in the Working area - this is, there is no reference of the item object in the Reference area - the discard operation will lead to remove it from the database schema without archiving.

3.5.4.4.4 Probable errors and possible causes

NA

3.5.4.5 Reset theoretical item

3.5.4.5.1 Functional description

This operation implies to initialise the contents of a theoretical item from those of a real item. Logically, the real item should be an instantiation of the theoretical item to reset. Furthermore, in

order to ensure the consistency of the database, only items placed in the Reference area can be reset.

NOTE. The reset of a direct definition item is also permitted leading to the creation of a new theoretical item. As a consequence, the real item shall be derived from it.

3.5.4.5.2 Example

Resetting a theoretical item is launched by clicking the  icon upon the desired row from the list of real/direct definition item objects. The system presents a confirmation message before performing the operation. The confirmation shall lead to change the contents of the theoretical item associated to the real one into the database and perform a commit.

3.5.4.5.3 Cautions and warnings

- All references included in the real item must not contain direct definition items.
- Item or pseudo item list references must not contain direct definition items.
- The theoretical item to reset must be placed in the Reference area.
- As a result of a direct definition reset the associated theoretical box shall be edited. Therefore, this theoretical box object must be initially located in the Reference area.

3.5.4.5.4 Probable errors and possible causes

Error	Possible cause
Real item is not located in the Reference area.	The real item to reset the theoretical one should be located in the Reference area.
Theoretical item is not located in the Reference area.	The theoretical item to be reset should be located in the Reference area.
A referenced list contains a direct definition item.	The direct definition item contained in the item list does not exist at theoretical level.
A referenced pseudo item list contains a direct definition item.	The direct definition item contained in the pseudo item list does not exist at theoretical level.
Reference to a direct definition item.	The item contains a reference to a direct definition item.
Item or pseudo-item contained in list has not been found.	One of the items or pseudo-items contained in a list has not been found in the user's database view.
The theoretical box of the item to reset is not located in the Reference area.	A direct definition item is to be reset. This is not possible if the theoretical box of the item is not in the Reference area.

3.5.4.6 Reset real item

3.5.4.6.1 Functional description

This operation implies to initialise the contents of a real item with those from the theoretical item it is derived. Similarly to the theoretical case, for the sake of consistency, only real items located in the Reference area can be reset.

3.5.4.6.2 Example

Resetting a real item is launched by clicking the  icon upon the desired row from the list of real item objects. The system presents a confirmation message before performing the operation. The confirmation shall lead to change the contents of the theoretical item associated to the real one into the database and perform a commit.

3.5.4.6.3 Cautions and warnings

- The data contents of both theoretical and real items are identical except the item identifier.
- The real and theoretical items that participate in the operation must be located in the Reference area.

3.5.4.6.4 Probable errors and possible causes

Error	Possible cause
The item is not in Reference area	The theoretical real item to reset the real one should be located in the Reference area.
The item is being edited: *itemIkey*	Similar to above.

3.5.5 XML file ingestion

3.5.5.1 Functional description

The ingestion of XML input files introduces the contents of the files into the Working area of HPSDB database.

The process is activated from the "XML Input Files" option from the "Input Files" menu of the left frame.

Upon a successful load of the data contained in the files, the data can be accessed and manipulated through the HPSDB MMI, since changes have been automatically committed into the database.

The format of the XML files is provided in Annex E.

3.5.5.2 Cautions and warnings

- As the input files may contain data corresponding to different user roles, input files shall be successfully processed only if the data contained in them conform to the access rights assigned to the user.

3.5.5.3 Probable errors and possible causes

Error	Possible cause

Error	Possible cause
Invalid box object identifier: Length incorrect	The length of the box object identifier is not correct.
Invalid box object identifier. Incorrect box type.	Inexistent box type.
Empty or malformed reference.	A box or item object reference is not correct.
The theoretical box *thBoxName* does not exist. Cannot instantiate real box.	The theoretical box object associated to a real box does not exist.
The real box object that contains *itemType* (*itemName*) is corrupt.	The item type *itemType* is not valid or not correct for item identified as *itemName*.
The theoretical *itemType* for *item* does not exist in *boxType*. Cannot instantiate real item.	Error in the instantiation of a real item due to the fact that the item type for the item is not valid.
A box object previously inserted in database cannot be edited.	Input files containing the creation and edition of a box object are not allowed.
The referenced box object *boxId* does not exist.	A reference to an inexistent box object has been found.
Theoretical box object cannot contain references to real ones.	A theoretical box or item cannot contain references to real objects.

3.5.6 Printing facility

This option allows the user to print the contents of objects to ASCII files. The format of the files is the same as the one used for the file ingestion.

This facility shall be available to each box or item object where the  icon (Print object) is present in the set of actions that appear when visualising the list of item or box objects.

The system shall present a file dialogue box indicating the user to select the target directory where the output file shall be placed as soon it has been generated.

3.5.7 TM parameter and TC items verification

3.5.7.1 Functional description

This function deals with the ability to attach the verification data to telemetry parameter and telecommand items obtained as an output of a test phase. The items must be part of real subsystems and models.

The operation can be run in two modes:

- Manually, where the verification data corresponding to an individual item is added or updated via the MMI. Thus, the applicable real items shall have a TBD option where the user can set the verification data for the item.

– Automatically, where an input file collecting the verification data of on or more items for a real subsystem or model object are processed. The format of these files is provided in ANNEX F.

It is important to mention that contrary to the normal behaviour of the data updates in HPSDB, the changes of the verification data are made directly into the reference area. This means that the information is left out from the validation process.

3.5.7.2 Example

TBD

3.5.7.3 Cautions and warnings

- Only items that are TM parameters or TC shall be processed from the files. For the manual operation, the corresponding icon shall be only available to the valid items.
- The items included in a verification file belong to the same box object.
- All items included in a file shall be processed. The operation returns a message per item indicating the result.
- The modification of some data of the items can produce the verification data to be reset. Thus, for a TM parameter, the verification data shall be reset when:
  - The parameter is modified
  - Any curve referenced in the parameter is changed
  - A TM packet SCOS archiving and/or a TM structure where the parameter occurs is modified
- For a TC item, the verification data shall be reset when:
  - The telecommand is modified
  - Any telecommand structure referenced inside the telecommnad is modified
  - Any curve referenced in a parameter referenced inside the telecommand is changed

3.5.7.4 Probable errors and possible causes

Error	Possible cause
Real item *itemNMCVTName* does not exist in the reference area.	The item does not exist in the reference area. Make sure the item belongs to the selected box object from where the verification file is processed. *This error shall only appear when processing verification files (automatic mode).*
*** Wrong date in file for item itemNMCVTName	Test date cannot be parsed. It must have the format given in ANNEX F. *This error shall only appear when processing verification files (automatic mode).*

Error	Possible cause
Verification date is not after the last verification date	The test date must be greater than the last verification date given for the item.

3.5.8 Real element ON/OFF status

3.5.8.1 Functional description

This function indicates the time periods that a given real element has been switched on. As in the previous case, there are two different ways to provide the needed information:

- Manually, through a dedicated form of the HPSDB MMI, where the user indicates ON activity period of the real element.
- Automatically, where an input file collecting the ON periods of a set of real elements is given. The format of these files is provided in ANNEX G.

It is important to mention that contrary to the normal behaviour of the data updates in HPSDB, the updates of ON/OFF status are made directly into the reference area. This means that the information is left out from the validation process.

3.5.8.2 Example

Manual Operation

The manual operation to establish an ON period for the real element is initiated from the edition of the real element, as depicted in Figure 3-60. On top of the items list, the "ON/OFF switchings" button takes the user to a new page listing all the ON periods set for the real element, and an option to set a new period (by means of the "New" button). This is shown in Figure 3-61.

Clicking the "New" button implies the system to show a form where the user must enter the ON period, by fixing two values:

- the ON date, i.e. the date and time the real element was switched on, and
- the OFF date, the date and time the real element was turned off.

The page representing these data is presented in Figure 3-62. It is important to mention that the OFF date must be greater than the ON date, and that the new period must not overlap with any other existing ON period for that real element.

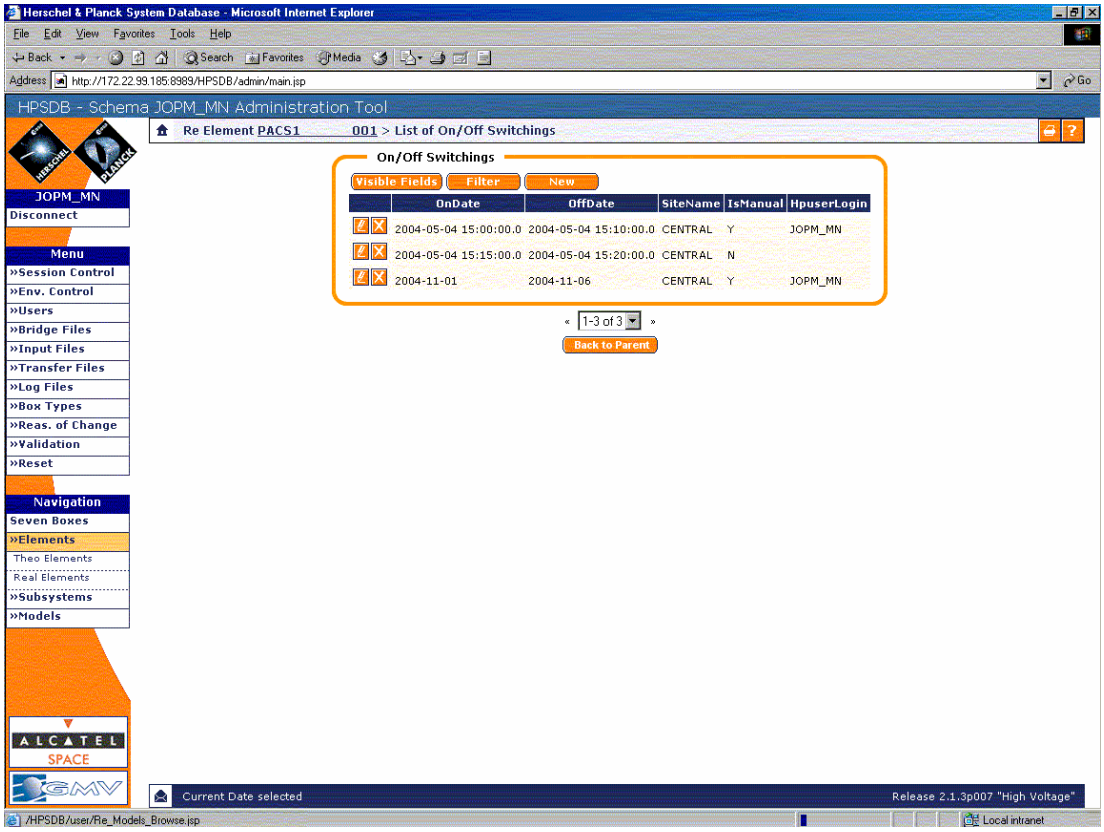


Figure 3-60: List of real element ON period

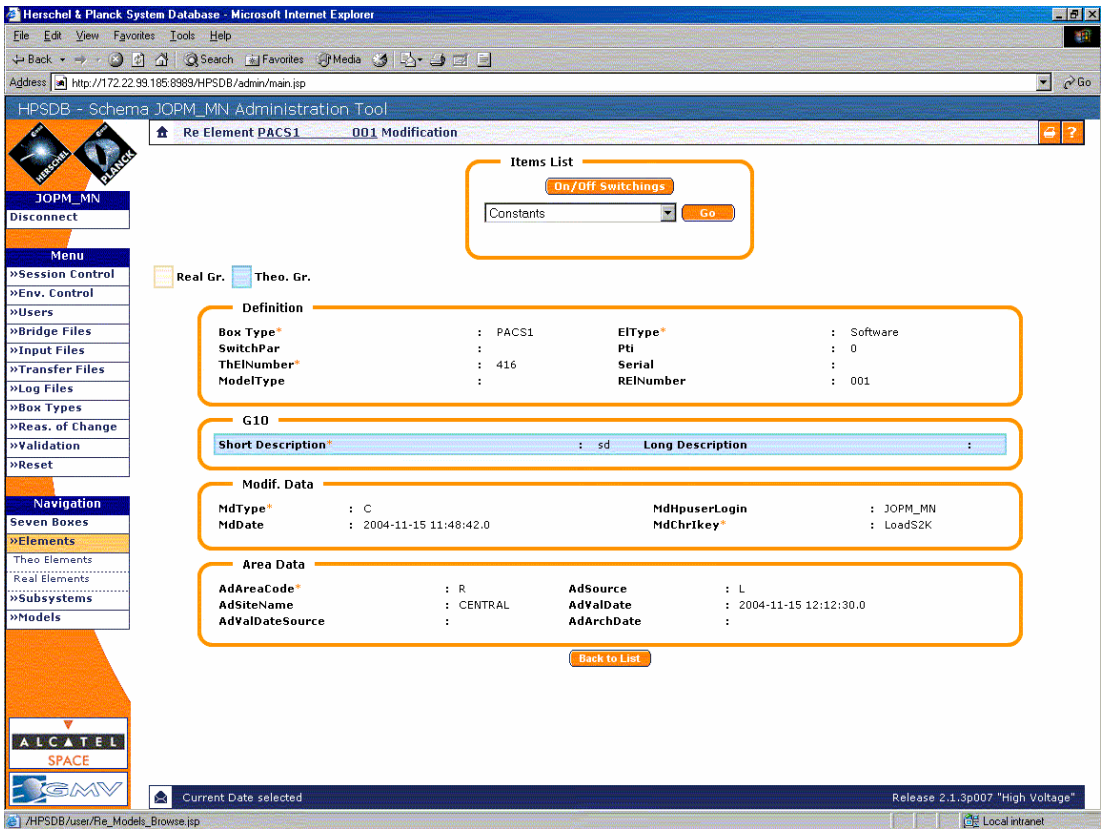


Figure 3-61: Manual ON/OFF switching (1): initiation

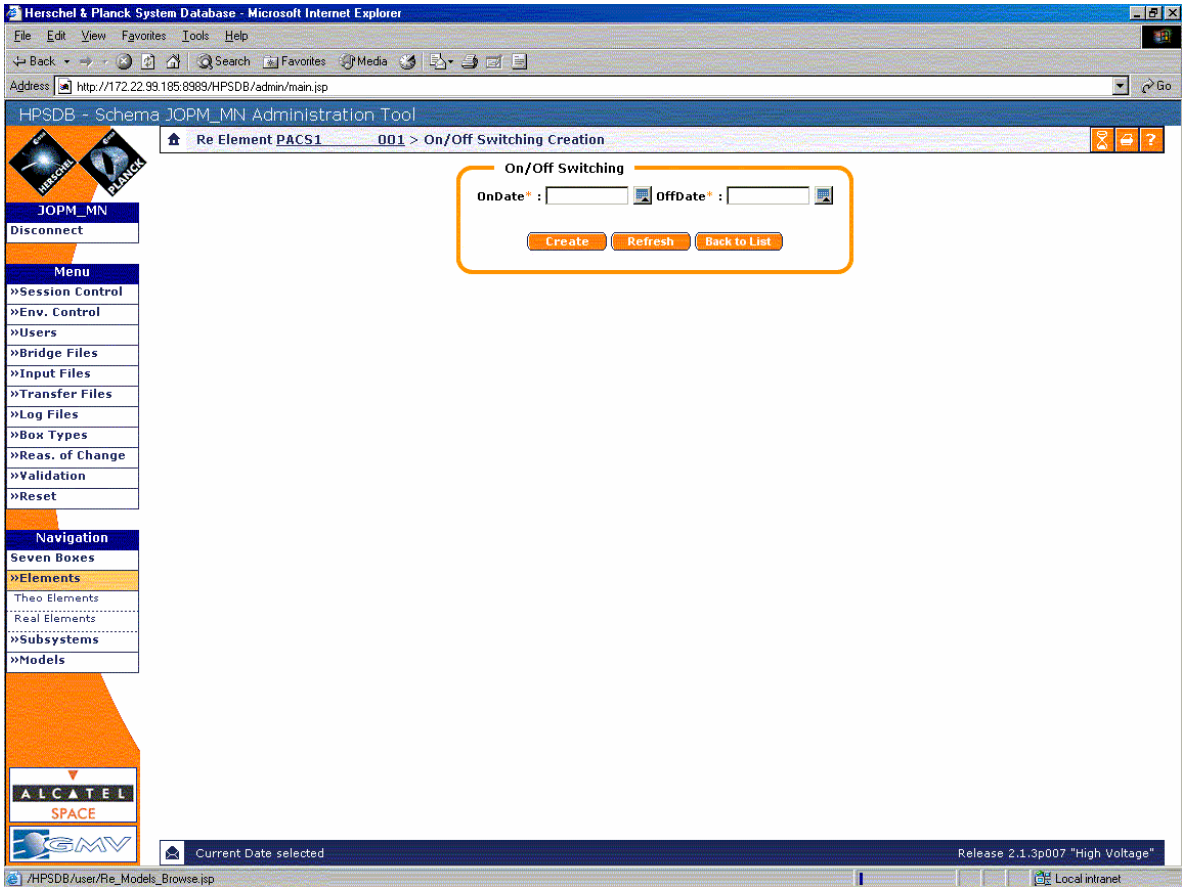


Figure 3-62: Manual ON/OFF switching (2): creating a new ON period

Automatic operation

The automatic operation refers to the capability to process input files containing ON periods for different elements. Therefore, as the operation is not associated to any real element in particular, it is activated from the "On/Off Files" option from the "Input Files" menu of the left frame. This shall lead to a specific form where the system request the user to enter the standard information when processing input files, such as the file generation date, creator, version and so on.

Upon termination of the process, the system shall inform the user about the result of each ON period (each line of the file), as depicted in Figure 3-64. **It is to be noticed that the information shall be stored and committed into the database only when the complete file has been successfully processed.** Thus, the data can be accessed by means of the ON period list for each particular element, as shown previously in the manual operation.

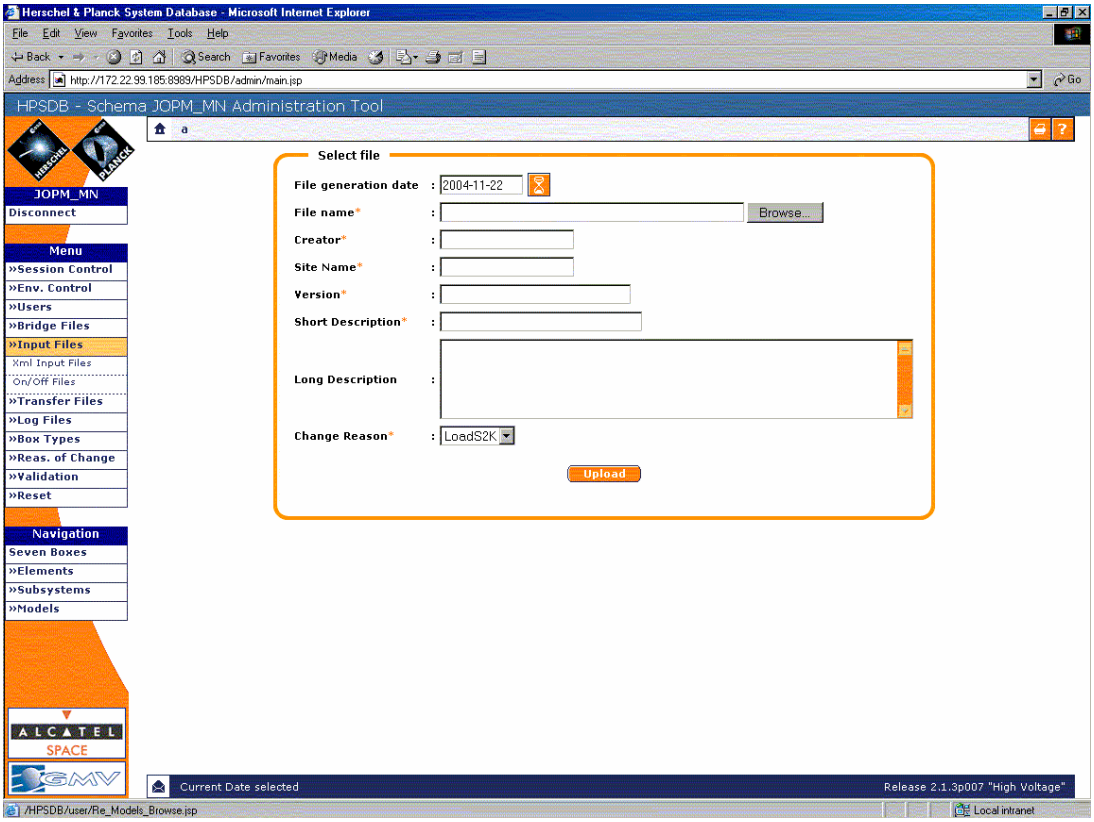


Figure 3-63: Automatic processing of ON periods for real elements

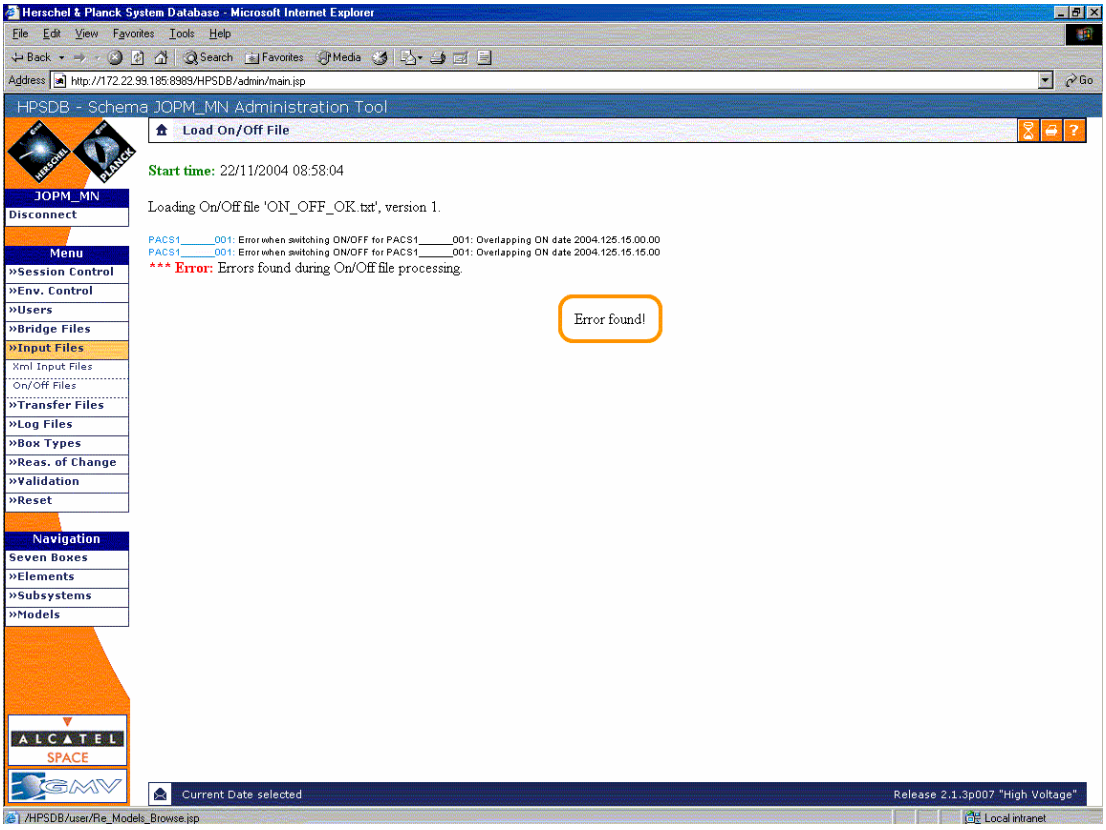


Figure 3-64: Real elements ON period file processing results

3.5.8.3 Cautions and warnings

- All lines of the file shall be processed no matter of the result. The operation returns a message per real element indicating the result.

3.5.8.4 Probable errors and possible causes

Error	Possible cause
Real element *boxNMCVTName* does not exist in the reference area.	The real element does not exist in the reference area. *This error shall only appear when processing input files (automatic mode).*
Overlapping ON date *OnDate*	The ON date is in conflict with another ON activity period.
Overlapping OFF date *OffDate*	The OFF date is in conflict with another ON activity period.
*** Wrong ON and/or OFF date fields for real element *boxNMCVTName*	The ON and/or OFF dates cannot be parsed. They must have the format given in ANNEX G. *This error shall only appear when processing verification files (automatic mode).*

3.5.9 Logical item object management

This section describes the set of operations relative to the logical instantiation applicable to both theoretical and direct definition items.

The operations have the same behaviour for all items. What differs is the contents of the lists that appear when accessing each type of item. The specific information that defines each item can be found in ANNEX B.

Figure 3-65 shows an example of an item that can be logically instantiated (first item from the list). The facts that evidence this capacity are two: the  icon (Instantiate logically) that appears in the operation list, and the bold appearance of the item's information displayed in the list. Please notice that only theoretical and direct definition items are susceptible to be logically instantiated. The HPSDB MMI takes care of applying this filter upon the list of available items.

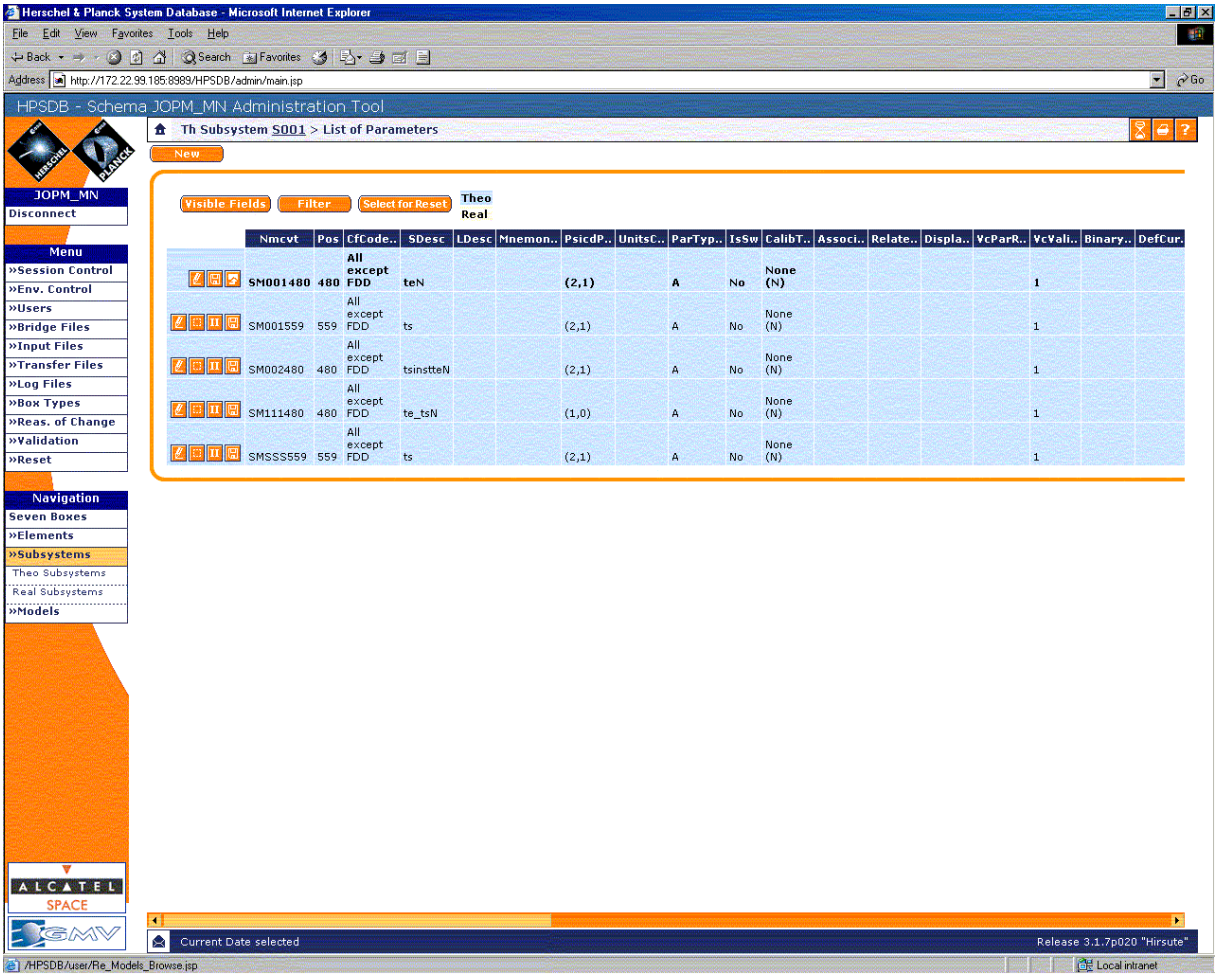


Figure 3-65: Item list including an item that can be logically instantiated

As soon as the item has been logically instantiated the aspect presented by the item within the list is depicted in Figure 3-66. The possible actions applicable to the item are listed below.

	Edit	Modify or visualise the information of the logically instantiated item object. The difference resides on whether the item object belongs to the Working or Reference area respectively.
	Discard	This option leads to discard the edition that has been carried out upon the real item object. This option is only applicable to items belonging to the Working area.
	Delete	Delete the logically instantiated item object. This option is only applicable to item objects belonging to the Reference area.
TBD	Reset item	Reset all granules of the item with corresponding lower level box object granule.
	Select for validation	A click on this editable field causes the logically instantiated item object to be selected for validation, this is, it is added to the validation basket. Obviously, this field only appear for those items residing in the Working area.

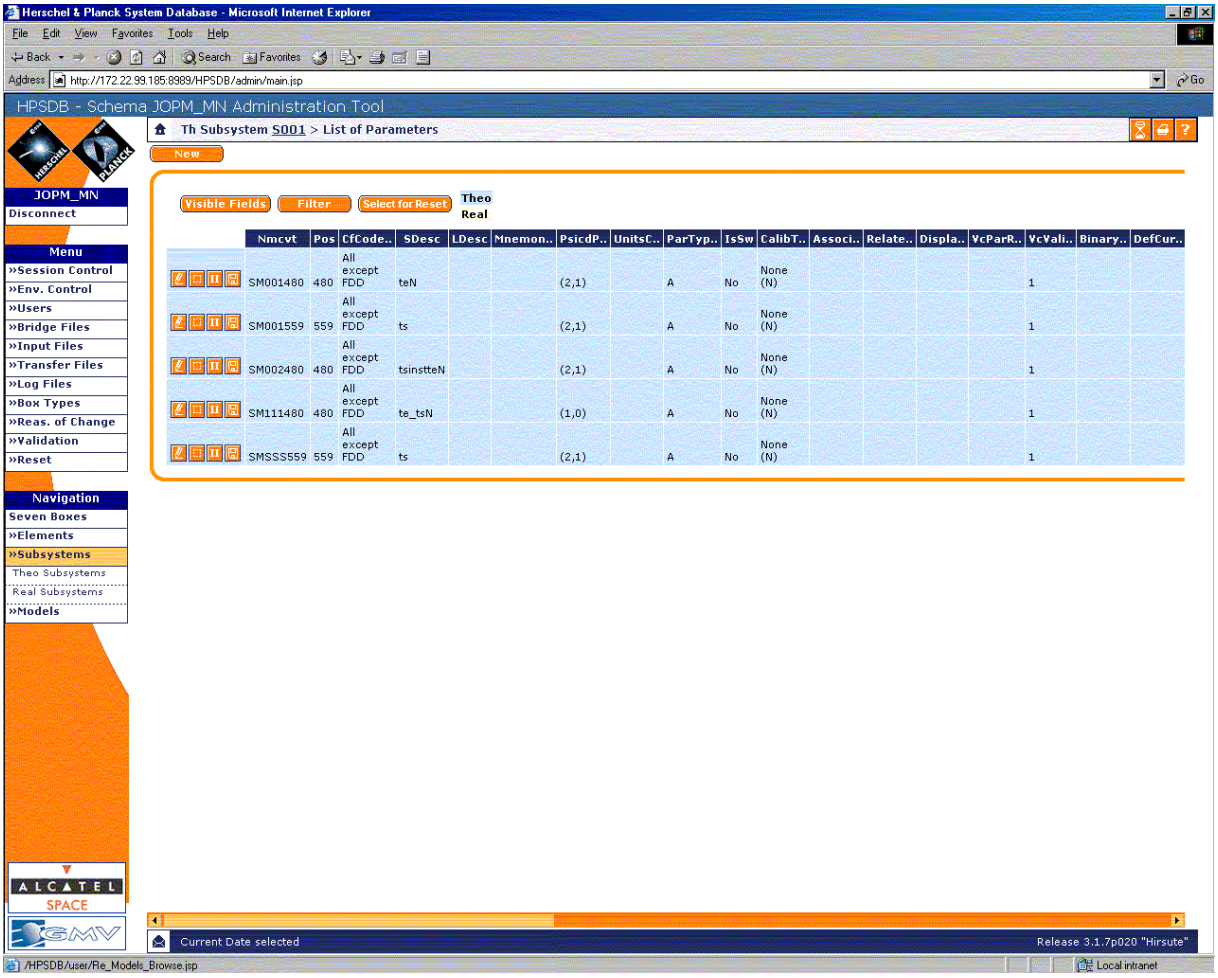


Figure 3-66: Item list after an item's logical instantiation

3.5.9.1 Edit a logically instantiated item

The edition of a logically instantiated item allows the user to overwrite the data of an item belonging to a low level box item once the box object has been allocated to an upper level box.

The behaviour and MMI presentation is very similar to the edition of a real item. Please refer to section 3.5.4.1 for further information.

3.5.9.2 Delete a logically instantiated item

The deletion of a logically instantiated item permits to remove the item from the high level box from where the item has been logically instantiated.

The behaviour and MMI presentation is very similar to the deletion of a real item. Please refer to section 3.5.4.2 for further information.

3.5.9.3 Discard a logically instantiated item

This option leads to discard all modifications performed on the Working area upon an item object that has been previously logically instantiated.

The behaviour and MMI presentation is very similar to discard a real item. Please refer to section 3.5.4.4 for further information.

3.5.9.4 Reset a logically instantiated item

3.5.9.4.1 Functional description

This operation implies to initialise the contents of a real item with those from the theoretical item it is derived. Similarly to the theoretical case, for the sake of consistency, only real items located in the Reference area can be reset.

3.5.9.4.2 Example

Resetting a logically instantiated item is launched by clicking the TBD icon upon the desired item object. The system presents a confirmation message before performing the operation. The confirmation shall lead to change the contents of the item with the ones of the corresponding item at the most immediate lower level.

3.5.9.4.3 Cautions and warnings

- The item to reset and the lower level item that participate in the operation must be located in the Reference area.
- The data contents of both items are identical except the item identifier.

3.5.9.4.4 Probable errors and possible causes

Error	Possible cause
LOGICAL RESET not allowed: The real item must be a direct definition.	The item must be theoretical or a direct definition.
The item is not in the Reference area	The logically instantiated item to reset should be located in the Reference area.
The item is being edited: *itemIkey*	Similar to above.

3.5.10 Reference Tool

3.5.10.1.1 Functional description

The reference tool allows to locate all references of a given box or item object in the database.

3.5.10.1.2 Example

The operation is initiated by clicking on the "Where is referenced" option from the "Reference Tool" left frame menu, which leads to the presentation of a new window where the user must specify the type of box or item to look for followed by its naming convention identifier according to the Naming Convention Specification, [AD.4.]. Once the item has been clearly identified and the "Find references" button is pressed all references shall be searched. It is to be highlighted that

the process may take long as the possible references may be all found almost anywhere and therefore the complete database must be scanned.

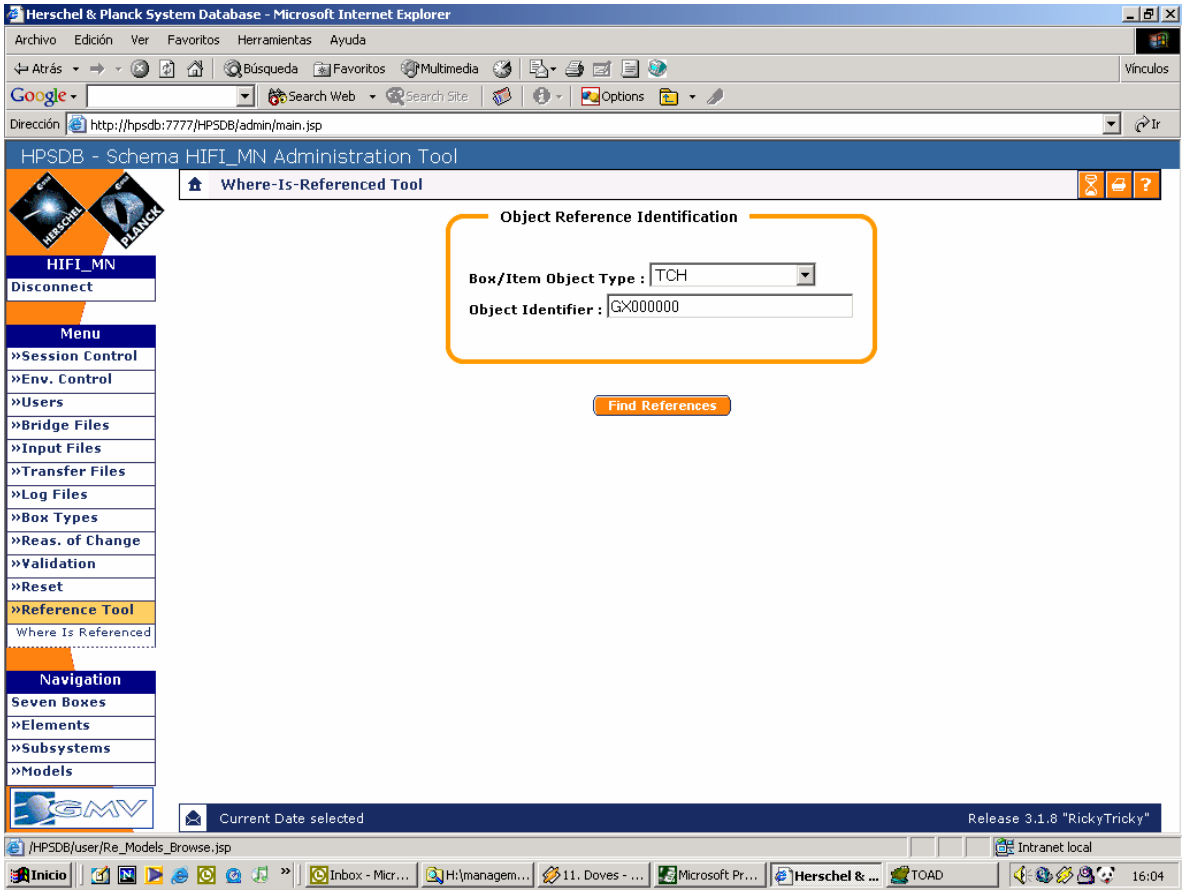


Figure 3-67: Inputs needed for the Reference tool

When the process finishes the results are presented in the screen indicating, apart from the start and end times the identification of the items where the input object is referenced. Figure 3-68 shows the results of the process for the inputs introduced in the previous steps. Please notice that in this case only item references exist in the database and therefore the information shown to the user is the box and item identifiers.

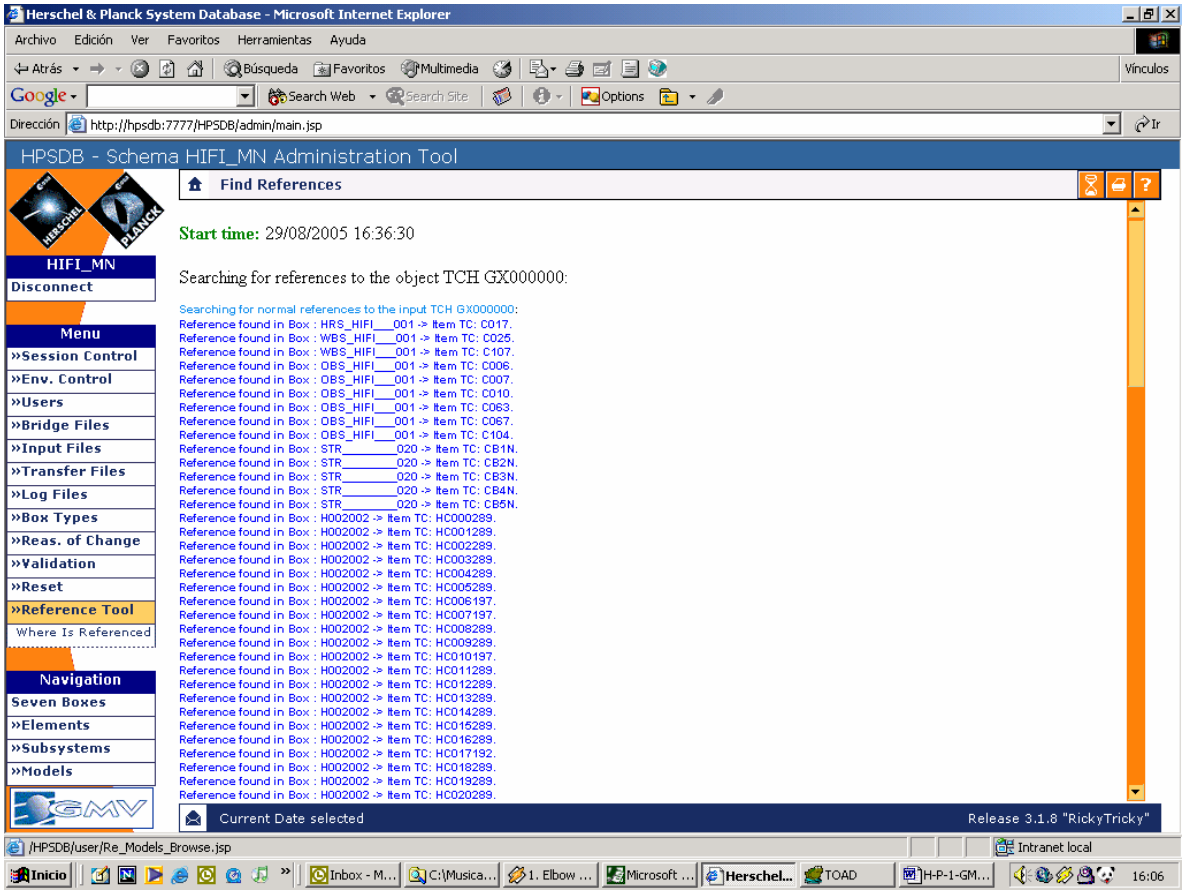


Figure 3-68: Results obtained after invoking the Reference tool

3.5.10.1.3 Probable errors and possible causes

NA.

ANNEX A BOX OBJECT DATA FIELD DESCRIPTIONS

To be prepared in accordance with ASP.

ANNEX B ITEM OBJECT DATA FIELD DESCRIPTIONS

To be prepared in accordance with ASP.

ANNEX C SOFTWARE PROBLEM REPORTING

Software problems shall be reported to GMV using SPR forms with the following information:

- Date
- Source
- Description
- Cause
- Status

ANNEX D LIST OF W2000 SERVICES

The following list displays the names of the Windows 2000 services needed for the correct behaviour of the HPSDB application:

Remote Access Connection Manager

Security Accounts Manager

Logical Disk Manager

IPsec Policy Agent

Protected Storage

Distributed Link Tracking (DLT) Client

DNS client

Print Spooler

Network Connections

Workstation

Computer Browser

Windows Management Instrumentation Driver Extensions

Windows Management Instrumentation (WMI)

Remote Procedure Call (RPC)

Removable Storage

Messenger

System Event Notification (SENS)

OracleMTSRecoveryService

OracleOraHome92Agent

OracleOraHome92TNSListener

OracleOraHomeIAS92EMWebsite

OracleOraHomeIAS92ProcessManager

OracleOraHomeIAS92WebCache

OracleOraHomeIAS92WebCacheAdmin

OracleServiceHPSDB

Plug and Play

Task Scheduler

Event Log

TCP/IP NetBIOS Helper Service

Remote Registry Service

RunAs Service

Server

COM+ Event System

ANNEX E XML INPUT FILE FORMAT

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSPY v5 rel. 2 U (http://www.xmlspy.com) by Rafael Andrés (GMV) -
->
<xs:schema xmlns:xdb="http://xmlns.oracle.com/xdb";
xmlns:xs="http://www.w3.org/2001/XMLSchema"; elementFormDefault="qualified"
attributeFormDefault="unqualified">
        <xs:element name="HPSDB">
                <xs:annotation>
                        <xs:documentation>HPSDB ingestion file
root</xs:documentation>
                </xs:annotation>
                <xs:complexType>
                        <xs:sequence>
                                <xs:element name="TC_GN" type="TC_GNType"
minOccurs="0" maxOccurs="unbounded"/>
                                <xs:element name="CVS_GN" type="CVS_GNType"
minOccurs="0" maxOccurs="unbounded"/>
                                <xs:element name="CURVE_GN" type="CURVE_GNType"
minOccurs="0" maxOccurs="unbounded"/>
                                <xs:element name="TM_GN" type="TM_GNType"
minOccurs="0" maxOccurs="unbounded"/>
                                <xs:element name="SCOS_TM_GN"
type="SCOS_TM_GNType" minOccurs="0" maxOccurs="unbounded"/>
                                <xs:element name="PAR_GN" type="PAR_GNType"
minOccurs="0" maxOccurs="unbounded"/>
                                <xs:element name="DISPLAY_GN"
type="DISPLAY_GNType" minOccurs="0" maxOccurs="unbounded"/>
                                <xs:element name="TC_STR_GN" type="TC_STR_GNType"
minOccurs="0" maxOccurs="unbounded"/>
                                <xs:element name="TM_STR_GN" type="TM_STR_GNType"
minOccurs="0" maxOccurs="unbounded"/>
                                <xs:element name="P_RANGE_SET_GN"
type="P_RANGE_SET_GNType" minOccurs="0" maxOccurs="unbounded"/>
                                <xs:element name="P_SET_GN" type="P_SET_GNType"
minOccurs="0" maxOccurs="unbounded"/>
                                <xs:element name="P_VAL_SET_GN"
type="P_VAL_SET_GNType" minOccurs="0" maxOccurs="unbounded"/>
                                <xs:element name="P_GROUP_GN"
type="P_GROUP_GNType" minOccurs="0" maxOccurs="unbounded"/>
                                <xs:element name="SCOS_TM_GROUP_GN"
type="SCOS_TM_GROUP_GNType" minOccurs="0" maxOccurs="unbounded"/>
                                <xs:element name="TM_PSICD_TEMPL_GN"
type="TM_PSICD_TEMPL_GNType" minOccurs="0" maxOccurs="unbounded"/>
                                <xs:element name="TM_STD_TEMPL_GN"
type="TM_STD_TEMPL_GNType" minOccurs="0" maxOccurs="unbounded"/>
                                <xs:element name="TCH_GN" type="TCH_GNType"
minOccurs="0" maxOccurs="unbounded"/>
                                <xs:element name="EL_TH" type="EL_THType"
minOccurs="0" maxOccurs="unbounded">
                                        <xs:key name="PK_EL_CURVE_TH">
                                                <xs:selector
xpath=".//CURVE_TH"/>
                                                <xs:field xpath="@Id"/>
                                        </xs:key>
                                        <xs:key name="PK_EL_TM_TH">
                                                <xs:selector xpath=".//TM_TH"/>
                                                <xs:field xpath="@Id"/>
                                        </xs:key>
                                        <xs:key name="PK_EL_TC_TH">
                                                <xs:selector xpath=".//TC_TH"/>
                                                <xs:field xpath="@Id"/>
                                        </xs:key>
```

```
                                        <xs:key name="PK_EL_CVS_TH">
                                                <xs:selector xpath=".//CVS_TH"/>
                                                <xs:field xpath="@Id"/>
                                        </xs:key>
                                        <xs:key name="PK_EL_SCOS_TM_TH">
                                                <xs:selector
xpath=".//SCOS_TM_TH"/>
                                                <xs:field xpath="@Id"/>
                                        </xs:key>
                                        <xs:key name="PK_EL_PAR_TH">
                                                <xs:selector xpath=".//PAR_TH"/>
                                                <xs:field xpath="@Id"/>
                                        </xs:key>
                                        <xs:key name="PK_EL_DISPLAY_TH">
                                                <xs:selector
xpath=".//DISPLAY_TH"/>
                                                <xs:field xpath="@Id"/>
                                        </xs:key>
                                        <xs:key name="PK_EL_TC_STR_TH">
                                                <xs:selector
xpath=".//TC_STR_TH"/>
                                                <xs:field xpath="@Id"/>
                                        </xs:key>
                                        <xs:key name="PK_EL_TM_STR_TH">
                                                <xs:selector
xpath=".//TM_STR_TH"/>
                                                <xs:field xpath="@Id"/>
                                        </xs:key>
                                        <xs:key name="PK_EL_P_RANGE_SET_TH">
                                                <xs:selector
xpath=".//P_RANGE_SET_TH"/>
                                                <xs:field xpath="@Id"/>
                                        </xs:key>
                                        <xs:key name="PK_EL_P_SET_TH">
                                                <xs:selector
xpath=".//P_SET_TH"/>
                                                <xs:field xpath="@Id"/>
                                        </xs:key>
                                        <xs:key name="PK_EL_P_VAL_SET_TH">
                                                <xs:selector
xpath=".//P_VAL_SET_TH"/>
                                                <xs:field xpath="@Id"/>
                                        </xs:key>
                                        <xs:key name="PK_EL_P_GROUP_TH">
                                                <xs:selector
xpath=".//P_GROUP_TH"/>
                                                <xs:field xpath="@Id"/>
                                        </xs:key>
                                        <xs:key name="PK_EL_SCOS_TM_GROUP_TH">
                                                <xs:selector
xpath=".//SCOS_TM_GROUP_TH"/>
                                                <xs:field xpath="@Id"/>
                                        </xs:key>
                                        <xs:key name="PK_EL_TM_PSICD_TEMPL_TH">
                                                <xs:selector
xpath=".//TM_PSICD_TEMPL_TH"/>
                                                <xs:field xpath="@Id"/>
                                        </xs:key>
                                        <xs:key name="PK_EL_TM_STD_TEMPL_TH">
                                                <xs:selector
xpath=".//TM_STD_TEMPL_TH"/>
                                                <xs:field xpath="@Id"/>
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        <xs:attributeGroup name="PAR_REAtts">
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                <xs:attribute name="CfCode" type="xs:float" use="optional"/>
                <xs:attribute name="SDesc" use="optional"/>
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                <xs:attribute name="VcValidityValue" type="xs:float"
use="optional"/>
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use="optional"/>
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use="optional"/>
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                <xs:attribute name="FixedValue" use="optional"/>
                <xs:attribute name="RawRadix" use="optional"/>
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                <xs:attribute name="ParNature" use="optional"/>
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        </xs:attributeGroup>
        <xs:attributeGroup name="SCOS_TM_THAtts">
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                <xs:attribute name="CfCode" type="xs:float" use="required"/>
                <xs:attribute name="SDesc" use="required"/>
                <xs:attribute name="LDesc" use="optional"/>
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                <xs:attribute name="LDesc" use="optional"/>
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```

```
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        </xs:attributeGroup>
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                <xs:attribute name="LDesc" use="optional"/>
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                <xs:attribute name="IsStandAlone" use="required"/>
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                <xs:attribute name="RedundantApidCode" type="xs:float"
use="optional"/>
                <xs:attribute name="Mapid" type="xs:float" use="optional"/>
                <xs:attribute name="ServiceType" type="xs:float" use="optional"/>
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use="optional"/>
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                <xs:attribute name="ProgressAck" use="optional"/>
                <xs:attribute name="CompletionAck" use="optional"/>
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                <xs:attribute name="ComplementTcRef" use="optional"/>
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                <xs:attribute name="IsCritical" use="required"/>
                <xs:attribute name="Delay" use="optional"/>
                <xs:attribute name="DefPValSetRef" use="optional"/>
                <xs:attribute name="SendPrecondListIkey" type="xs:float"
use="optional"/>
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                <xs:attribute name="IlStage" use="optional"/>
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                <xs:attribute name="AccSwInitFlag" use="optional"/>
                <xs:attribute name="CdmuSwInitFlag" use="optional"/>
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                <xs:attribute name="LDesc" use="optional"/>
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use="optional"/>
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                <xs:attribute name="ServiceSubtype" type="xs:float"
use="optional"/>
                <xs:attribute name="AcceptanceAck" use="optional"/>
```

```
                <xs:attribute name="StartAck" use="optional"/>
                <xs:attribute name="ProgressAck" use="optional"/>
                <xs:attribute name="CompletionAck" use="optional"/>
                <xs:attribute name="RedundantTcRef" use="optional"/>
                <xs:attribute name="ComplementTcRef" use="optional"/>
                <xs:attribute name="TchRef" use="optional"/>
                <xs:attribute name="IsCritical" use="optional"/>
                <xs:attribute name="Delay" use="optional"/>
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use="optional"/>
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                <xs:attribute name="IsForbidden" use="optional"/>
                <xs:attribute name="AccSwInitFlag" use="optional"/>
                <xs:attribute name="CdmuSwInitFlag" use="optional"/>
                <xs:attribute name="VerifIkey" type="xs:float" use="optional"/>
        </xs:attributeGroup>
        <xs:attributeGroup name="TC_STR_THAtts">
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        </xs:attributeGroup>
        <xs:attributeGroup name="TM_THAtts">
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use="optional"/>
                <xs:attribute name="ApidCode" type="xs:float" use="optional"/>
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                <xs:attribute name="Pi2Val" type="xs:float" use="optional"/>
                <xs:attribute name="EventPacketGeneration" use="optional"/>
                <xs:attribute name="EventId" use="optional"/>
                <xs:attribute name="DfhSize" type="xs:float" use="optional"/>
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                <xs:attribute name="ScosTmRef" use="optional"/>
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use="optional"/>
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                <xs:attribute name="CfCode" type="xs:float" use="optional"/>
```

```
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use="optional"/>
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                <xs:attribute name="ScosTmRef" use="optional"/>
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                <xs:attribute name="VcValidityValue" type="xs:float"
use="optional"/>
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        <xs:attributeGroup name="TM_PSICD_TEMPL_THAtts">
                <xs:attribute name="Id" use="required"/>
                <xs:attribute name="CfCode" type="xs:float" use="required"/>
                <xs:attribute name="SDesc" use="required"/>
                <xs:attribute name="LDesc" use="optional"/>
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                <xs:attribute name="Pi1Wid" type="xs:float" use="optional"/>
                <xs:attribute name="Pi1Off" type="xs:float" use="optional"/>
                <xs:attribute name="Pi2Wid" type="xs:float" use="optional"/>
                <xs:attribute name="Pi2Off" type="xs:float" use="optional"/>
                <xs:attribute name="ProcListIkey" type="xs:float" use="optional"/>
        </xs:attributeGroup>
        <xs:attributeGroup name="TM_PSICD_TEMPL_REAtts">
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                <xs:attribute name="CfCode" type="xs:float" use="optional"/>
                <xs:attribute name="SDesc" use="optional"/>
                <xs:attribute name="LDesc" use="optional"/>
                <xs:attribute name="TmStdTemplRef" use="optional"/>
                <xs:attribute name="ServiceIkey" type="xs:float" use="optional"/>
                <xs:attribute name="Pi1Wid" type="xs:float" use="optional"/>
                <xs:attribute name="Pi1Off" type="xs:float" use="optional"/>
                <xs:attribute name="Pi2Wid" type="xs:float" use="optional"/>
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                <xs:attribute name="LDesc" use="optional"/>
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                <xs:attribute name="LDesc" use="optional"/>
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        <xs:attributeGroup name="TM_STR_THAtts">
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                <xs:attribute name="LDesc" use="optional"/>
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```

```
                <xs:attribute name="LDesc" use="optional"/>
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        <!-- Pseudo Items Attributes-->
        <xs:attributeGroup name="P_LIM_Atts">
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                <xs:attribute name="CfCode" type="xs:float" use="optional"/>
                <xs:attribute name="LimitType" use="optional"/>
                <xs:attribute name="VcParRef" use="optional"/>
                <xs:attribute name="VcValidityValue" type="xs:float"
use="optional"/>
                <xs:attribute name="HighLimitValue" use="optional"/>
                <xs:attribute name="LowLimitValue" use="optional"/>
                <xs:attribute name="StepLimitValue" use="optional"/>
        </xs:attributeGroup>
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                <xs:attribute name="VcValidityValue" type="xs:float"
use="optional"/>
                <xs:attribute name="CurveInternalId" type="xs:float"
use="optional"/>
        </xs:attributeGroup>
        <xs:attributeGroup name="P_DAUGHTER_Atts">
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                <xs:attribute name="Name" use="optional"/>
        </xs:attributeGroup>
        <xs:attributeGroup name="CVE_Atts">
                <xs:attribute name="ParRef" use="optional"/>
                <xs:attribute name="ValueInterp" use="optional"/>
                <xs:attribute name="CheckFlag" use="optional"/>
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                <xs:attribute name="ToleranceParValue" use="optional"/>
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                <xs:attribute name="Commutation" type="xs:float" use="optional"/>
                <xs:attribute name="ParRef" use="optional"/>
                <xs:attribute name="Format" use="optional"/>
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        <xs:attributeGroup name="SCR_D_STR_Atts">
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                <xs:attribute name="InvalidParMode" use="optional"/>
                <xs:attribute name="Commutation" type="xs:float" use="optional"/>
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                <xs:attribute name="ForeColour" use="optional"/>
                <xs:attribute name="ParRef" use="optional"/>
                <xs:attribute name="Format" use="optional"/>
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                <xs:attribute name="IsObidReference" use="optional"/>
                <xs:attribute name="Description" use="optional"/>
                <xs:attribute name="Width" type="xs:float" use="optional"/>
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                <xs:attribute name="OnNewLine" use="optional"/>
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        <xs:attributeGroup name="GRAPH_D_STR_Atts">
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                <xs:attribute name="ParPrintType" use="optional"/>
                <xs:attribute name="LineType" use="optional"/>
```

```
                <xs:attribute name="LineColour" use="optional"/>
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                <xs:attribute name="MaxValue" use="optional"/>
                <xs:attribute name="Symbol" use="optional"/>
                <xs:attribute name="ParRef" use="optional"/>
        </xs:attributeGroup>
        <xs:attributeGroup name="DISCR_POINT_Atts">
                <xs:attribute name="RawParValue" use="optional"/>
                <xs:attribute name="EngParValue" use="optional"/>
        </xs:attributeGroup>
        <xs:attributeGroup name="DIG_POINT_Atts">
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        <xs:attributeGroup name="TC_STR_DEF_Atts">
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                <xs:attribute name="StartBit" type="xs:float" use="optional"/>
                <xs:attribute name="CdfEllen" type="xs:float" use="optional"/>
                <xs:attribute name="CtrCmdParRef" use="optional"/>
                <xs:attribute name="NTimes" type="xs:float" use="optional"/>
                <xs:attribute name="NSepBits" type="xs:float" use="optional"/>
                <xs:attribute name="FixedAreaDesc" use="optional"/>
                <xs:attribute name="TcStrRef" use="optional"/>
                <xs:attribute name="CmdParRef" use="optional"/>
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                <xs:attribute name="StartBit" type="xs:float" use="optional"/>
                <xs:attribute name="CtrAcqParRef" use="optional"/>
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                <xs:attribute name="TimeOffset" type="xs:float" use="optional"/>
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                <xs:attribute name="TmStrRef" use="optional"/>
                <xs:attribute name="AcqParRef" use="optional"/>
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                <xs:attribute name="MinParValue" use="optional"/>
                <xs:attribute name="MaxParValue" use="optional"/>
        </xs:attributeGroup>
        <xs:attributeGroup name="P_VAL_SET_VALUE_Atts">
                <xs:attribute name="ParPos" type="xs:float" use="optional"/>
                <xs:attribute name="ParValue" use="optional"/>
                <xs:attribute name="ValueRep" use="optional"/>
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                <xs:attribute name="FixedAreaDesc" use="optional"/>
                <xs:attribute name="CmdParInternalId" type="xs:float"
use="optional"/>
                <xs:attribute name="Value" use="optional"/>
                <xs:attribute name="RawRadix" use="optional"/>
```

```
        </xs:attributeGroup>
        <!-- Position Attributes-->
        <xs:attributeGroup name="SUB_POSAtts">
                <xs:attribute name="Pos" type="xs:float" use="required"/>
                <xs:attribute name="BoxId" type="xs:string" use="required"/>
                <xs:attribute name="AccBc" use="required"/>
                <xs:attribute name="Acc1553RtAddr" use="optional"/>
                <xs:attribute name="RedundantAcc1553RtAddr" use="optional"/>
                <xs:attribute name="CdmuBc" use="required"/>
                <xs:attribute name="Cdmu1553RtAddr" use="optional"/>
                <xs:attribute name="RedundantCdmu1553RtAddr" use="optional"/>
                <xs:attribute name="EgseAddr" use="optional"/>
                <xs:attribute name="Egse1553RtAddr" use="optional"/>
                <xs:attribute name="Port" type="xs:float" use="optional"/>
                <xs:attribute name="Scoe" use="optional"/>
                <xs:attribute name="VcParInternalId" type="xs:float"
use="optional"/>
                <xs:attribute name="VcValidityValue" type="xs:float"
use="optional"/>
        </xs:attributeGroup>
        <xs:attributeGroup name="MOD_SUB_TYPEAtts">
                <xs:attribute name="BoxId" type="xs:string" use="required"/>
                <xs:attribute name="VcParInternalId" type="xs:float"
use="optional"/>
                <xs:attribute name="VcValidityValue" type="xs:float"
use="optional"/>
        </xs:attributeGroup>
</xs:schema>
```

ANNEX F DATA VERIFICATION FILE FORMAT

The data verification files are simple ASCII files containing lines with verification data of telecommand and telemetry parameter items separated by tabs. Each line corresponds to one item and has the following format:

<date-time> <type> <item_name> <test_seq_name> <test_seq_issue> <site>

where:

<date-time>	= YYYY.DDD.HH.MM.SS.mmm (SCOS standard Julian time format)
<type>	= Verification type: c (telecommand) or p (telemetry parameter)
<item_name>	= Naming convention identifier of the item
< test_seq_name >	= Name of the test sequence which performed the verification
<test_seq_issue>	= Issue number of the test sequence which performed the verification
<site>	= Name of the site where the verification was performed

Eg:

```
2004.105.15.00.00.344     c     PC001428    test_seq1   10    CENTRAL
2004.96.10.11.12.141      p     AC023721    test_esoc   34    ESOC
2004.126.09.45.48.015     p     SF003356    test_34     10    ALENIA
```

ANNEX G REAL ELEMENT ON/OFF FILE FORMAT

The real element ON/FF status files are simple ASCII files containing lines with the switch ON/OFF attributes of a set of real elements. Each line corresponds to one real element and has the following format:

<real-el-name> <site> <on-date-time> <off-date-time>

where:

< real-el-name > = Naming convention identifier of the real element

<site> = Name of the site where the verification was performed

<on-date-time> = YYYY.DDD.HH.MM.SS (SCOS standard Julian time format)

<on-date-time> = YYYY.DDD.HH.MM.SS (SCOS standard Julian time format)

Eg:

```
PACS1_____001    CENTRAL    2004.125.15.00.00    2004.125.15.10.00
PACS1_____001    CENTRAL    2004.126.10.30.00    2004.126.10.55.44
```