

Save-Restore at Elettra



Tango Meeting, Elettra, 17-18 Aprile 2008

Save Restore Graphical User Interface based on QT4

**Giacomo Strangolino
Sincrotrone Trieste**

mailto: giacomo.strangolino@elettra.trieste.it

web: <http://www.giacomos.it>

Why?



- **To implement some new features needed by the operators;**
- **to focus on the usability of the Graphical User Interface;**
- **to concentrate on safe *save/restore* operations, not on the context creation.**

Features

- Keeps the existent *MySQL snap* database tables structure;
- presents a GUI that takes into consideration some **HCI** aspects;
- tracks the **history** of the *saves/restores* for each *context*;
- tracks the **history** of the *restores* for each *snapshot*;
- before a *restore* operation, it is possible to **compare** the *saved values* with the *current* values on the equipments;
- a *file view* supports the save/restore on/from simple text files;
- detailed **exception** reporting during each operation.
- Concentrates on *save/restore* processes, not on context creation.

Features (I)

Keeps the existent *MySQL* snap database table structures

- Name;
- Description;
- Author;
- Reason
- ...

Contexts window: select a context and then

- save;
- view save/restore history

Available contexts:

Name	Author	Description	Reason	ID
Preinjector-power-supply	Giacomo	p/power_supp...	Save corrente...	2
PTB-Power_Supply	Giacomo e Ro...	Context corre...	Corrente dei p...	3
Booster-power_supply-static	Giacomo e Cl...	Booster/powe...	Salvataggio c...	4
Kib e Sib	Giacomo/Fatima	Save restore ...	Voltage e Dela...	6
Pre-injector-gun-modulatore-linetrigger	Fatima Claudi...	Save restore ...	SaveRestore d...	7
(Timing) !SAVE SU Booster timing!	Claudio	Timing Booster	Timing con tut...	8
(Extraction) !SAVE su Extraction - keb,seb e bumper!	Giacomo e Cl...	Keb e Seb	Save Restore ...	11
World	Giacomo	Save Restore ...	Save Restore ...	12
injection - Kib e Sib	Giacomo/Fatima	Save restore ...	Voltage e Dela...	13
(Extraction - keb e seb) !SAVE SU Extraction - keb,seb e bumper!	Giacomo e Cl...	Keb e Seb	Save Restore ...	14
Pre-injector-gun-modulatore-linetrigger	Fatima Claudi...	Save restore ...	SaveRestore d...	15
(Pre-ini main params) !SAVF SU pre-iniector (reviewed)	Claudio e Giac	Main paramet	Pre iniector st	16

Features (II)

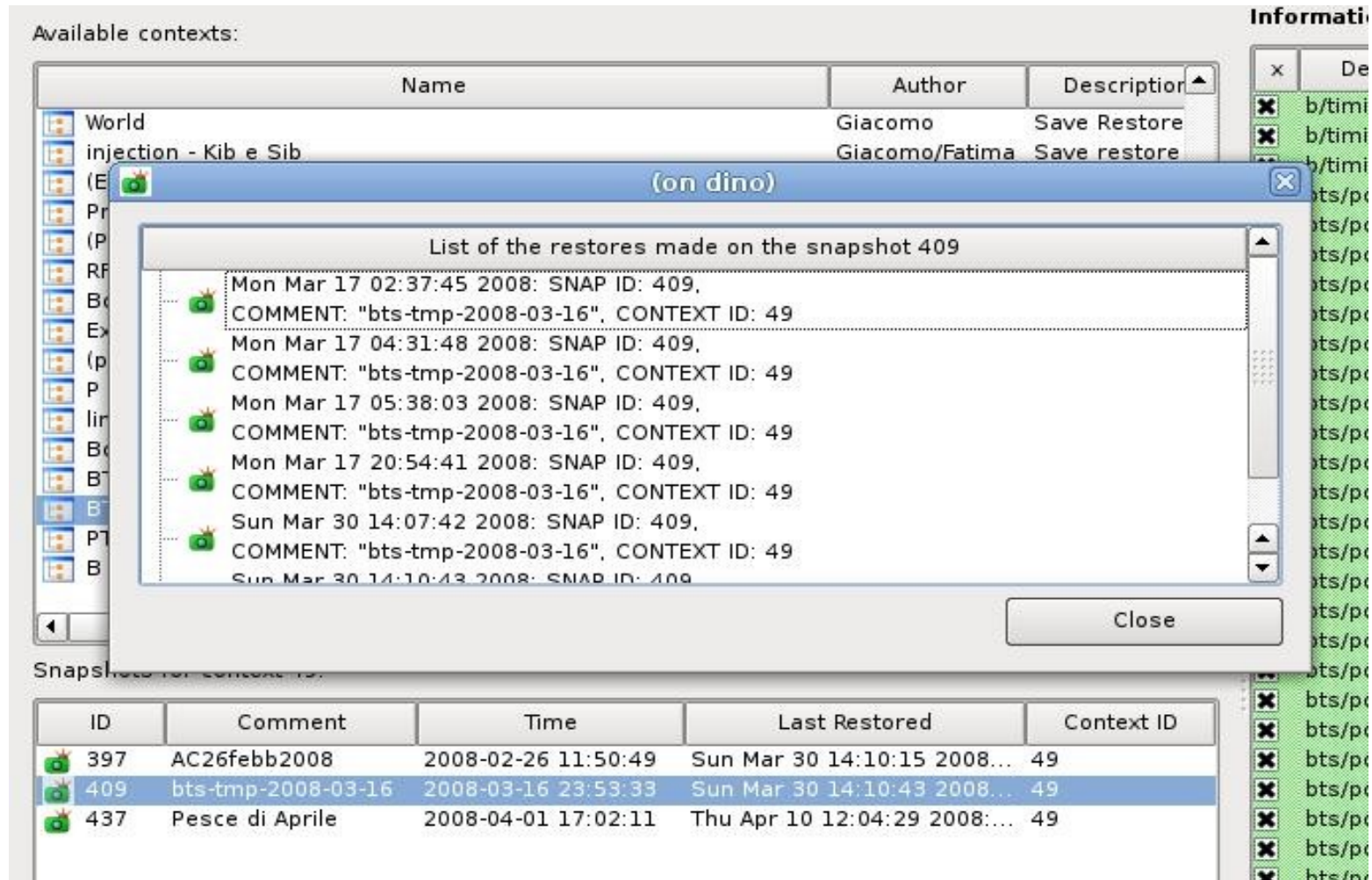


Tracks the history of the *saves/restores* for each context

Date	Restored from snap n.	Snap Comment
Sat Dec 1 15:48:30 2007	SNAP 129	"filippo"
Sat Dec 1 15:49:03 2007	SNAP 129	"filippo"
Sun Dec 2 10:58:11 2007	SNAP 139	"high_efficiency_preinjector_01_..."
Sun Dec 2 11:26:23 2007	SNAP 131	"pre-ottimizzazione run 2"
Sun Dec 2 15:18:19 2007	SNAP 137	"filippo_al_centro"
Tue Dec 4 11:39:26 2007	SNAP 137	"filippo_al_centro"
Wed Dec 5 02:10:07 2007	SNAP 147	"allineamento 1"
Thu Dec 6 19:06:42 2007	SNAP 142	"pdg-mm"
Thu Dec 6 19:08:22 2007	SNAP 142	"pdg-mm"
Fri Dec 7 16:00:47 2007	SNAP 157	"100giri"
Fri Dec 7 21:10:36 2007	SNAP 135	"B-ottimizzata-trai-trinletti"

Features(III)

Tracks the history of the *restores* for each snapshot



The screenshot shows the Eletra graphical user interface. A dialog box titled "(on dino)" is open, displaying a "List of the restores made on the snapshot 409". The dialog lists several restore operations with their timestamps and comments. Below the dialog, a table shows the available contexts and snapshots.

Name	Author	Description
World	Giacomo	Save Restore
injection - Kib e Sib	Giacomo/Fatima	Save restore

ID	Comment	Time	Last Restored	Context ID
397	AC26febb2008	2008-02-26 11:50:49	Sun Mar 30 14:10:15 2008...	49
409	bts-tmp-2008-03-16	2008-03-16 23:53:33	Sun Mar 30 14:10:43 2008...	49
437	Pesce di Aprile	2008-04-01 17:02:11	Thu Apr 10 12:04:29 2008:...	49

Features (IV)

Compare *saved* values with current *machine* values

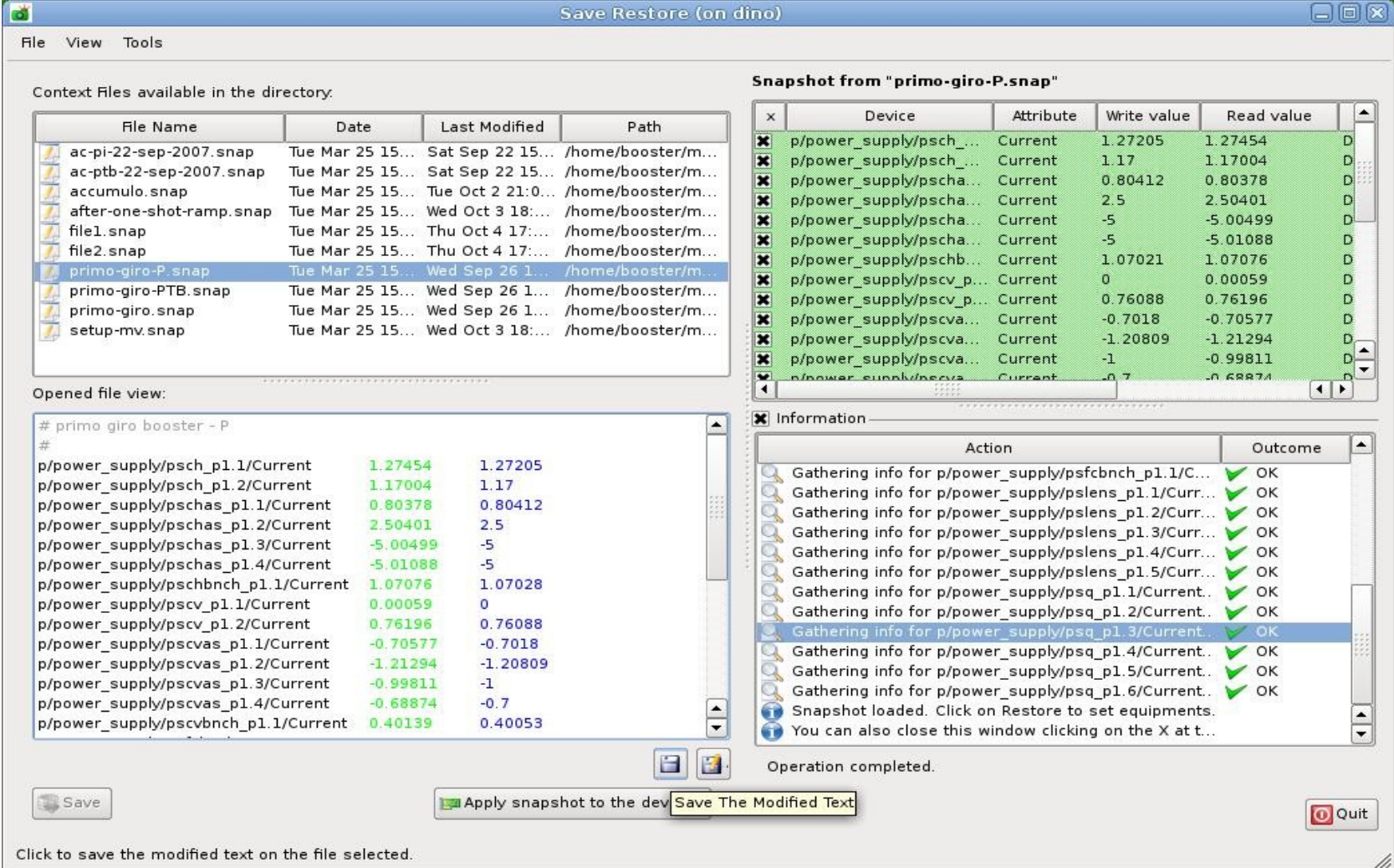
Device	Attribute	Write value saved	Actual write value
b/timing/btiming_b	CorrectorDelay	11000000	12000000
b/timing/btiming_b	QuadrupoleDelay	710000	740000
b/timing/btiming_b	BendingDelay	480000	490000
b/timing/injexttiming_b	ExtractionDelay	90862390	86000100
sr/injection/kicker_s12.1	Delay	44998600	44998620

Close

- Before a *restore*, you can *diff* the saved value with the *current* attribute value and decide to restore or not that attribute.

Features (V)

File view



The screenshot shows the 'Save Restore (on dino)' application window. It features a menu bar with 'File', 'View', and 'Tools'. The main interface is divided into several sections:

- Context Files available in the directory:** A table listing files with columns for File Name, Date, Last Modified, and Path.
- Opened file view:** A text editor showing the contents of a file named 'primo-giro-P.snap', which contains a list of hardware attributes and their values.
- Snapshot from "primo-giro-P.snap":** A table displaying a snapshot of hardware data with columns for Device, Attribute, Write value, and Read value.
- Information:** A log of actions performed, such as 'Gathering info for p/power_supply/psfcbnch_p1.1/C...', all of which resulted in 'OK'.
- Buttons:** 'Save', 'Apply snapshot to the dev', 'Save The Modified Text', and 'Quit'.

At the bottom, a message states: 'Click to save the modified text on the file selected.'

HCI Considerations (I)

- Information ordered and *grouped* in *four* widgets;
- operator view and *advanced* view (to *administrate* database, e.g. remove unwanted snaps/contexts);
- snapshot information displayed when all data is ready from db (avoid human operations between *two incomplete* states of the UI);
- modal dialogs used only when the pre-emptive model is strictly required;

HCI considerations (II)



- tried to display the information to maximize the *recognition* and minimize the *recall* processes (example of *recall*: “Search Snap”);
- tried to choose **resemblance icons**, i.e. images analogous to concepts, reducing *as much as possible* **symbolic** and **arbitrary** icons;
- the user is given a continuous visual **feedback** when performing any operation, such as: *progress*, *errors* (devices not responding, percentage of completed operations, read/write failures).

HCI considerations (III)



Software Evaluation

- *Observing and monitoring* the users' interaction with the interface “on the field” (i.e. control room);
- gathering *opinions* about usability and missing features.

Graphical interface



Overview

The screenshot shows the 'Save Restore (on dino)' application window. It features a menu bar (File, View, Tools) and a toolbar (Save, Search snap, Find, Restore, Quit). The interface is divided into several sections:

- Contexts list:** A table showing available contexts with columns for Name, Author, and Description.
- Snapshot list:** A table showing snapshots for context 43, with columns for ID, Comment, Time, Last Restored, and Cont.
- Snapshot data:** A table titled 'Information about the Snapshot 438' showing device, attribute, write value, and read value.

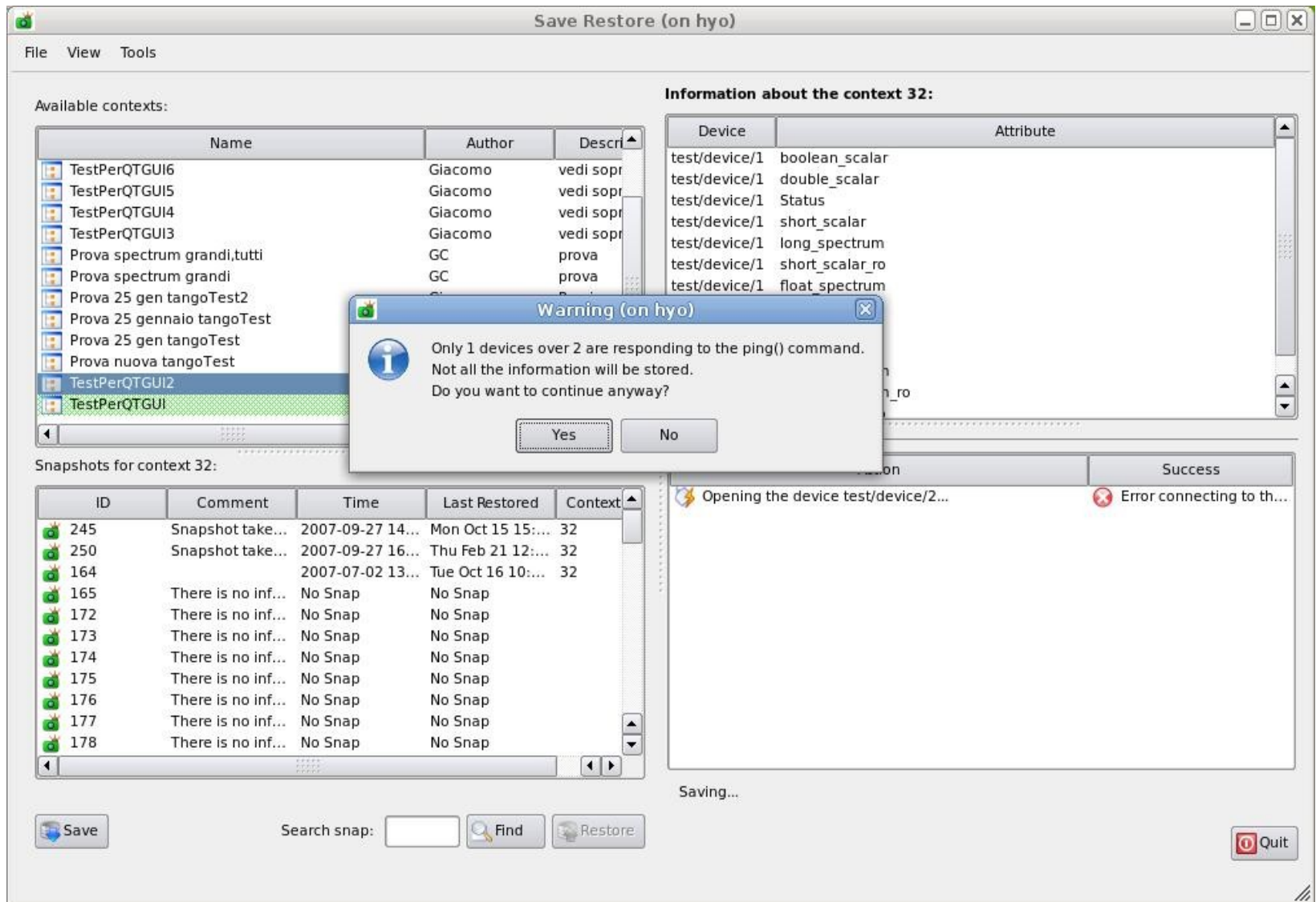
Callouts highlight specific features: 'Contexts list' points to the available contexts table; 'Snapshot list' points to the snapshots table; 'Snapshot data' points to the information about snapshot 438; 'Select/deselect the attributes to restore' points to the checkboxes in the snapshot data table; 'When last restored' points to the 'Last Restored' column in the snapshot list; and 'Find by snap ID' points to the 'Find' button and the search input field containing '438'.

When last restored

Find by snap ID

Graphical interface

Interaction (I): some devices don't answer to ping()

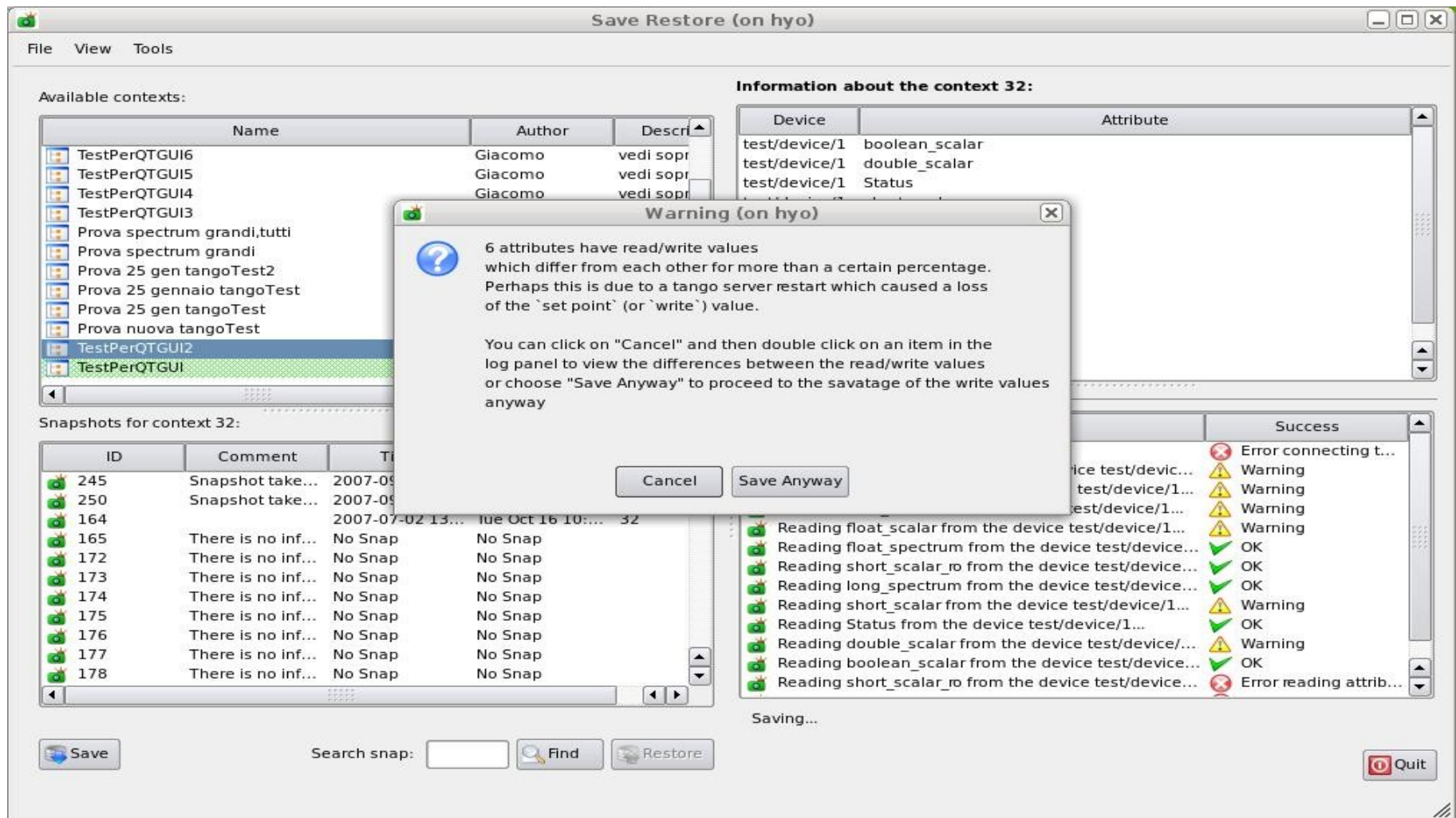


The screenshot shows the 'Save Restore (on hyo)' application window. It features a menu bar with 'File', 'View', and 'Tools'. The main area is divided into several sections:

- Available contexts:** A table listing various contexts with columns for Name, Author, and Description.
- Information about the context 32:** A table showing attributes for a specific device, such as 'boolean_scalar', 'double_scalar', 'Status', 'short_scalar', 'long_spectrum', 'short_scalar_ro', and 'float_spectrum'.
- Snapshots for context 32:** A table listing snapshots with columns for ID, Comment, Time, Last Restored, and Context.
- Warning dialog box:** A modal dialog titled 'Warning (on hyo)' with an information icon. The text reads: 'Only 1 devices over 2 are responding to the ping() command. Not all the information will be stored. Do you want to continue anyway?' with 'Yes' and 'No' buttons.
- Log area:** A log window at the bottom right showing messages like 'Opening the device test/device/2...' and 'Error connecting to th...'. A 'Success' label is also visible.
- Bottom controls:** Includes a 'Save' button, a search field for snapshots, 'Find' and 'Restore' buttons, and a 'Quit' button.

Graphical interface

Interaction (II): attributes with saved write values different from the current by some percentage



The screenshot displays the Elettra graphical user interface. The main window is titled "Save Restore (on hyo)". It features a menu bar with "File", "View", and "Tools". On the left, there is a list of "Available contexts" including "TestPerQTGUI6" through "TestPerQTGUI1". The "Information about the context 32:" panel shows a table of attributes for "test/device/1":

Device	Attribute
test/device/1	boolean_scalar
test/device/1	double_scalar
test/device/1	Status

A "Warning (on hyo)" dialog box is overlaid in the center, containing the following text:

6 attributes have read/write values which differ from each other for more than a certain percentage. Perhaps this is due to a tango server restart which caused a loss of the `set point` (or `write`) value.

You can click on "Cancel" and then double click on an item in the log panel to view the differences between the read/write values or choose "Save Anyway" to proceed to the savatage of the write values anyway

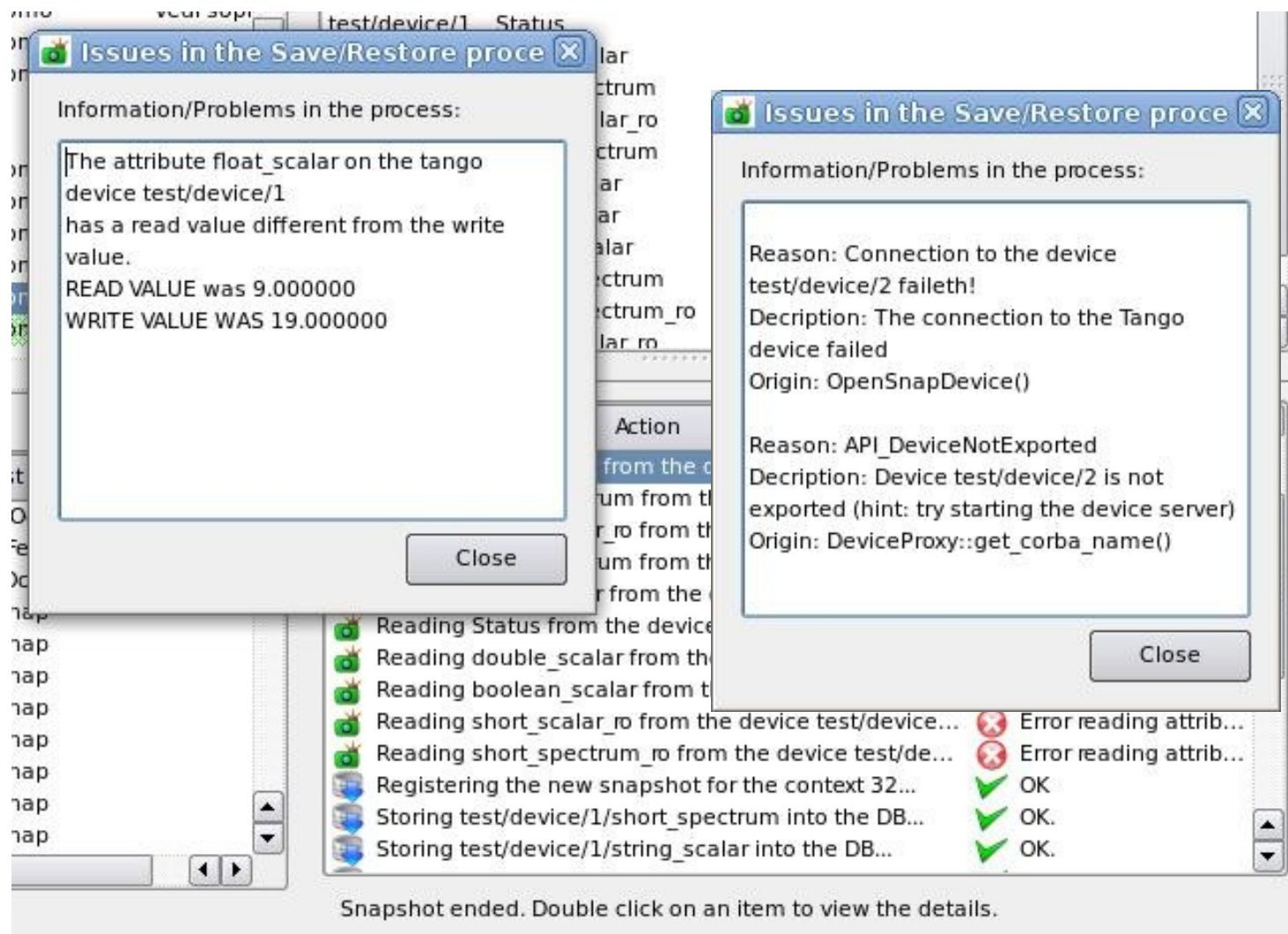
Buttons for "Cancel" and "Save Anyway" are visible at the bottom of the dialog.

The background window also shows a "Snapshots for context 32:" table with columns for ID, Comment, and Time. A log panel at the bottom right shows various status messages, including "Warning" and "Error" entries.

Graphical interface

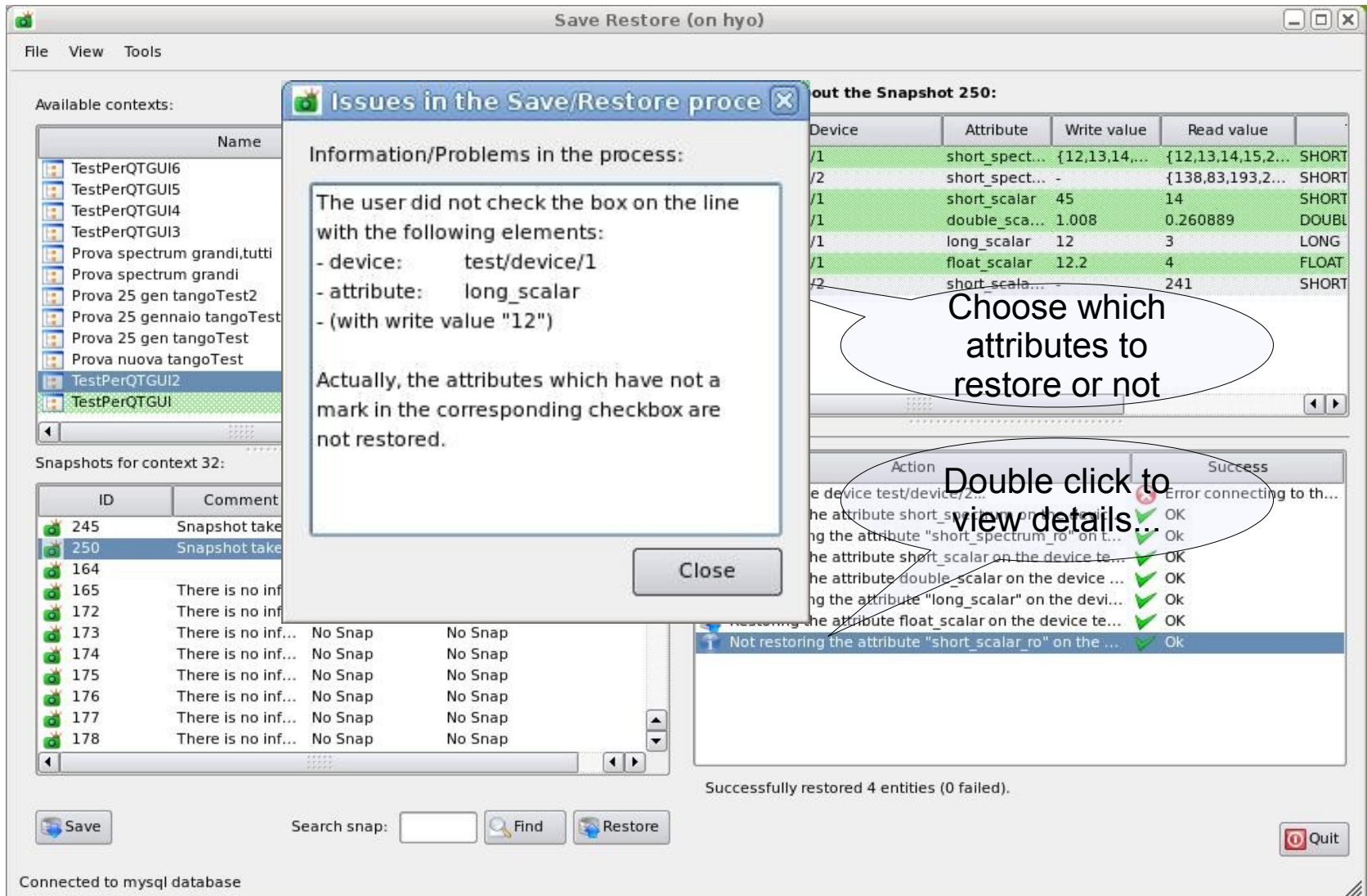


Interaction (III): double click on the *Information* panel



Graphical interface

Interaction (IV): restore and *details* dialog



The screenshot shows the 'Save Restore (on hyo)' application window. A dialog box titled 'Issues in the Save/Restore process' is open, displaying the following text:

Information/Problems in the process:

The user did not check the box on the line with the following elements:

- device: test/device/1
- attribute: long_scalar
- (with write value "12")

Actually, the attributes which have not a mark in the corresponding checkbox are not restored.

A 'Close' button is visible at the bottom of the dialog.

In the background, a table titled 'About the Snapshot 250:' is visible, showing a list of attributes and their values. A callout bubble points to the 'long_scalar' row with the text: 'Choose which attributes to restore or not'.

Below the table, a log window shows the results of the restore process. A callout bubble points to the 'Not restoring the attribute "short_scalar_ro" on the ...' entry with the text: 'Double click to view details...'. The log shows the following entries:

Action	Success
Not restoring the attribute "short_scalar_ro" on the ...	Ok
Restoring the attribute "float_scalar" on the device te...	Ok
Restoring the attribute "long_scalar" on the devi...	Ok
Restoring the attribute "double_scalar" on the device ...	Ok
Restoring the attribute "short_scalar" on the device te...	Ok
Restoring the attribute "short_spectrum_ro" on t...	Ok
Restoring the attribute "short_spectrum" on t...	Ok
Restoring the device test/device/2...	Error connecting to th...

At the bottom of the application window, a status bar indicates 'Successfully restored 4 entities (0 failed)'. The interface also includes a 'Save' button, a 'Search snap:' field, 'Find' and 'Restore' buttons, and a 'Quit' button.

Graphical interface

Interaction (V): admin interface

Remove or hide unwanted snapshots and/or contexts

Available contexts:

Name	Author	Descr
TestPerQTGUI4	Giacomo	vedi sopr
TestPerQTGUI3	Giacomo	vedi sopr
Prova spectrum grandi,tutti	GC	prova
Prova spectrum grandi	GC	prova
<input checked="" type="checkbox"/> Prova 25 gen tangoTest2	Giacomo	Provino
<input checked="" type="checkbox"/> Prova 25 gennaio tangoTest	Giacomo	Provino
<input checked="" type="checkbox"/> Prova 25 gen tangoTest	Giacomo	Provino
Prova nuova tangoTest	Giacomo	Provino
TestPerQTGUI2	Giacomo	vedi sopr
TestPerQTGUI	Giacomo	vedi sopr

Remove
 Just hide on the gui
 Delete also the associated snapshots

Snapshots for context 37:

ID	Comment	Time	Last Restored	Context ID
285	prova m,ista	2008-01-25 10...	Never restored	37
287	1	2008-01-25 10...	Never restored	37
<input checked="" type="checkbox"/> 288	2	2008-01-25 10...	Never restored	37
<input checked="" type="checkbox"/> 289	3	2008-01-25 11...	Never restored	37
290	4	2008-01-25 11...	Never restored	37

Remove Snapshots

Save-Restore at Elettra



Tango Meeting, Elettra, 17-18 Aprile 2008

Save Restore Graphical User Interface based on QT4

**Giacomo Strangolino
Sincrotrone Trieste**

mailto: giacomo.strangolino@elettra.trieste.it

web: <http://www.giacomos.it>