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GeoSynoptic Panel

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SOLARIS
NATIONAL SYNCHROTRON
RADIATION CENTRE



EUROPEAN UNION
EUROPEAN REGIONAL
DEVELOPMENT FUND



Application for managing devices in a Tango-using control system.

Goals:

- 1) synoptic view – map of the machine,
- 2) overview of devices' statuses,
- 3) quick detection of alarm states,
- 4) customisable display,
- 5) diagnostics.



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- 1) Settings
- 2) Main Window



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Work in progress :)

First part – the Settings

- Used to define configuration.
- Tabs – various options.
- Save & import of settings files.
- Status bar communication with the user.

GeoSynoptic Panel

Welcome to GSP | Choose Tango Host | Group Devices | Attribute Icons | Icon Drawer | Icon Positioner | Save Data

What would you like to do?

Launch Settings:

Test the Main Application:

Checking if the following components are installed:

- PyTango
- Taurus
- Sardana
- Tango
- SQL Database

GSP

Solaris

Ready.

Previous Next

Settings – Welcome to GSP.

- **First tab – launching Settings or the Main Window.**
- **Checks for presence of components.**

The screenshot shows the 'GeoSynoptic Panel' application window. The title bar includes 'Welcome to GSP' and several tabs: 'Choose Tango Host', 'Group Devices', 'Attribute Icons', 'Icon Drawer', 'Icon Positioner', and 'Save Data'. The main content area is titled 'What would you like to do?' and contains two buttons: 'Run Settings' and 'Run Test'. To the right, under the heading 'Checking if the following components are installed:', there is a list of five components, each with a green status indicator: PyTango, Taurus, Sardana, Tango, and SQL Database. A large GSP logo is displayed on the right side of the window. At the bottom, there is a 'Solaris' logo with a colorful particle trail. The bottom status bar shows 'Ready.' and navigation arrows for 'Previous' and 'Next'.

Settings – Welcome to GSP.

- First tab – launching **Settings** or the **Main Window**.
- Checks for presence of components.

The screenshot shows the 'GeoSynoptic Panel' application window. The title bar includes 'Welcome to GSP' and several menu items: 'Choose Tango Host', 'Group Devices', 'Attribute Icons', 'Icon Drawer', 'Icon Positioner', and 'Save Data'. The main content area is titled 'What would you like to do?' and contains two sections:

- Launch Settings:** A button labeled 'Run Settings'.
- Test the Main Application:** A button labeled 'Run Test'.

To the right, under the heading 'Checking if the following components are installed:', there is a list of components, each with a green circular indicator:

- PyTango
- Taurus
- Sardana
- Tango
- SQL Database

On the right side of the window, there is a large blue circular logo with the letters 'GSP' and a stylized network diagram. At the bottom of the window, there is a decorative banner with the word 'Solaris' in a glowing, metallic font, set against a background of colorful, abstract light trails. The bottom status bar shows a 'Previous' button, a progress indicator, and a 'Next' button. The text 'Ready.' is visible in the bottom left corner.

Settings – Choose Tango Host

- Tango Host choice.
- Refresh – get all devices from the database.
- Import XML settings file.

GeoSynoptic Panel - Settings

Welcome to GSP | Choose Tango Host | Group Devices | Attribute Icons | Icon Drawer | Icon Positioner | Save Data

Enter the desired Tango Host:

tangobox:10000 Refresh

Search for XML settings

- archiving/hdb/archivingmanager.01_01
- elin/focus/beam1
- elin/focus/beam2
- elin/focus/gun
- elin/focus/klystron
- elin/focus/klystron1
- elin/focus/klystron2
- elin/steer/1
- elin/steer/gun
- elin/steer/pbunch
- elin/cool/bun-temps
- elin/cool/pbun-temps
- elin/cool/sec-temps
- elin/cool/temp-adc
- elin/focus/b1coil
- elin/focus/b2coil
- elin/focus/b3coil
- elin/focus/b4coil

Previous Next

Successful connection to Tango Host on tangobox:10000

Settings – Group Devices

- Grouping devices & editing the groups.
- Independent from the classic Tango division.
- Layers for the Main Window.

The screenshot displays the 'GeoSynoptic Panel - Settings' application window. The 'Group Devices' tab is active, showing a configuration interface for grouping devices. The window title is 'GeoSynoptic Panel - Settings' and the main content area is titled 'Welcome to GSP'. Below the title bar, there are navigation tabs: 'Welcome to GSP', 'Choose Tango Host', 'Group Devices', 'Attribute Icons', 'Icon Drawer', 'Icon Positioner', and 'Save Data'. The 'Group Devices' tab is selected.

The interface is divided into several sections:

- TangoHost:** tangobox:10000
- Available devices:** A list of 20 devices, each with a gear icon, including:
 - elin/mod2/heatv-adc
 - elin/mod2/hv-adc
 - elin/mod2/thyrheatv-adc
 - elin/o-cool/temp
 - elin/rf/bun-at
 - elin/rf/pbun-at-dac
 - elin/rf/pbun-ph
 - elin/rf/pbun-ph-adc
 - elin/rf/pbun-ph-dac
 - elin/rf/sec-ph
- Focus:** A dropdown menu currently showing 'Focus'.
- List of groups:** A list of four groups: 'Default', 'Focus', 'Steer', and 'Motor'. Below this list are buttons for 'Add group' and 'Delete group'.
- Device Management:** Three buttons at the bottom: 'Delete device from group', 'Clear group', and 'Add all devices to group'.

On the right side of the window, there is a logo for 'GSP' (GeoSynoptic Panel) featuring a blue circle with the letters 'GSP' and a stylized antenna or probe icon.

At the bottom of the window, there are navigation buttons: 'Previous' (with a left arrow) and 'Next' (with a right arrow). A progress bar is visible between these buttons. The status bar at the very bottom shows 'Ready.'

Settings – Attribute Icons

- Setting icons to devices or groups.
- Predefined icons.
- Import of custom icons.

Welcome to GSP | Choose Tango Host | Group Devices | **Attribute Icons** | Icon Drawer | Icon Positioner | Save Data

TangoHost: tangobox:10000

Available devices:

- archiving/hdb/archivingmanager.01_01
- elin/focus/beam1
- elin/focus/beam2
- elin/focus/gun
- elin/focus/klystron
- elin/focus/klystron1
- elin/focus/klystron2
- elin/steer/1
- elin/steer/gun
- elin/steer/pbunch
- elin/cool/bun-temps

ctctrl02

elin/steer/1

ctctrl01

elin/steer/gun

elin/steer/pbunch

motctrl01

ICON ATTRIBUTED

Choose an icon:

media-flash

Group: Steer

media-flash

ATTRIBUTE

Available groups:

- Default
- Focus
- Steer**
- Motor

Clear this set of icons

Previous | Ready. | Next

Settings – Icon Drawer

- Drawing icons using simple shapes & colours.
- Saving as SVG files.
- Scroll to change size.

The screenshot displays the 'GeoSynoptic Panel - Settings' application window. The 'Icon Drawer' tab is active, showing a form for creating icons. The form includes several sections:

- Shape Selection:** Radio buttons for Rectangle, Circle, Ellipse, and Line. The 'Ellipse' option is selected.
- Dimensions:** Input fields for width (800) and height (600).
- Coordinates:** Input fields for center x (400) and center y (300).
- Radiuses:** Input fields for radii x (200) and radii y (300).
- Start/End Points:** Input fields for start x (0), start y (0), end x (0), and end y (0).
- Color Selection:** A 'Switch to RGB selecting' option is checked, with input fields for fill color (red, green, blue) and border color (red, green, blue), all set to 0.
- Preview:** A central preview window shows a black ellipse on a maroon background.
- Image Upload:** A section on the right allows uploading an image, with a preview of the 'GSP' logo.
- Buttons:** 'Import data from XML', 'Add a picture to new device', 'Assign the name and sizes', 'Draw', 'Refresh', and 'Assign the picture to the device'.

At the bottom of the window, there is a navigation bar with 'Previous' and 'Next' buttons, and a status indicator 'Ready.'.

Settings – Icon Positioner

- Positioning the devices:
 - drag & drop,
 - coordinates.
- Uses previously attributed icons.

The screenshot displays the 'GeoSynoptic Panel - Settings' application window. The interface includes a navigation bar with tabs: 'Welcome to GSP', 'Choose Tango Host', 'Group Devices', 'Attribute Icons', 'Icon Drawer', 'Icon Positioner', and 'Save Data'. The 'Icon Positioner' tab is active.

Key elements of the interface include:

- TangoHost:** tangobox:10000
- Available devices:** A list of device paths such as 'archiving/hdb/archivingmanager.01', 'elin/focus/beam1', 'elin/focus/beam2', 'elin/focus/gun', 'elin/focus/klystron', 'elin/focus/klystron1', 'elin/focus/klystron2', 'elin/steer/1', 'elin/steer/gun', 'elin/steer/pbunch', 'elin/cool/bun-temps', 'elin/cool/pbun-temps', 'elin/cool/sec-temps', 'elin/cool/temp-adc', 'elin/focus/b1coil', 'elin/focus/b2coil', and 'elin/focus/b3coil'.
- Coordinate Input:** A section titled 'Enter the coordinates for the icon:' with input fields for '61' and '46', and buttons for 'Set Coordinates' and 'Save Coordinates'.
- Diagram:** A schematic diagram of a synchrotron beamline. It features a central yellow beamline with various components like steering magnets (green rectangles), klystrons (blue vertical bars), and bending magnets (curved blue segments). A small monkey icon is positioned above the beamline.
- Navigation:** 'Previous' and 'Next' buttons are located at the bottom of the window.
- Status:** The text 'Ready.' is displayed at the bottom left.

Settings – Icon Positioner

- Positioning the devices:
 - drag & drop,
 - coordinates.

- Uses previously attributed icons.

The screenshot shows the 'GeoSynoptic Panel' settings window. The 'Icon Positioner' tab is active. The interface includes a 'Welcome to GSP' message, a 'TangoHost' field, and a list of 'Available devices'. A blue arrow points from the text 'drag & drop' to the device list. Another blue arrow points from the text 'coordinates' to the coordinate input field. The coordinate input field contains the values '61' and '46'. Below the input field is a 'Set Coordinates' button. The main workspace displays a beamline diagram with various components and icons. At the bottom, there are 'Previous' and 'Next' navigation buttons.


Settings – Save Data

- **Saving the configuration:**
 - to database (device properties),
 - XML file.
- **Preview of the XML file.**

GeoSynoptic Panel - Settings

Welcome to GSP | Choose Tango Host | Group Devices | Attribute Icons | Icon Drawer | Icon Positioner | **Save Data**

Enter the path to an .xml file:



◀ Previous ▶ Next

Ready.

Second part – the Main Window

- Map of devices.
- Icons & locations.
- State colours.

The screenshot displays the 'GeoSynoptic Panel Main' window. The interface is divided into several sections:

- Panel View:** A tabbed interface with 'Diagnostics' selected.
- Groups:** A dropdown menu set to 'Default'.
- Devices:** A text input field for device names.
- Device List:** A list of device paths including:
 - archiving/hdb/archivingmanager.01_01
 - elin/focus/beam1
 - elin/focus/beam2
 - elin/cool/bun-temps
 - elin/cool/pbun-temps
 - elin/cool/sec-temps
 - elin/cool/temp-adc
 - elin/steer/gv1
 - limaccds/backgroundsubtraction/1
 - limaccds/flatfield/1
 - limaccds/limatacoccds/1
 - elin/r-beam/on
 - elin/v-rv/2
- Diagnostics:** A button at the bottom left of the device list.
- Map:** A central diagram showing the layout of the synchrotron facility. It features a long horizontal beamline with various components. A large, complex structure on the right represents the storage ring. Numerous icons are placed on the map, each labeled with 'Time1:' and 'Time2:'. Some icons are green, while others are black. The icons are distributed across the beamline and storage ring area.
- Chosen device:** A text field at the bottom center.
- Status:** A text field at the bottom right.

Second part – the Main Window

- Map of devices.
- Icons & locations.
- State colours.
- Filter list of devices:
 - by name,
 - by group.

The screenshot displays the 'GeoSynoptic Panel Main' window. The interface is divided into several sections:

- Panel View:** A tabbed interface with 'Diagnostics' selected.
- Groups:** A dropdown menu currently set to 'Default'.
- Devices:** A text input field for filtering devices by name.
- Device List:** A scrollable list of device names, including:
 - archiving/hdb/archivingmanager.01_01
 - elin/focus/beam1
 - elin/focus/beam2
 - elin/cool/bun-temps
 - elin/cool/pbun-temps
 - elin/cool/sec-temps
 - elin/cool/temp-adc
 - elin/steer/gv1
 - limaccds/backgroundsubstraction/1
 - limaccds/flatfield/1
 - limaccds/limatacoccds/1
 - elin/r-beam/on
 - elin/v-rv/2
- Diagnostics:** A button located below the device list.
- Map:** A central area showing a schematic layout of the synchrotron facility. Various components are marked with icons and labels such as 'Time1: Time2:' and 'Time1: Time2:'. Some labels are green, while others are black.
- Chosen device:** A text field at the bottom left for displaying the selected device.
- Status:** A text field at the bottom right for displaying the status of the chosen device.

Second part – the Main Window

- Map of devices.
 - Icons & locations.
 - State colours.
- Filter list of devices:
 - by name,
 - by group.

Panel View Diagnostics

Groups:
Default

Devices:

archiving/hdb/archivingmanager.01_01
elin/focus/beam1
elin/focus/beam2
elin/cool/bun-temps
elin/cool/pbun-temps
elin/cool/sec-temps
elin/cool/temp-adc
elin/steer/gv1
limaccds/backgroundsubtraction/1
limaccds/flatfield/1
limaccds/limatacoccds/1
elin/r-beam/on
elin/v-rv/2

Diagnostics

Chosen device: Status:

Text status of the chosen device.

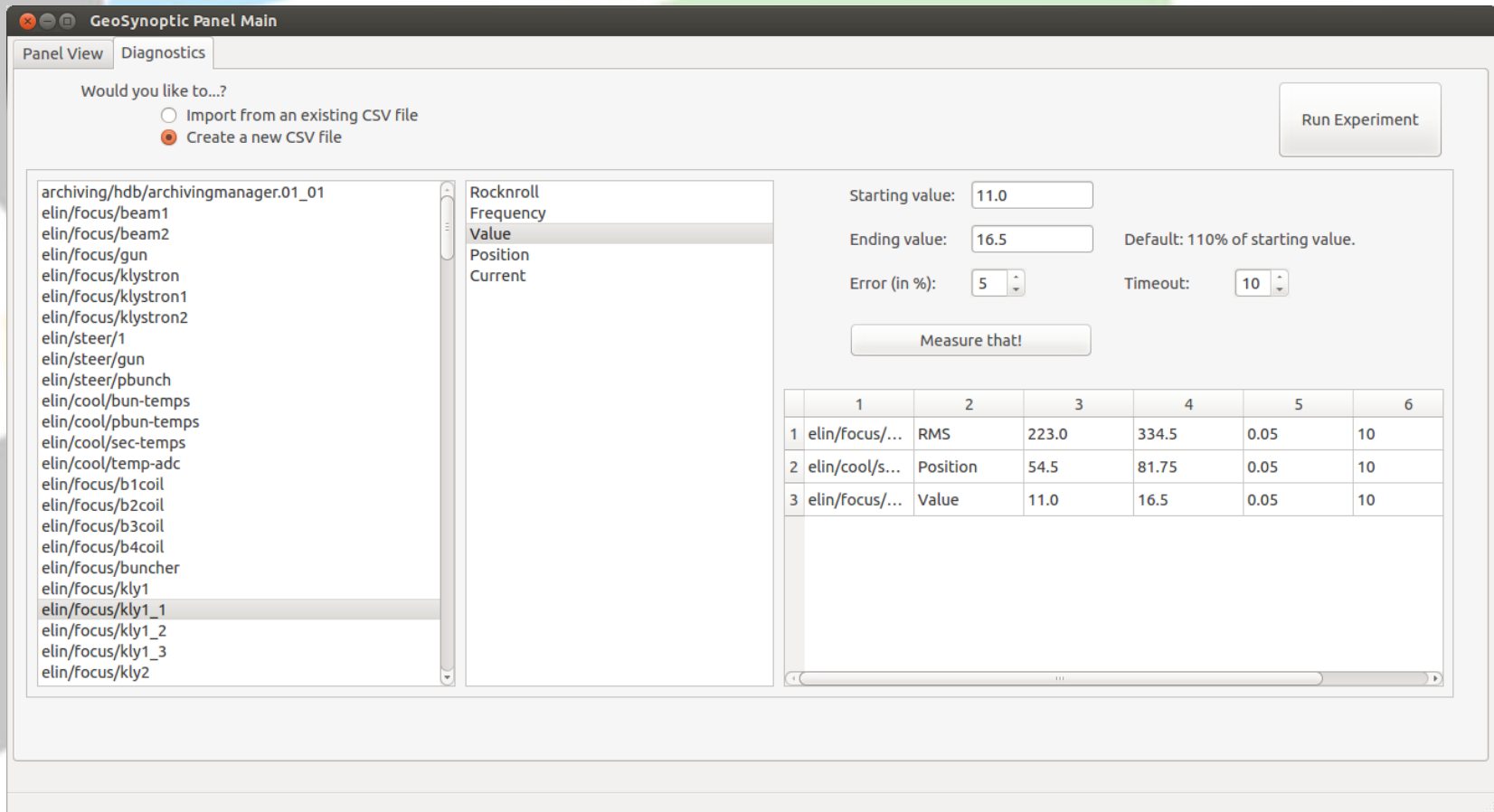
Second part – the Main Window

- Map of devices.
- Icons & locations.
- State colours.
- Filter list of devices:
 - by name,
 - by group.

The screenshot shows the 'GeoSynoptic Panel Main' window. On the left, there is a 'Panel View' tab and a 'Diagnostics' tab. Below this, there is a 'Groups:' dropdown menu set to 'Default' and a 'Devices:' text input field. A list of device names is displayed, including 'archiving/hdb/archivingmanager.01_01', 'elin/focus/beam1', 'elin/focus/beam2', 'elin/cool/bun-temps', 'elin/cool/pbun-temps', 'elin/cool/sec-temps', 'elin/cool/temp-adc', 'elin/steer/gv1', 'limaccds/backgroundsubtraction/1', 'limaccds/flatfield/1', 'limaccds/limatacoccds/1', 'elin/r-beam/on', and 'elin/v-rv/2'. At the bottom of this list is a 'Diagnostics' button. The main area of the window displays a schematic diagram of the synchrotron facility with various components labeled. Some labels are green boxes with 'Time1' and 'Time2' text, while others are black boxes with 'Time1' and 'Time2' text. A large text overlay in the center of the diagram reads 'Clicking the labels opens Taurus Panel.' At the bottom of the window, there are two fields: 'Chosen device:' and 'Status:'.

Main Window – Diagnostics.

- Simple procedure.
- Test any numerical attribute.
- Save & import CSV settings files.



GeoSynoptic Panel Main

Panel View Diagnostics

Would you like to...?

Import from an existing CSV file

Create a new CSV file

Run Experiment

archiving/hdb/archivingmanager.01_01
elin/focus/beam1
elin/focus/beam2
elin/focus/gun
elin/focus/klystron
elin/focus/klystron1
elin/focus/klystron2
elin/steer/1
elin/steer/gun
elin/steer/pbunch
elin/cool/bun-temps
elin/cool/pbun-temps
elin/cool/sec-temps
elin/cool/temp-adc
elin/focus/b1coil
elin/focus/b2coil
elin/focus/b3coil
elin/focus/b4coil
elin/focus/buncher
elin/focus/kly1
elin/focus/kly1_1
elin/focus/kly1_2
elin/focus/kly1_3
elin/focus/kly2

Rocknroll
Frequency
Value
Position
Current

Starting value: 11.0

Ending value: 16.5 Default: 110% of starting value.

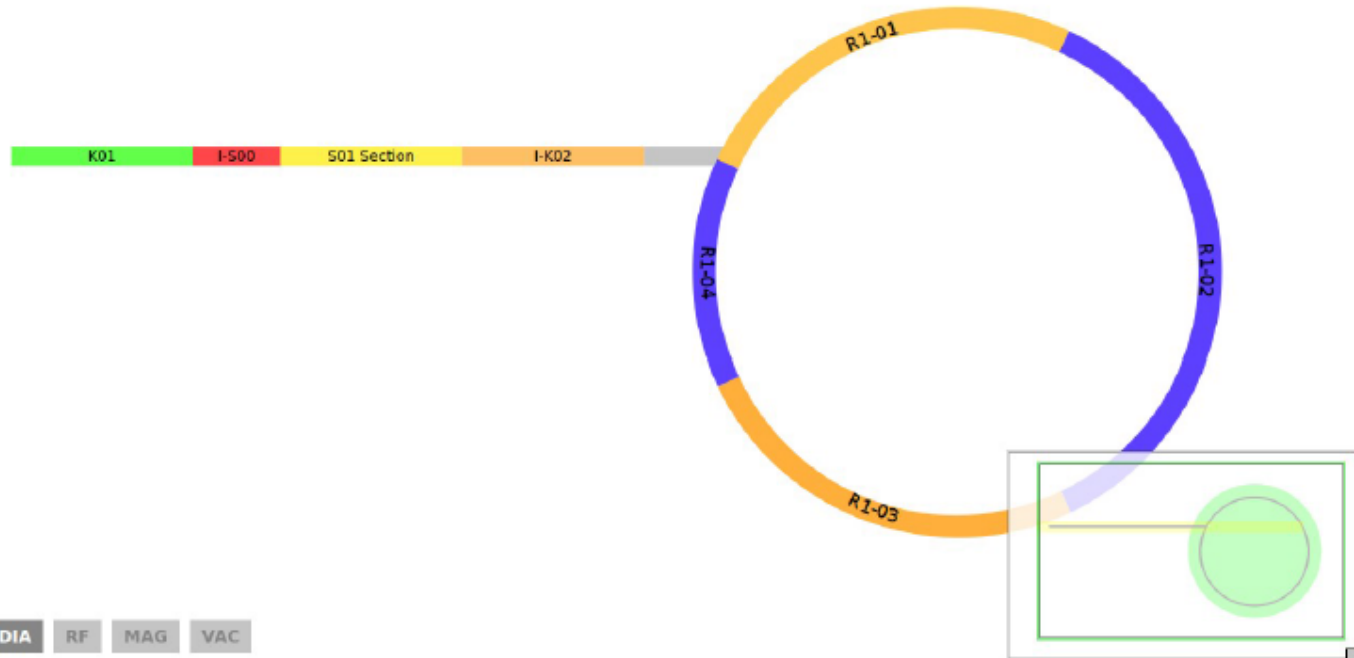
Error (in %): 5 Timeout: 10

Measure that!

	1	2	3	4	5	6
1	elin/focus/...	RMS	223.0	334.5	0.05	10
2	elin/cool/s...	Position	54.5	81.75	0.05	10
3	elin/focus/...	Value	11.0	16.5	0.05	10

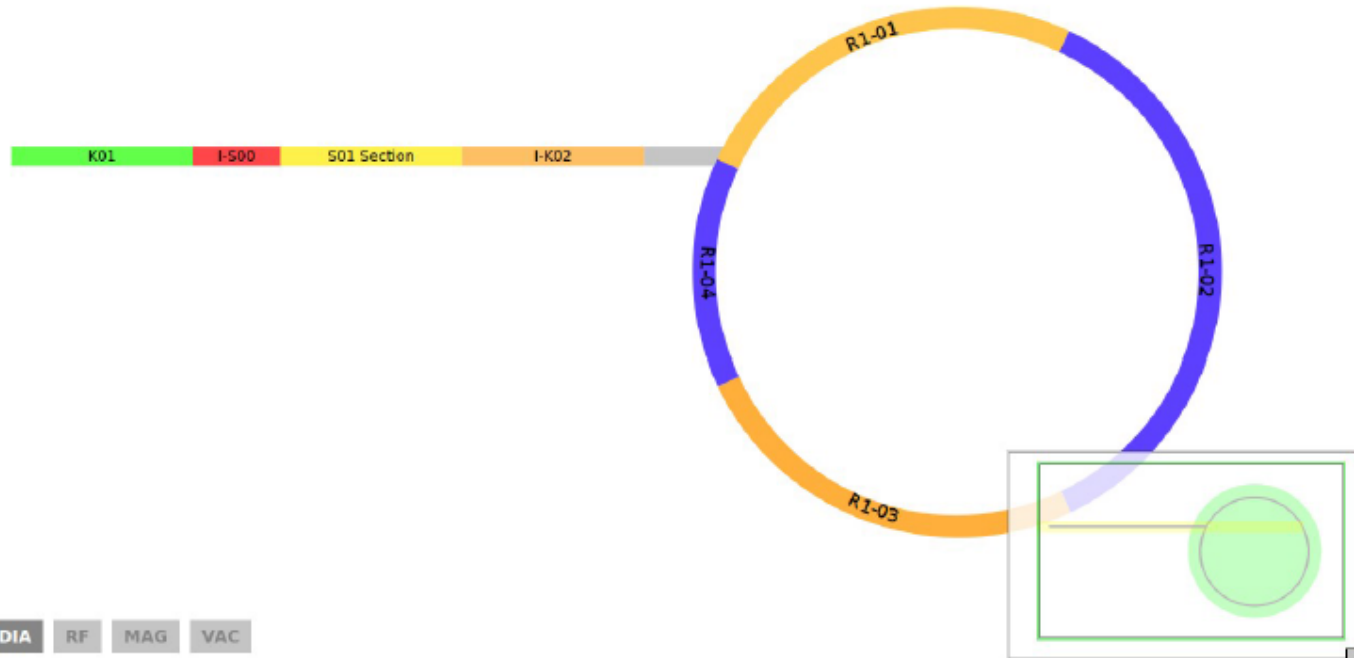
Synoptic Panel.

- New approach based on the MAX IV Synoptic.
- SVG panel with layers.
- Generated view based on the content of the database.



Synoptic Panel.

- **New approach based on the MAX IV Synoptic.**
- **SVG panel with layers.**
- **Generated view based on the content of the database.**
- **Division of devices:**
 - **according to the Tango family,**
 - **based on the groups from the GSP configuration.**





Synoptic Panel - customisation.



- Sections & subsections colours.
- Sizes (in percent).
- Toggle the device captions (a label always appear when hovering the mouse over an icon).

UITester.py

Next step

Default settings

Section colors:  

Subsection colors:  

Linac section size:

Linac subsection size:

Ring section size:

Ring subsection size:

Real coordinates of ring center:

Show device captions:

Synoptic Panel - customisation.

- Sections & subsections definition.
- Size change (in percent).
- The section names will be used to look up the devices in the database.

UITester.py

Previous step | Next step

Linac sections | Ring sections

Section Name	Size	Color	Change displayed name	Subsections
I-K01	25,00	Green	<input checked="" type="checkbox"/> K01	2
I-S00	12,00	Red	<input type="checkbox"/> Change displayed name	0
I-S01	25,00	Yellow	<input checked="" type="checkbox"/> S01 Section	0
I-K02	25,00	Orange	<input type="checkbox"/> Change displayed name	0
R1-01	25,00	Yellow	<input type="checkbox"/> Change displayed name	0
R1-02	36,00	Blue	<input type="checkbox"/> Change displayed name	0
R1-03	25,00	Orange	<input type="checkbox"/> Change displayed name	0
R1-04	14,00	Blue	<input type="checkbox"/> Change displayed name	0

Add new section | Add new section

Short term:

- **Reworking the Settings.**
- **New implementation of the Main Window & integration with the Settings.**

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Mid term:

- **Implementation at Solaris.**

Short term:

- **Reworking the Settings.**
- **New implementation of the Main Window & integration with the Settings.**

Mid term:

- **Implementation at Solaris.**

Long term:

- **Introduction to the whole Tango Community.**
- **Integration with the Control Program.**

Thank you, Tango dancers!
Questions? Suggestions?



SOLARIS

NATIONAL SYNCHROTRON
RADIATION CENTRE

TANGO The logo for 'Tango controls' features the word 'TANGO' in large, bold, black capital letters. The letter 'O' is replaced by a bright green circle. A black silhouette of a person in a tango pose is superimposed on the circle, with the word 'controls' written in a small, black, sans-serif font along the right side of the circle.