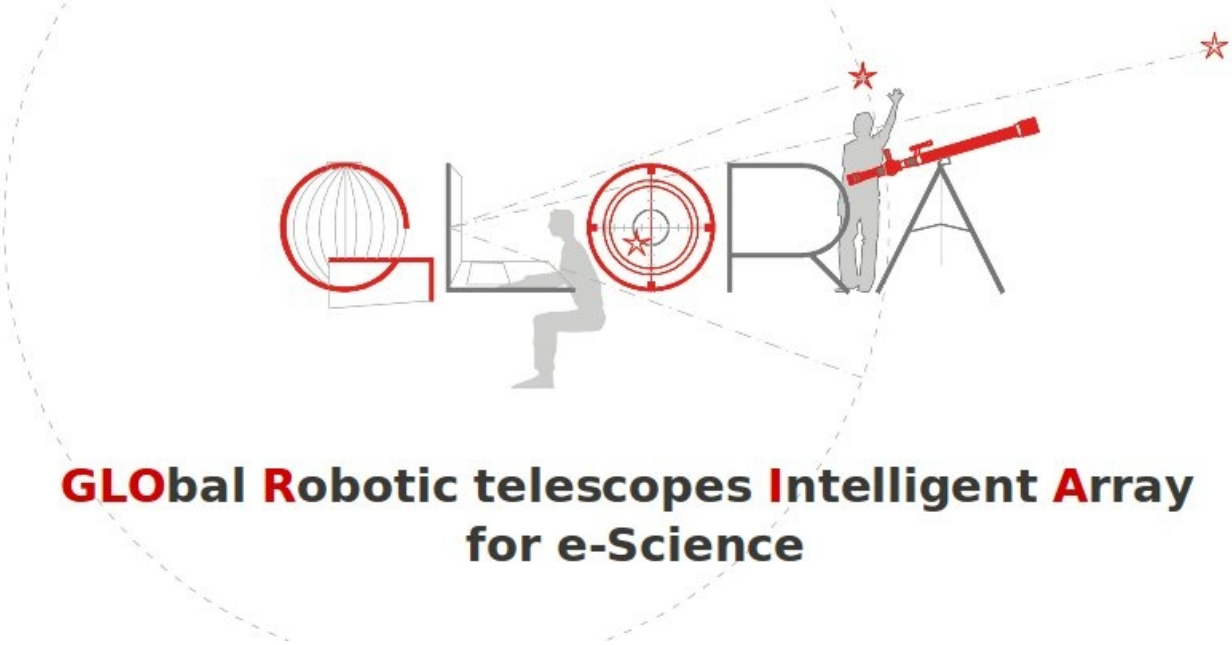
GLORIA is funded by the European Union 7th Framework Programme (FP7/2007-2013) under grant agreement n° 283783




# Demonstrator

**CODE:** DEL-044

**VERSION:** 01

**DATE:** October 17th, 2012

| | |
|---|---|
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## Change Control

| Issue | Date | Section | Page | Change Description |
|---|---|---|---|---|
| 01 | 17/10/2012 | All | All | Creation |
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## Reference Documents

| Nº | Document Name | Code | Version |
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| R.1 | Name | Code | Version |
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# 1. Introduction

This deliverable 7.7 explain the first GLORIA on-line experiment demonstrator for teleoperating RTs (robotic telescopes) and the first off-line experiment demonstrator. Although in the contract was stated that the demonstrator was going to be deployed in only one RT, we have decided to implemented it in two RTs, which are the only two solar RTs we have between the seventeen RTs of GLORIA network. With this decision we will be able to do demonstrations in Europe mainly during the day time. Since one RT is in Madrid (Spain) and the other one is in Tenerife (Spain) we decrease the possibility of not being able to make a demonstration due to bad weather conditions.

These on-line and off-line demonstrator do not have any astronomical context. The first one is just for allowing the teleoperation of a RT, and testing the different web component for controlling. the dome, the mount, the weather station, the camera, etc. The off-line experiment is just made by a couple of generic web components, one for downloading or showing a script where the off-line experiment would be explained, and another one for uploading the result after the off-line work is made.

All these web components are integrated into an authoring tool which will allow all GLORIA users built up new on-line and off-line experiments. During the lifetime of GLORIA project we expect to increase the number of these web components and improve them in order to allow much more possibilities when creating new experiments.

# 2. Description of the RTs

Two robotic telescopes has been chosen to implement the demonstrator. The first is located in the Observatorio de Monteganced o (Madrid, Spain) and the second in Observatorio de El Teide (Tenerife, Spain). Both robotic telescopes are prepared to solar observation.

In this section are described the devices of each RT and their physical connections.

## 2.1. Observatorio de Monteganced o

The structure of the equipment is divided in two areas(see Fig. 1). Areas are located in different places of the building.

- A laboratory area. The robotic telescope server(computer) is located in this area.
- A observatory area. Contains the astronomical devices and their operational computers (allow to operate different devices).

This distribution prevents a failure in one PC affecting the whole system, for example, if the PC serving request fails, the other PCs can continue operating the observatory. Note that one kind of devices are connected to a computer (via the USB connection) while others have an ethernet connection (because they are physically connected to a hub/router). The advantage of ethernet devices is that they don’t need a computer to be teleoperated , reducing the equipment needed.

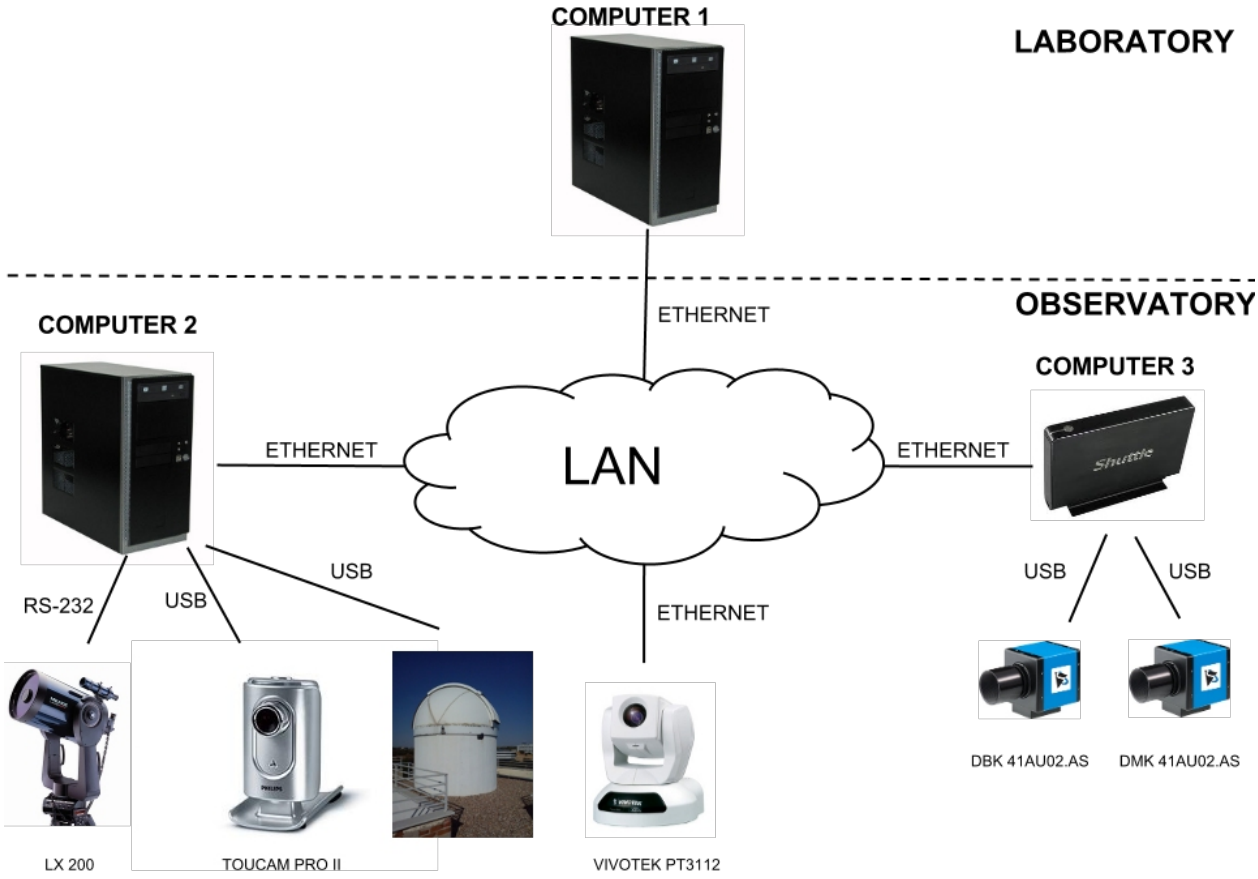


*Figure 1: Architecture of Observatorio de Montegancedo*

The list of devices present in the observatory are (grouped by type):

Computers

- A PC (COMPUTER 1) to execute the services provided by the robotic telescope.
  - O.S: linux ubuntu-server 12.04 LTS (stable version). The election of this distribution is because this computer has to serve the requests from GS, so must be very speed in the responses. This computer is the interface to RTS, it's the robotic telescope gate.
  - Memory: 2GB
  - CPU: 2x Intel(R) Pentium(R) Dual CPU E2160 @ 1.80GHz
- A PC(COMPUTER 2) to teleoperate the internal webcam, the dome and the telescope mount. This computer was being used as devices server before the project, our architecture has been designed to allow the integration of many computers.
  - O.S: linux ubuntu 4.1
  - Memory: 2GB
  - CPU: 1 x AMD Athlon(tm) processor 1GHz
- A barebone (COMPUTER 3) to operate the CCD cameras.
  - O.S: Windows 7. The reason is because this kind of cameras works with libraries written in windows. This reduce the development time. Also, most of astronomical devices work in this operative system. Its price and reduced size makes its a good choice.
  - Memory: 4GB
  - CPU: Intel(R) Atom(TM) D525 @ 1.80 GHz 1.79GHz

Astronomical

- Two CCD cameras
  - DBK 41AU02.AS: is an USB CCD Color camera
  - DMK 41AU02.AS: is an USB CCD Monochromatic camera.
- Mount:
  - Model LX200.

Others

- Internal Camera: Philips Toucam Pro II
- External Camera: Vivotek PT 3112.
- Dome:
  - It is the typical dome. See left side of the figure 2
  - Has two mobile parts.
    - One to turn and to move at desire position. It is composed by several sensors to identify its position.
    - One to open the shutter.

Figure 2 shows images from the outside and inside cameras. The telescope used for solar observation is the small (yellow color) placed on the astronomical telescope.

## 2.2. Observatorio de El Teide

As happened in the other observatory, in this case, the organization is structured in two different areas as can be seen in Figure 3:

- Lab area. Is sited in the main building of the observatory.
- RT area. Is sited outsite of the main building, next to other robotic telescope.

The main difference with the other observatory is that has a greater number of ethernet devices and the dome is shared with other R.T (only works by night). This increment the complexity of the teleoperation because the operations must be synchronized. The problem was fixed splitting the dome in two autonomous parts, one for night RT (also included in the future GLORIA network) and other for the day (included in the demonstrator).

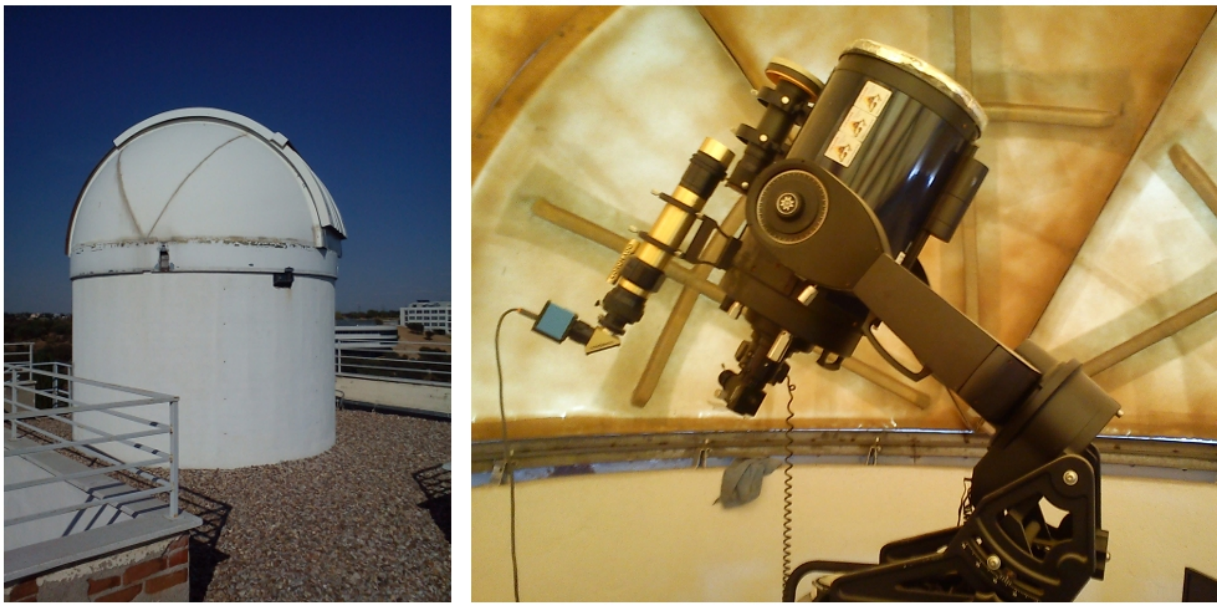

*Figure 2: Views from Observatorio de Monteganceda*

The list of devices present in the observatory are (grouped by type):

Computers

As can be seen, the configuration of computers is different among the observatories (in caso of computers 1 and 2). The reason is because this equipment existed previously. Our architecture allow the execution in different computers and configurations.

- A PC (COMPUTER 1): Has the same purpose than Observatorio de Montegancedo.
  - O.S: Ubuntu 4.4
  - Memory: 4GB
  - CPU: 2x AMD Athlon(tm) 64 X2 Dual Core Processor 5600+
- A PC (COMPUTER 2) to control the dome. The dome is shared by two RTs, therefore the same connection to dome is used.
  - OS: Ubuntu 4.2
  - Memory: 3.5GB
  - CPU: 2 x Intel(R) Pentium(R) D CPU 3.00GHz
- A barebone (COMPUTER 3) to operate the CCD cameras.
  - O.S: Windows 7. The reason is because this kind of cameras works with libraries written in windows. This reduce the development time. Also, most of astronomical devices work in this operative system. Its price and reduced size makes its a good choice.
  - Memory: 4GB
  - CPU: Intel(R) Atom(TM) D525 @ 1.80 GHz 1.79GHz

Astronomical

- Two CCD cameras
  - DBK 41AU02.AS: is an USB CCD Color camera.
  - DMK 41AU02.AS: is an USB CCD Monochromatic camera.
- Mount :
  - Model: Gemini II. It is a german mount (different than Observatorio de Montegancedo) accesible via ip.
- Telescope model: Coronado LS152THA. Has incorporated a H-Alpha filter for solar observation

Others

- External Cameras: There are two, one observing to all structure of the RT and other observing only the RT.
  - Model: DualNight M12
  - Allow night vision.
  - Can detect movement (very useful in future developments)
  - Digital zoom without scale
  - Incorporate speakers and microphone.
- Dome: It is composed by two parts (see fig 4). These parts are autonomous and can be teleoperated individually. For the demonstrator, only can be operated the right part.
- Weather station. The model installed is a METEODATA M3000C. Besides having a large number of sensors (humidity, temperature, air speed, etc...) is equipped with a powerful alarms system and IO controllers. This allow to detect dangerous weather conditions and closing automatically the dome without human/software intervention. Also make it impossible to open the dome in dangerous situations.

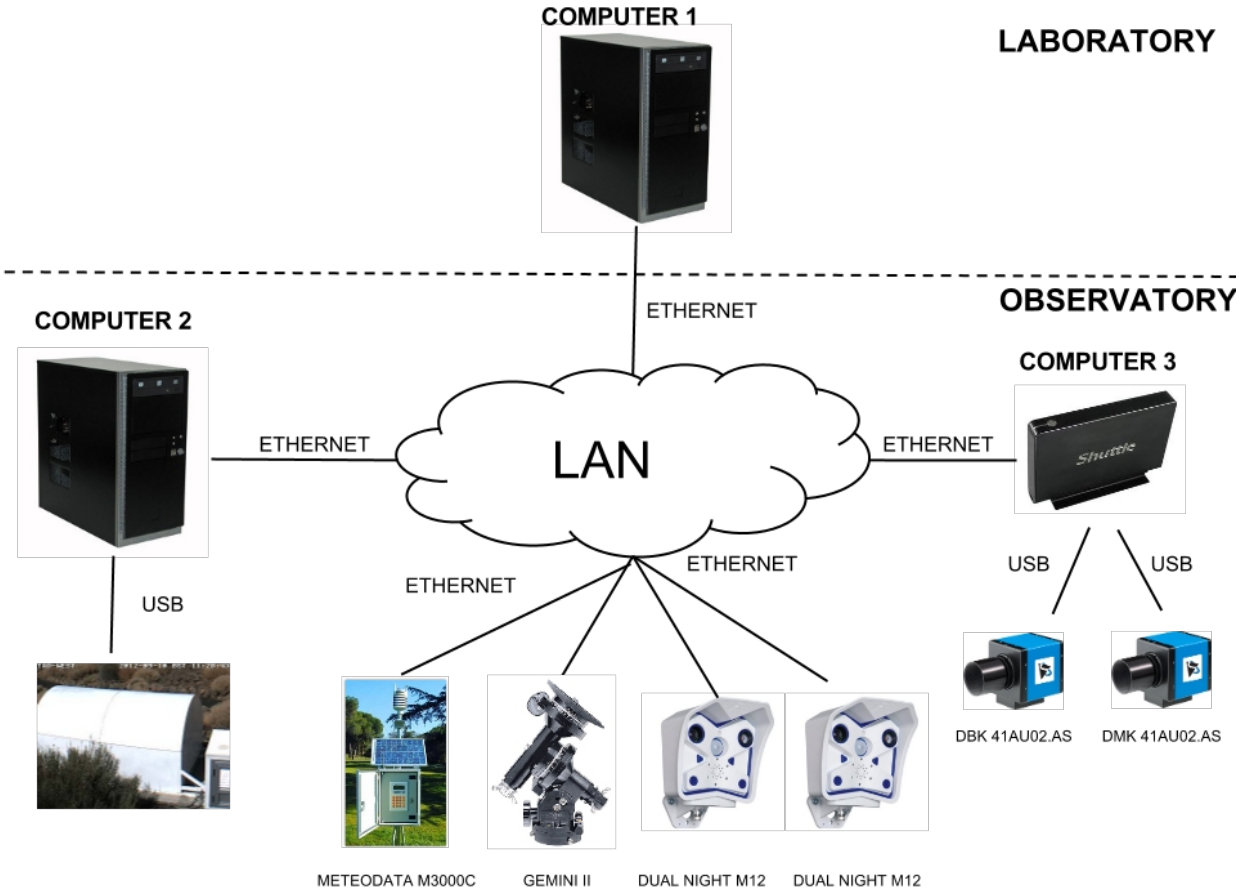


*Figure 3: Architecture of Observatorio de El Teide*

Figure 4 shows an images from the outside and inside cameras. In this observatory already exists another robotic telescope used at night.


*Figure 4: Views from Observatorio de El Teide*

## 3. Demo guide

In this section, all the necessary steps to run properly the demo are described in detail. However, those who prefer not doing all the steps, could watch the videos published into the YouTube GLORIA channel:

http://www.youtube.com/user/gloriaproject

Anyone who pretends to run the demo has to access to the following website:

http://pre.gloria-project.eu

As it is necessary to be logged in the website for running the demonstrator, a user with the corresponding permissions has been previously created in order to the Project Officer and the experts can evaluate the demo without having to create an account. The credentials (username and password) are:

Email address: demo@gloria-project.eu

Password: gloriademo.2011

These credentials must be introduced in the web form which appears after clicking in the "Log in" link, as is shown the Fig. 5 and 6.

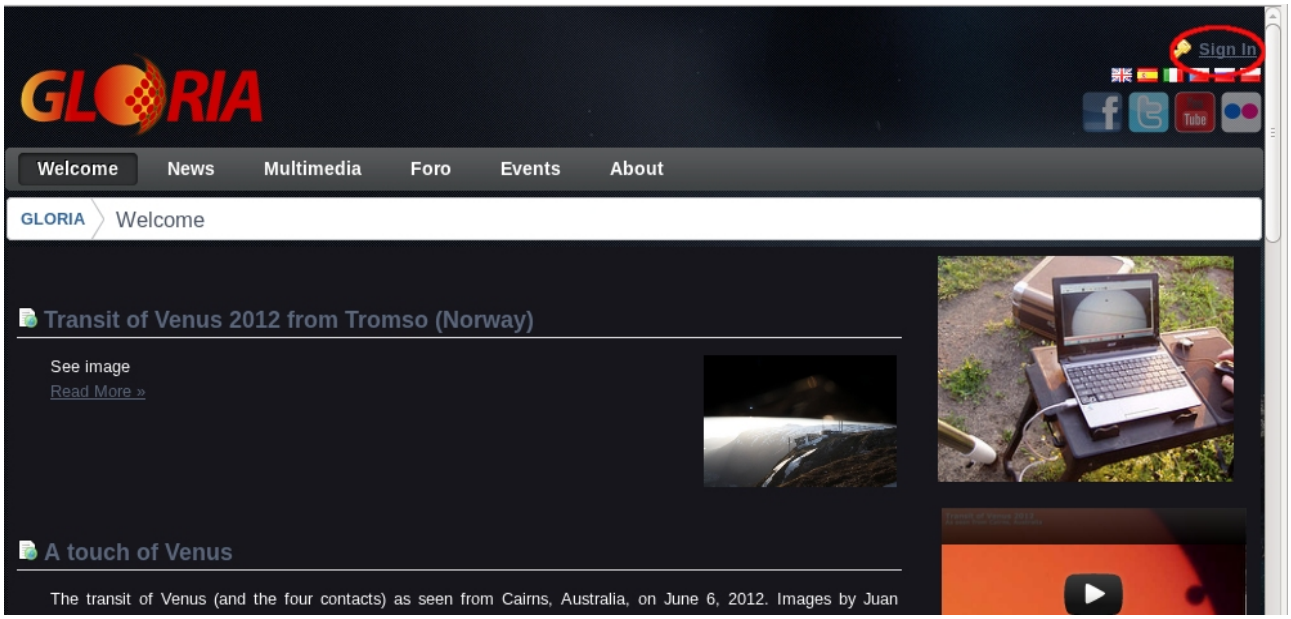


*Figure 5: Screenshot of the Home Page*

However, anyone could create a new and personal account. The first subsection *"User Registration"* is a step by step guide which explains how to create it. After that, the new user would be given the corresponding roles, for what it is necessary to contact UPM team (fsanchez@ciclope.info).

Once the user signs into the website, as with the demo account as with an own account, new tabs appear in the bar navigation, corresponding each one to the different functionality. The Fig. 7 shows the home page which user sees after logging into. As can be seen in the figure, four new tabs appear:

- Authoring Tool: It is the tab which shows how to add and configure components in order to create an experiment. The rest of the tabs of the experiments (Montegancedo, TAD and Off-line tabs) are created previously by means of this Authoring Tool.
- Montegancedo: It is an example of an on-line experiment created through the Authoring Tool tab. In this case this experiment controls the Montegancedo Observatory, one of the telescopes in the network.
- TAD: It is another example of an on-line experiment. In this case this experiment controls the TAD Observatory, one of the telescopes in the network.
- Off-line: It is an example of an off-line experiment created through the Authoring Tool tab.

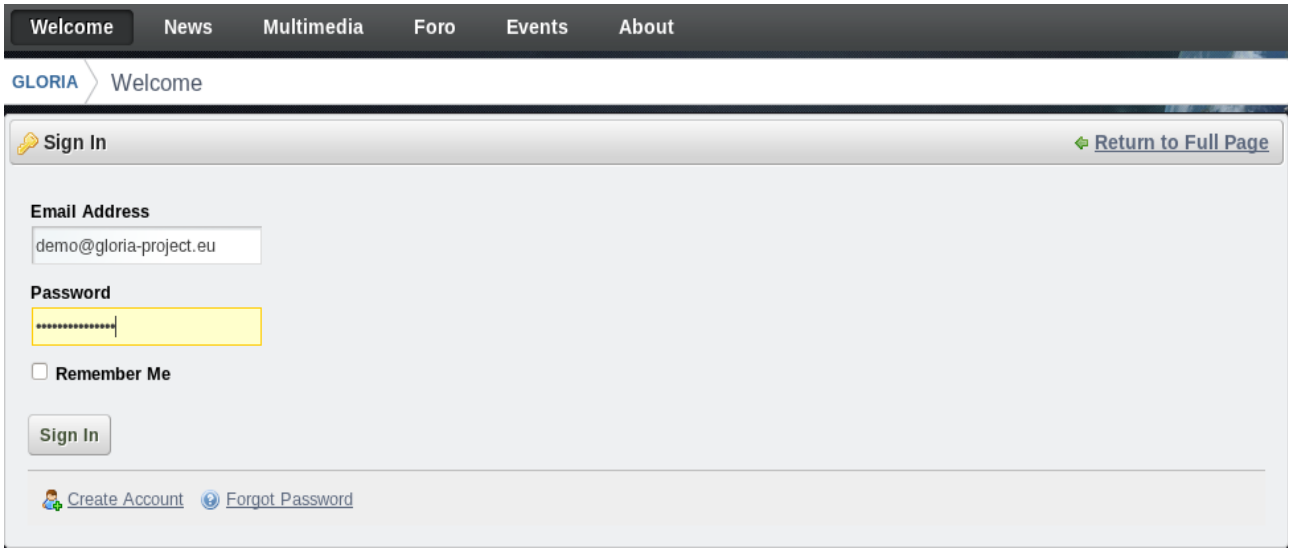


*Figure 6: Screenshot of the "Sign In" Form*

A detailed description of how to use each tab can be found in the following sections.

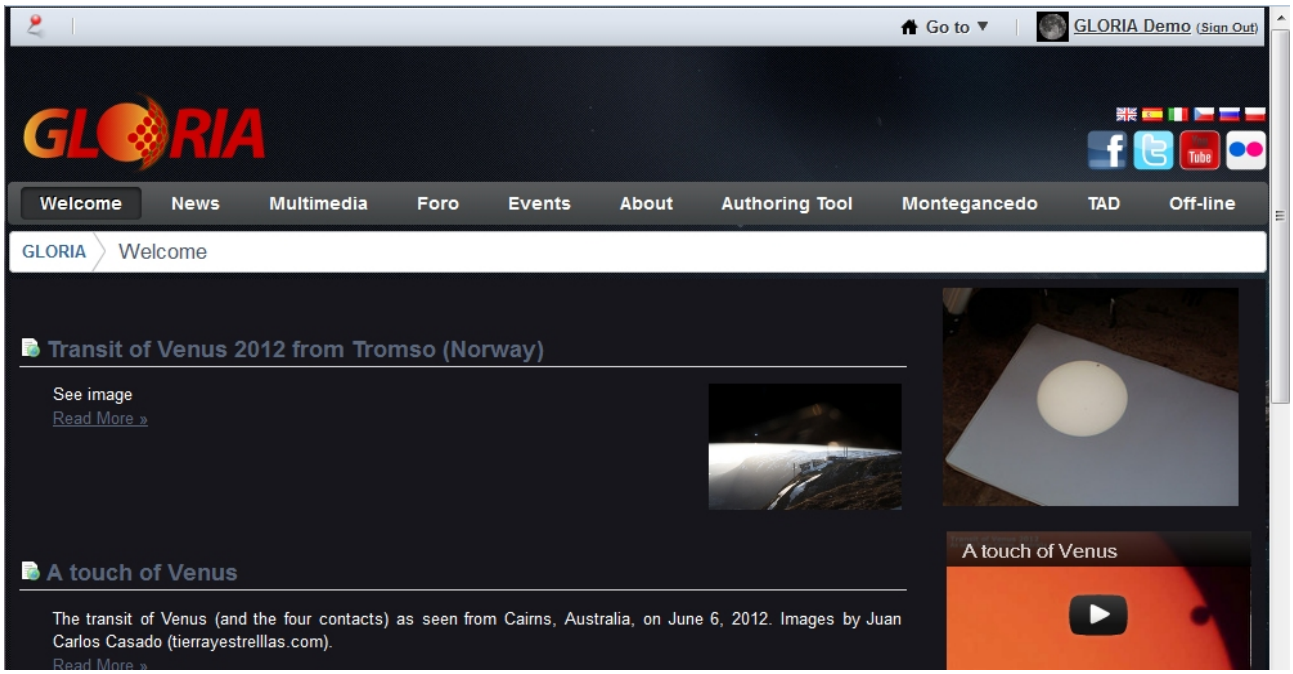


*Figure 7: Screenshot of the home page when a user is logged in*

The second subsection *"RT Registration"* explains how the telescope owners register and preliminary validate their telescopes in GLORIA.

The other subsections *"Online Demonstrator"* and *"Offline Demonstrator"* detail the procedures to build and run the different experiments.

## 3.1. User Registration

1. Click in "Sign in" (see Fig. 6).
2. If you don't have an account yet, click in "Create Account" (see Fig. 8).

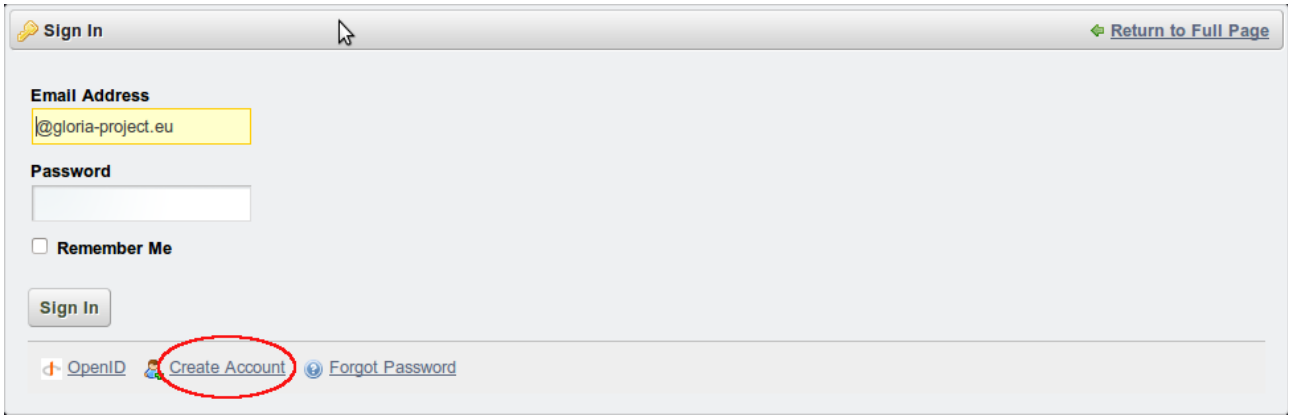


*Figure 8: Screenshot of the "Sign in" form with the link to create an account*

3. Fill out all the fields required (see Fig. 9) and click the "Save" button. Fields "Birthday" and "Gender" are only required for statistical purposes.


*Figure 9: Screenshot of the form to create an account*

4. You will receive two e-mails to your email address indicated in the previous form, as it is indicated in the Figure 10.

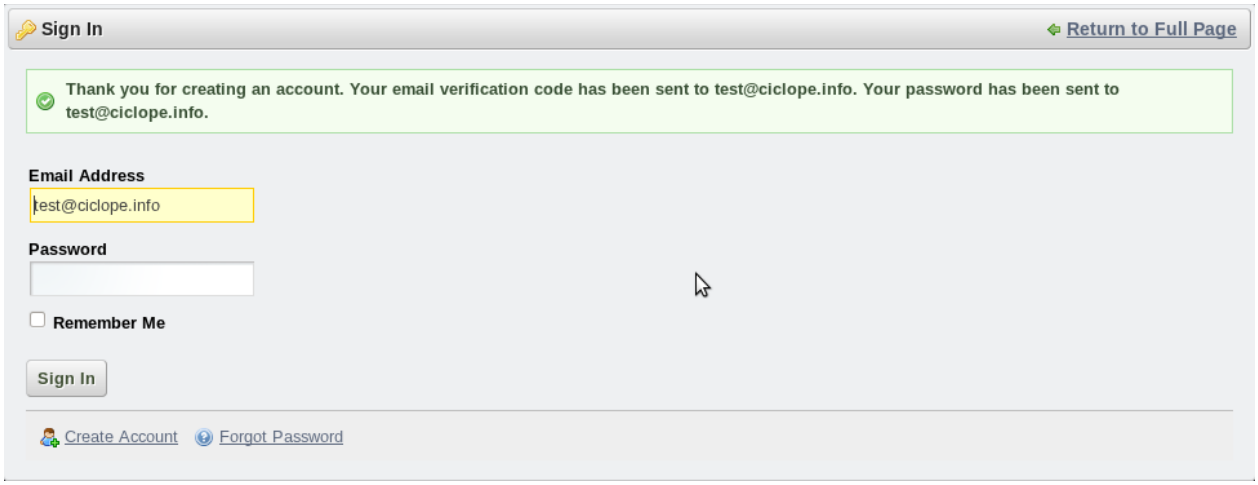


*Figure 10: Screenshot of the message which appears when you create an account*

5. One e-mail contains the password and the second one contains a link to verify your email address. Click in the link attached and a page will be showed, similar to the Figure 11. Later, click in the "Verify" button.

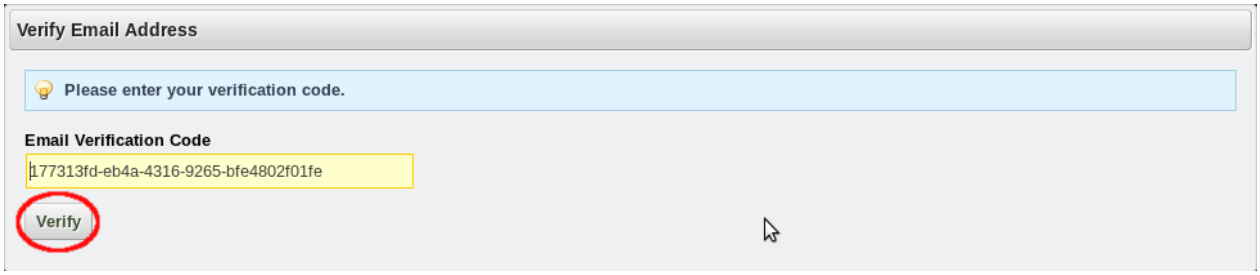


*Figure 11: Screenshot when you click in the verification email*

6. After that, you must sign in from the Home page (see first step). Once you sign in, you must read the "Terms of Use" and click in "I Agree" if you accept the conditions (see Fig. 12). Otherwise, your account will not be created.

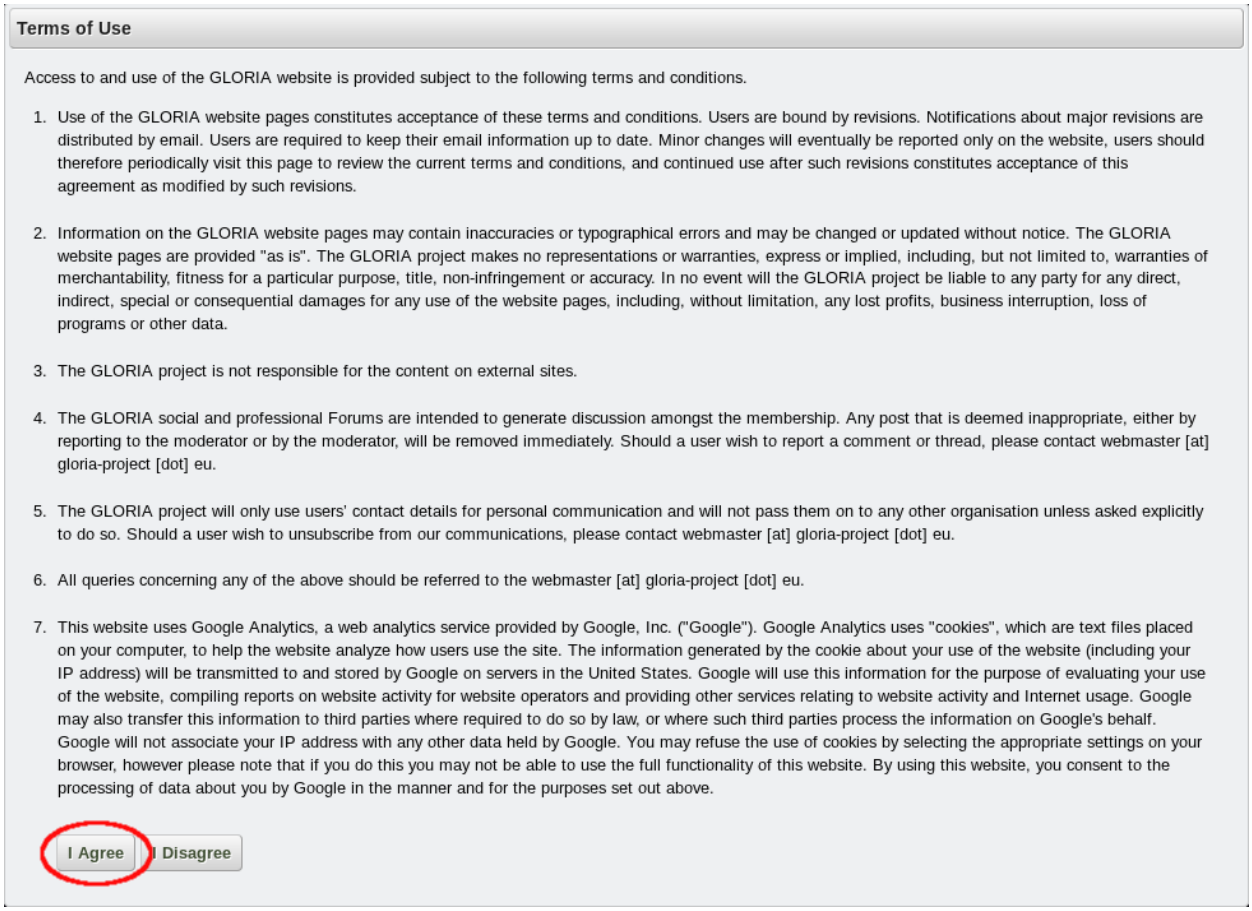


*Figure 12: Screenshot of the acceptance of the terms of use*

7. Once you agree the terms of use, you must set a new password, through a form as in the Figure 13. This is only when the first login for security issues.
8. You will be logged into the application, that means the account has been created properly.

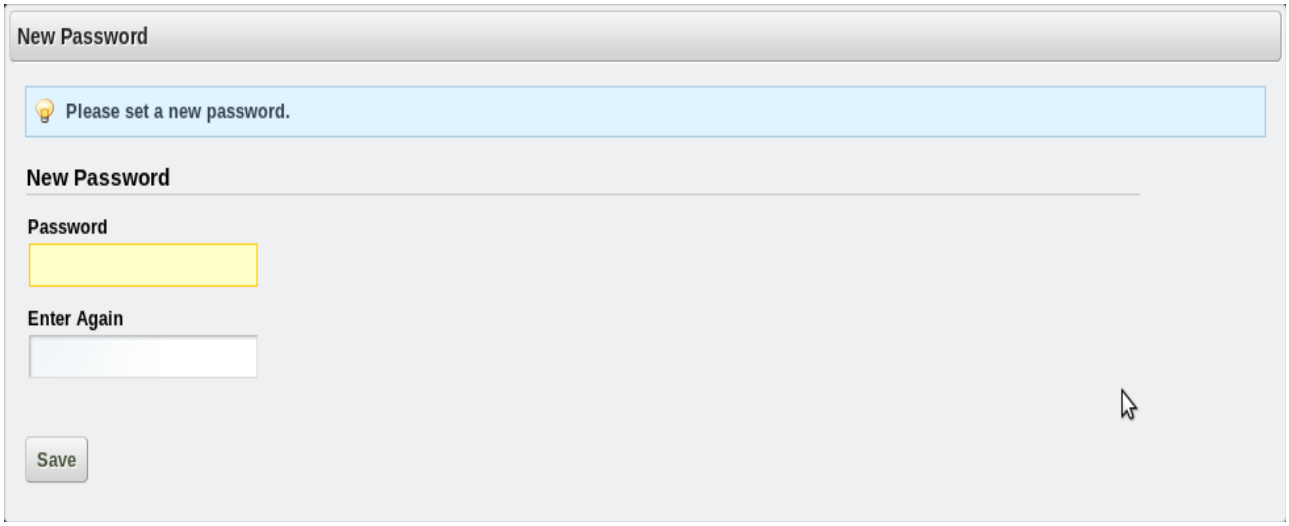


*Figure 13: Screenshot of the form to set a new password*

## 3.2. RT Registration

### Purpose

The purpose of this procedure is to provide a web tool to the telescope owners which facilitates the registration and preliminary validation of telescopes in GLORIA.

### Considerations

The telescope to be included in the GLORIA network must have been robotized previously. The method and architecture of its robotization is not significant, as each owner is totally free in this implementation. What it requires is that the telescope server web access remains active, and complies with the interface specification provided by GLORIA. (DEL 3.5: *Report for high level interfaces for standard RT networks*).

As indicated in the deliverable 7.2, *The Bank of RT trials document,* regarding the integration phase of a telescope on the network, this step is what makes the robotic telescope move from the first to the second (from *Unknown* to *Test*).

All required and optional information of the registration form has been taken from the document 3.6 (*Specification of the reference data and database formats*).

The telescope owner should be aware that once provided all the required information in the registration form, the system starts appropriate tests to verify connectivity and structure of RT devices and configurations implemented.

### Registration form

To proceed with registration, the owner of the telescope must prepare the following information (see Fig. 14):

- Identifying:
  - Name of the telescope.
- Descriptive:
  - Name of the observatory.
  - Brief description of the robotic telescope.
  - (Optional) Country and city.
  - (Opcional) Latitude and longitude.
- Connectivity:
  - URL of the robotic telescope server.

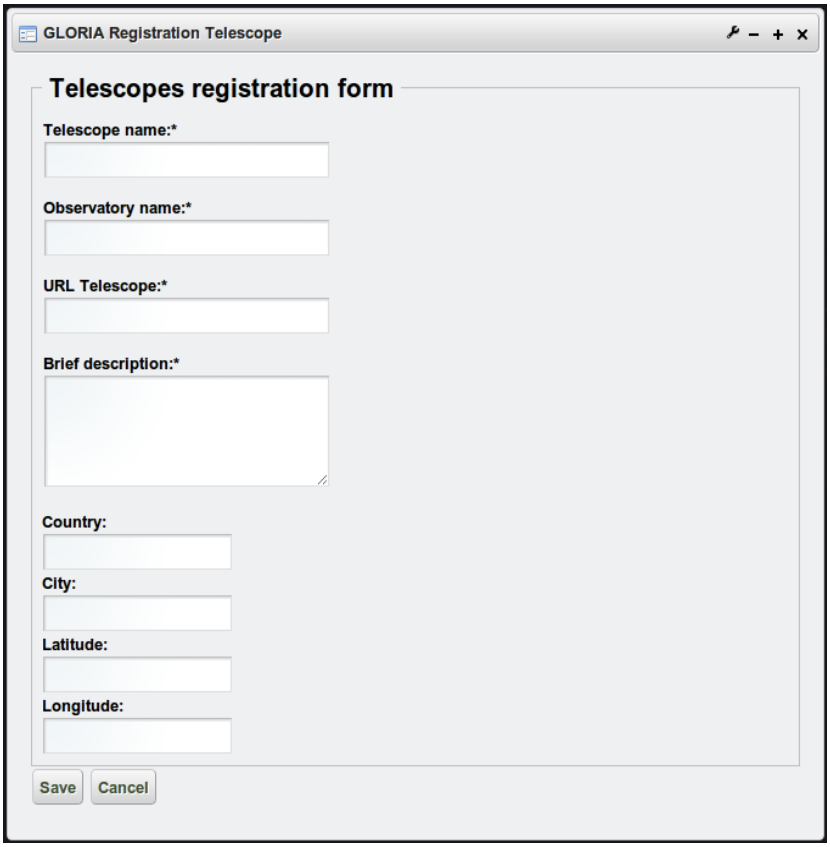


*Figure 14: Screenshot of the robotic telescope registration form*

Each of these data will be required in the registration form, except for those classified as optional. If any of them fail, the form would indicate the inability to perform the registration.

**Procedure**

The steps required to complete the registration of a robotic telescope are:

1. Start the robotic telescope server software, making sure it is accessible from the Internet.
2. Log on to the GLORIA site (pre.gloria-project.eu).
3. Access the profile and request to add a new telescope to the network.
4. Once loaded the registration form, enter all the required data. It is important to take special care when writing the address (URL) of the robotic telescope and the name chosen for it.
5. Upon completion of data entry, click OK to complete the registration.
6. GLORIA proceed to validate the format of the information received. If there are no errors in the data type, the system initiates communication with the telescope server
    a. If the URL of the telescope has been misspelled or the server is not active, the system will notify it with an error message. (*Screen?*)
    b. If there is connectivity and the service is available, GLORIA starts executing the discovery process of all existing devices (its description and configuration). This registration step is very important for the further use of the telescope as teleoperation device panels (cameras, mounts, etc..) offering the possibility of managing all of them that are discovered automatically.
    c. If there are any problems in the process of automatic device discovery, the system will notify the incidence with an error message.
    d. The system confirms the successful completion of the registration process.
7. Accepting registration completion notification.

## 3.3. Authoring Tool demo

How to add a portlet

1. Log into the system and access the “Authoring Tool” tab. The “ Authoring Tool” page, is what will be used for demonstration.
2. To add portlets to the “Authoring Tool” page, must click on "add" link located in the top left and will appear a floating panel with all available portlets (Fig. 15)

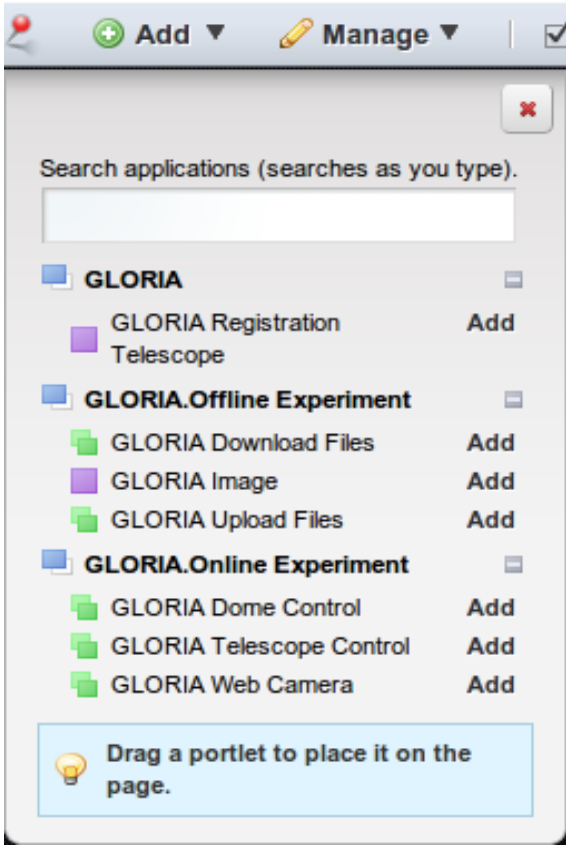


*Figure 15: Floating Panel portlets*

3. Clicking on "add" of a portlet, it is added to the “Authoring Tool” page. You can add as many portlets of the same type as much as you want.

Portlet Configuration

1. When a portlet is added for the first time, it can be set. To do this, must click on the icon of "tools" at the top right and then to "preferences" (Fig. 16).


*Figure 16: GLORIA Web Camera preferences*

2. In general settings tab, can select a camera of observatories, telescopes and cameras availables in GLORIA (Fig. 17)

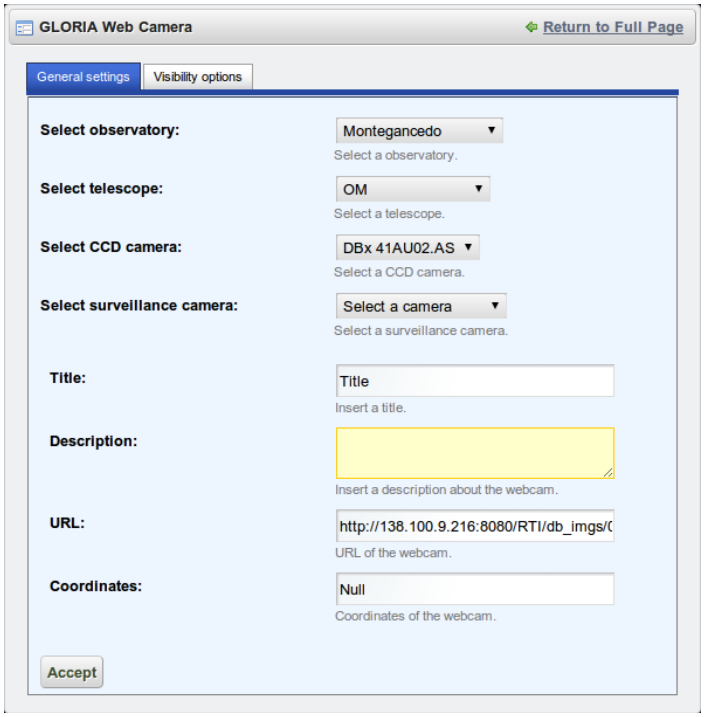


*Figure 17: GLORIA Web Cam general settings*

First, user has to select the camera. After that, information about the camera as the URL of the camera image, its coordinates, a title and a short description will be displayed.

3. In visibility options tab, can configure the camera controls you want to add the portlet (Fig. 18):
4. When configuration is complete, press accept and clicking on "Return to Full Page" to return to the main view of the portlet (Fig. 19).

Overview of an experiment

In previous sections, is explained how to add portlets to the “Authoring Tool” and how to configure them. If everything went correctly, the “Authoring Tool” page should look like the following Fig. 20.

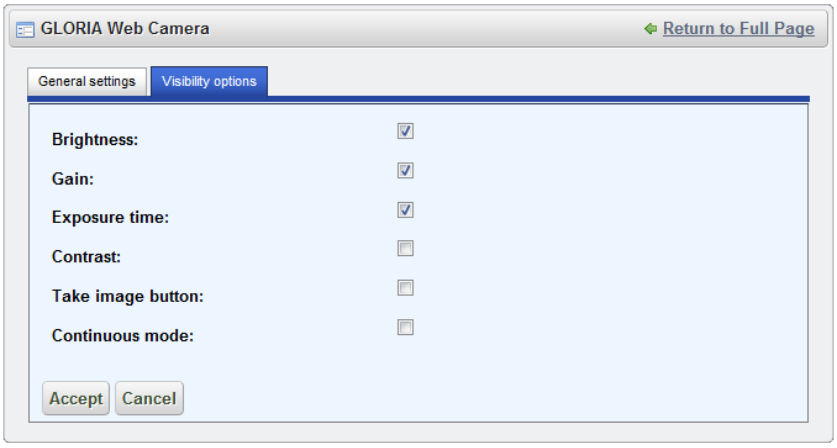


*Figure 18: GLORIA Web Cam visibility options*

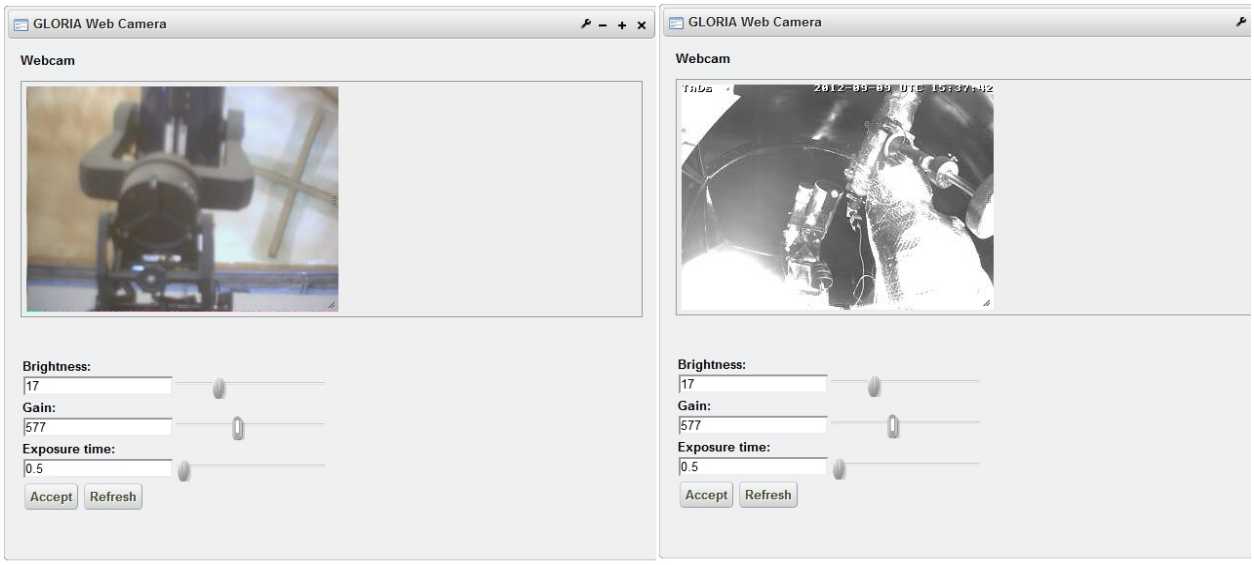


*Figure 19: GLORIA webcam configured*

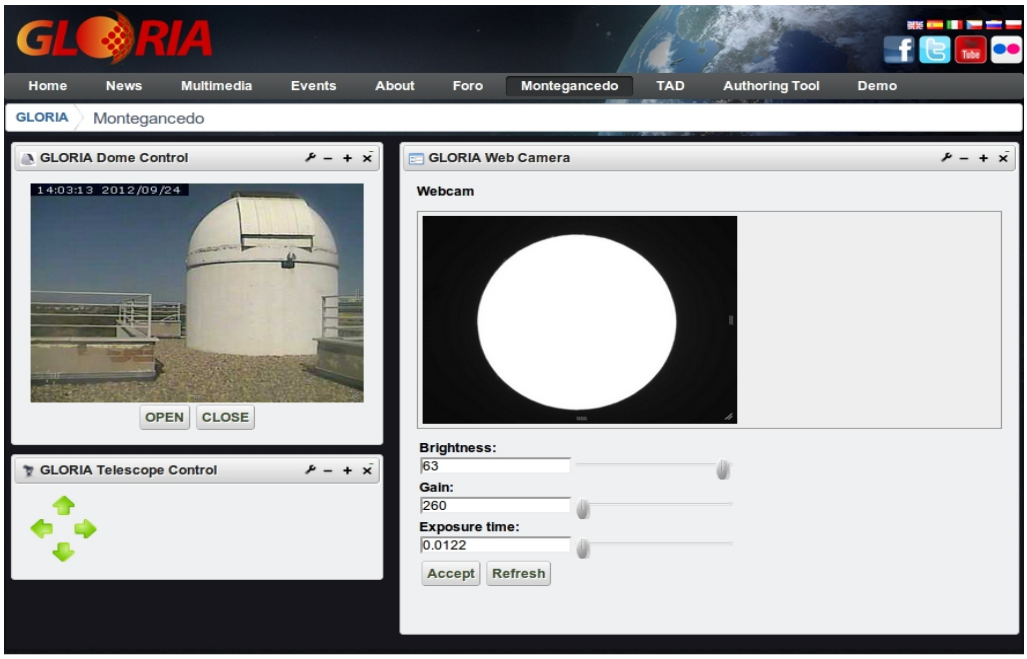


*Figure 20: Experiment On-line Demo for the Montegancedo observatory.*

# 4. Online Demonstrator

## 4.1. Description of the demonstrator

This simple online experiment allows a user to view live webcam images of some of the GLORIA telescope domes. This demonstration of a Liferay portlet in action shows how they work and can be used for GLORIA.

## 4.2. Description of the web components

**GLORIA Web Camera**

This portlet is used to show the images of a webcam (CCD or surveillance) installed in an observatory.

1. When GLORIA Web Camera portlet is added for the first time, it can be set. To do this, must click on the icon of "tools" at the top right and then to "preferences" (Fig. 21).

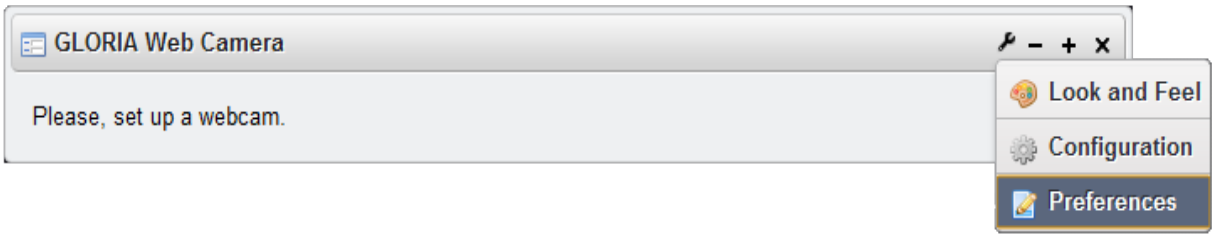


*Figure 21: GLORIA Web Camera preferences.*

2. In general settings tab, can select a camera of observatories, telescopes and cameras availables in GLORIA (Fig. 22)

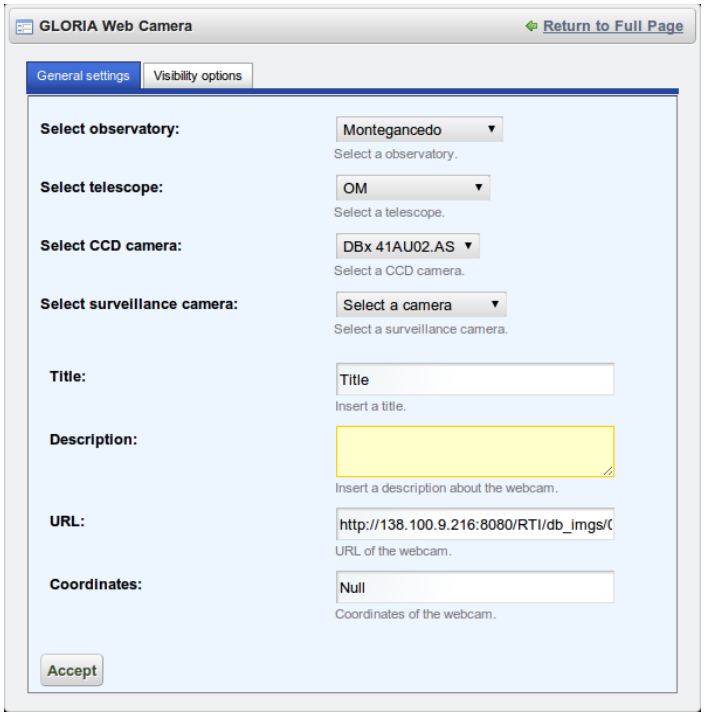


*Figure 22: GLORIA Web Cam general settings*

After selecting the camera, the camera data as the URL of the camera image, its coordinates, a title and a short description will be displayed.

| Content of General setting | Description | Available |
|---|---|---|
| Select observatory | Shows all available observatories GLORIA. | OK |
| Select telescope | Shows all available telescopes of an observatory. | OK |
| Select CCD camera | Shows all available CCD cameras of a telescope. | OK |
| Select surveillance camera | Shows all available surveillance cameras of a telescope. | OK |
| Title | Title to display in the portlet. | OK |
| Description | Description to display in the portlet. | OK |
| URL | URL of the camera images. | OK |
| Coordinates | Coordinates of telescope | OK |

3. In visibility options tab, can configure the camera controls you want to add the portlet (Fig. 23):

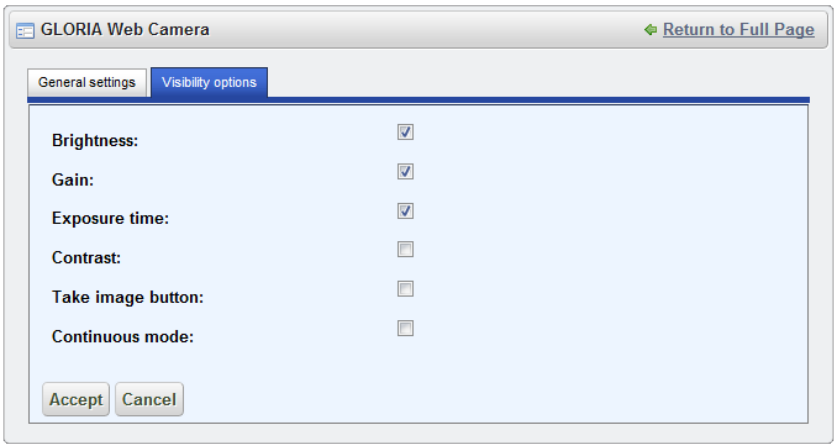


*Figure 23: GLORIA Web Cam visibility options*

| Content of visibility options | Description | Available |
|---|---|---|
| Brightness | Shown in the portlet, the brightness setting controls. | OK |
| Gain | Shown in the portlet, the gain setting controls. | OK |
| Contrast | Shown in the portlet, the contrast setting controls. | OK |
| Take image button | Shown in the portlet, the take image button. | OK |
| Continuous mode | Shown in the portlet, the continuous mode setting controls. | NO |

4. When configuration is complete, press accept and clicking on "Return to Full Page" we return to the main view of the portlet (Fig. 24). On the l*eft: a CCD camera configured of the Montegancedo Observatory. On the right: a surveillance camera configured of the Teide Observatory.*

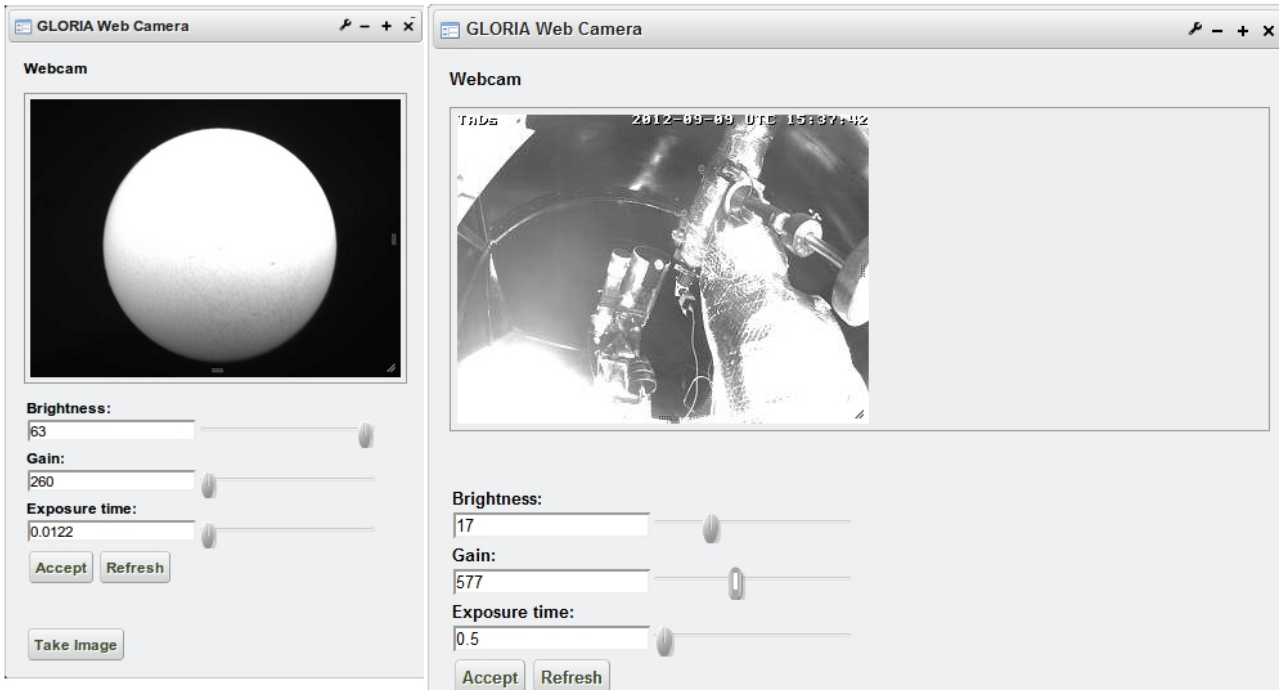


*Figure 24: Different settings for GLORIA Webcam*

5. Clicking on “Accept” button, the camera is configured with the values inserted.
6. Clicking on “Refresh” button, fields are updated with the values of the camera.
7. Clicking on “take Imagen” button (see Fig. 25), a big image (see Fig. 26) is generated with the settings configured in the camera and is shown in a new window, where users can download the image to your computer by clicking the right mouse button and select "save as".

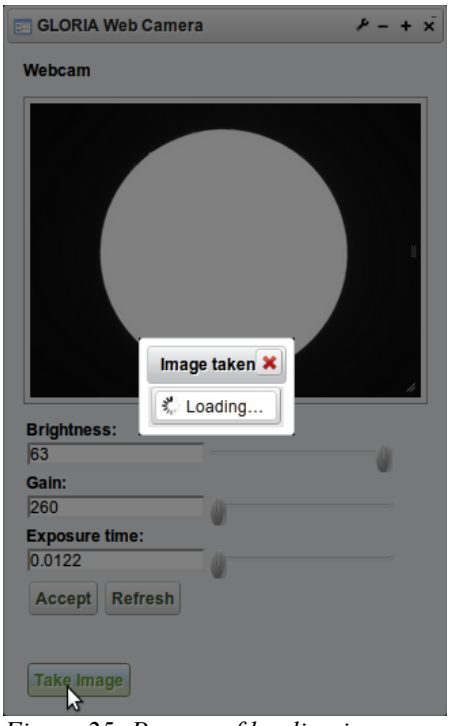


*Figure 25: Pop-up of loading image*

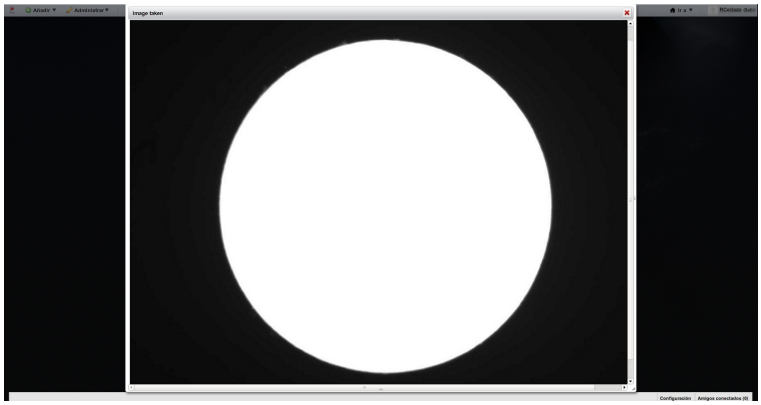

*Figure 26: Pop-up of image generated*

**GLORIA Dome Control:**

This portlet is used to control the dome installed in an observatory.

1. When GLORIA Dome Control portlet is added for the first time, it can be set. To do this, must click on the icon of "tools" at the top right and then to "preferences" (Fig. 27).

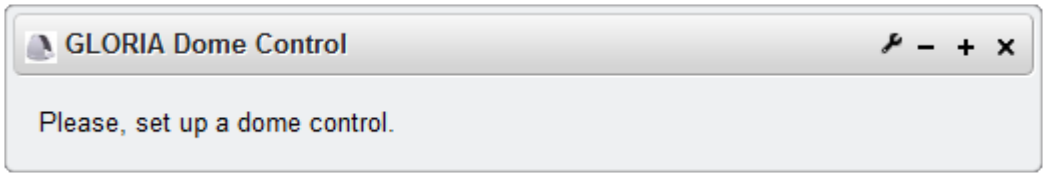


*Figure 27: Initial message of GLORIA Dome Control*

2. In preferences, can select a camera of observatories, telescopes and dome availables in GLORIA (Fig. 28)

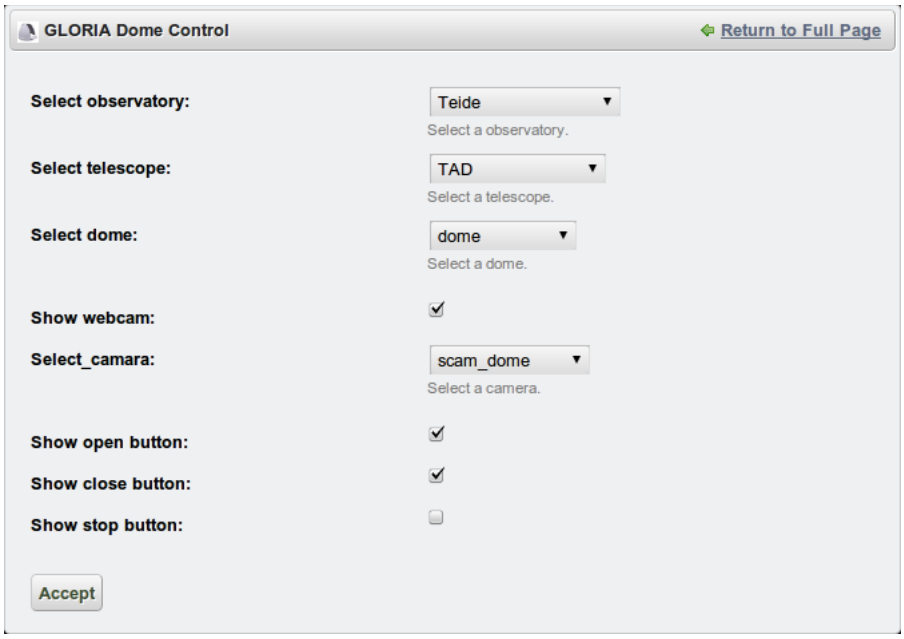


*Figure 28: GLORIA Dome Control preferences.*

| Content of preferences | Description | Available |
|---|---|---|
| Select observatory | Shows all available observatories GLORIA. | OK |
| Select telescope | Shows all available telescopes of an observatory. | OK |
| Select dome | Shows all available domes of a telescope. | OK |
| Show webcam | Shown in the portlet the image of a camera. | OK |
| Select camera | Shows all available cameras of a telescope. | OK |
| Show open button | Shown in the portlet, the open dome button. | OK |
| Show close button | Shown in the portlet, the close dome button. | OK |
| Show stop button | Shown in the portlet, the stop dome button. | NO |

3. When configuration is complete, press accept and clicking on "Return to Full Page" we return to the main view of the portlet (Fig. 29).


*Figure 29: GLORIA Dome Control configured.*

4. Clicking on “Open” button, the dome is opened.
5. Clicking on “Close” button, the dome is closed.

**GLORIA Telescope Control:**

This portlet is used to control a telescope installed in an observatory.

1. When GLORIA Telescope Control portlet is added for the first time, it can be set. To do this, must click on the icon of "tools" at the top right and then to "preferences" (Fig. 30).

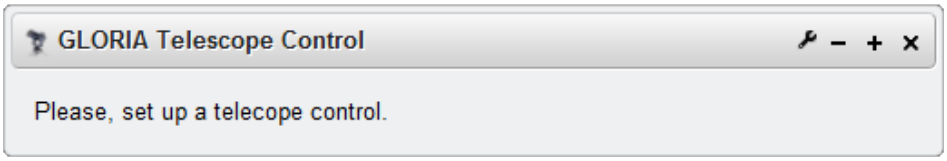


*Figure 30: Initial message of GLORIA Telescope Control*

2. In preferences, can select a camera of observatories, telescopes and mounts availables in GLORIA (Fig. 31)

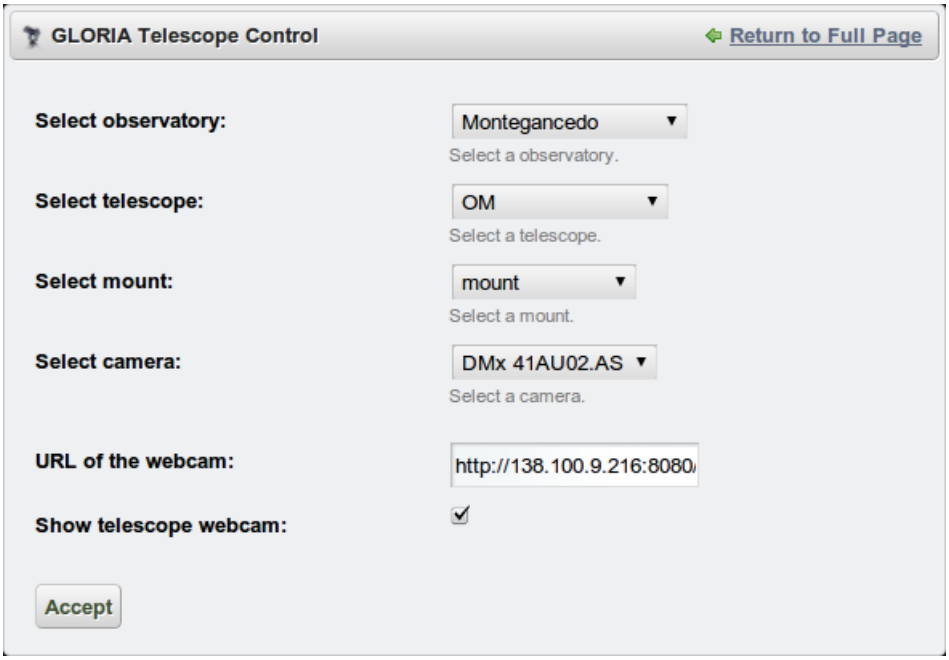


*Figure 31: GLORIA Telescope Control preferences.*

| Content of preferences | Description | Available |
|---|---|---|
| Select observatory | Shows all available observatories GLORIA. | OK |
| Select telescope | Shows all available telescopes of an observatory. | OK |
| Select mount | Shows all available mounts of a telescope. | OK |
| Select camera | Shows all available cameras of a telescope. | OK |
| URL of the webcam | URL of the camera images. | OK |
| Show telescope webcam | Shown in the portlet the image of the camera. | OK |

3. When configuration is complete, press accept and clicking on "Return to Full Page" we return to the main view of the portlet (Fig. 32).


*Figure 32: GLORIA Telescope Control configured*

4. Clicking up arrow, the telescope moves to the north.
5. Clicking right arrow, the telescope moves to the east.
6. Clicking left arrow, the telescope moves to the west.
7. Clicking down arrow, the telescope moves to the south.

## 4.3. Integration tests

### 4.3.1. Telescopio Abierto de Diculgación (TAD)

All tests has been passed with a visual application (see Fig. 33). On the left site appear all the configured devices in TAD. On the right side all operations of devices and their results.

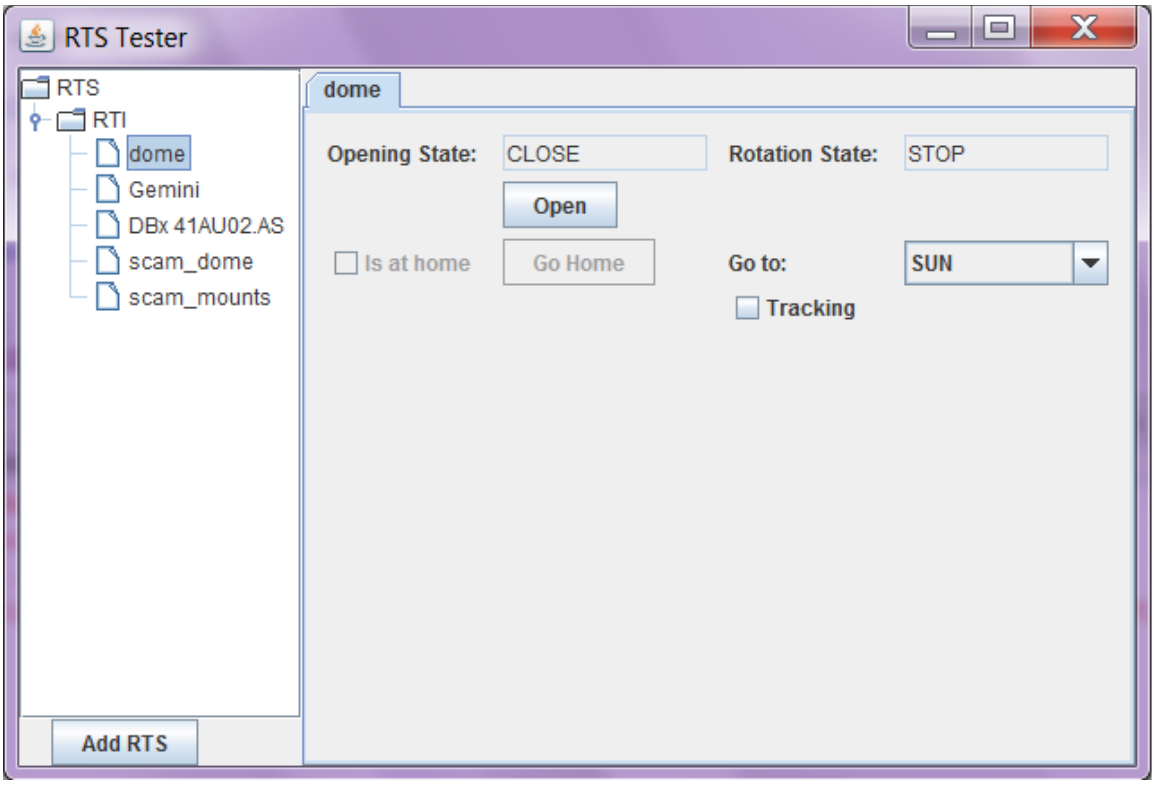


*Figure 33: Screenshot of RTS Tester application used for RTI access test.*

| **Surveillance Camera** | |
|---|---|
| Connection test | Result |
| • Using a browser, open the url of the camera streaming<br>cam-dome: http://150.214.93.54/view/index.shtm<br>cam-mount: http://161.72.128.34/cgi-bin/faststream.jpg | <br>OK<br>OK |
| RTI access test | |
| • Recover the streaming URL of both surveillance cameras | OK |

| **Mount** | |
|---|---|
| Connection test | Result |
| • Using a browser, verify the access to the application web (provided by the manufacturer) that manages the mount. URL=http://161.72.128.201 | OK |
| RTI access test | |
| • Verify<br>○ The mount can be moved to North, West, East and South.<br>○ The mount can be parked.<br>○ The slew rate can be changed. (SLEW, CENTER, GUIDE, FIND)<br>○ The mount can be oriented to the Sun position.<br>○ Tracking can be enabled/disabled.<br>○ The tracking rate can be set to SOLAR.<br>○ The mount state and radec position can be retrieved. | OK<br>OK<br>OK<br>OK<br>OK<br>OK<br>OK<br>OK |

| **Camera** | |
|---|---|
| Connection test | Result |
| • Using a telnet session, verify the access to the camera controller daemon. 161.72.128.10:11000 | OK |
| RTI access test | |
| • Verify<br>○ The one shot exposure can be executed.<br>○ The one shot image url can be retrieved and can be displayed using a browser.<br>○ The continuous exposure can be started and stopped.<br>○ The continuous image url can be retrieved and can be displayed using a browser.<br>○ The access to the following read-only properties:<br>■ One shot image path<br>■ Continuous image path<br>○ The access to the following read/write properties:<br>■ Brightness<br>■ Gain<br>■ Exposure time<br>■ Continuous mode quality<br>■ One shot mode quality<br>■ Auto gain<br>■ Auto exposure | OK<br>OK<br>OK<br>OK<br><br>OK<br><br>OK<br>OK<br><br>OK<br>OK<br>OK<br>OK<br>OK<br>OK<br>OK |

| **Dome** | |
|---|---|
| Connection test | Result |
| • Using a telnet session, verify the access to the dome controller daemon. 161.72.128.10:2000 | OK |
| RTI access test | |
| • Verify<br>○ The dome can be opened and closed.<br>○ The dome can go to home position.<br>○ The dome cannot be oriented to Sun position.<br>○ The tracking management is unsupported.<br>○ The rotation state recovering always is in STOP state..<br>○ The open/close state can be retrieved. | OK<br>OK<br>OK<br>OK<br>OK |

### 4.3.2. Observatorio de Montegancedo (OM)

All tests has been passed with a visual application (see Fig. 34). On the left site appear all the configured devices in TAD. On the right side all operations of the selected device. The figure shows the operations of a ccd camera.

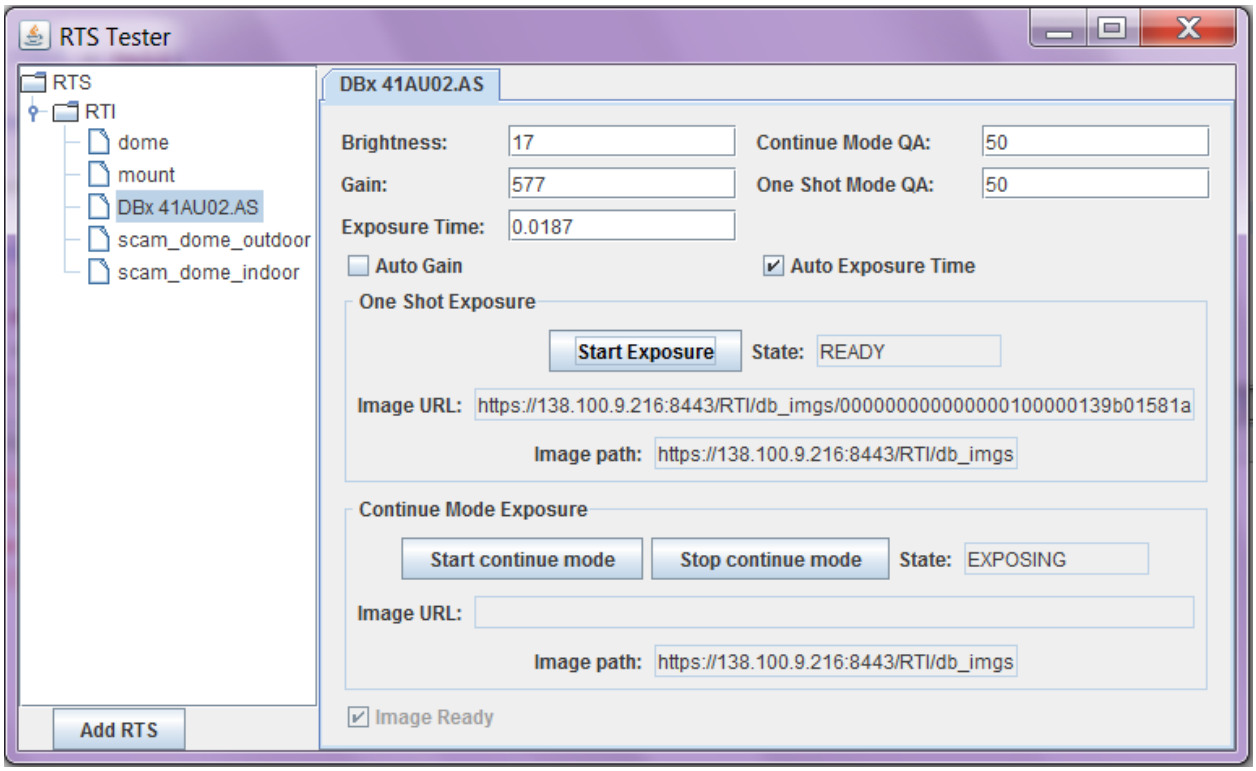


*Figure 34: Screenshot of RTS Tester application used for RTI access test*

| **Surveillance Camera** | |
|---|---|
| Connection test | Result |
| • Using a browser, open the url of the camera streaming<br>cam-dome: http://tornasol.datsi.fi.upm.es/catalejo/imgout.jpg<br>cam-mount: http://gayuba5.datsi.fi.upm.es/images/interior.jpg | <br>OK<br>OK |
| RTI access test | |
| • Recover the streaming URL of both surveillance cameras | OK |

| **Mount** | |
|---|---|
| Connection test | Result |
| • Using a telnet session, verify the access to the camera controller daemon. 138.100.9.142:2001 | OK |
| RTI access test | |
| • Verify<br>○ The mount can be moved to North, West, East and South.<br>○ The mount can be parked.<br>○ The slew rate can be changed. (SLEW, CENTER, GUIDE, FIND)<br>○ The mount can be oriented to the Sun position.<br>○ Tracking can be enabled/disabled.<br>○ The tracking rate can be set to SOLAR.<br>○ The mount state and radec position can be retrieved. | <br>OK<br>OK<br>OK<br>OK<br>OK<br>OK<br>OK<br>OK |

| **Camera** | |
|---|---|
| Connection test | Result |
| • Using a telnet session, verify the access to the camera controller daemon. marte.datsi.fi.upm.es:11000 | OK |
| RTI access test | |

| | |
|---|---|
| • Verify | |
| ○ The one shot exposure can be executed. | OK |
| ○ The one shot image url can be retrieved and can be displayed using a browser. | OK |
| ○ The continuous exposure can be started and stopped. | OK |
| ○ The continuous image url can be retrieved and can be displayed using a browser. | OK |
| ○ The access to the following read-only properties: | |
| ■ One shot image path | OK |
| ■ Continuous image path | OK |
| ○ The access to the following read/write properties: | |
| ■ Brightness | OK |
| ■ Gain | OK |
| ■ Exposure time | OK |
| ■ Continuous mode quality | OK |
| ■ One shot mode quality | OK |
| ■ Auto gain | OK |
| ■ Auto exposure | OK |

| **Dome** | |
|---|---|
| Connection test | Result |
| • Using a telnet session, verify the access to the dome controller daemon. gayuba5.datsi.fi.upm.es:2002 | OK |
| RTI access test | |
| • Verify | |
| ○ The dome can be opened and closed. | OK |
| ○ The dome can go to home position. | OK |
| ○ The dome can be oriented to Sun position. | OK |
| ○ The tracking can be enabled/disabled. | OK |
| ○ The rotation state and open/close state can be retrieved. | OK |

# 5. Offline Demonstrator

The purpose is to prove that any user can download a document, fill it and sending back to the system.

## 5.1. Web components

**GLORIA Download File**

This portlet is used to allow a user to download files which become available by admin user (Fig. 35). For example, it can be used to enable guides, practices, manuals, etc.


*Figure 35: GLORIA Download files view.*

1. In tools and preferences, the admin user can upload files (Fig. 36)

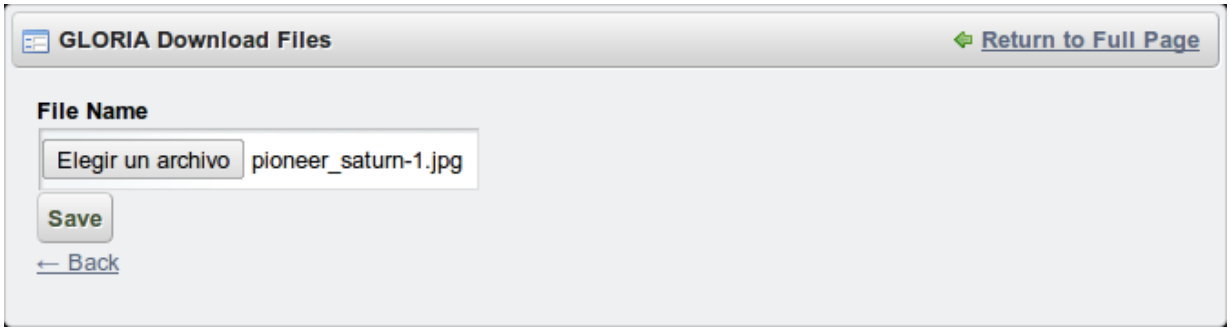


*Figure 36: GLORIA Download files preferences*

2. When a files is uploaded successfully, a message will appear (Fig. 37)

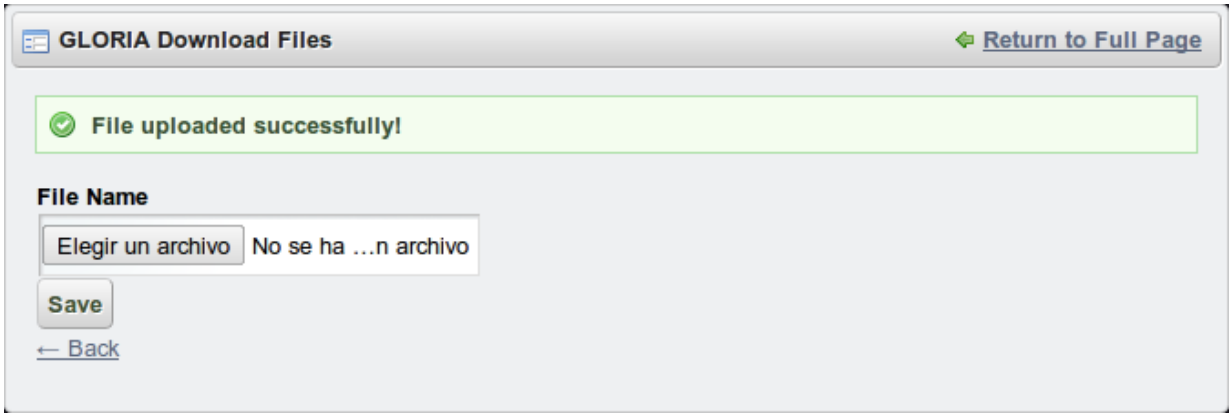


*Figure 37: GLORIA Download files preferences with success message*

3. Returning to the main view, it is observed that the new file is available for download (Fig. 38)

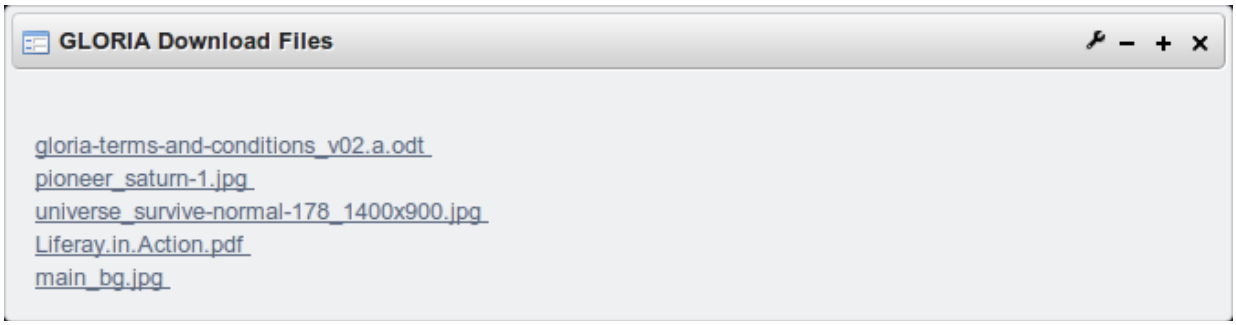


*Figure 38: GLORIA Download files view with the last uploaded file by administrator user*

**GLORIA Upload File**

This portlet is used to allow a user to upload files (Fig. 39). For example, it can be used to report results, statistics, etc.


*Figure 39: GLORIA Upload files view*

When a files is uploaded successfully, a message will appear (Fig. 40)

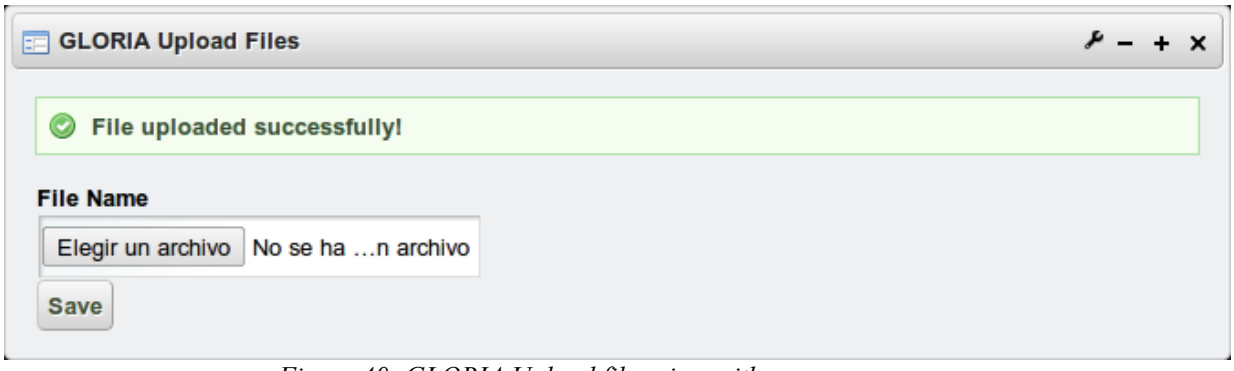


*Figure 40: GLORIA Upload files view with success message*

**GLORIA Image File**

This portlet allows a user to download images (Fig. 41). GLORIA Image File can be used to configured an online repository of images which appear randomly.


*Figure 41: GLORIA Image the first view*

1. In tools and preferences, the admin user can set up an online repository of images.


*Figure 42: GLORIA Image preferences*

2. Returning to the main view, it is shown the images of online repository (Fig. 43)

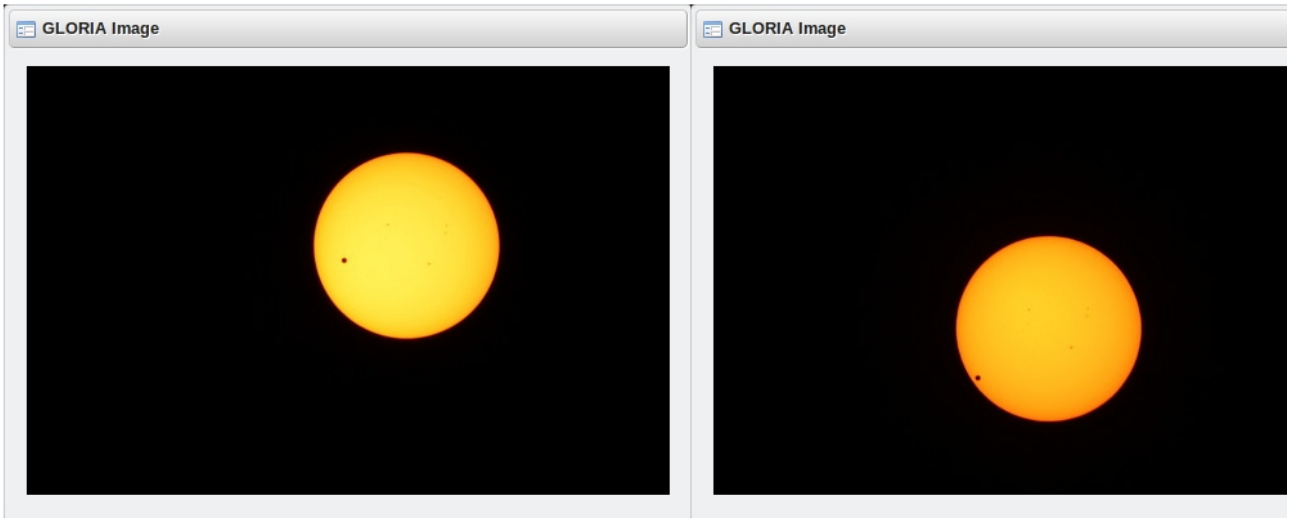


*Figure 43: GLORIA Image view configured*

# GLORIA Partners

**UPM**
Universidad Politécnica de Madrid
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**AUAV**
Astronomical Institute, Academy of Sciences of the Czech Republic
CZECH REPUBLIC

**CSIC**
Consejo Superior de Investigaciones Científicas
SPAIN

**INAT & CVUT**
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CZECH REPUBLIC

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CZECH REPUBLIC

**IAC**
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**INAF**
Istituto Nazionale di Astrofisica
ITALY

**SAO**
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**UCDNUID**
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