

# The GeoSight Handbook



Insights from Spatial Data.

UNICEF

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# 1 For Users

## 1.1 User Guide

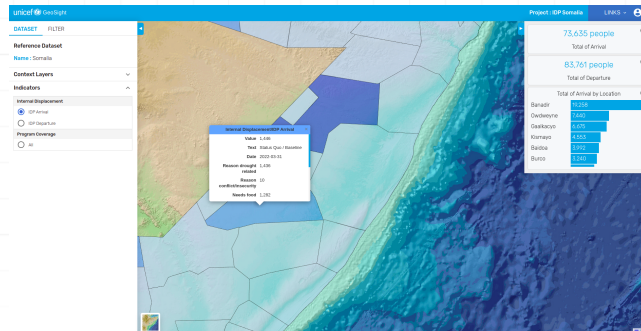
## 1.1 Overview

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The GeoSight platform is a situational awareness platform to monitor multiple factors including: health, child protection, nutrition, wash (water, sanitation and hygiene) and education in a geographic region. To fully understand the platform and the information you can obtain from it, you need to understand how it works.

## 1.1 Map Interactions

The GeoSight map interaction tools give an interactive map experience. Users are able to zoom and pan to areas of interest and display information in just a few clicks.



### 1.1.1 Zoom In and Out

#### Zooming in

Zooming into an area on the map is useful to show a specific area of interest and to see more detail.

To Zoom in or out on the map canvas either scroll your mouse up and down or use Ctrl+shift+click and drag an square around the area you wish to zoom in on.

### 1.1.2 Move Around the Map

#### Moving Around the Map

Navigating or panning around the map is useful to focus on specific areas of interest.

To pan, **click** the mouse on the map canvas and while holding the click drag the map to the desired area of interest.

### 1.1.3 Information Display Window


#### Information Display Window

To gain information on a specific area within the map, "click" on that area with your mouse. By clicking on an area, a popup window with information related to your selected layers for that area will be displayed on the screen. This action will also change the info window in the 'Summary Tab' to the 'Indicators Tab'. You can also view more details by "clicking" on 'details' in the popup window. This will also change the info window's tab to the 'Details Tab'.

## 1.1 User Tutorial

### Note:

#### RIR: Risk-Informed Response

 The RIR platform is a situational awareness platform to monitor health, child protection, nutrition, water, sanitation, hygiene, and education in a geographic region. This section will explain how the RIR platform works so that you can fully understand the platform and the information you can obtain from it.

### 1.1.1 Working with this documentation

Whenever you see a phrase in **bold**, it refers to a link or button on the user interface that you can interact with.

### 1.1.2 Session outline

This session will tour the RIR platform functionality using simple examples and workflows that the everyday platform user would use.

#### 1.1.2.1 Important Links:

- [RIR Platform](#)
- [RIR Full Documentation](#)

#### 1.1.2.2 Session Outline:

During this tutorial, we will show you how to navigate the platform and summarise what each tool and button does. We will include simple examples and workflows.

1. Access the platform
2. **Documentation** and **Links**
3. **Instances**
4. **Sign in**
5. The Dashboard tour:
  - **The Context Analysis Button**
  - **Programme Interventions Panel**
  - **The Indicator Panel**
  - **Hiding and showing panels**
  - **The Traffic Light**
  - **The Information Panel**
  - **Downloading Data button**

Dashboard Flow Diagram

(See also [Indicators](#)).

6. Layers
  - The **Context Layers Icon**
  - The **Basemap Icon**
  - **Geography Level Panel**

Layers Flow Diagram

(see also [Layers](#)). We will look at these layer related topics:

7. Map Interactions
  - **Panning** moving around the map
  - **Zooming** in and out
  - The **Information Display Window**
  - **The Map Slider** (eg. to compare people in need of 'Child Protection' vs. 'Child Protection Program Coverage')
  - **Timelapse Bar**(eg. IDP arrival over time)

Map Interactions Flow Diagram

(see also [Map Interactions](#))

8. More on the **Information Panel**
  - **Graphical Representation**
9. Questions


You can find more self-study content in the full system documentation here: [Platform Tour](#)).

## 1.1.3 Tutorial


### 1.1.3.1 Accessing the platform

You can access the platform here: <https://staging.rir.kartoza.com>:

 **Note:**


 **Note** this link will change in the future. We will advise all users of the system when that happens.

### 1.1.3.2 Documentation

 On the top right-hand side of the landing screen, there is a drop-down menu for **Links** and a link to a sign-in page. The **Links** drop-down menu is a quick way to access the documentation for using the platform and the different data and resources associated with the platform (which are not covered in this tutorial).


Links Menu

 **Note:**

 **Instructor note:** Briefly show the documentation and how to navigate it.


Documentation

### 1.1.3.3 Instances


 On the landing page, you will see several **instances**. An **Instance** is a configured dashboard for a specific region or country. We will use the **Somalia instance** for the examples in this tutorial.

Instances

### 1.1.3.4 Signing In

 Return to the RIR platform, click on the **Sign In** link, and a page will open where you can add in your user name and password. Your credentials are created for you by an administrator and may not be necessary. As a web user, you will still be able to interact with the platform without a login.

Sign In


 **Sign In** is only important to access specific workflows. Some data and workflows may only be available to named users who are signed into the platform. Once you are signed in to the platform, your name will appear on the top right, and depending on your admin privileges, there will be a drop-down with the option to log out and reach the admin page if you are an administrator.

Signed In

### 1.1.3.5 The Somalia Dashboard

 Click on the **instance** labeled Somalia, and the dashboard will load and open.


Dashboard

 You will see I am still signed in, and there are three options available to me on the bottom left. If I sign out, these buttons will disappear because web users do not have access to some functionality. For this tour, a web user status will work.



Web User

## 1.1.4 Dashboard Tour


 Let's tour the dashboard together. We will start from left to right across the screen, showing what each button and panel does with a few simple examples.


### 1.1.4.1 The Context Analysis Button


 At the top left of the screen, you will see the **Context Analysis Button**. This button gives access to the **Indicator Panel** it is selected, and the is panel open by default.

Context Analysis Button

 Below the **Context Analysis Button** is the **Programme Interventions Panel**. It contains a set of buttons that allow access to key risk response indicators.

 Click on the arrow next to the house symbol, the tabs will extend and be labeled so you can see what each symbol means, Health, Child Protection, Nutrition, Wash, and Education.


 For example, the second button-down with a picture of the caduceus/ medical symbol indicates **Health**. Once opened the panel shows a report on the status of or degree to which the intervention for that factor is helping and other information like costing.

 Click on each button to see the information for each factor.


Program Interventions Panel


### 1.1.4.2 The Indicator Panel

 Click back on the **Context Analysis Button** and observe the **Indicator Panel**.


 This panel contains a list of **indicators** (special layers) that relate to the main factors of interest on the platform like health and nutrition. Indicators are special layers in RIR that are linked to the situation in the region. Indicators are used to show the situation in the region. For example, in Somalia, there are indicators for the Children in need of protection **PIN- Child Protection** that we will practically explore below. The panel is expanded by default but can be collapsed if you click on the tab labeled with a house on the right side of the panel. Collapsing the pannel can allow you to observe the map better.


Indicator Panel


 Click on the triangle next to the label **People In Need**.

 This opens a drop-down menu showing all the data on different groups of people that require assistance from government or other organizations.


 Select the box next to **PIN- Child Protection**.

 A tick will appear in the check box and you will see a layer appear on the map. The map shows areas in darkening blue shades that indicate a decrease in child protection per region. You can select only one sub-layer (e.g. best-case or worst-case) of the **indicator** layer by ticking or un-ticking the **checkboxes** next to each of the cases.

 Click and unclick the different case options (see how the map changes). Ensure all of the **PIN- Child Protection** sub-Layers are ticked to continue with the tutorial.


 An **Information panel** will also open on the right-hand side of the screen when an **indicator** is selected. We will go through the **Information Panel** in more detail shortly.

People in Need

 The coloured circles next to each **indicator** show the current severity level for that indicator. Blue is the best case, yellow mid, and red is the worst case. The case scenario will indicate if that region or state needs additional responses or interventions to reduce risk.

#### Coloured Circles


### 1.1.4.3 The Traffic Light


 You can access what we call traffic lights for the indicators by clicking on the arrow in the top right of the **Indicator panel**. This will expand the information on the severity level, for example, you can see that for our selected layer of **PiN- Child Protection** overall in Somalia the situation is worsening for children hence the yellow color. Several regions need additional responses or support to protect vulnerable children. Click the triangle (now on the top right) again to see the map again.

 Click on the arrow in the top right of the **Indicator panel**


#### Traffic Lights

### 1.1.4.4 The Information Panel


 On the right-hand side of the map area, the **Information Panel** shows a summary of the severity case of the indicator selected for each region or district. For example in Adan Yabaal Child protection has a value of 3. You will also see an interactive **pie chart** infographic summarising all the data in the layer.

 Hover your mouse over the **pie chart** and observe the labels and number of districts in Worsening and Worst Case scenarios.

#### Information Panel

 If you click on the region name like Adan Yabaal in the **Information Panel** the platform will show which region it is on the map with an information window.


 Click on Adan Yabaal (the text) in the **Information Panel** under the pie chart.


 Once a single district is selected, the **Information Panel** will show all the indicators for that specified region and the severity of the situation for each indicator using different traffic light colors. You can click on each indicator for more detail like Child protection and you will see more information and a simple infographic. We will look at the **Information Panel** with different data further on in this tutorial and show how the simple infographic in the detail section can show changes over time if the data has such information.

 Click on **PiN-Child Protection** (the text) in the **Information Panel** and observe the information and simple Infographic and hover your mouse over it.

#### Information Window Detail


### 1.1.4.5 Downloading Data Button

 You can download any data of interest by clicking on the round symbol with the download arrow in it (**download button**) next to each indicator in the **Indicator Panel** for the selected indicator. You can get all the data for the instance if you click **the download button** at the top of the **Information Panel**. This will give you a spreadsheet of the information that you can use outside of the platform.


 Click on the **download button** next to **People In Need** and observe the downloaded spreadsheet on your computer. Note the data is also colour-coded in the spreadsheet as per the platform.

#### Download Data Spreadsheet

## 1.1.5 Layers

 Let's explore the layers available to visualize and give context to the indicators on the map.


### 1.1.5.1 Context Layers

 The **context layers** can be accessed by clicking on the button with 3 overlapping squares on it. There will be a list of options to choose from. Context layers are shown on the map to provide a sense of the conditions in the region. They can cover any topic - for example, security, food security, infrastructure, etc. Context layers do not have indicator data attached, they are a visual aid in the dashboard map. Let's Select 'Access' We can now see all the roads, airports, and other access indicators/features. If you click on the drop-down triangle you can choose exactly what features you want to see and Turn off everything except roads and ports by checking and unchecking the feature boxes. If you click on a point on the map like a port you will be given information about that specific point in an **Information Window**.


 Click on the context layers button, select access layers select only roads and ports. Click on a port and see the information window.


Layers Ports


### 1.1.5.2 Base Maps


 You can also change the base map behind the data if you click on the world icon in the panel. The default is an OpenStreetMap canvas. There is also a GEBCO grid base map which is a global terrain model for ocean and land, a Mapbox satellite base map, and an open topo base map which is rendered from OSM and SRTM data.

Layers Topo

 For example, it may be useful to have a topographic map to visualize geographic features like mountains and rivers that could impede people's movement into areas if you are reviewing the internal displacement of people.


 - turn on the Open **Topo Map** base map - Navigate back to the indicator panel - Uncheck the child protection layer. - Click the drop-down for **Internal Displacement** - select the **IDP Departure layer**


 You can now see some of the topographic features underneath the departures layer. You may observe that several areas with high departure rates are in the northern desert area. Thus drought may be affecting the people in these areas. Let's take it a step further and go to the contest layers again drop down the **Natural Hazard** option and check on the **Drought Priority Areas**. You can see that many of the drought priority areas are in the northern desert area we can see on the context topo map.

 Navigate to the context layers and check on the **Drought Priority Areas**.

Inaternal Displacement


### 1.1.5.3 Geography Level


 Finally, while we have the IDP data handy you can change the **Geography Level** of the indicators. By specifying country, region, or district in the menu on the bottom right of the map canvas. Geography levels express the hierarchy between administrative boundaries. For example, in Somalia, we have the country boundary subdivided into regions, which are in turn subdivided into districts. RIR uses these geography levels to provide a sense of the conditions in the region.

 - Turn off the **Acess layers** and the **Drought Priority Areas** by going to the layers and unchecking them so that we can see the regions better - On the menu at the bottom right of the page select Region and you will see that the geographic level of the areas changes. - click on Country and see what happens.


Geography level

## 1.1.6 Map Interactions

 Let's now get into interacting with the Map. Activate the child protection indicator again and deactivate departures.

 Check on the **PIN- Child Protection** and check off the **IDP Departure layer**

### 1.1.6.1 Zooming

 Zoom into and out of the map by using the scroll wheel on your mouse or you can click your mouse, hold down shift and draw a square around the area you wish to zoom in to.

Zoom

### 1.1.6.2 Panning

To pan on the map click on the map and drag it around.


### 1.1.6.3 Information Window

Once you have zoomed and panned to an area of interest click on it and you will see an information window as we saw earlier. For more information click on the detail button and information will be shown in the **Information Panel** on the right. Click off the window to get out.

 Zoom in, Pan, and click on a region of interest.

Information window


### 1.1.6.4 The Slider

 You can choose two indicators for comparison on the map. For example, while child protection is selected let's see where there is program coverage for child protection in Somalia.

Under the **Program Coverage** indicator select the **Child Protection** option. You will see a slider appear and the layer names represented on each side on the bottom left and right of the screen. If you click on the middle toggle and drag you can see that in several of the regions in the north with the worst-case scenario for child protection there are no active programs to combat the issue depicted in red. These would be ideal candidates to fund child-relief projects in.


 Check on the **Child Protection** indicator layer and drag the slider across the map.

Slider


 You can make the sliding horizontal by clicking the map button at the bottom right of the map canvas.


### 1.1.6.5 Timelapse Bar

There is a **Timelapse Bar** that can show changes in data over time located at the bottom center of the screen or map area. A great example of this is the internal displacement of people. Turn off the child protection indicators and activate the IDP layer for departures. You can see where indicators are selected because the tab heading will be bolded. Click the play button on the time bar and you will see the changes in what region people are leaving over time.

 Check the box on the **IDP Departure layer** and any other layers off. Click on the green play button on the timelapse bar.


timelapse

 People will leave due to conflict, drought, and other reasons. This is also interesting to compare to IDP arrivals using the slide bar to see where people are leaving and what regions they are going to who may need extra financial and technical support.

 Check the box on the **IDP Arrivals layer** and use the slider to compare the two layers.

Timelapse


## 1.1.7 More on the Information Panel


 While the **IDP Departures** is open, let's look at the last options and functionalities on the **Information Panel**. If the **Information Panel** is minimized or you want to minimize it. Click on the blue Info button that looks like a tab on the right-side panel to maximize and minimize it.

Inside the information panel, there is a summary of all the region/or districts and for example how many people departed that area because we are looking at the departures layer.


Info Button

### 1.1.7.1 Graphical Representation

 The graphical representation of the scenarios in this case a **pie chart** showing the proportion of best-case regions to worst-case and the status quo. You can hover your mouse over the chart and interact with it. For example, it will show that the best case is the reality for 54 out of the 73 districts in a pop-up label.

 Hover your mouse over the pie chart and observe the labels and number of districts in different scenarios.

Graphical Representation


 Further click on the name Adan Yabaal and in the Indicators select **IDP departure**. This will open the details panel where you can see a line graph showing the change over time for the Adan Yabaal district as well as other pertinent information.

 Click on Adan Yabaal (the text) in the **Information Panel** under the pie chart, click on **IDP Departures** (the text) and observe and hover your mouse over the line chart.

Indicators Info Panel

IDP Detail

## 1.1.8 Bringing it all together

 With your knowledge of the RIR dashboard try an analysis where we look at what districts people are departing from and what districts they are arriving to.

- Make the context map OpenStreetMap
- Add the context layer Refugees and IDPs
- activate both the arrivals and departures indicator layers
- click on different districts and observe the detail in the information panel
- slide the slider to see if neighboring districts accept departing people, thus having higher arrivals than previously observed (see the linear graphs to compare).

Answer the following questions: - what regions have the highest number of departures? - What regions have the highest number of arrivals? - what region has had the most changes in departures over time?

Bringing it all Together

# 1 For Developers

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## 1.1 Setup

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This document covers how you can set up the project, for production and development environment setup.

## 1.1 Installation

### 1.1.1 Preparation

#### 1.1.1.1 Dependencies installation

The project provide **make** command that making setup process easier. To install make on your machine or virtual box server, do:

 Code:

```
sudo apt install make
```

Project has recipe that you can use to run the project in one command. This recipe needs docker-compose to be able to use it. To install it, do:

 Code:

```
sudo apt install docker-compose  
apt install ca-certificates curl gnup lsb-release
```

#### 1.1.1.2 Docker installation

The project needs docker to be able to run it. To install it, please follow below instruction.

 Code:

```
curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o /usr/share/keyrings/docker-archive-keyring.gpg
```

On the next prompt line:

 Code:

```
echo \  
"deb [arch=$(dpkg --print-architecture) signed-by=/usr/share/keyrings/docker-archive-keyring.gpg] \  
$(lsb_release -cs) stable" | sudo tee /etc/apt/sources.list.d/docker.list > /dev/null
```

Run apt update:



Code:

```
sudo apt-get update
```

This will install docker



Code:

```
sudo apt-get install docker-ce-cli containerd.io
```

This will check if installation of docker was successful



Code:

```
sudo docker version
```

And it should return like this



Code:

```
Client: Docker Engine - Community
Version:      20.10.9
API version:  1.41
Go version:   go1.16.8
Git commit:   c2ea9bc
Built:        Mon Oct  4 16:08:29 2021
OS/Arch:      linux/amd64
Context:      default
Experimental: true
```



## Manage docker as non-root

This will ensure that the docker can be executed without sudo.



Code:

```
sudo systemctl daemon-reload
sudo systemctl start docker
sudo usermod -a -G $USER
sudo systemctl enable docker
```

Verify that you can run docker commands without sudo.



Code:

```
docker run hello-world
```

For more information how to install docker, please visit [Install Docker Engine](#)

## 1.1.1 Project Setup

### 1.1.1.1 Clone GeoSight repository

This will clone the GeoSight repository to your machine



Code:

```
git clone https://github.com/unicef-drp/GeoSight
```

### 1.1.1.2 Set up the project

This will set up the GeoSight project on your machine



Code:

```
cd GeoSight
cd deployment
cp docker-compose.override.template.yml docker-compose.override.yml
cp .template.env .env
cd ..
make up
```

Wait until everything is done.

After everything is done, open up a web browser and go to <http://127.0.0.1/> and the dashboard will open:

By Default, we can use the admin credential:



Code:

```
username : admin
password : admin
```

### 1.1.1.3 Set up different environment

To set up different environment, for example the Default credential, or the port of server, open **deployment/.env**. You can check the description below for each of variable.



Code :

```
COMPOSE_PROJECT_NAME=geosight
NGINX_TAG=0.0.1 -> Change this for different nginx image
DJANGO_TAG=0.0.1 -> Change this for different django image
DJANGO_DEV_TAG=0.0.1 -> Change this for different django dev image

# Environments
DJANGO_SETTINGS_MODULE=core.settings.prod -> Change this to use different django config file
ADMIN_USERNAME=admin -> Default admin username
ADMIN_PASSWORD=admin -> Default admin password
ADMIN_EMAIL=admin@example.com -> Default admin email
INITIAL_FIXTURES=True
HTTP_PORT=80 -> Change the port of nginx

# Database Environment
DATABASE_NAME=django -> Default database name
DATABASE_USERNAME=docker -> Default database username
DATABASE_PASSWORD=docker -> Default database password
DATABASE_HOST=db -> Default database host. Change this if you use cloud database or any new docker
RABBITMQ_HOST=rabbitmq

# Onedrive
PUID=1000
PGID=1000
```

After you change the desired variable and do **make up** . It will rerun the project with new environment.

## 1.1.1 Development setup

### 1.1.1.1 Development Environment

This section is for setup development, so we can develop the project and check the changes in runtime. The sections depend on what interpreter that you use

### 1.1.1.2 Using pycharm

This section is for using pycharm.

Requirements:

- Pycharm
- Finished **Setting up the project**

#### Setup interpreter

1. Go to file -> setting -> Project -> Project Interpreter -> click cog -> add  
Project Interpreter
2. Go to ssh interpreter -> Fill the form like below  
Project Interpreter
3. Click next and fill **docker** as password  
Project Interpreter
4. Click next and change interpreter like below and click finish  
Project Interpreter
5. After finish, it will show all package like below.  
Project Interpreter
6. In current page, click **path mappings**, click + button and put local path to where the project (django-project folder) and remote path is like below. and click oK.  
Project Interpreter

Now the interpreter is done. When we restart the machine, we need to do **make up** to run the project.

## Setup run configuration

After the interpreter is done, we need configuration to run the project in development mode.

1. Click "Add configuration" like in the cursor in the image below. (top-right)

Project Interpreter

2. There will be a popup, and click +, then click **django server** like below

Project Interpreter

Project Interpreter

3. It will show the form and fill like below.

Project Interpreter

4. Don't click the OK yet, but click **Environment Variables** and add environments like below 9by clicking + button).

Project Interpreter

5. After that, click OK.

6. Now we need to run the server by clicking **go** button in below image.

Project Interpreter

7. When we click the **go** button, pycharm will run a process until like image below.

Project Interpreter

8. Now it is done. We can access the development server in <http://localhost:2000/>

This development mode is DEBUG mode, and also whenever we change the code, the site will also change in runtime.

For more information how to set up on pycharm, please visit [Using a Docker Compose-Based Python Interpreter in PyCharm](#)



<https://github.com/unicef-drp/GeoSight>