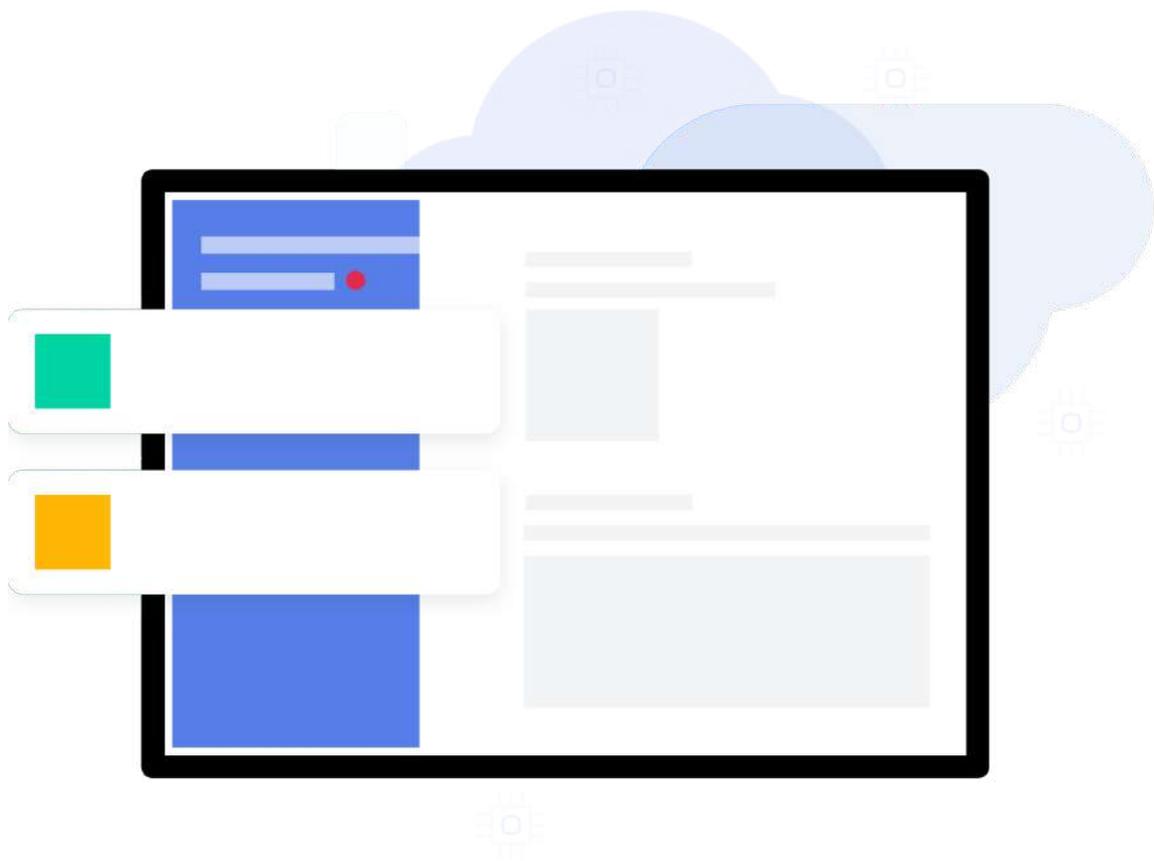


FIWOO

Welcome **aboard.**



User guide

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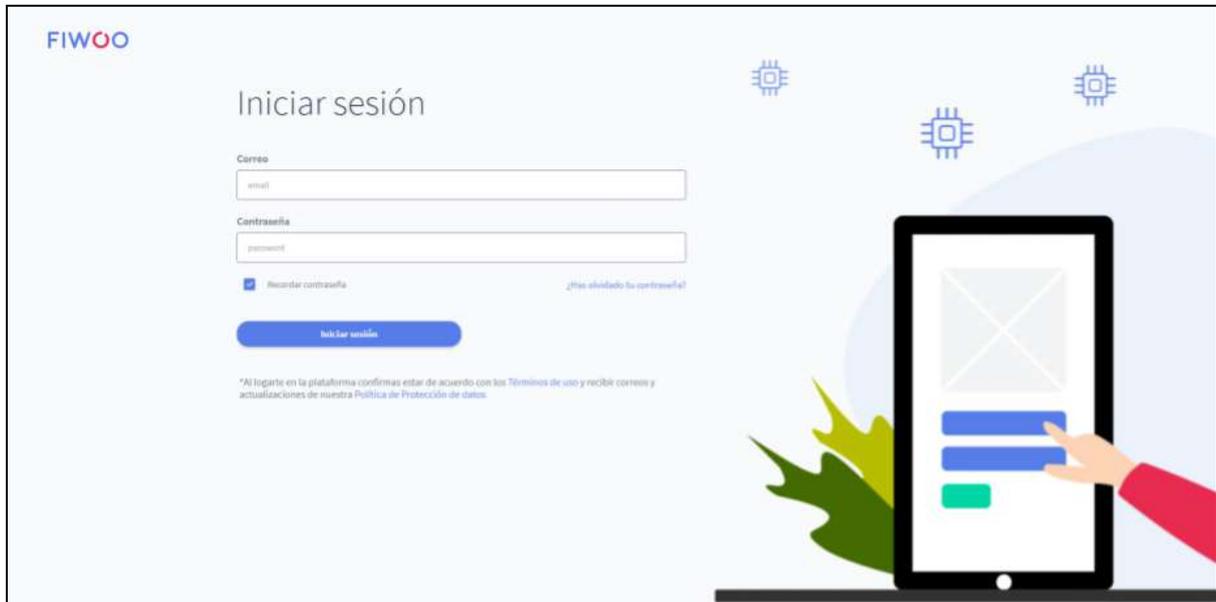
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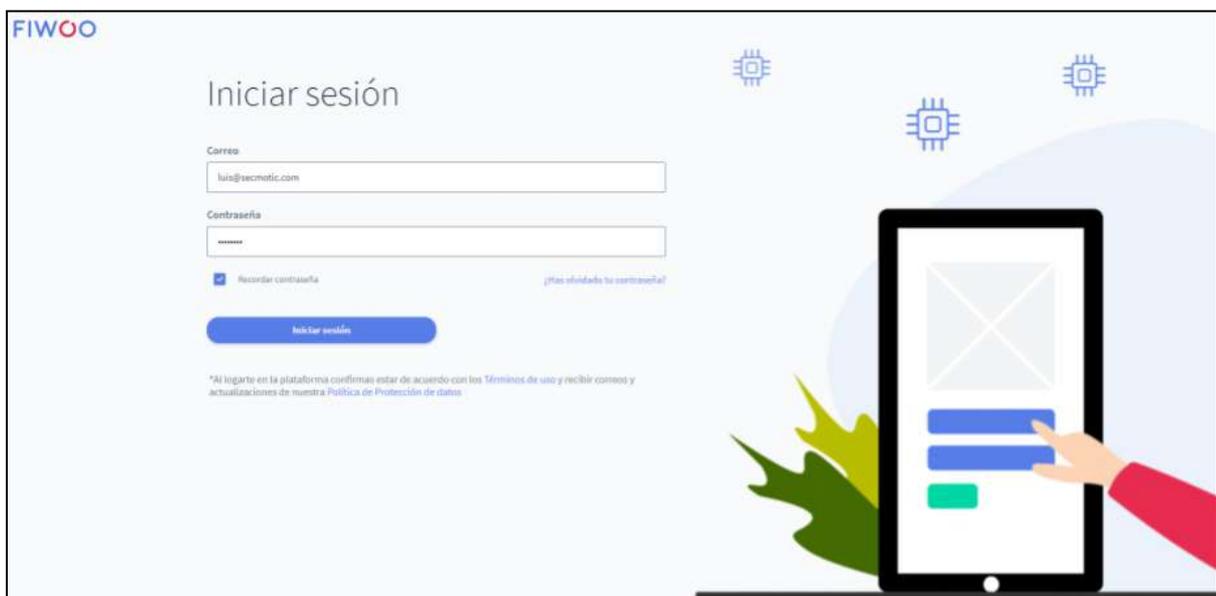
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Login

To access the FIWOO platform (<http://demo.fiwoo.eu/>) we must login with our credentials on the login screen.



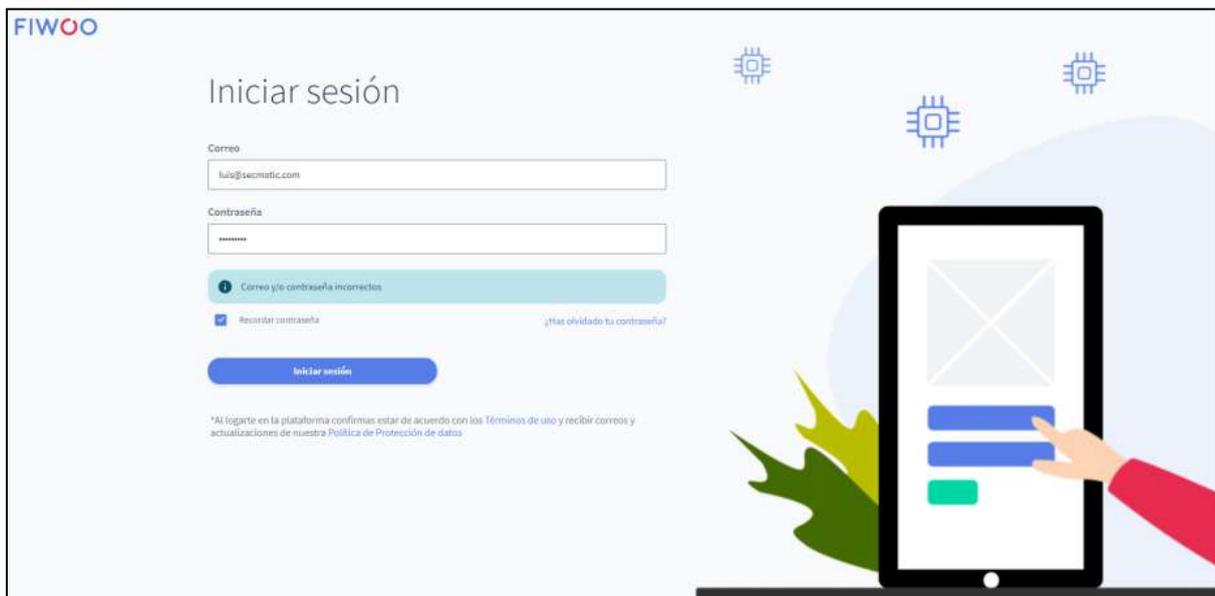
We will enter our email and password in the fields “Email” and “Password” respectively and we will click on “Sign In” to confirm our credentials and access the platform.



Once recognized and authorized by the system, we will see the main FIWOO.



It may be the case that when entering the credentials, either the mail (Email) and/or the password (Password), these are not correct, so that on the screen we will see a message that warns us that the credentials are wrong .



User management

If we want to access the FIWOO platform user management, we must access our profile screen, located in the upper right corner, and then select "Users".



Users

Once we access the user management we find a list of users created on the platform.

FIWOO

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INPROINNOVA 2021

Ayuntamiento de Pizarra

Demo ADSJ

Open Demo Dashboards

Environment

Mobility

Smart Industry

App: Users

Usuarios

Correo electrónico: [dropdown] | Busca...

Añadir usuario

Rol para nuevos usuarios: Rol por defecto no seleccionado

	CORREO ELECTRÓNICO	NOMBRE	APELLIDO	Opciones
<input type="checkbox"/>	infofiwa@uco.es	A Julia TDF	UCO	⋮
<input type="checkbox"/>	jaser@secmatic.com	J Jaser	AbdelKader	⋮
<input type="checkbox"/>	lconde@woover.es	L Luis	Conde	⋮
<input type="checkbox"/>	concha@secmatic.com	C Concha	Abiz	⋮

If it is the first time that we access the platform or we have not created any user, this list will be empty except for our account.

In the following sections we will see the different user management and configuration options.

Create new user

If we want to create a new user, we must select the “Add user” option.

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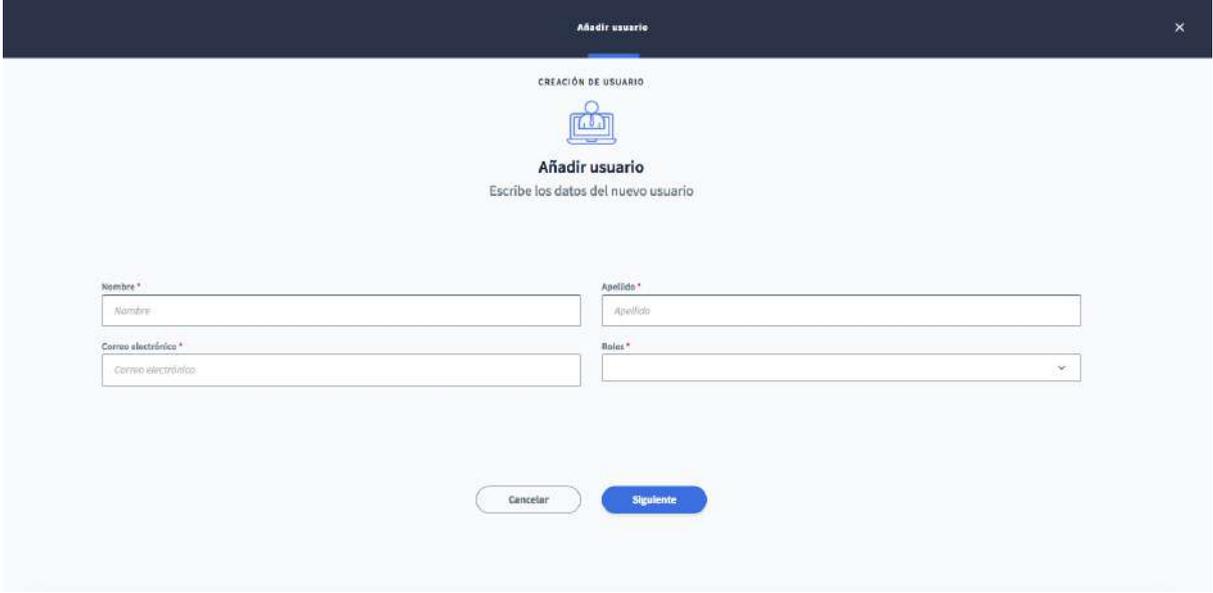
Correo electrónico: [dropdown] | Busca...

Añadir usuario

Rol para nuevos usuarios: Rol por defecto no seleccionado

	CORREO ELECTRÓNICO	NOMBRE	APELLIDO	Opciones
<input type="checkbox"/>	infofiwa@uco.es	A Julia TDF	UCO	⋮
<input type="checkbox"/>	jaser@secmatic.com	J Jaser	AbdelKader	⋮
<input type="checkbox"/>	lconde@woover.es	L Luis	Conde	⋮

We fill in the name (First name), last name (Last name) and email (Email). Finally, we select the role type(s) we want for the new user. In the following image we can see an example of configuration.



Nombre *

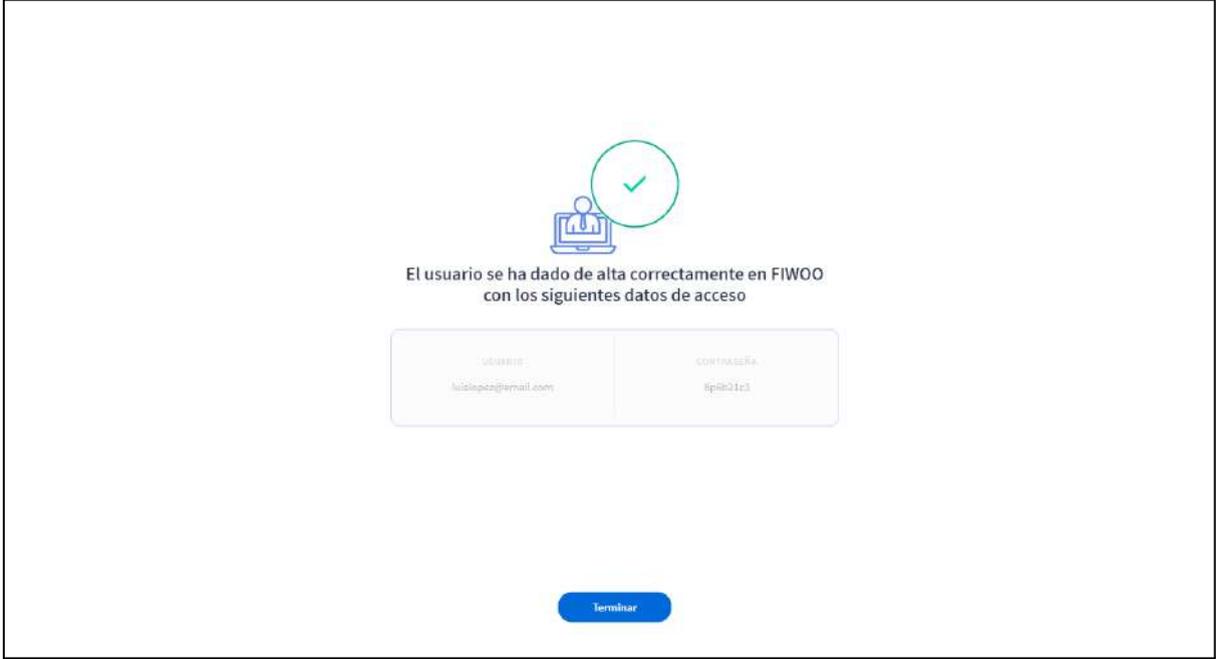
Apellido *

Correo electrónico *

Roles *

Cancelar Siguiente

If we have entered all the data correctly, a new confirmation screen will appear with the access credentials of that user.



El usuario se ha dado de alta correctamente en FIWOO con los siguientes datos de acceso

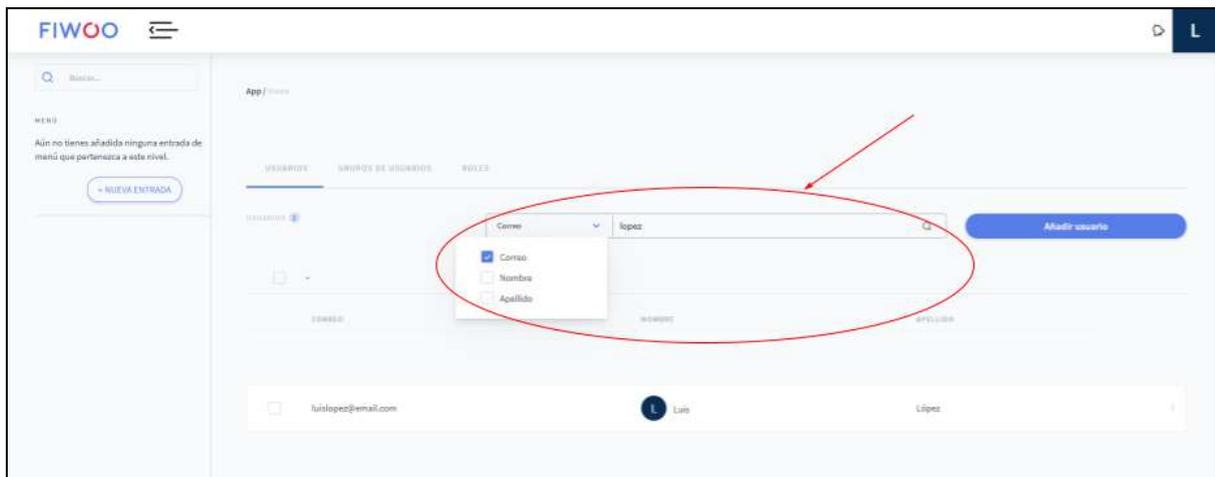
USUARIO	CONTRASEÑA
ludopez@email.com	@p@#21r3

Terminar

If, on the other hand, we have entered a field incorrectly (for example, the email without "@"), the system will notify us that we must correct the error before continuing.

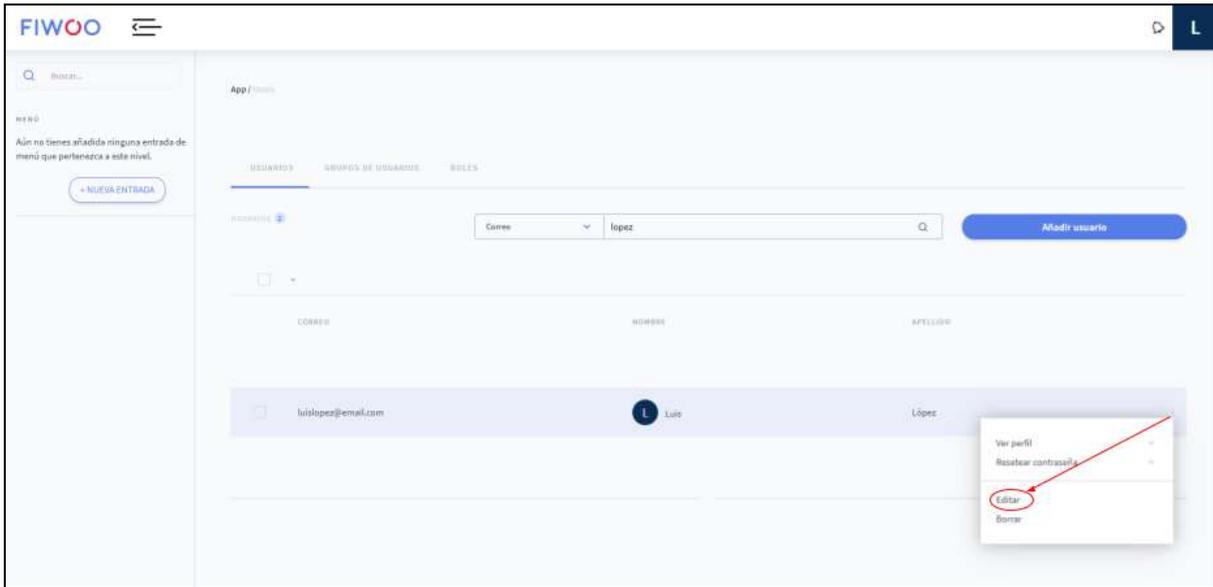
User search engine

If we want to filter our list of users we can use the search engine at the top and carry out a personalized search. We have three options to filter: email (Email), name (Name) and surname (Last name). Once selected, we will write the text to search for in the search box on the right.

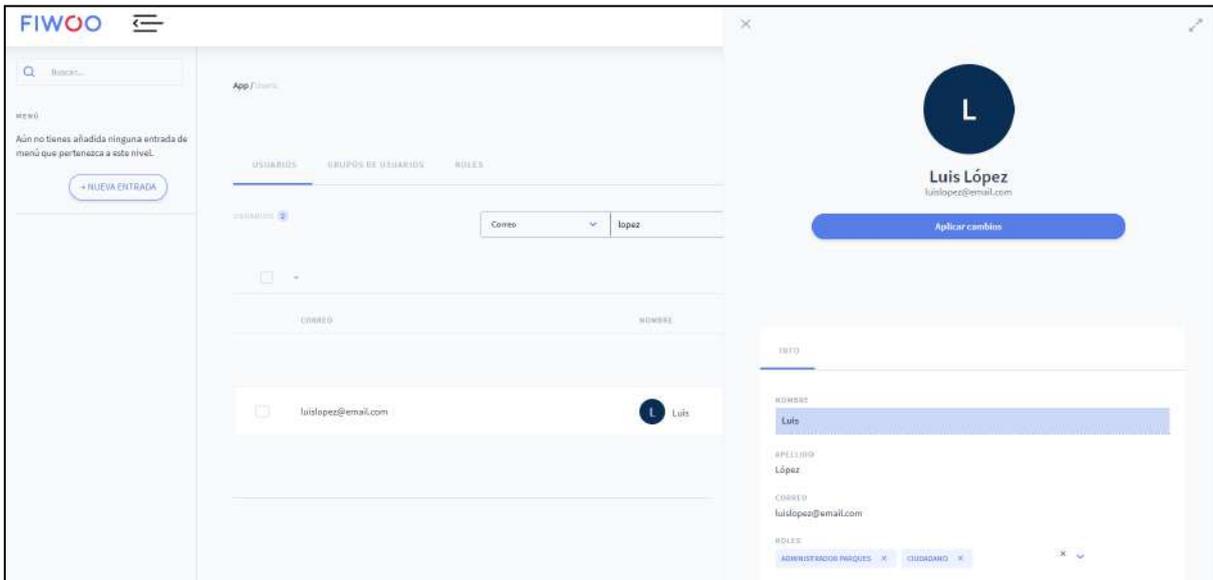


Modify user information

After creating a user, you may want to modify their information. To do this, just click on the three points to the right of the row of the user you want to modify and select the “Edit” option.

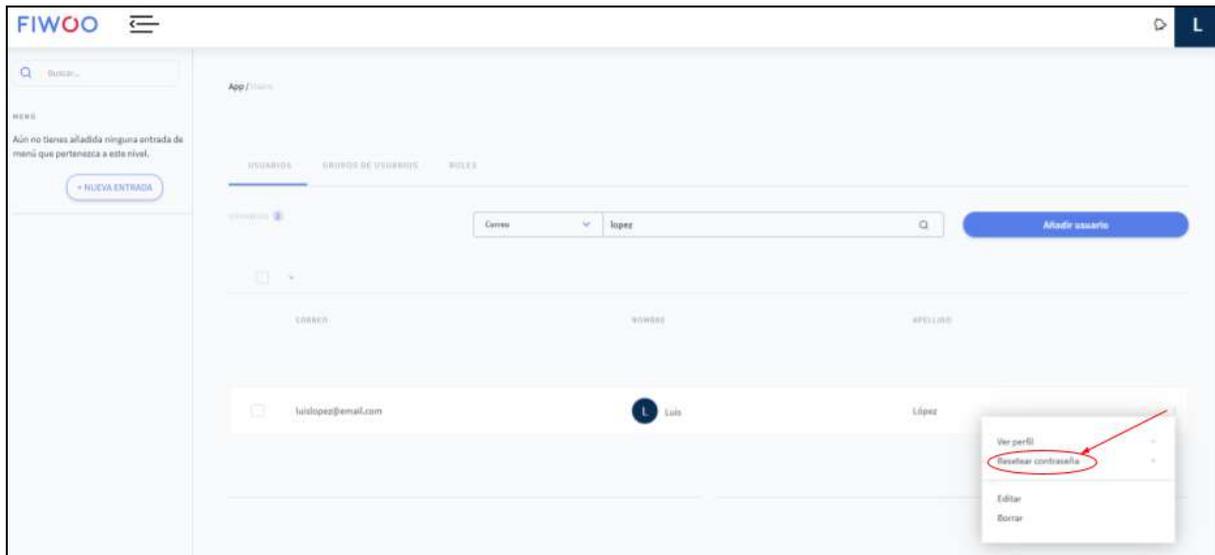


Once in that section, pressing the "Update user" button will unlock the different fields for editing, allowing the modification of the Name, Surname, Email and Roles. Once the modifications are finished, the "Apply changes" button must be pressed to make them take effect.



Reset user password

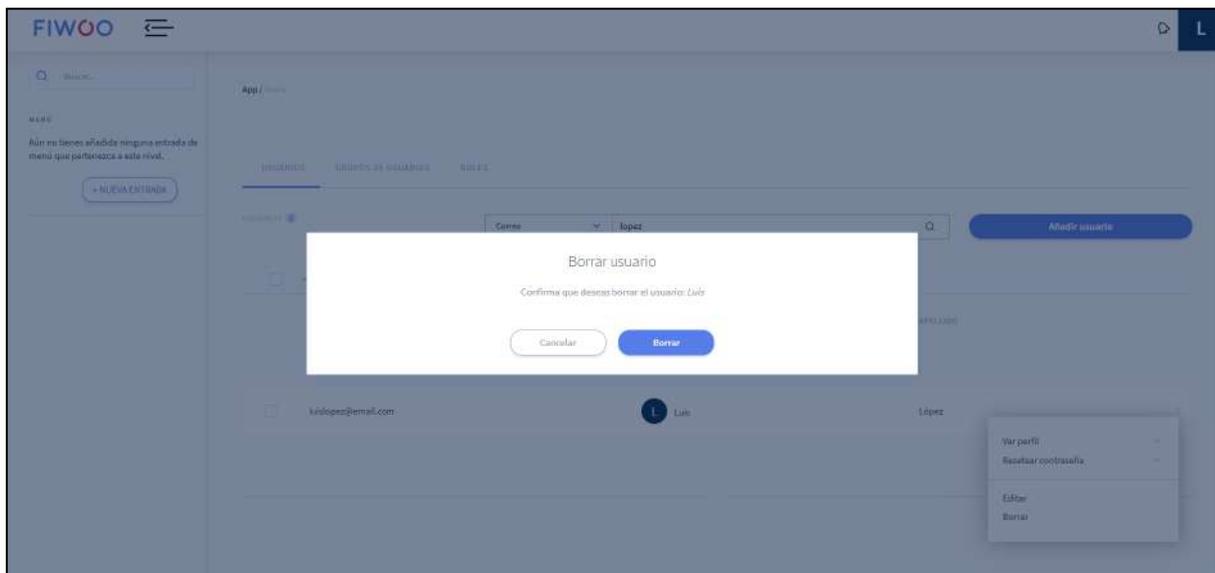
If it is necessary to reset the password of a previously created user, simply search for the user, press the three dots to the right of its row and select the "Reset password" option. After doing so, a new window will open indicating the new password generated for the user.



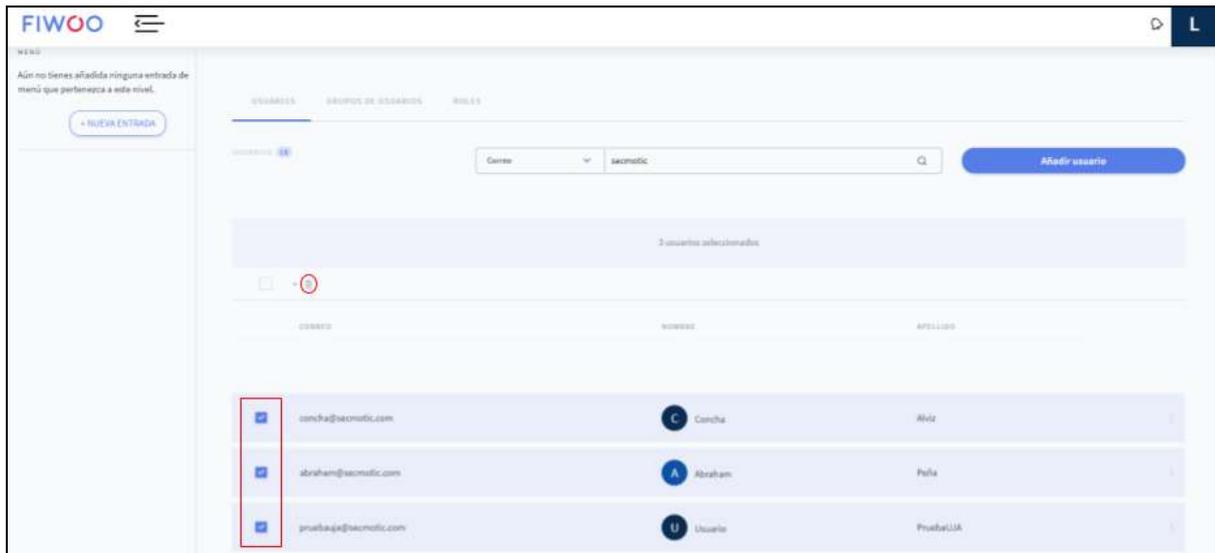
Eliminate user

When it comes to eliminating users from the platform, there are two alternatives: one by one or en bloc.

To delete users one by one, we simply have to press the three points to the right of the user and select the “Delete” option. A new window will open to confirm that we want to delete the user. If we press the "Delete" button again in that window, the user will be deleted.



There is also the option to delete multiple users at once. To do this, we select the ones we want to remove using the selection box to the left of each row. Once done, the trash can icon will appear at the top of the menu, with which you can delete all at once. After clicking on this icon, a new window will open to confirm that we want to delete the users. If we press the “Delete” button in that window, the users will be deleted.



User Groups

Another type of entity that is very important in the platform are User Groups. Within the People section, by clicking on the User Groups tab, we can access this functionality, which allows us to group users to give them access permission to certain entities on the platform.



Create new user group

If we want to create a new user group, we must select the “Add user group” option.



Fill in the Name and Description and click on the “Next” button.

Añadir grupo de usuarios Asignar permisos

CREACIÓN DE GRUPO



Añadir grupo de usuarios

Los grupos de usuarios son espacios de trabajo que se crean entre diferentes miembros de la plataforma. Recuerda poner nombre al grupo en función del tema que quieras organizar.

Nombre *

Introduce un nombre para el nuevo grupo de usuarios.

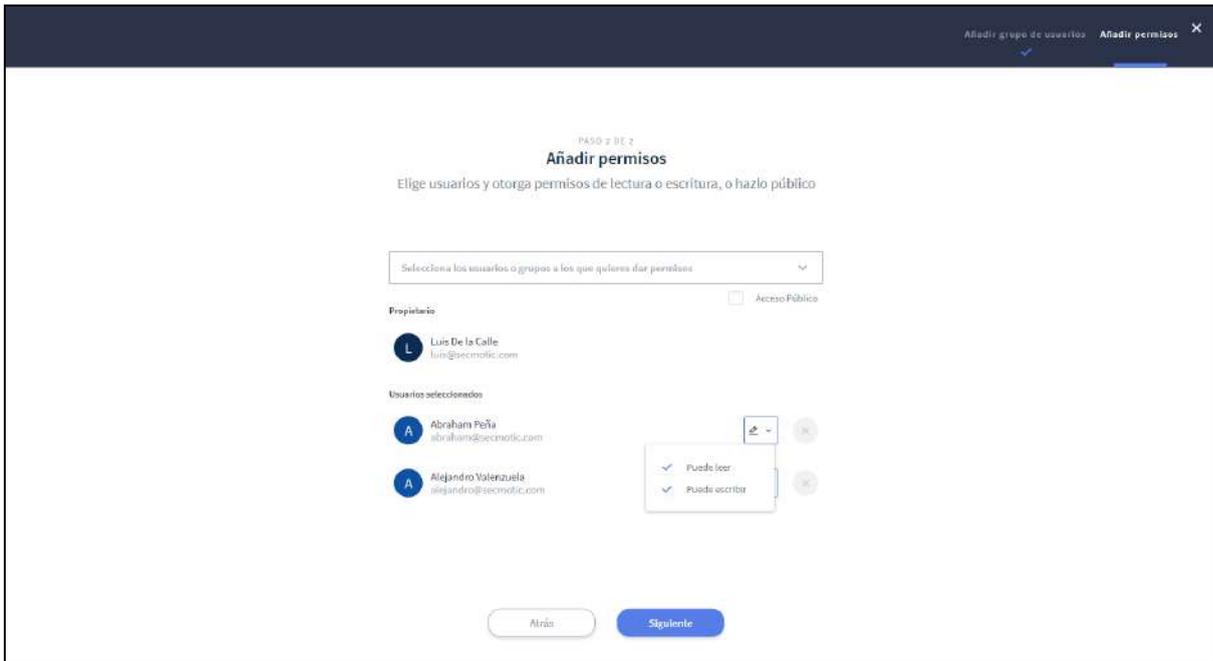
Descripción

Introduce una descripción para el nuevo grupo de usuarios.

Cancelar Siguiente

After this we select who will be able to modify the configuration of the user group. Various types of access can be selected:

- Public Access: any user with a login on the platform will be able to see the group of users.
- Share with users/user groups in viewing mode: when selecting the users or user groups with whom we want to share in the search engine, we put it in "Can read" mode. With this option the user or group will be able to see the user group and its configuration, but not modify it.
- Share with users/user groups in editing mode: when selecting the users or user groups with whom we want to share in the search engine, we put it in "You can write" mode. With this option the user or group will be able to see and modify the user group and its configuration.



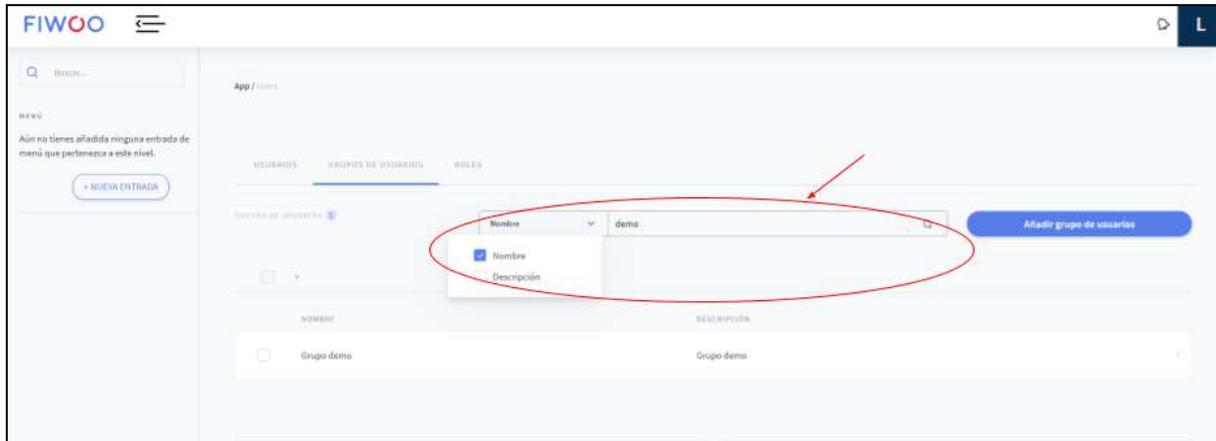
Now pressing the “Next” button we finish creating the group. From this same screen you can "Add users" to the group, so that they belong to it and thus have access to the assets shared with said group.



Pressing this button a selector appears in which we can choose which users we want to add to the group. Once finished, we press the "Finish" button and the users are added to the group.

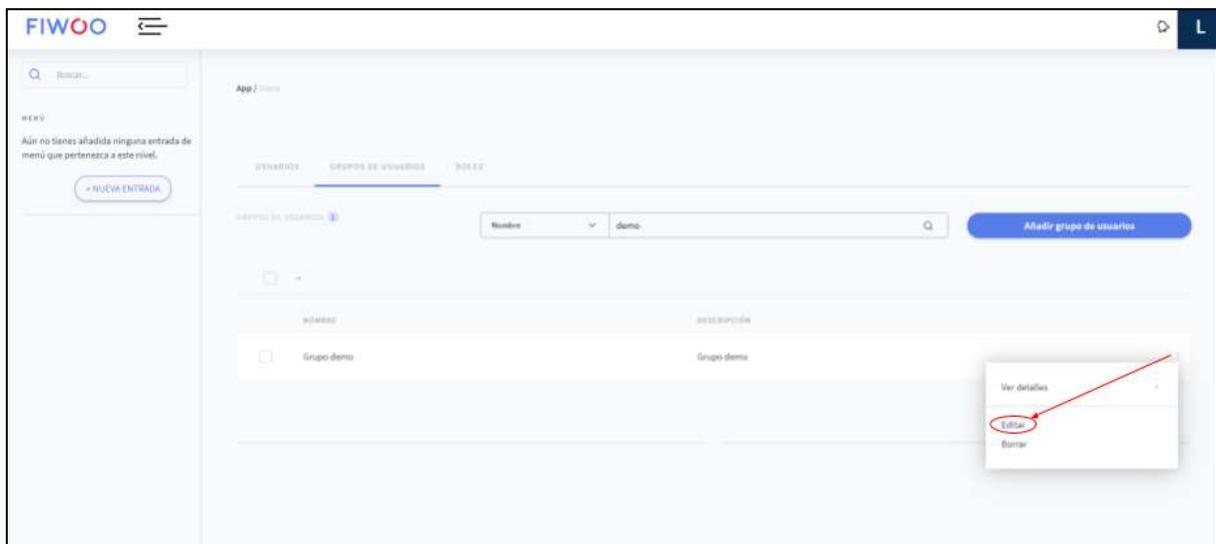
User group search engine

If we want to filter our list of user groups we can use the search engine at the top and carry out a personalized search. We have two options to filter: Name and Description. Once selected, we will write the text to search for in the search box on the right.



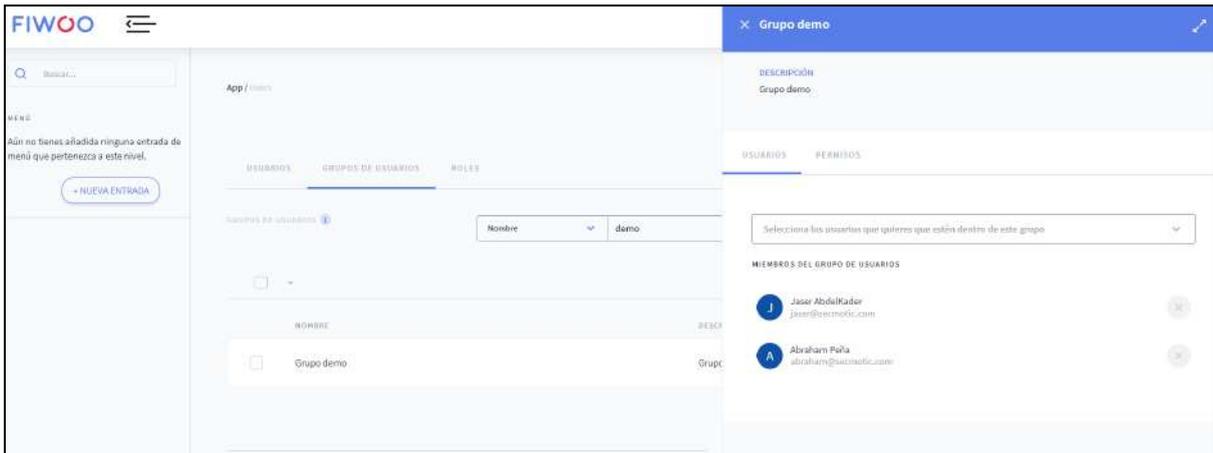
Modifying User Groups

After creating a user group, you may want to modify its information. To do this, just click on the three dots to the right of the row of the user group you want to modify and select the "Edit" option.



Pressing this option opens a side menu that allows you to make two types of modifications:

- Add/remove users who are members of the group. Using the search engine users can be located and by clicking on them they are added to the group. Similarly, it is possible to remove users from the group using the X to its right.

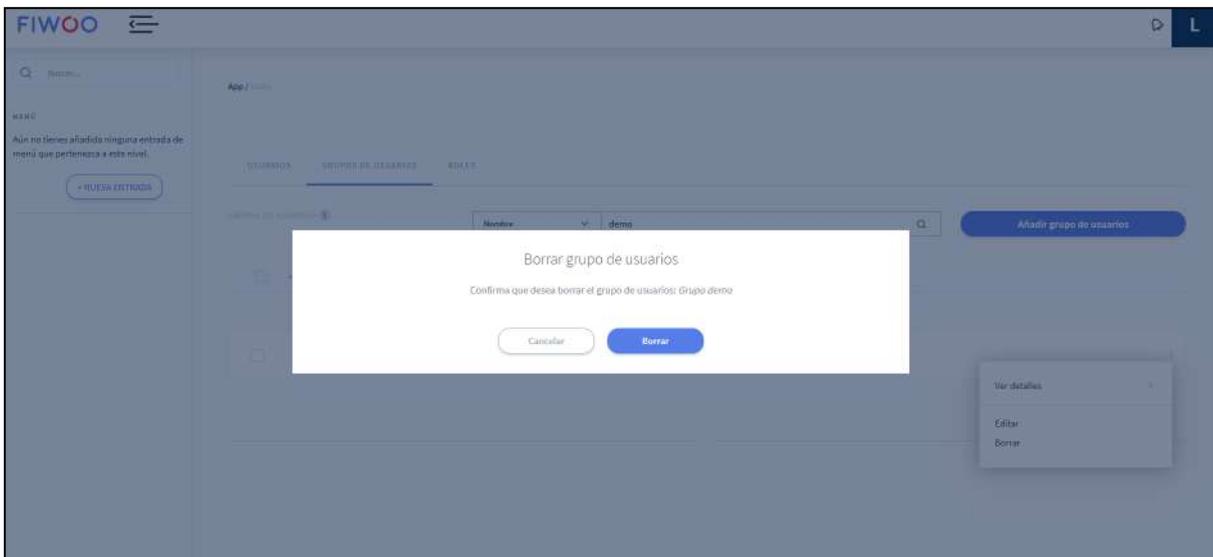


- Modify the permissions of the group, allowing other users to see and modify its configuration

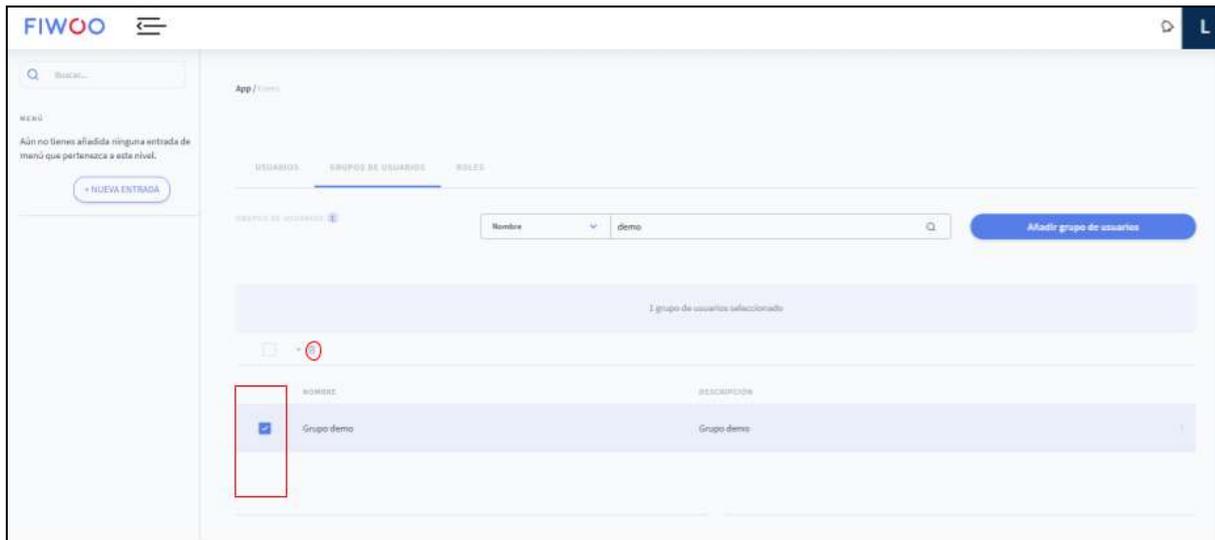
. Eliminate user groups

When it comes to eliminating user groups from the platform, there are two alternatives: one by one or en bloc.

To delete user groups one by one, we simply have to press the three points to the right of the group and select the “Delete” option. A new window will open to confirm that we want to delete it. If we press the “Delete” button again in that window, the group will be deleted.



There is also the option to delete multiple groups at once. To do this, we select the ones we want to remove using the selection box to the left of each row. Once done, the trash can icon will appear at the top of the menu, with which you can delete all at once. After clicking on this icon, a new window will open to confirm that we want to delete the groups. If we press the “Delete” button in that window, the groups will be deleted.



Roles

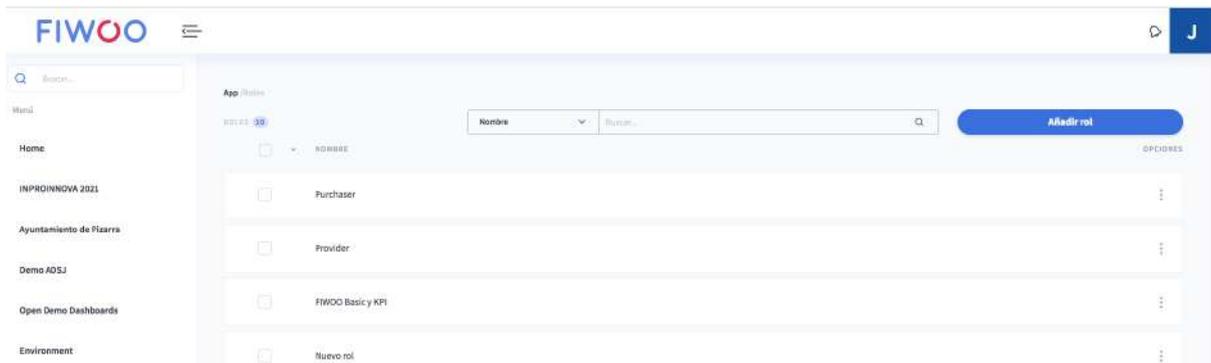
The third type of entity that we can manage from the “People” menu are roles. In general, it is necessary to precisely detail the actions that our users can perform in the system. To carry out this task we help ourselves with the roles. Roles are well-organized sets of permissions that help us differentiate the functions that can be carried out by the users to whom they are assigned.

To access the management of roles, we must be located in the people menu and click on the “Roles” submenu. This action will take us to a list where the Roles that currently exist are found.



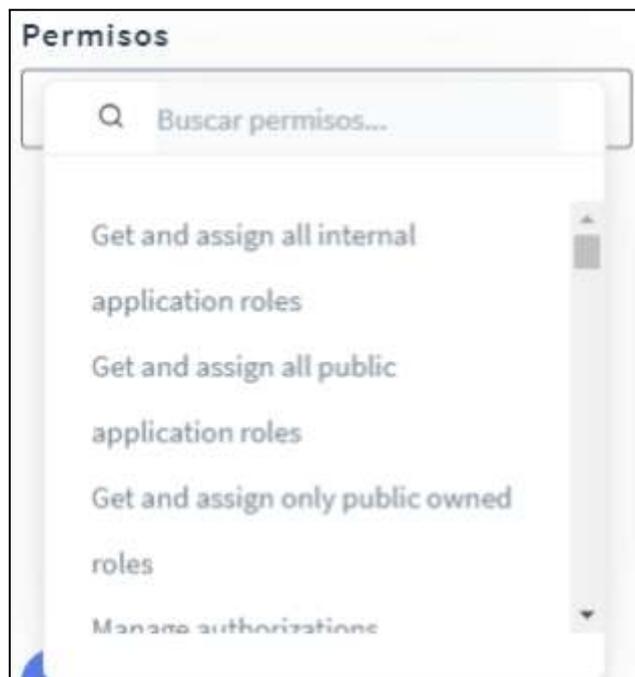
Create new role

If we want to create a new role, we must select the “Add role” option.

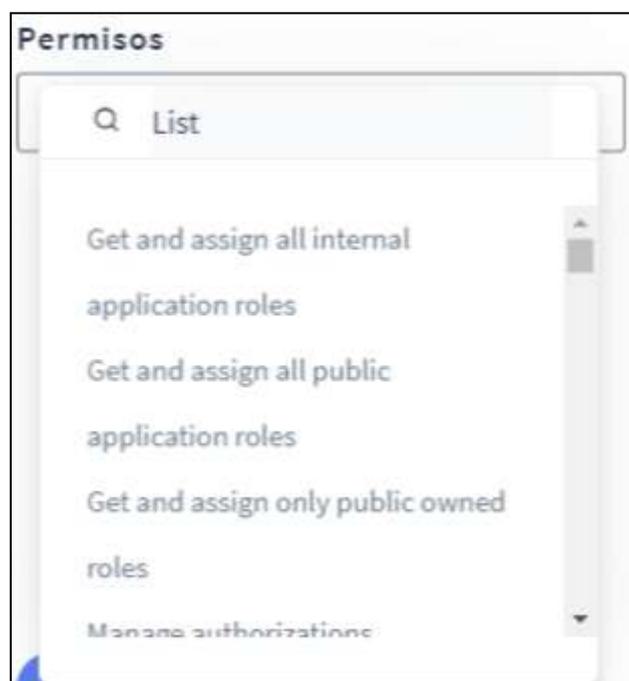


A form will appear that will ask us for a name that identifies the new role and will also allow us to assign the permissions that the users assigned this role will have. We are going to create a "Guest" role which only has permissions to list system elements and cannot modify anything.

To add permissions it is necessary to click on the dropdown of the second field of the form. The following list will appear with all the permissions that are available on the platform.



We have the option to add the permissions that we want one by one and we can also add all the permissions that contain the words that we write in the search bar. In the following example we see how we add the permissions to list elements to the guest role.

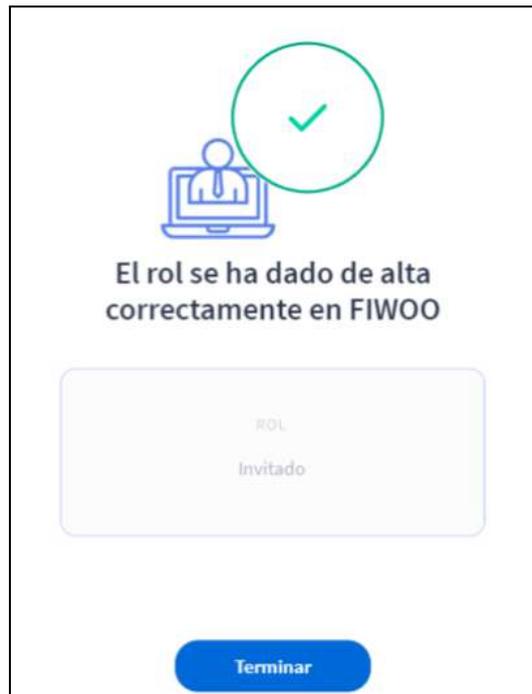


Once we decide the reason for filtering, press the “Enter” key and the permissions will be added automatically.



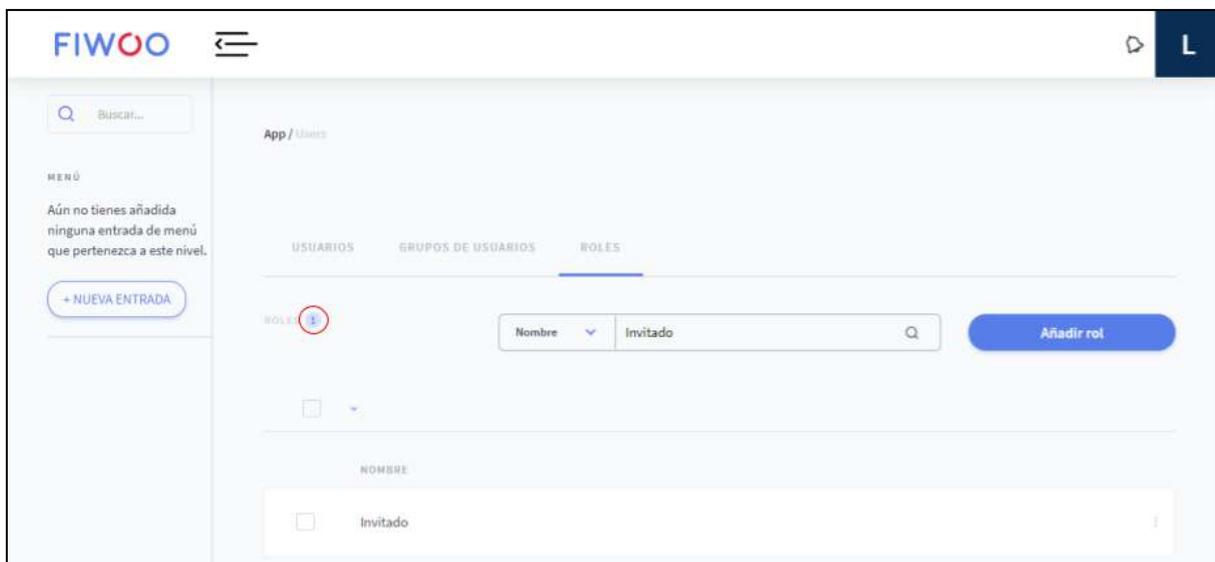
The figure shows all the added permissions. If we want to remove a specific permission from the added ones, we simply have to click on the "x" that is immediately to the right of it. If instead we want to delete all the permissions, we can do it by clicking on the "x" located on the right next to the drop-down.

After deciding the name and permissions, click on the finish button and add the new role. The app will display a message like the following.



Role search engine

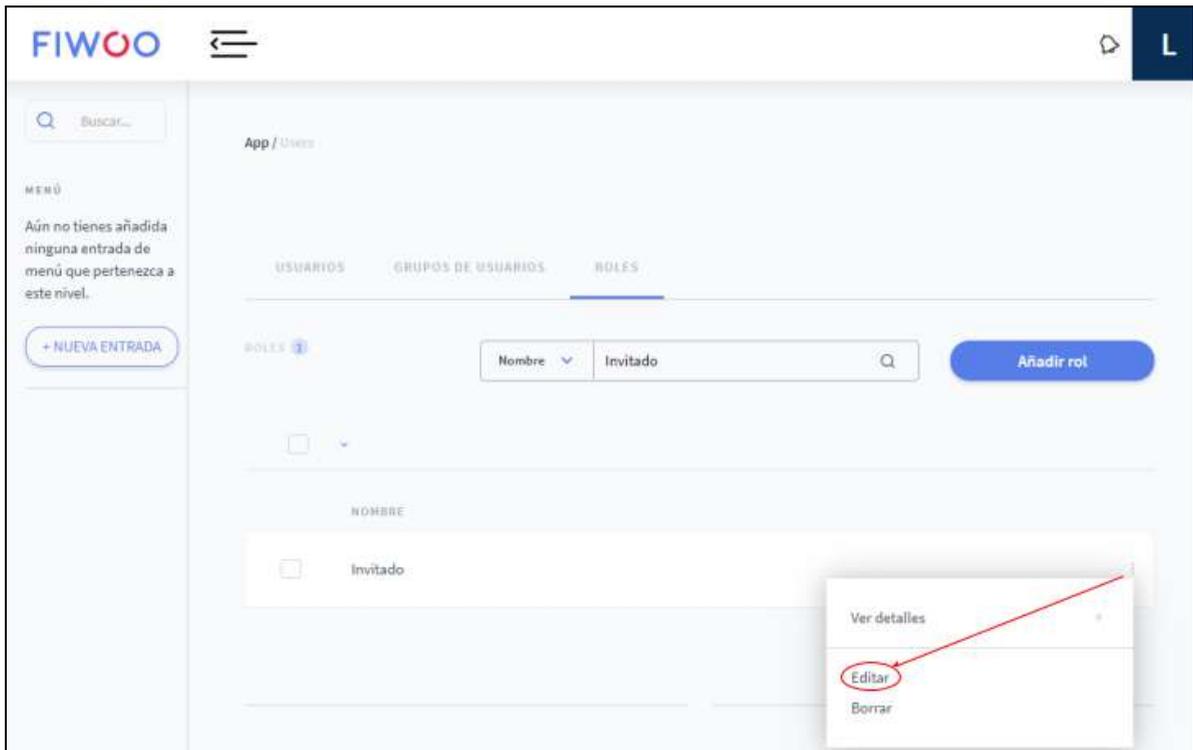
If we want to filter our list of roles, we can use the search engine at the top and carry out a personalized search. We have a single filtering option, the Name. We will write the text to search in the search box on the right.



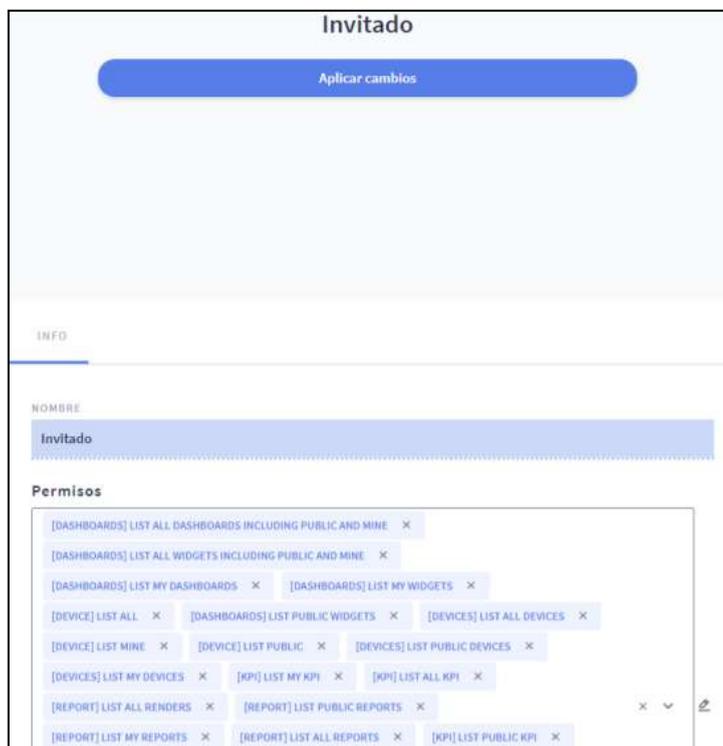
On the left it is possible to see the number of matches of our search, in this case there is only one.

Modify a role

If you need to modify an existing role, you must click on the three points to the right of the row of the role you want to modify and select the "Edit" option.



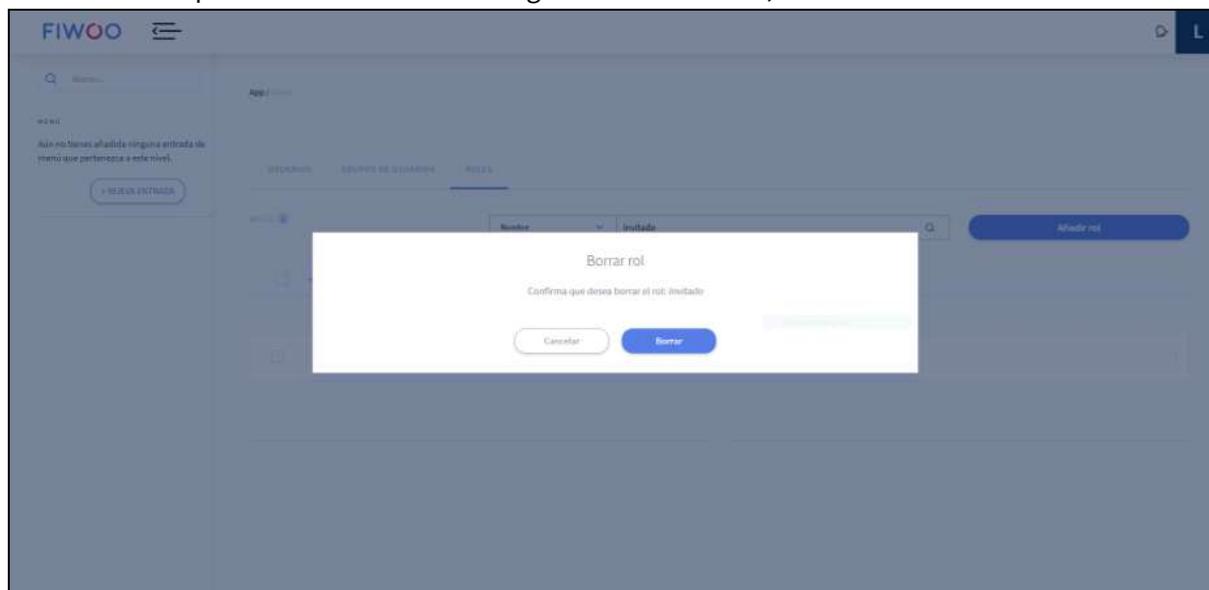
Once in that section, pressing the "Update role" button will unlock the different fields for editing, allowing the Name and Permissions to be modified. Once the modifications are finished, the "Apply changes" button must be pressed to make them take effect.



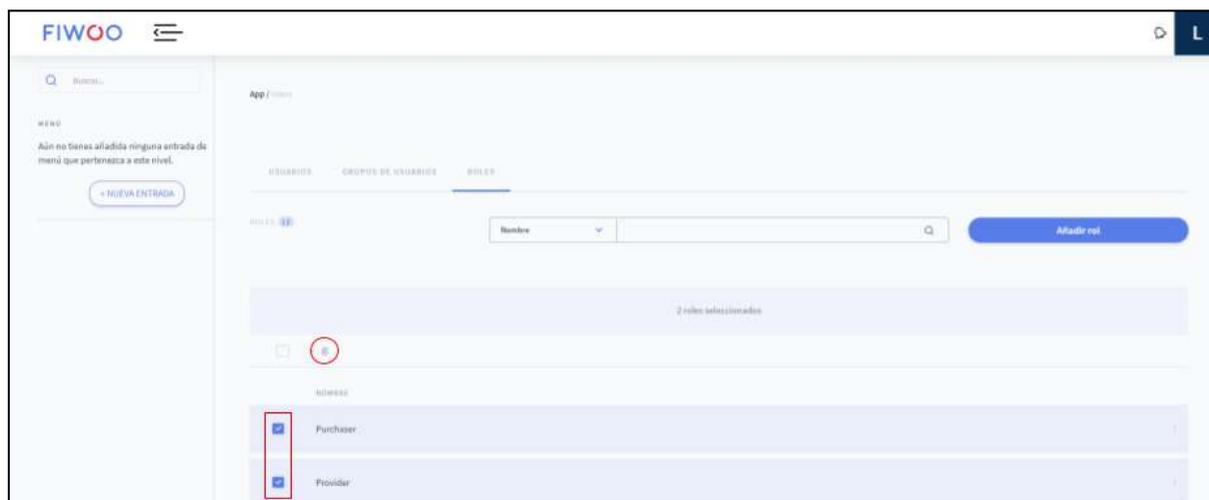
Eliminate roles

When it comes to eliminating roles from the platform, there are two alternatives: one by one or en bloc.

To delete roles one by one, we simply have to press the three points to the right of the role and select the "Delete" option. A new window will ask us to confirm the action to avoid unwanted deletions. If we press the "Delete" button again in that window, the role will be deleted.

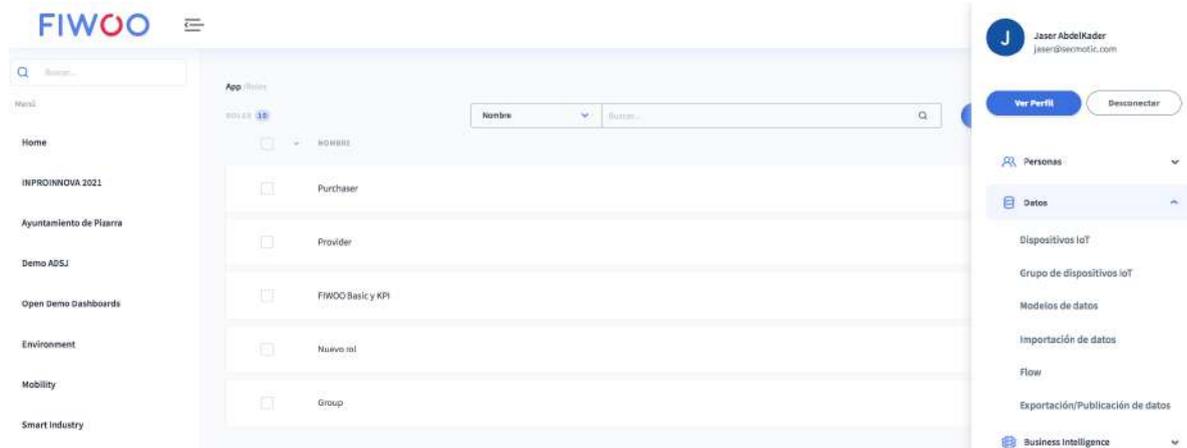


There is also the option to delete multiple roles at once. To do this, we select the ones we want to remove using the selection box to the left of each row. Once done, the trash can icon will appear at the top of the menu, with which you can delete all the selected items. After clicking on this icon, a new window will open to confirm that we want to delete the roles. If we press the "Delete" button in that window, the roles will be deleted.



Management Data

In the current section we will deal in detail with the management of our devices and the services that we have by connecting to third-party devices with the aim of being able to exploit the data coming from them. We'll start by looking at how to work with templates that make it easy to create new services and devices.



IoT devices

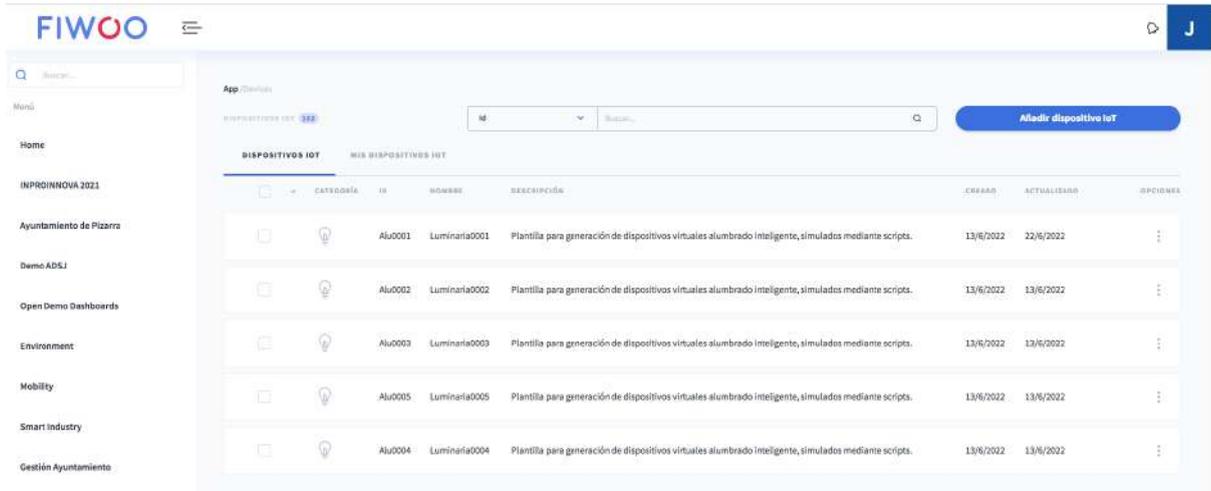
From the Data menu we can carry out the pertinent actions to manage the connected entities, endowed with the functionality of collecting and supplying different types of data to our system. We will be able to operate in different ways with the data received and we will be able to represent them in a more comfortable and friendly way.

We can access the device manager by selecting the “IoT Devices” option from the menu that appears when you click on the button in the upper right corner.

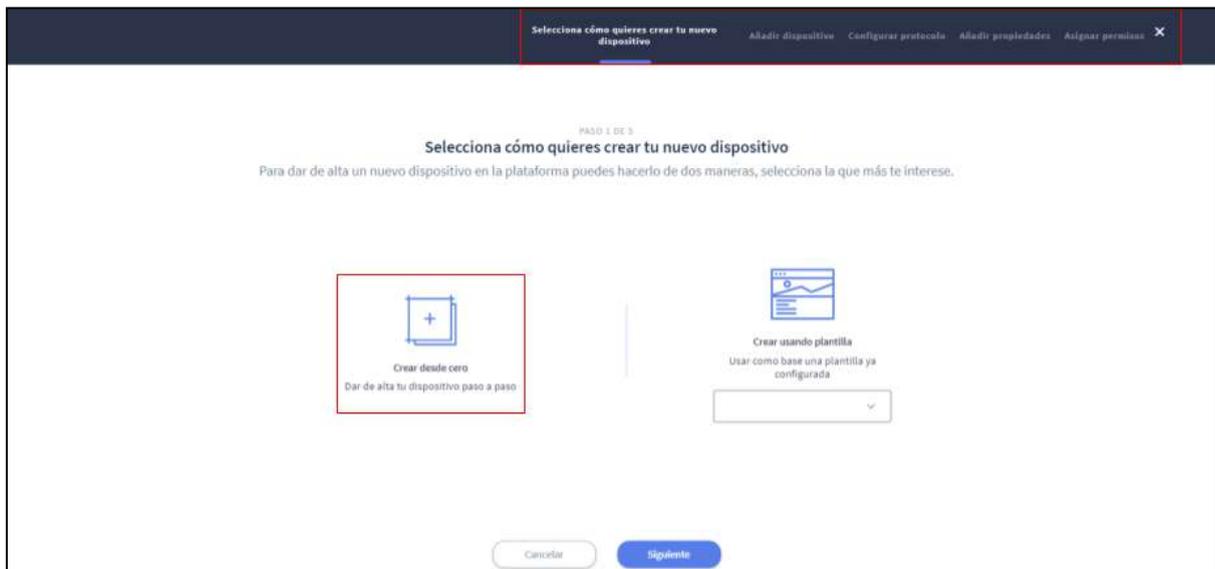


Create device from scratch

Once we are in the device manager, we can create a new one by pressing the “Add IoT device” button.



This action will start a guided creation process in which we will have to fill in various forms that we will show below. This creation process begins with a window that describes the procedure and allows you to select the creation method.



The top bar shows the various steps that need to be completed before the creation. In this window there are two creation options available, in the current section we will thoroughly deal with the first one, that is, the creation of a new device from scratch. In the next sections we will work with the option of creating a new device based on a template that we have previously generated. After pressing the "Create from scratch" button we will advance to the form of the "Add device" step. This form collects the generic information corresponding to the new devices.

The data on this form is all mandatory, and is mainly responsible for collecting the following data:

- Category: This section contains information related to the application that is going to be given to a device, it has three sections.
 - Category: Identifies the sector to which the work performed by a device is related. Each category is assigned an icon with which the device will later be represented in the widgets.
 - Organization: Represents the type of institution or department in which the device is established. Its main function is to group devices for publication as open data.
 - Data set: It is used to indicate what data will be obtained from the device. It is a second level of grouping, within each organization there will be several data sets, to be able to order them within the open data system.
- Device identifier.
- Name of the device, so that it can be searched for later.
- Device description.

The device in this specific example is a video camera that will participate in international institutional relations and security projects by providing data on the staff assistance. Click on “Next” to advance to the next step.

In this step it is necessary to indicate the protocol by which we will receive the data from our devices. Depending on the selected protocol, more or less information will have to be added; we see that in the first instance we only have to fill in a field.



The screenshot shows a web interface for configuring a device protocol. At the top, there is a progress bar with five steps: 'Seleccionar cómo quieres crear tu nuevo dispositivo', 'Añadir dispositivo', 'Configurar protocolo', 'Añadir propiedades', and 'Añadir permisos'. The 'Configurar protocolo' step is currently active. Below the progress bar, the text reads 'CREADOR DE DISPOSITIVO' and 'Configurar protocolo'. A subtitle says 'Introduzca el tipo de protocolo y el servicio a vincular.' There is a single input field labeled 'Protocolo' with the placeholder text 'Elige un protocolo'. At the bottom, there are two buttons: 'Atrás' and 'Siguiente'.

The available protocols are the following:

- IOTA-UL: We will choose this protocol if the data sent by our devices is plain text in UltraLight 2.0 format.
- IOTA-JSON: We will use this device if our device sends the information in JSON format.
- SIGFOX: We will choose this option if the device uses the SigFox network to send data to the platform.
- LORA: We will decide on this option if the device establishes a connection through a LoRaWAN type network. FIWOO currently supports connection to The Things Network (TTN).

In the case of deciding on the IOTA UL or JSON protocols, it will be necessary to specify which transport protocol our device will use to send us information. We have three options available: HTTP, MQTT and AMQP. And if we choose SIGFOX it will not be necessary to indicate additional information.

The case of the LORA protocol is more particular and requires more information. To use this protocol we must have an application that works on TTN (The Things Network) and devices linked to said application. If we meet these premises, we must specify the following fields in the form:

- Device EUI: Hexadecimal identifier of the device on the TTN network.
- Application EUI: Hexadecimal identifier of the application in the TTN network.
- Application identifier: Application identifier in the TTN network.
- Application key: It is necessary to establish secure communications with the device.
- Credentials: Username and password that allow interaction with the TTN network.
- Data model: CayenneLPP, CBOR or Application Server, indicating the format in which we expect to receive the data.



CREACIÓN DE DISPOSITIVO

Configurar protocolo

Introduzca el tipo de protocolo y el servicio a vincular.

Protocolo

LORA

Modelo de Datos

Application Server

Nombre de usuario

luis@secmotic.com

Contraseña

Device EUI

00 90 F3 EA 85 C6 04 AA

Application EUI

70 B3 D5 7E D0 02 9B 5E

Application Id

test_app

Application Key

444B8EF16415B5F6ED777EAFE695C49

After specifying the necessary information about the protocol, click "Next" to advance in the process. In the current section we must establish the properties that we will receive from our devices. We will be presented with the following form to fill out.

Selección cómo quieres crear la nueva dispositivo

Añadir dispositivo ✓

Configurar protocolo ✓

Añadir propiedades

Asignar permisos ✕

CREACIÓN DE PROPIEDADES

Añadir propiedades

Añada y configure las propiedades que tendrá este dispositivo.

PROPIEDAD	ID	NOMBRE	TIPO	PARÁMETRO	ENDIAN	OFFSET	UNIDAD	VALOR
Propiedad ▼	<input type="text"/>							

Inicio **Guardar**

From this form we have the possibility to indicate different properties that we will have accessible from the devices. There are three types of properties in total: commands, active attribute, and static attribute. Next we will see what use each property has and also what properties are needed by the different protocols mentioned above.

If our device is going to maintain a constant flow of information we will need a property that is an active attribute. These properties represent the values that we will receive from the devices that we register in the system. This property type will be available on all device connection protocols. It is necessary to establish the following parameters:

- ID: Identifier of the attribute (Required). It has a maximum length of three characters and is the short representation of the device.
- Name: Descriptive label of the property (Required).
- Type: Class of value that is expected to be received from the device, one of the predefined values must be chosen.
 - Null
 - Number
 - String
 - Object
 - Array
 - Boolean
 - Point
 - LineString
 - Polygon
- Unit: Magnitude or measure with which to represent the received value (Optional).

In the event that we had a video device that every certain period of time sends us an image (a frame of its recording) of a room, we could define an active Array type attribute that collects said frame.

CREACIÓN DE DISPOSITIVO
Añadir propiedades
Añada y configure las propiedades que tendrá este dispositivo.

PROPIEDAD	ID	NOMBRE	TIPO	VALOR	UNIDAD
Atributo Activo	frame	frame	Array	--Vacio	--Vacio

Propiedad

It can also be interesting to save device information manually by the user, that is, data of interest but that the device does not send. To accomplish this task, **static attributes**. Through these attributes we will represent values that, although they may be subject to change in the future, remain with the value established by the user. The IoTa-UL, IoTa-JSON and SigFox protocols support this type of properties, although it should be noted that the configuration between SigFox and the rest varies a bit. If we use IoTa-UL or IoTa-JSON, the parameters that we must complete to define this property are:

- Name: Descriptive label of the property (Required).
- Type: Class of value that is expected to be received from the device, one of the predefined values must be chosen.
 - Null
 - Number
 - String
 - Object
 - Array
 - Boolean
 - Point
 - LineString
 - Polygon
- Value: This parameter indicates the information to be saved (Required).

A practical example of using these values could be to persistently store the room in which the devices are placed.

CREACIÓN DE DISPOSITIVO
Añadir propiedades
Añada y configure las propiedades que tendrá este dispositivo.

PROPIEDAD	ID	NOMBRE	TIPO	VALOR	UNIDAD
Atributo Activo	frame	frame	Array	--Vacio	--Vacio
Atributo Estático	--Vacio	habitacion	String	dormitorio	--Vacio

Propiedad

The last property type to mention is the **command**. These properties help us standardize communications with our devices so that you can interact with those devices from the platform

without having to rely on other applications. Only the IoT-A-UL and IoT-A-JSON protocols currently accept these types of properties. The parameters that must be established to create a command are the following:

- ID: Identifier of the command (Required).
- Name: Descriptive label of the property (Required).
- Type: In this case, only the Command type is available.
- Value: This field represents the information that will be sent to the device when the command is executed. You can set as many aliases for the different values as you want, and even none if they are going to be sent manually. The mission of aliases is to make it easier to recognize the action that said value will perform on the device.

An example could be a command that allows interact with the device indicating a new orientation.

PROPIEDAD	ID	NOMBRE	TIPO	VALOR	UNIDAD
Atributo Activo	frame	frame	Array	--Vacio	--Vacio
Atributo Estático	--Vacio	habitacion	String	dormitorio	--Vacio

Form fields: Comando (dropdown), grad, Orientación, Command (dropdown), Valor (dropdown), Unidad (text: Grados), Guardar

We are going to see how to define several aliases for values that interest us within a command, for this we place ourselves in the “VALUE” field of our command-type property; Once positioned, a menu will appear that will allow us to press an option called “Add command”.

Dropdown menu options: Añadir coma...

After selecting this option, the system will display a new window where we must enter the desired value and an alias that identifies it.

Dialog box: Añadir valor de comando. Fields: DERECHA, 90 GRADOS. Buttons: Cancelar, Añadir valor.

We can create as many alias-value pairs as we see necessary in the same command.

CREACIÓN DE DISPOSITIVO
Añadir propiedades
Añada y configure las propiedades que tendrá este dispositivo.

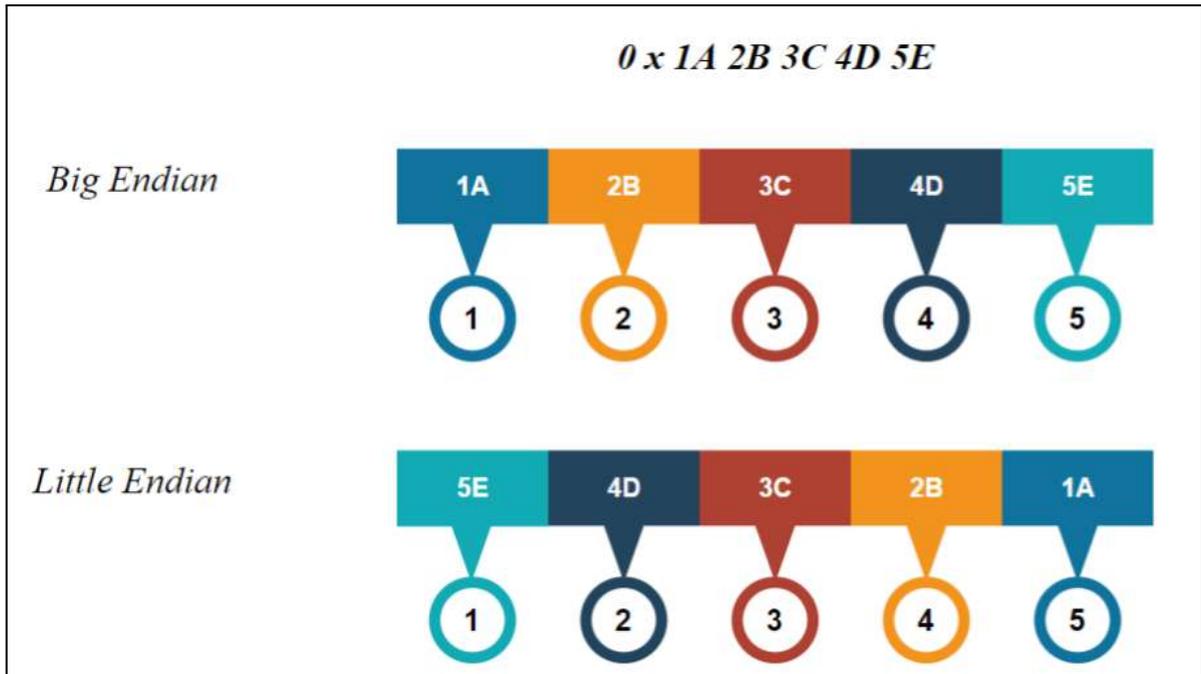
PROPIEDAD	ID	NOMBRE	TIPO	VALOR	UNIDAD	
Atributo Activo	frame	frame	Array	--Vacio	--Vacio	 
Atributo Estático	--Vacio	habitacion	String	dormitorio	--Vacio	 
Comando	grad	Orientacion	Command	DERECHA,IZQUIERDA,GIRO COMPLETO	--Vacio	 

In the case of working with the **SigFox** we must take into account some considerations, the first is that it supports both active and static types and their functions do not vary with respect to the IOTA-UL and IOTA-JSON protocols; in fact, static attributes are defined in exactly the same way. Where the SigFox protocol differs from the rest is with the active attributes, since this time we expect our devices to communicate with the system through bit frames.

In summary, if we need to establish communication with a device through this protocol, we must specify values such as the size of the frame, the reading method and from which byte to start reading. To declare the active attributes of SigFox the following information must be established:

- ID: Identifier of the attribute (Required). It has a maximum length of 3 characters and is the short representation of the device.
- Name: Descriptive label of the property (Required).
- Type: Class of value that is expected to be received from the device, one of the predefined values must be chosen.
 - uint
- Parameter: length within the bit frame occupied by the attribute being created. The minimum size is one bit and the maximum is 64 bits or 8 bytes.
- Offset: Through this parameter we indicate in which bit of the byte the information containing the value of the attribute should begin to be read.
- Endian: Method of reading the attribute data.
 - Little Endian: Starting with the least significant byte.
 - Big Endian: Starting with the most significant byte.
- Unit: Magnitude or measure with which to represent the received value (Optional).

Let's see an example, suppose our device sends 64-bit (5B) frames like the following: 0 x 1A 2B 3C 4D 5E; This frame is in hexadecimal, so each letter or number corresponds to 4 bits. If the active attribute that we are creating were made up of all the bytes, we should specify that its length is 64 bits and that the offset is 0, since we must start reading from the first bit. Finally we must specify the reading method, by means of Big Endian we specify that we want the most significant byte to indicate the order and by means of Little Endian it is just the opposite, the least significant will be the first to be read.



Once we take into account all these details we can add new properties to our device.

CREACIÓN DE DISPOSITIVO
Añadir propiedades
Añada y configura las propiedades que tendrá este dispositivo.

PROPIEDAD	ID	NOMBRE	TIPO	PARÁMETRO	ENDIAN	OFFSET	UNIDAD	VALOR
Atributo Activo	FRAME	frame	Atributo_model_type_uint	04	little-endian	0	--Vacio	--Vacio
Atributo Estático	--Vacio	habitacion	String	--Vacio	--Vacio	--Vacio	--Vacio	dormitorio

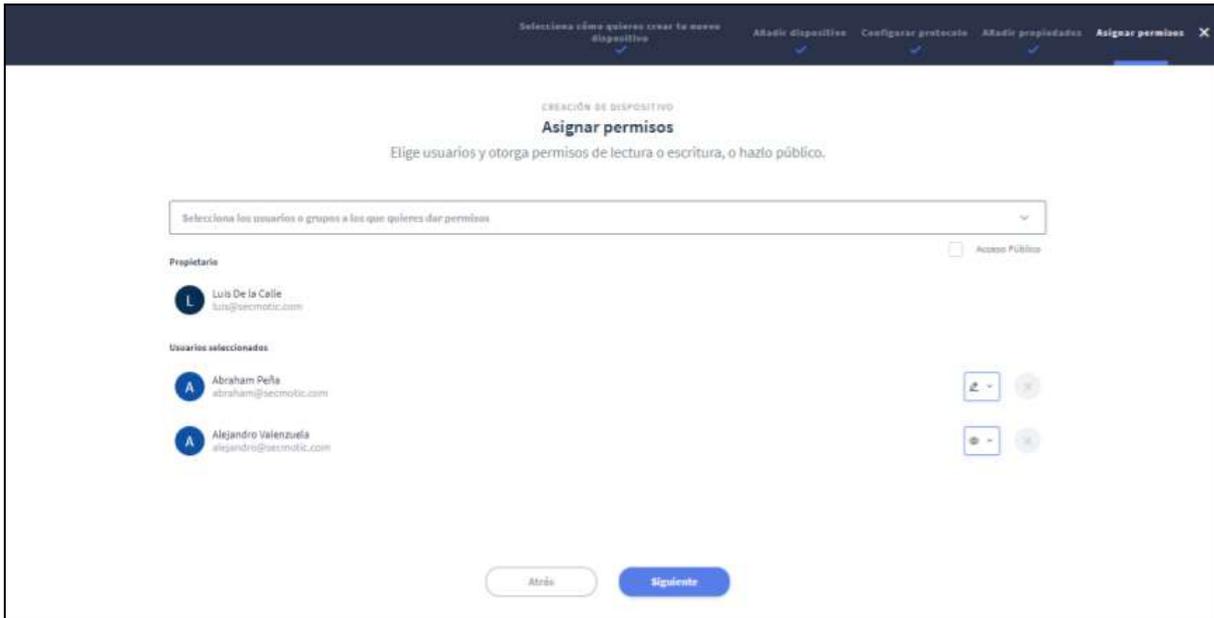
Once we know the types of properties, it is necessary to know that it is possible to add as many properties as needed, being able to use properties of different types. There is also the option to modify or delete the properties already created using the icons located to the right of each one.

CREACIÓN DE DISPOSITIVO
Añadir propiedades
Añada y configura las propiedades que tendrá este dispositivo.

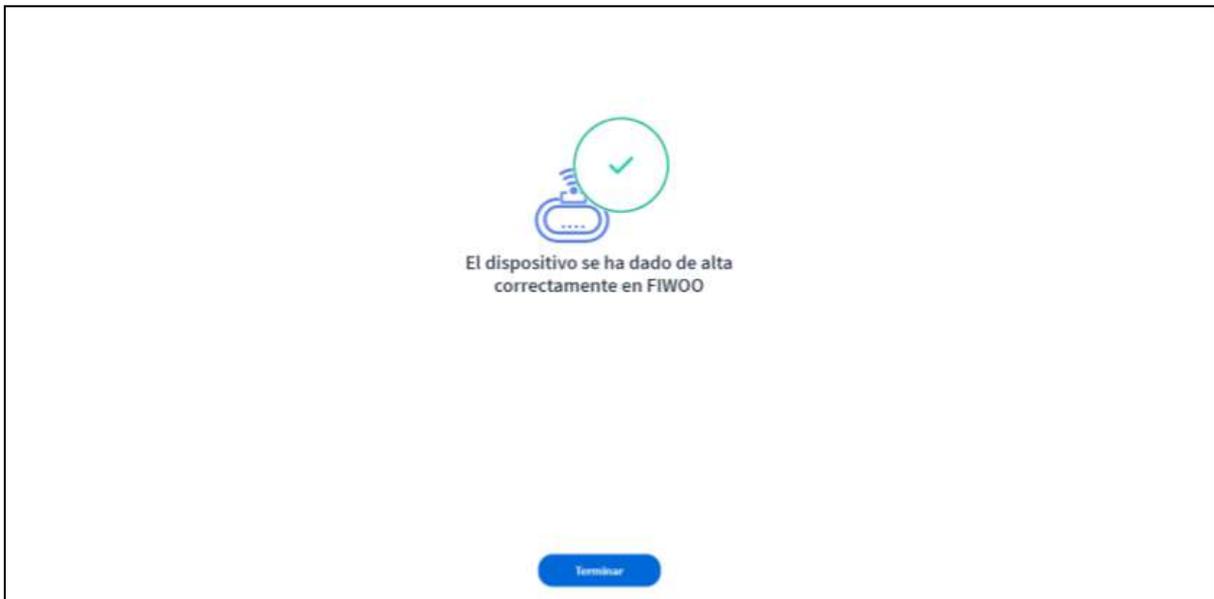
PROPIEDAD	ID	NOMBRE	TIPO	VALOR	UNIDAD
Atributo Activo	frame	frame	Array	--Vacio	--Vacio
Atributo Estático	--Vacio	habitacion	String	dormitorio	--Vacio

Propiedad

Once all the required properties are in place, we go to the last step by clicking on “Next”. In this step it is possible to indicate which users will have permissions to interact with the generated device. Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.

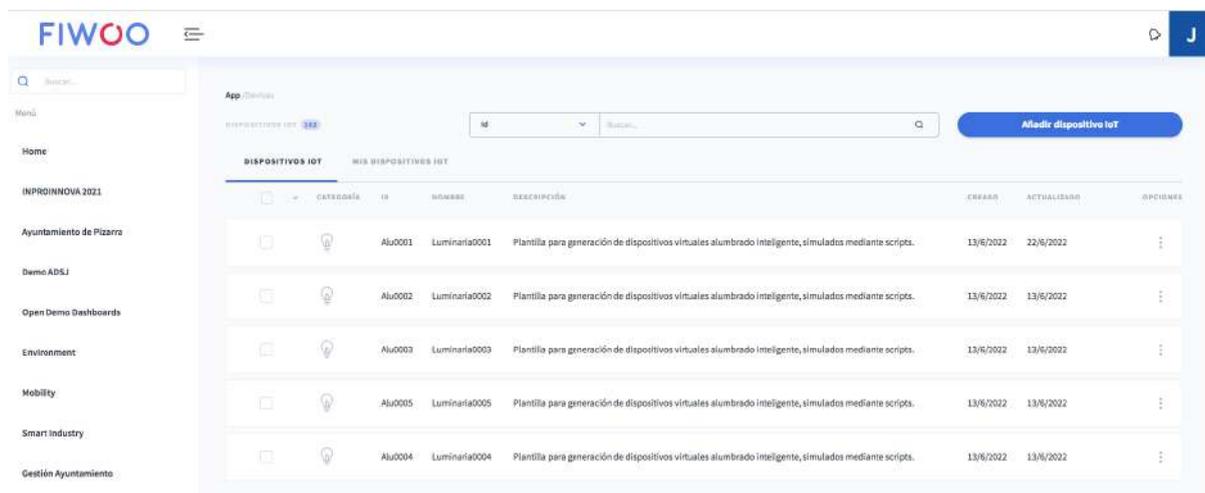


After clicking on the “Next” button, the process will end and the system will display the following message to inform you that everything has been saved correctly.

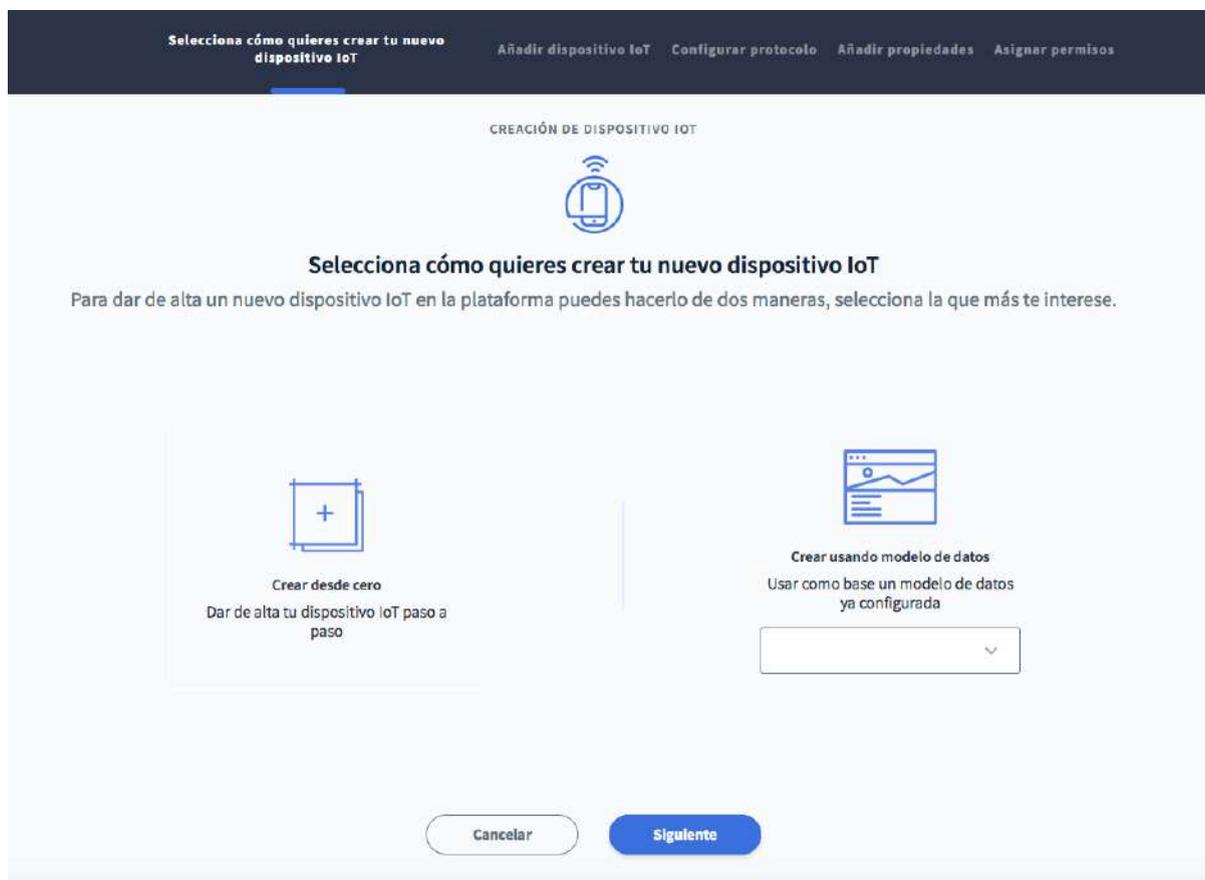


Create device based on data model (templates)

As can be seen in section [Data Model](#) there is the possibility of creating a template that serves as a model to generate new devices, thus speeding up the process of registering our equipment in the FIWOO system. Once again, we go to the device manager and proceed to create a new one by pressing the "Add device" button.



This action will start a guided device creation process that starts with a window that describes the procedure and allows you to select the creation method.



During this process we have an upper bar where the different steps that must be completed before finishing the creation process are shown.

As we saw in the previous section, in this window there are two creation options available, currently we will deal with the second in depth, that is, **the creation of a new device starting from a data model** that we have previously generated. Creating a device without a data model is detailed in [Create device from scratch](#).

To work with a template we will select one using the drop-down menu that is indicated in the previous image, this menu has a search bar that allows us to quickly find the desired template. After choosing the template and pressing the "Create using template" button, we will advance to the form of the "Add device" step. This form collects the generic information corresponding to the new devices.

Selecciona cómo quieres crear tu nuevo dispositivo

Añadir dispositivo Configurar protocolo Añadir propiedades Asignar permisos X

CREACIÓN DE DISPOSITIVO

Añadir dispositivo

Introduzca los datos identificativos de su dispositivo.

Categoría

GPS

MEDIO AMBIENTE Y SOSTENIBILIDAD

Calidad del aire

Id

GPS Test

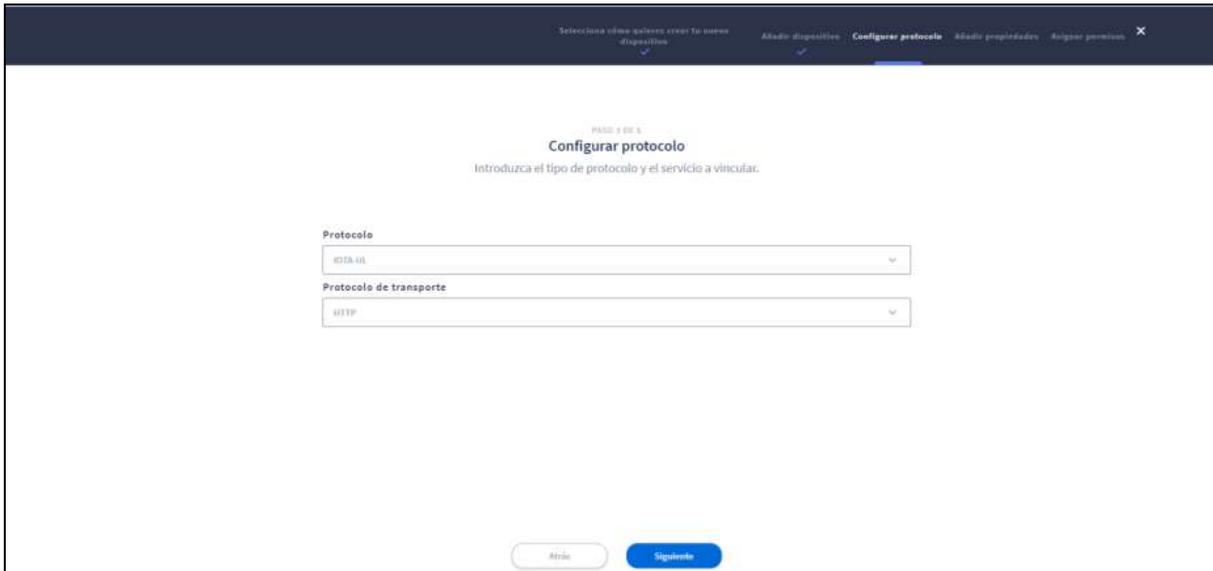
Nombre

Dispositivo GPS Template

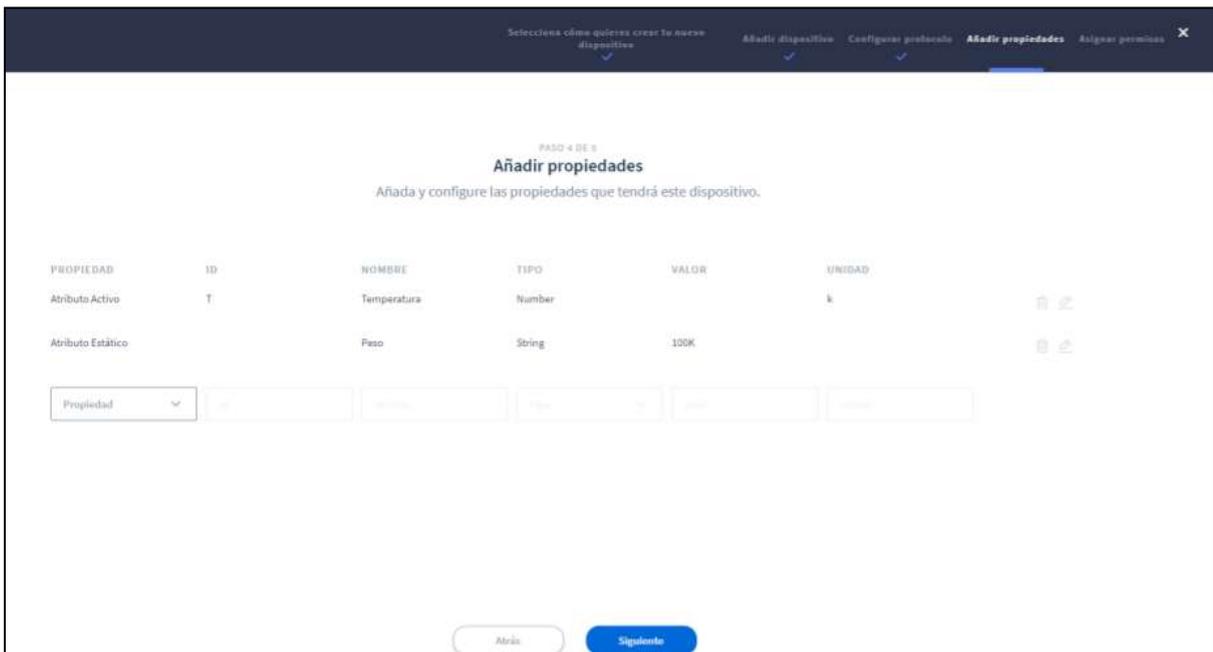
Descripción

Estos dispositivos móviles informan de su posición al sistema.

When entering the form we check how the data was filled in automatically, the only parameter that we must fill in is the device identifier. This identifier must be unique for each device and will be used by it to send its data to the platform. It should be noted that, if the template does not perfectly suit our needs, we can modify the values of the form, we are not obliged to follow the template at all times. After specifying the identifier we can go to the next step by clicking on "Next".



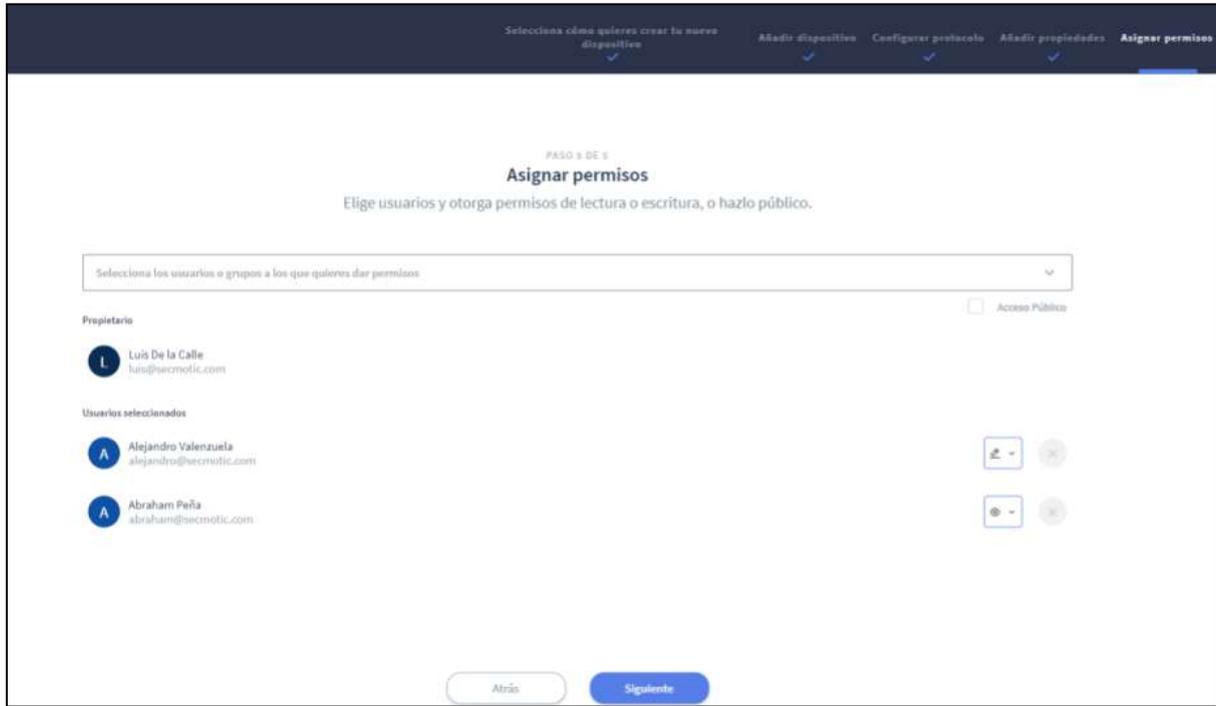
The template has generated both the protocol that the device will use and the transport protocol by which it will send the data. If necessary, these pre-established values could be modified and the ones we want configured. Once the protocols have been decided, click on "Next" to advance to step 4.



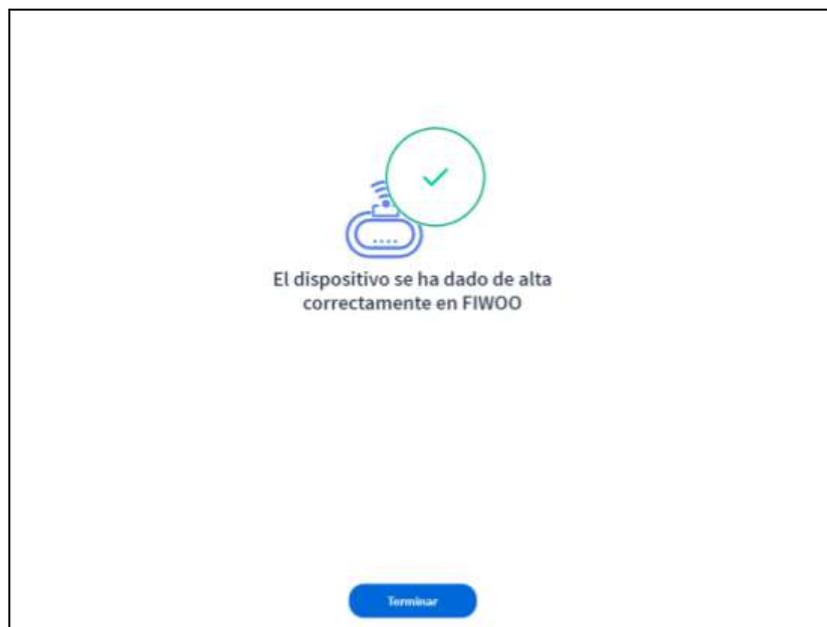
In this step we have also received the help of the template, we can see how the properties have been included automatically. Es importante resaltar que si en el paso anterior se hubiese seleccionado un protocolo distinto al que se configuró en la plantilla, el formulario actual estaría vacío y deberíamos rellenar los campos manualmente. Esto es debido a que cada protocolo acepta distintos tipos de propiedades.

As usual, you can add as many properties as you need. There is also the option to modify or delete the properties already created using the icons to the right of the properties. Once all the required properties are in place, go to the last step by clicking on "Next".

In this step we must indicate the users and/or groups of users that will have access to interact in some way with the device that we are going to create. In this step the template also helps and assigns the permissions to the relevant users and/or user groups...

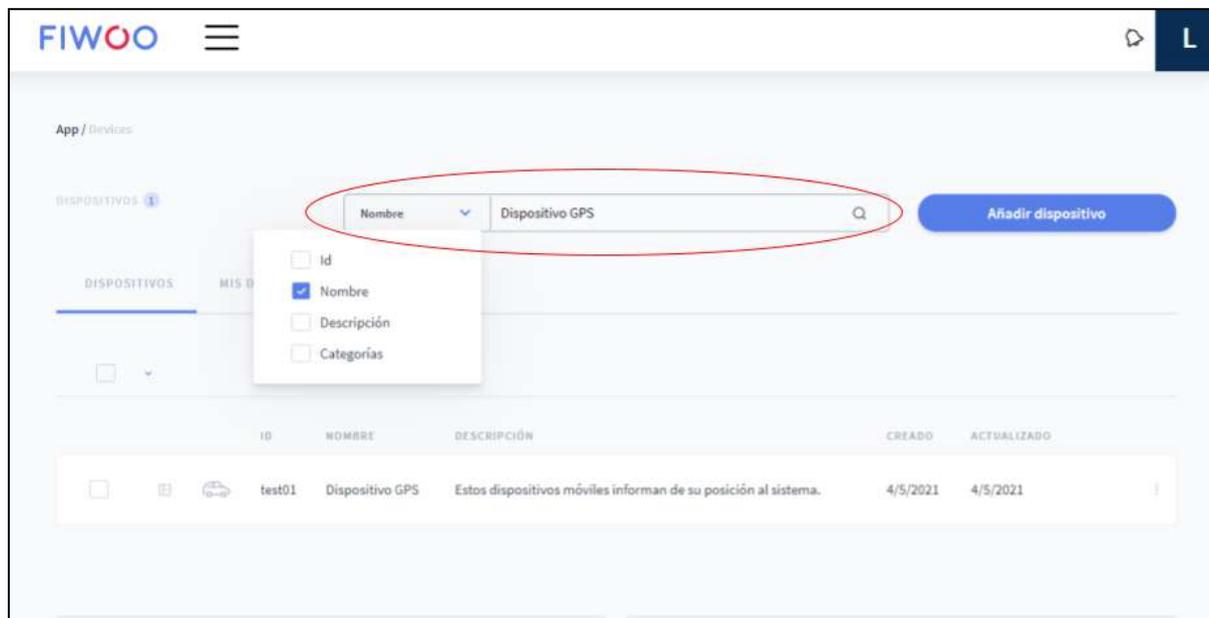


After clicking on the "Next" button, the process will be completed and the system will display the following message to inform that everything has been saved correctly.



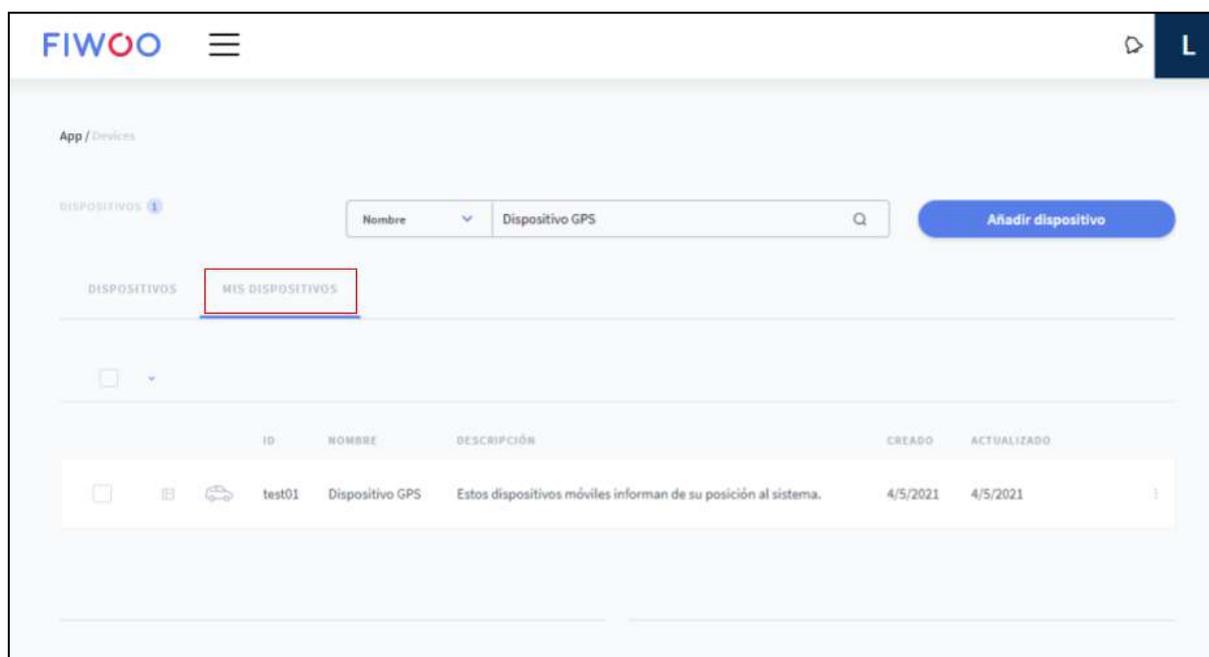
Device search engine

If we want to filter our list of devices we can use the search engine at the top and carry out a personalized search. We have four options to filter: Id, Name, Description and Category. Once selected, we will write the text to search for in the search box on the right.



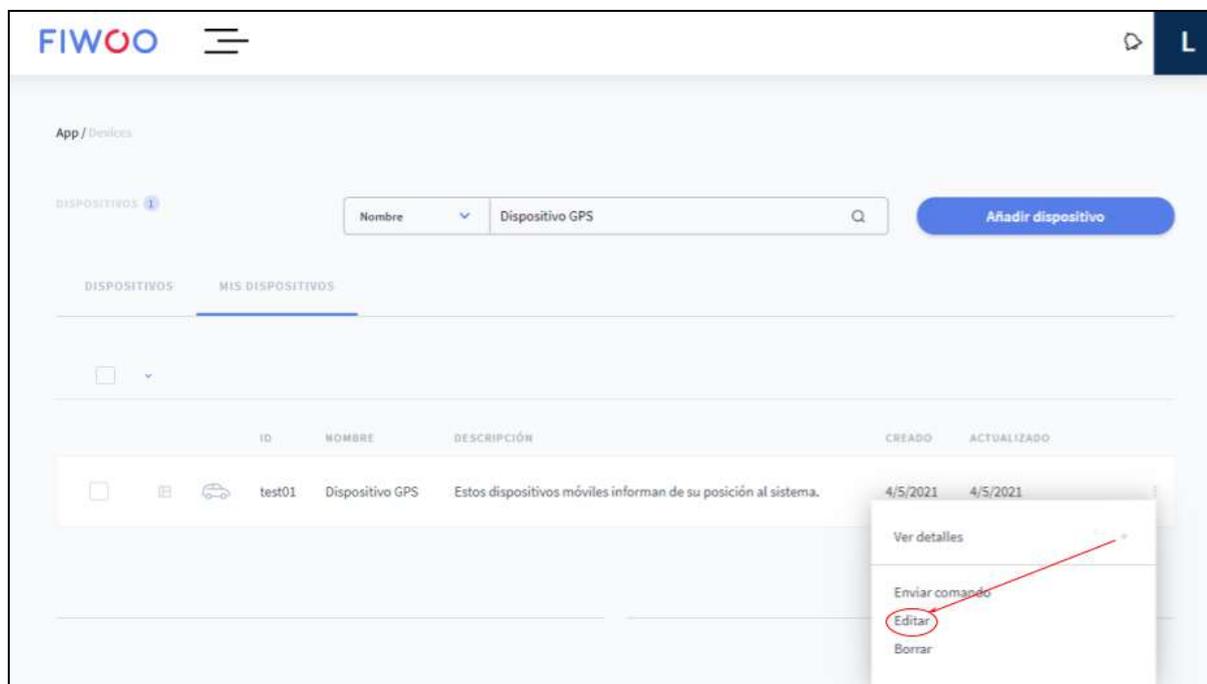
My devices

We have a convenient view that facilitates access to the devices created by the user who has the active session. To enter this view we just have to click on “MY DEVICES” from the device management view.

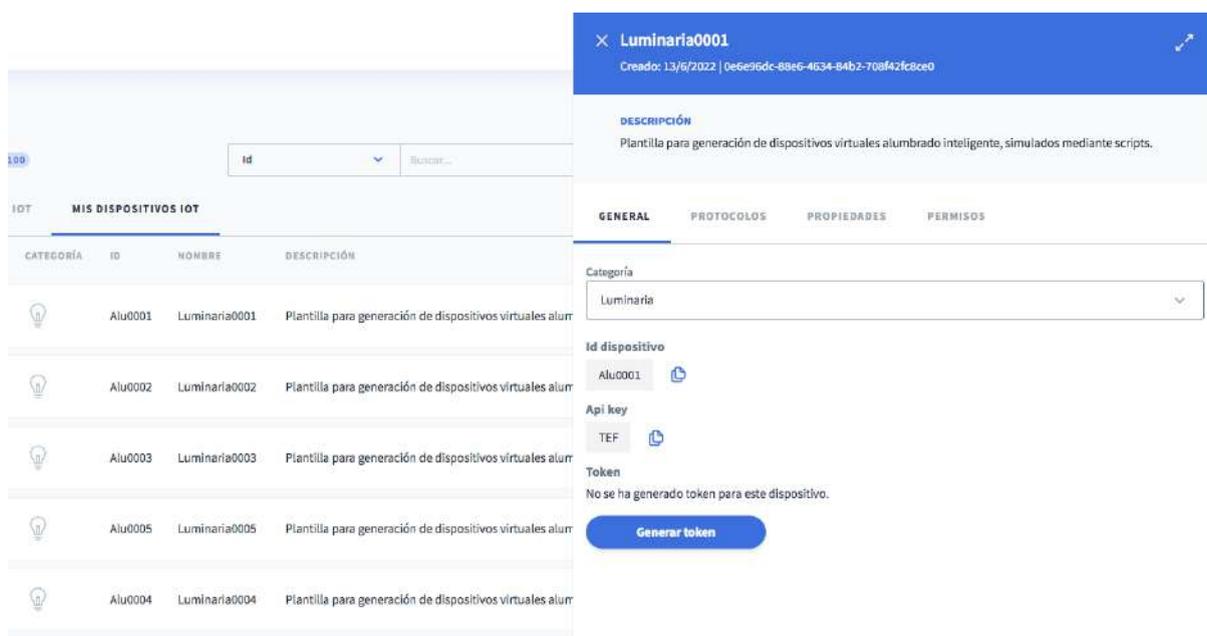


Modifying a device

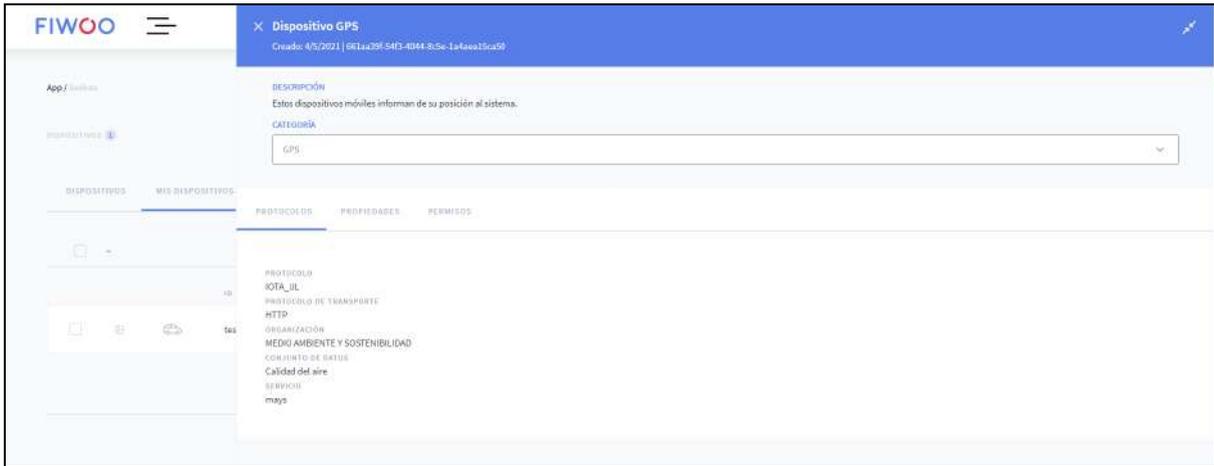
There is the option of changing the configuration of the created devices, but to be able to edit them it is necessary that they are owned by us or have permission to do so. To modify a device, just click on the three dots to the right of the row of the device you want to modify and select the “Edit” option. This action can be carried out from the Devices view and from the My Devices view.



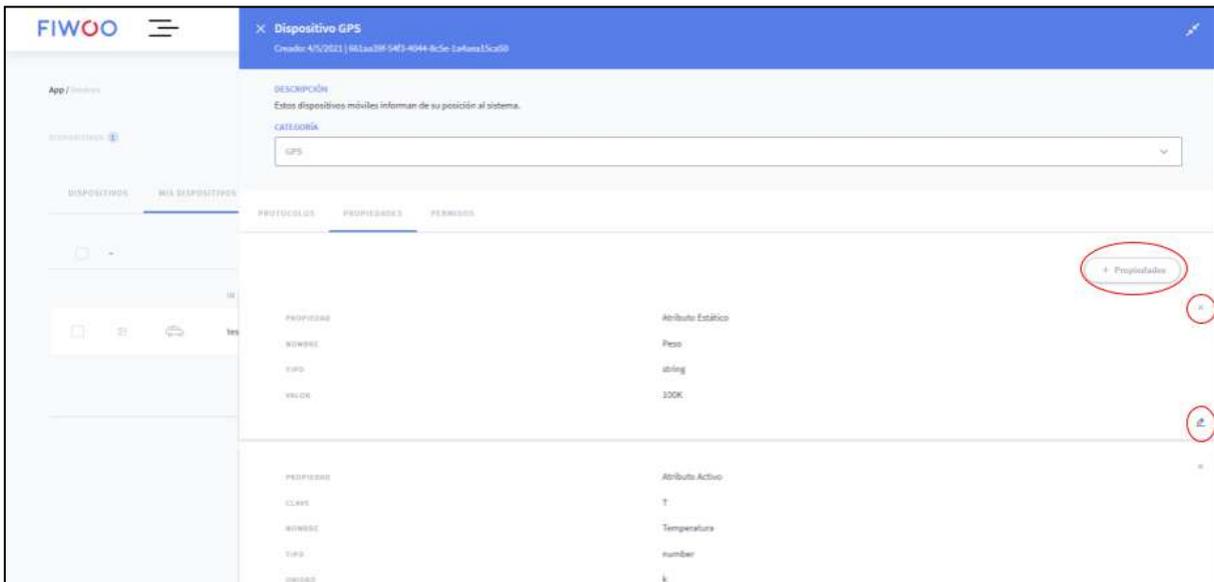
This will display a menu on the right side of the screen where we can see the current characteristics of the device.



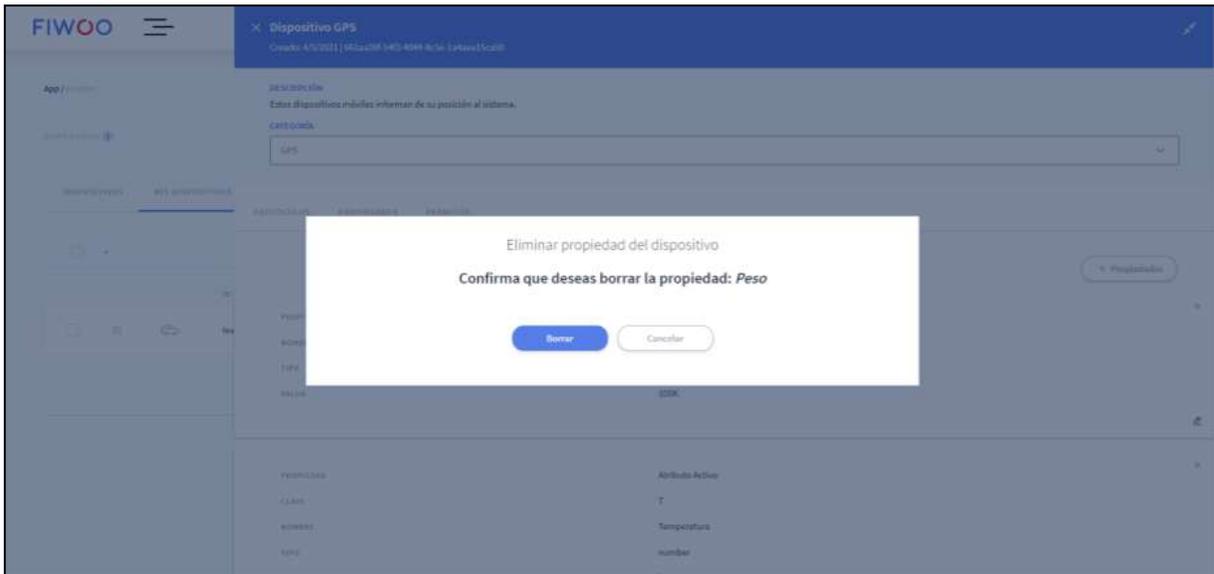
In the upper right corner we have a button that allows us to resize the menu, enlarging said menu in such a way that it is more comfortable to edit the device.



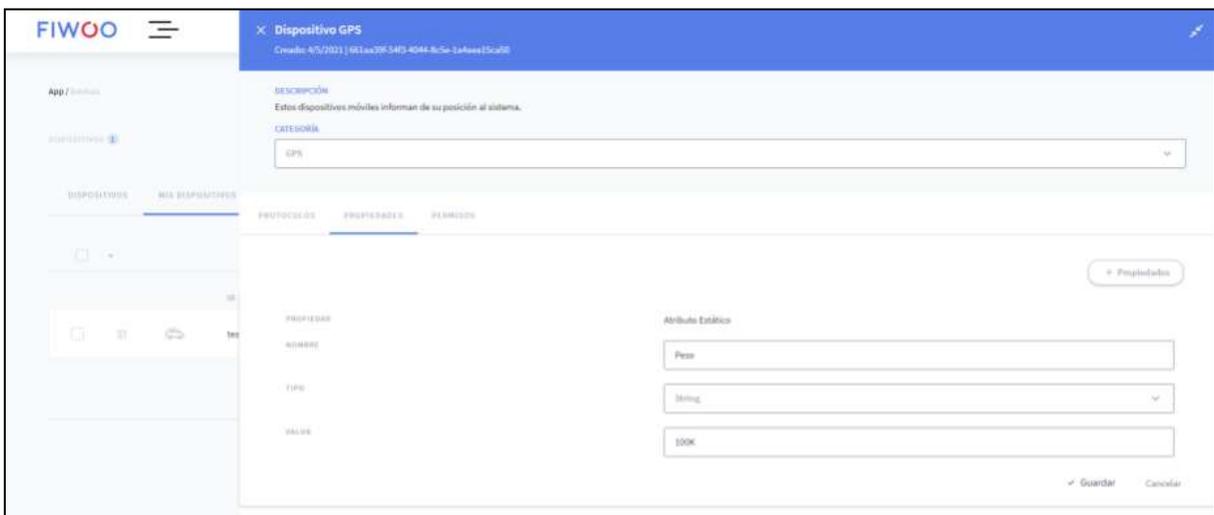
We can appreciate that we have the ability to modify the device name, description and category. We also have access to three submenus, these are: Protocols, Properties and Permissions. In the Protocol submenu we only have the ability to view the data, however in the other two we have many more options available.



In the Properties submenu we have a button that allows us to add new attributes to the device and also some icons in the shape of a pencil and a trash can that allow us to edit and delete properties respectively. When trying to delete a property, the system will display a window that will ask you to confirm the performance of said action.



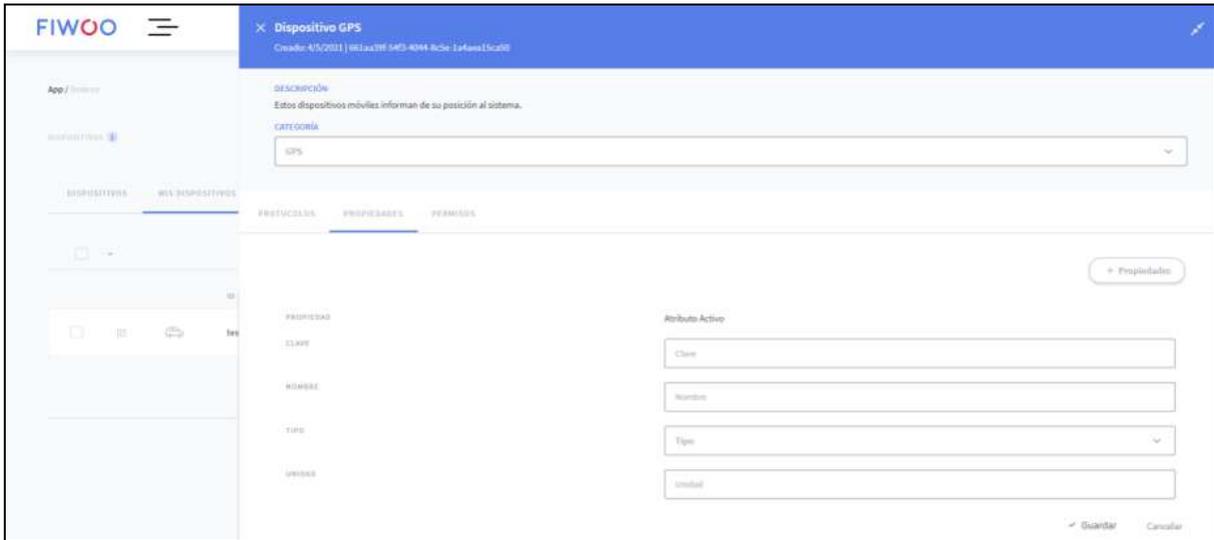
If we click on the pencil icon we will have access to a form that will allow us to modify the values of the property in question.



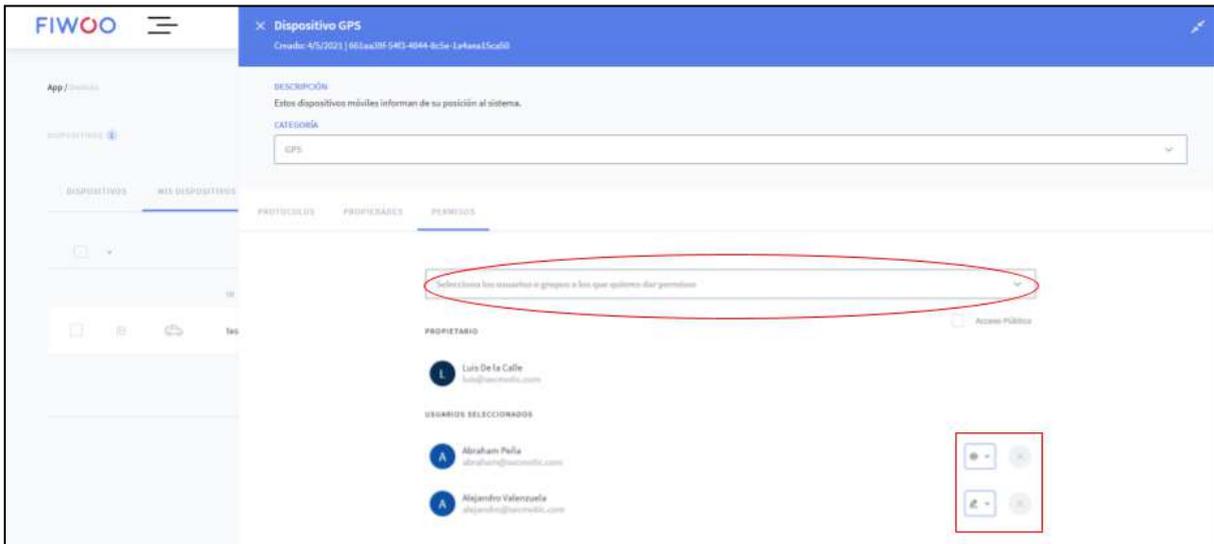
Clicking on the “+ Properties” button will show a small menu with the different types of properties available for our device.



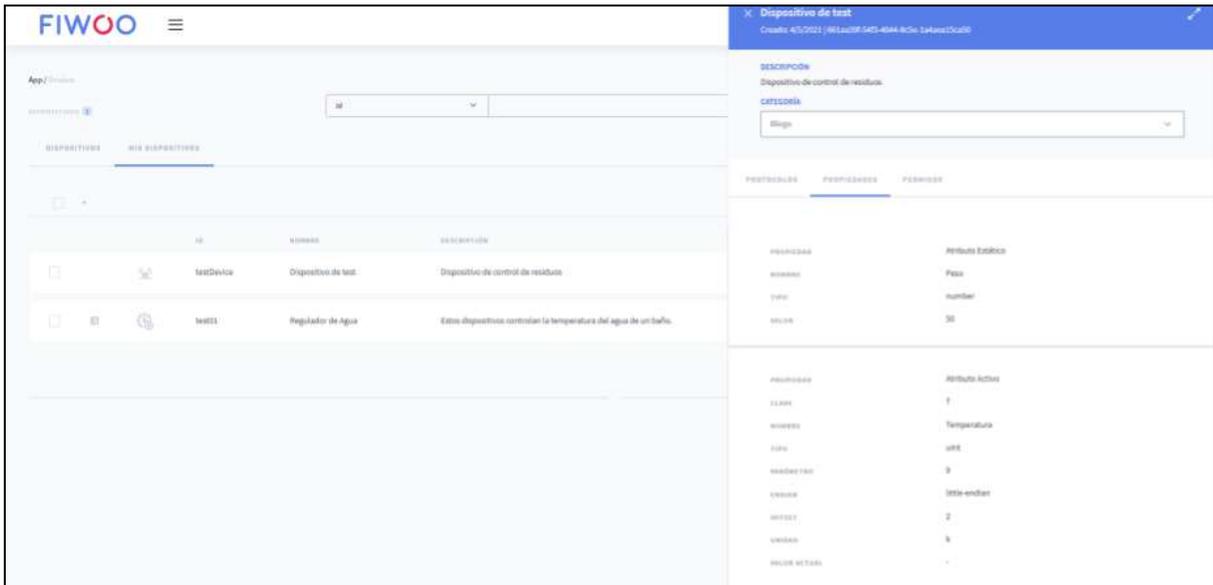
After choosing a type of property, a form will be shown to enter the data for this new attribute.



In the last submenu we will be able to modify the permissions that users have on the device. We have the possibility of using the search bar to give access to new users or groups of users and we also have buttons to specify permissions for users who already have them and even revoke permissions.



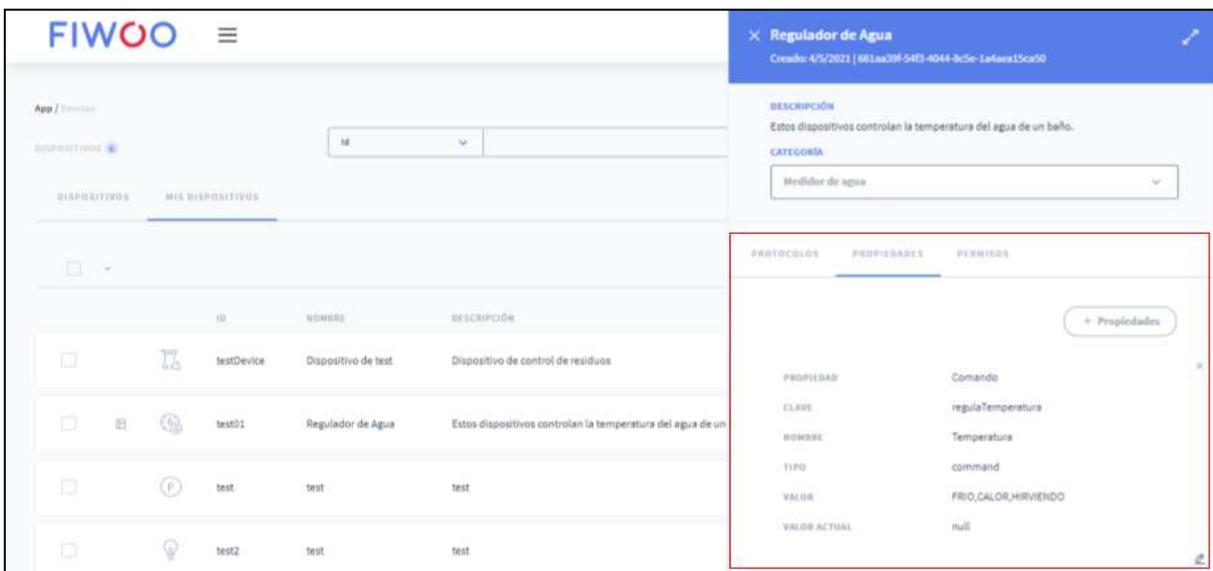
If our devices use the LoRa or SigFox protocol, we must know that we do not have full power to edit its parameters, specifically we can only make changes to its name, description, category and permissions. If we enter the properties tab we see how the edit and delete buttons do not appear.



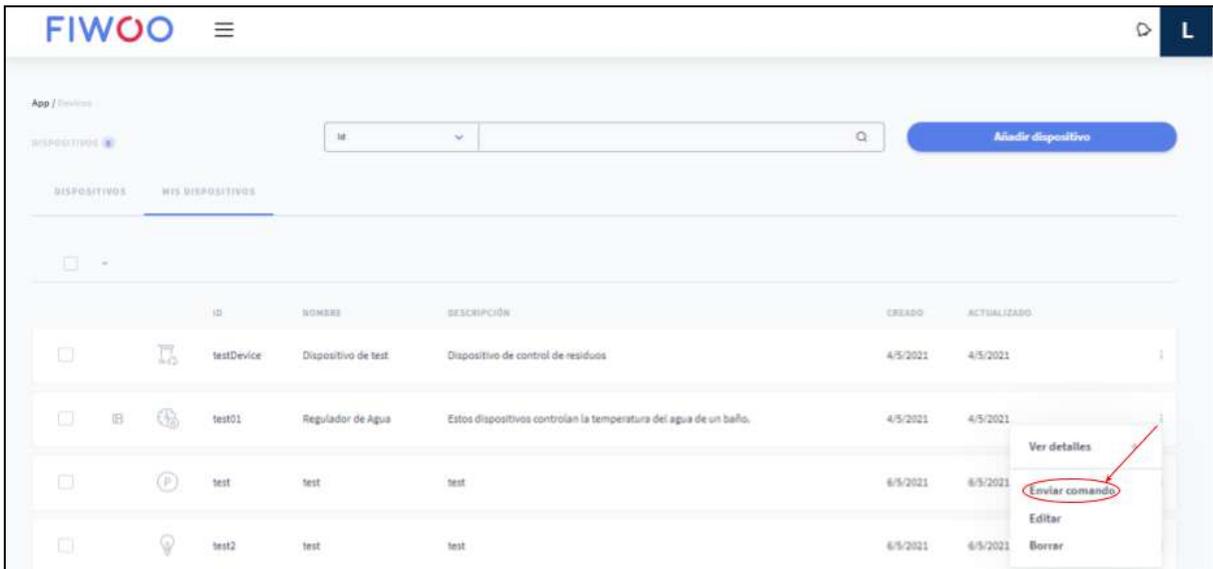
Send a command to a device

The commands allow the user to interact with the devices, establishing values that will be transmitted to the device in order for it to process it and act accordingly. In this section we will show how to send these commands and the available options.

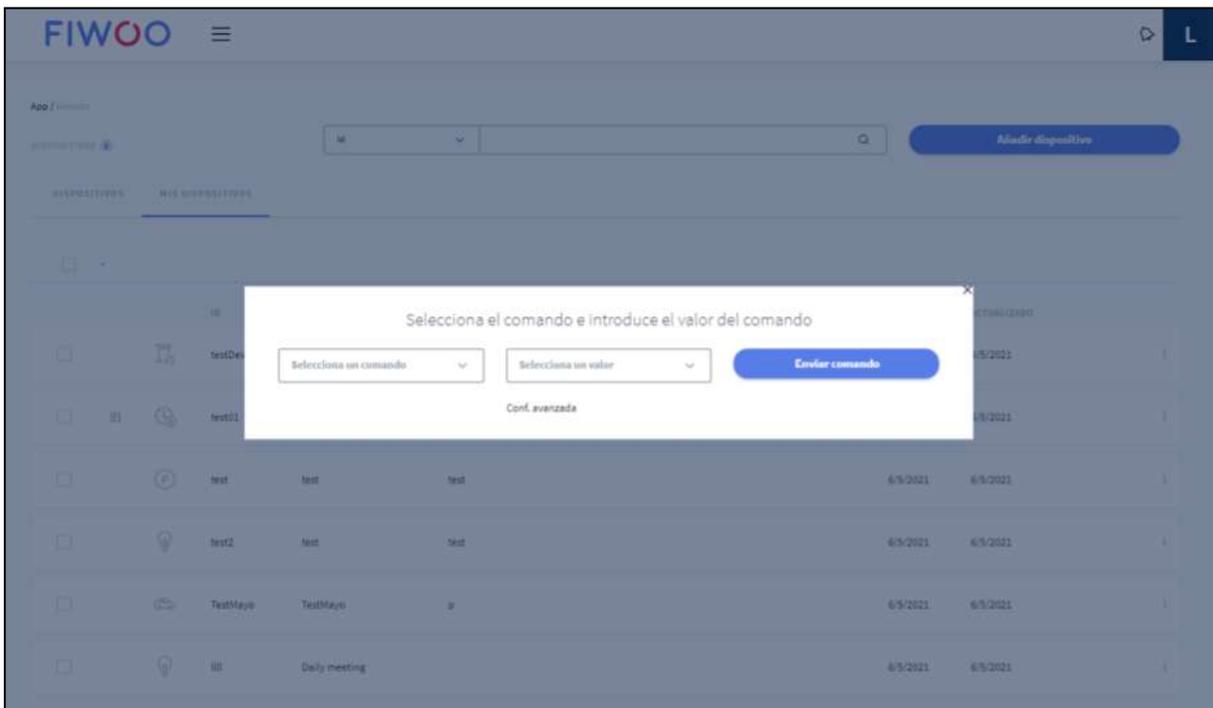
Keep in mind that this option will only be available on those devices that have at least one command-type property defined. Let's see an example of a device that controls the temperature of a bathtub, in which we have defined a command that helps us cool the water.



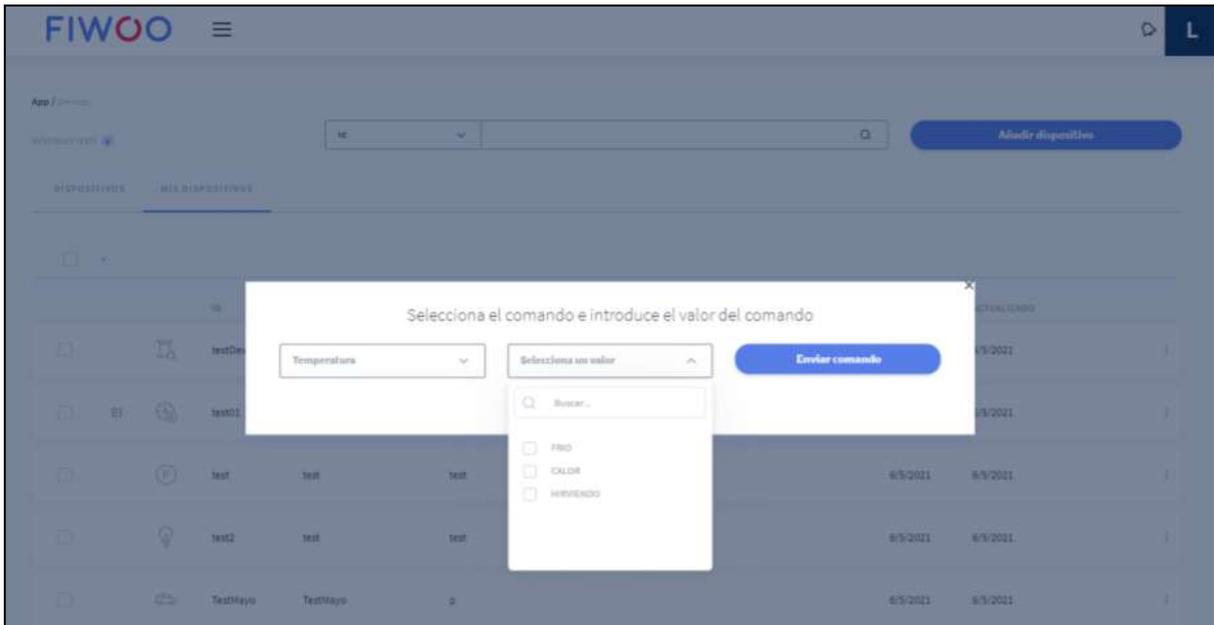
In the image you can see the configuration of one of the commands that we are going to use. To transmit this information to a device, we must place ourselves on the three dots that appear to its right and select the "Send command" option.



After this, a window will appear where we will indicate the command that we want to execute and the value that will be sent to the device for that command.



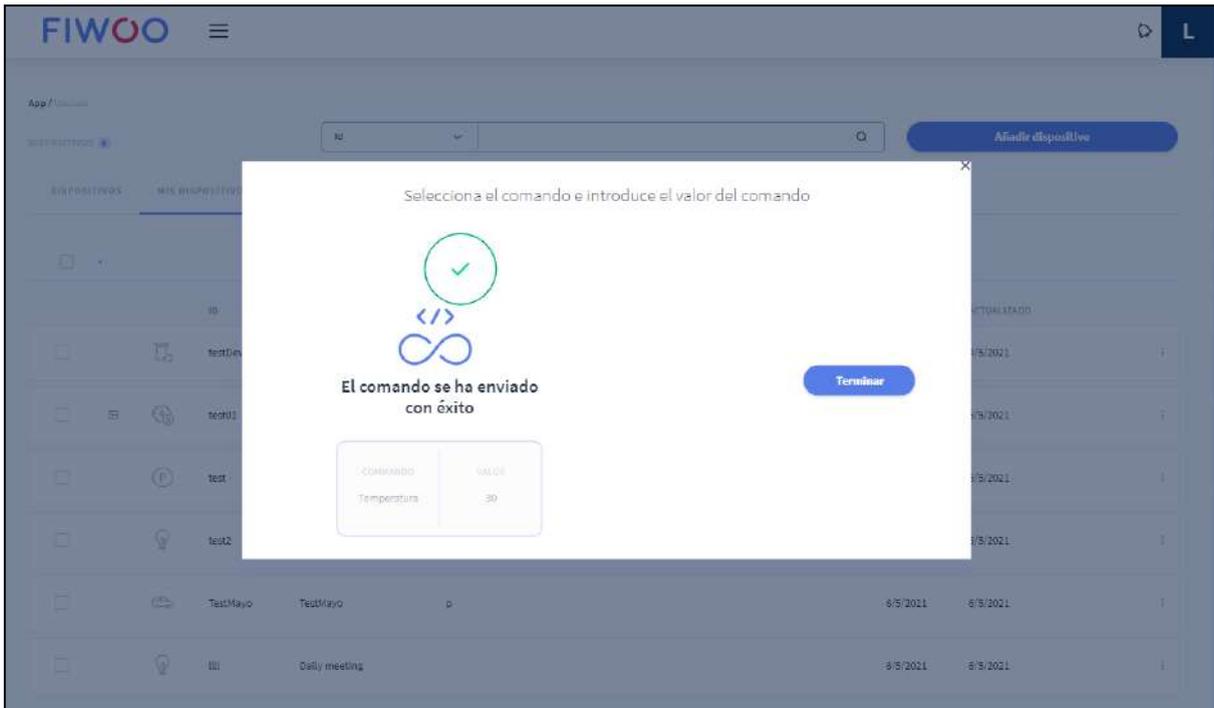
In the window that appears we have two search bars: the one on the left will allow us to choose the “Temperature” command that we showed before; on the other hand, the bar on the right will let us choose between the options “COLD”, “HEAT” and “BOILING”. If by chance we wanted to insert the value to send in the command manually, we could do it by clicking on “Conf. avanzada”.



After pressing the button “Conf. advanced” the search bar on the right has become a text field where we can specify the value we want. To restore the form to its previous stage, we only have to press the “Conf. simple” that has replaced the previous button.



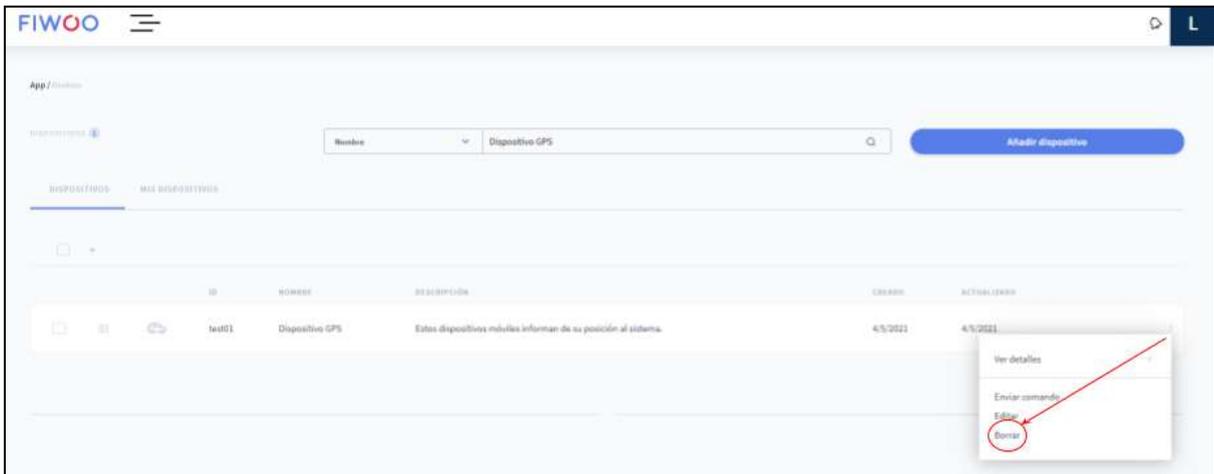
After selecting a value and pressing the "Send command" button, the system will send this information to the device and will display a message indicating that the operation has been carried out successfully.



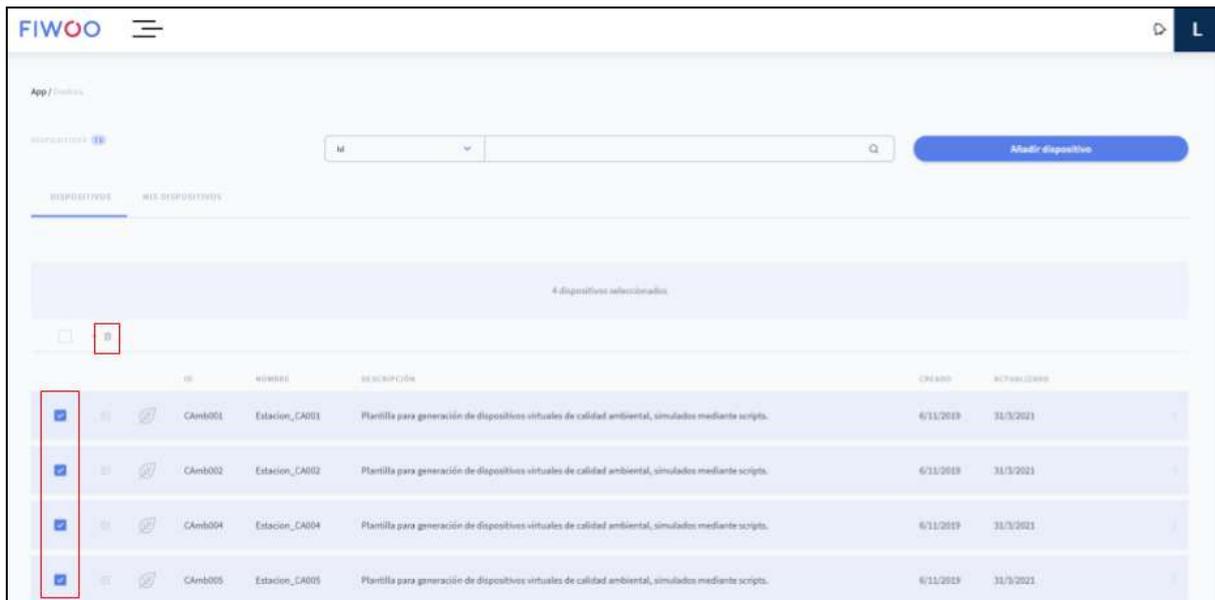
Remove device

When removing a device from the platform, there are two alternatives: one by one or in bulk.

To delete devices one by one, we simply have to press the three points to the right of the device and select the “Delete” option. A new window will open to confirm that we want to delete it. If we press the "Delete" button again in that window, it will be removed from the system.



There is also the option to remove multiple devices at once. To do this, we select the ones we want to remove using the selection box to the left of each row. Once done, the trash can icon will appear at the top of the menu, with which you can delete all at once. After clicking on this icon, a new window will open to confirm that we want to remove the devices. If we press the “Delete” button in that window, they will be removed from the system.



Data models

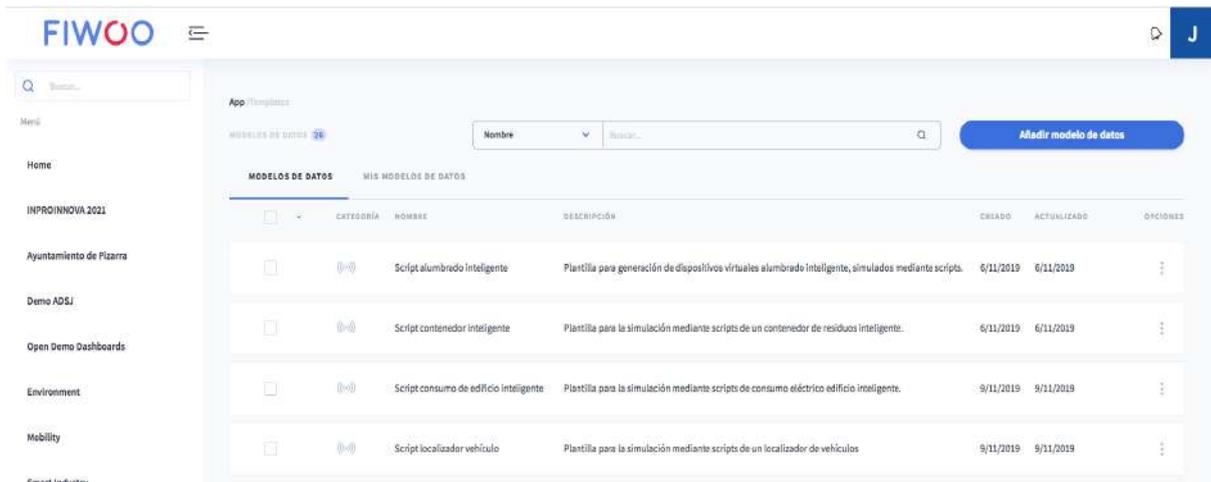
When working with several devices, the task of creating them can be somewhat tedious. To facilitate this work, we will use the Data Models (templates), which allow the creation of a common structure between devices and/or services of the same type, so that it will not be necessary to enter the same data on multiple occasions.

We can access it by selecting the “Data model” option from the menu that appears when you click on the button in the upper right corner.

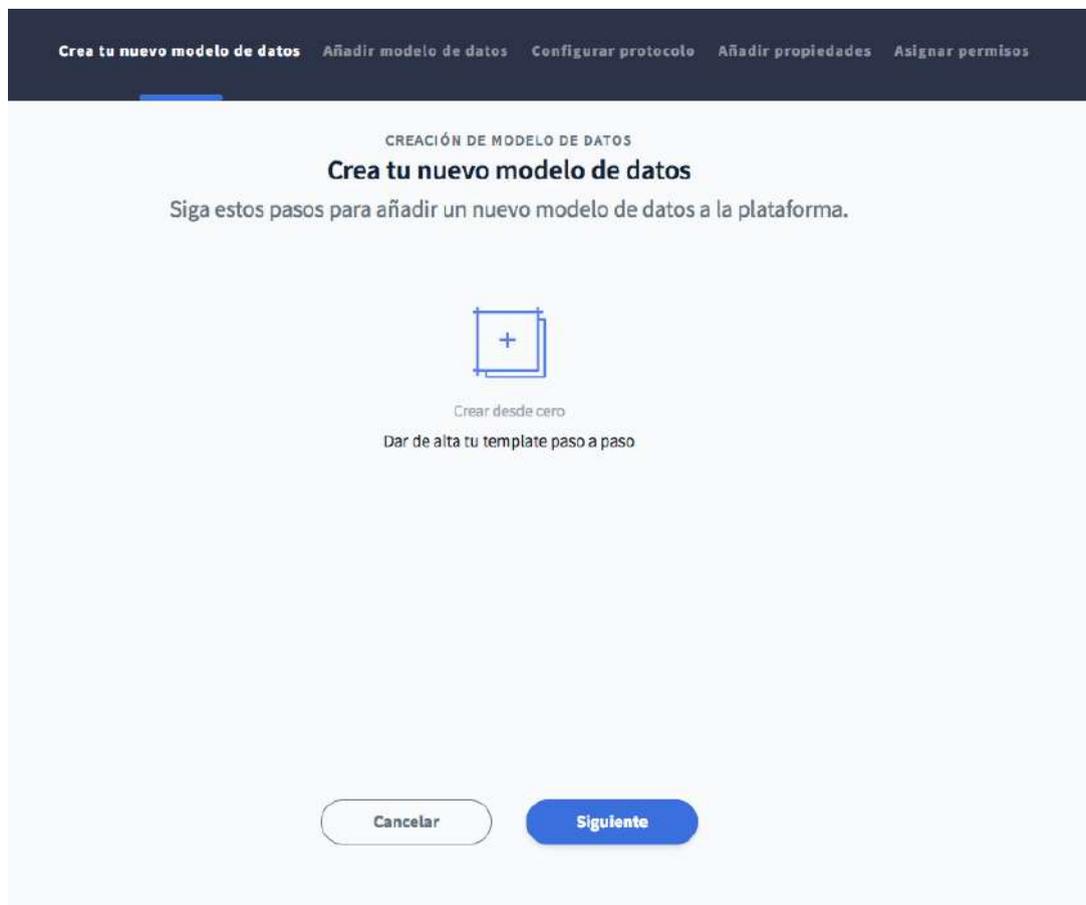


Create data model

Once we are in the template manager, we can create a new one if we press the “Add model” button.



This action will start a guided creation process in which we will have to fill in various forms that we will discuss below. This creation process begins with an informational window.



The upper bar shows the different steps that must be completed before finishing the creation process. After pressing the next button we will advance to the form of the “Add Template” step. This form collects the generic information corresponding to the new devices and services.

Creación de modelo de datos

CREACIÓN DE MODELO DE DATOS

Añadir modelo de datos

Introduzca los datos identificativos de su pantalla.

Categoría

Otra

Organización

Conjunto de datos

Nombre

Introduce un nombre para el dispositivo IoT

Descripción

Introduce una descripción

Atrás

Siguiente

The data on this form is all mandatory, and is mainly responsible for collecting the following data:

- **Category:** This section contains information related to the application that is going to be given to a device, it has three sections.
 - **Category:** Identifies the sector to which the work performed by a device is related. Each category is assigned an icon with which the device will later be represented in the widgets.
 - **Organization:** Represents the type of institution or department in which the device is established. Its main function is to group devices for publication as open data.
 - **Data set:** It is used to indicate what data will be obtained from the device. It is a second level of grouping, within each organization there will be several data sets, to be able to order them within the open data system.
- Name of the template, so that it can be searched for later.
- Template description.

The template for this particular example will help create GPS devices that will be used in Environment projects and will provide data related to air quality at a given point. Click on “Next” to advance to the next step.

In this step it is necessary to indicate the protocol by which we will receive the data from our devices. Depending on the selected protocol, more or less information will have to be added; we see that in the first instance we only have to fill in one field.



The available protocols are the following:

- IOTA-UL: We will choose this protocol if the data sent by our devices is plain text in UltraLight 2.0 format.
- IOTA-JSON: We will use this device if our device sends the information in JSON format.
- SIGFOX: We will choose this option if the device uses the SigFox network to send data to the platform.
- LORA: We will decide on this option if the device establishes a connection through a LoRaWAN type network. FIWOO currently supports connection to The Things Network (TTN).

In the case of deciding on the IOTA UL or JSON protocols, it will be necessary to specify which transport protocol our device will use to send us information. We have three options available: HTTP, MQTT and AMQP. In the case of choosing LORA, it is necessary to indicate the data model with which we will work, CayenneLPP, CBOR or Application Server. Finally, if we choose SIGFOX it will not be necessary to indicate additional information.

After specifying the necessary information about the protocol, click on "Next" to advance in the process. In this section we must establish the properties that we will receive from our devices. We will be presented with the following form to fill out.

From this form we have the possibility to indicate different properties that we will have accessible from the devices. There are three types of properties: commands, active attribute, and static attribute. Next we will see what use each property has and also what properties are needed by the different protocols mentioned above.

If our device is going to maintain a constant flow of information we will need a property that is an active attribute. These properties represent the values that we will receive from the devices that we register in the system. This property type will be available on all device connection protocols. It is necessary to establish the following parameters:

- ID: Identifier of the attribute (Required). It has a maximum length of three characters and is the short representation of the device.
- Name: Descriptive label of the property (Required).
- Type: Class of value that is expected to be received from the device, one of the predefined values must be chosen.
 - Null
 - Number
 - String
 - Object
 - Array
 - Boolean
 - Point
 - LineString
 - Polygon
- Unit: Magnitude or measure with which to represent the received value (Optional).

In the event that we had a device that every certain period of time would indicate the level of CO2 in a room, we could define an active attribute of a numerical type that would collect said value, even determining the corresponding unit of measurement.

CREACIÓN DE PLANTILLA
Añadir propiedades
Añada y configure las propiedades que tendrá esta plantilla.

PROPIEDAD	ID	NOMBRE	TIPO	VALOR	UNIDAD
Atributo Activo	CO2	m3	Number	1000	kg/m3

Propiedad

It can also be interesting to save device information manually by the user, that is, data of interest but that the device does not send. To accomplish this task, **static attributes**. Through these attributes we will represent values that, although they may be subject to change in the future, remain with the value established by the user. The IoT-A-UL, IoT-A-JSON and SigFox protocols support this type of properties, although it should be noted that the configuration between SigFox and the rest varies a bit. If we use IoT-A-UL or IoT-A-JSON, the parameters that we must complete to define this property are:

- Name: Descriptive label of the property (Required).
- Type: Class of value that is expected to be received from the device, one of the predefined values must be chosen.
 - Null
 - Number
 - String
 - Object
 - Array
 - Boolean
 - Point
 - LineString
 - Polygon
- Value: This parameter indicates the information to be saved (Required).

A practical example of using these values could be to persistently store the height at which the devices are placed.



The last property type to mention is the **command**. These properties help us standardize communications with our devices so that you can interact with those devices from the platform without having to rely on other applications. Only the IoT-UL and IoT-JSON protocols currently accept these types of properties. The parameters that must be established to create a command are the following:

- ID: Identifier of the command (Required).
- Name: Descriptive label of the property (Required).
- Type: In this case, only the Command type is available.
- Value: This field represents the information that will be sent to the device when the command is executed. You can set as many aliases for the different values as you want, and even none if they are going to be sent manually. The mission of aliases is to make it easier to recognize the action that said value will perform on the device.

An example could be a command that allows interact with the device by passing information on the desired temperature.



We are going to see how to define several aliases for values that interest us within a command, for this we place ourselves in the “VALUE” field of our command-type property; Once positioned, a menu will appear that will allow us to press an option called “Add command”.

PROPIEDAD	ID	NOMBRE	TIPO	VALOR	UNIDAD
Comando	regularTemperatura	TEMPERATURA	Command	Valor	
Propiedad				Añadir coma...	

After selecting this option, the system will display a new window where we must enter the desired value and an alias that identifies it.

Añadir valor de comando

FRIO	17	Cancelar	Añadir valor
------	----	----------	--------------

We can create as many alias-value pairs as we see necessary in the same command.

CREACIÓN DE PLANTILLA
Añadir propiedades
Añada y configure las propiedades que tendrá esta plantilla.

PROPIEDAD	ID	NOMBRE	TIPO	VALOR	UNIDAD	
Atributo Activo	CO2	co2	Number	--Vacio	ug/cm3	🗑️ ✎️
Atributo Estático	--Vacio	Altura	String	3 Metros	--Vacio	🗑️ ✎️
Comando	regularTemperatura	TEMPERATURA	Command	FRIO,CALOR	--Vacio	🗑️ ✎️

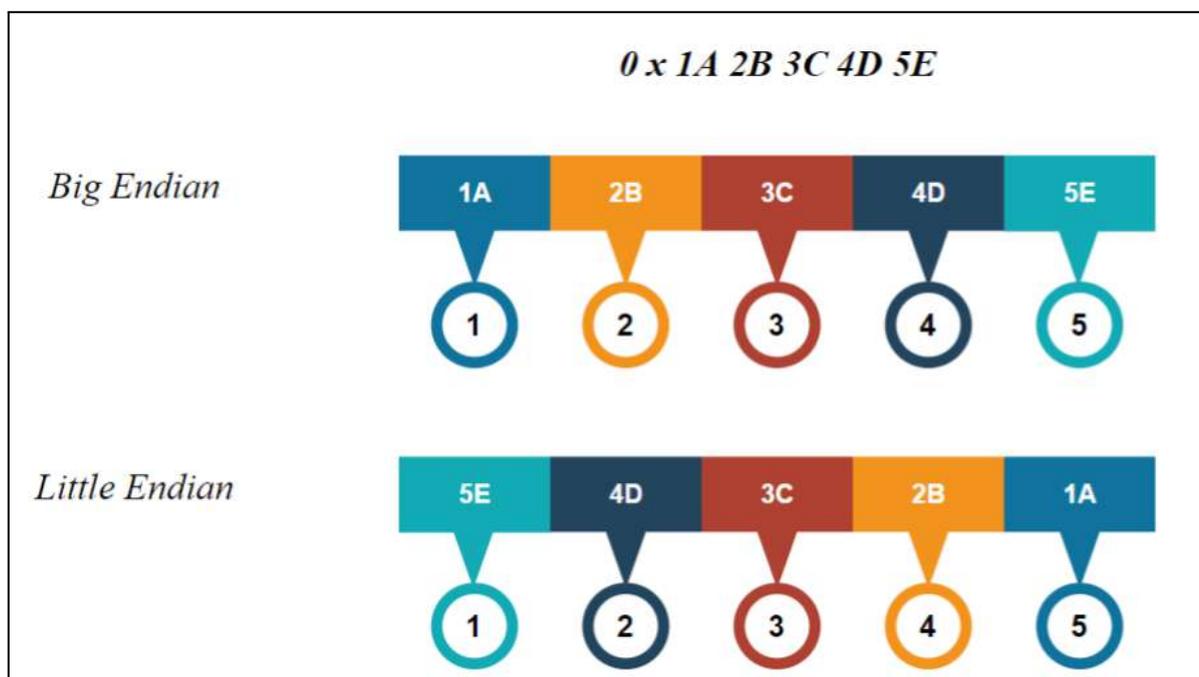
In the case of working with the **SigFox** we must take into account some considerations, the first is that it supports both active and static types and their functions do not vary with respect to the IOTA-UL and IOTA-JSON protocols; in fact, static attributes are defined in exactly the same way. Where the SigFox protocol differs from the rest is with the active attributes, since this time we expect our devices to communicate with the system through bit frames.

In summary, if we need to establish communication with a device through this protocol, we must specify values such as the size of the frame, the reading method and from which byte to start reading. To declare the active attributes of SigFox the following information must be established:

- ID: Identifier of the attribute (Required). It has a maximum length of three characters and is the short representation of the device.
- Name: Descriptive label of the property (Required).
- Type: Class of value that is expected to be received from the device, one of the predefined values must be chosen.

- uint
- Parameter: length within the bit frame occupied by the attribute being created. The minimum size is one bit and the maximum is 64 bits or 8 bytes.
- Offset: Through this parameter we indicate in which bit of the byte the information containing the value of the attribute should begin to be read.
- Endian: Method of reading the attribute data.
 - Little Endian: Starting with the least significant byte.
 - Big Endian: Starting with the most significant byte.
- Unit: Magnitude or measure with which to represent the received value (Optional).

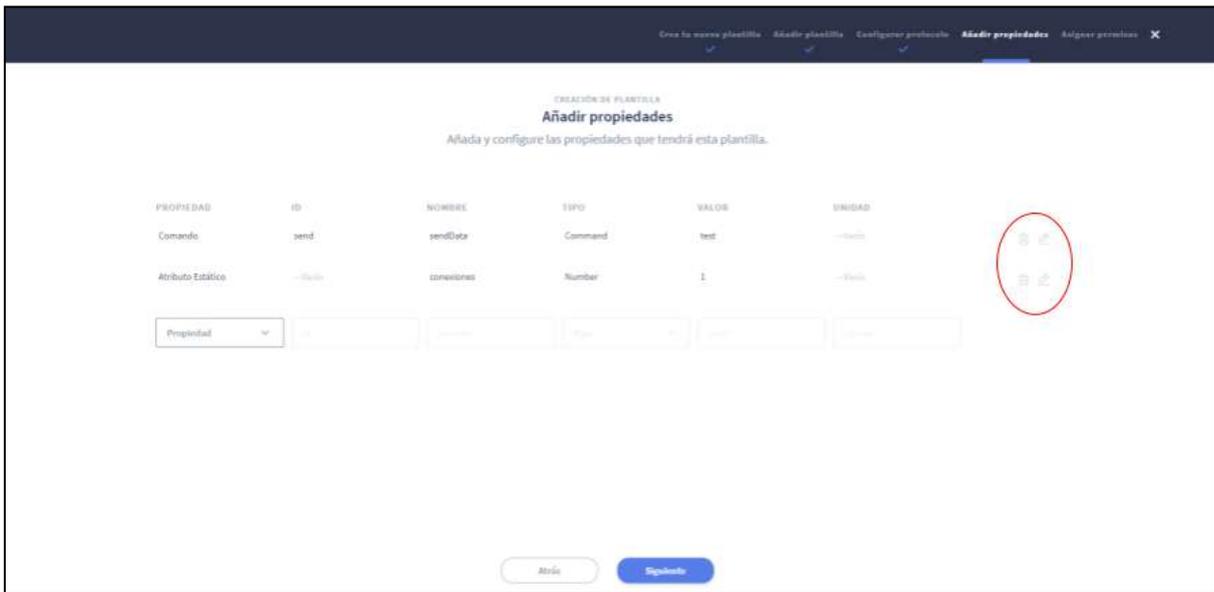
Let's see an example, suppose our device sends 40-bit (5B) frames like the following: 0x1A 2B 3C 4D 5E; This frame is in hexadecimal, so each letter or number corresponds to 4 bits. If the active attribute that we are creating were made up of all the bytes, we should specify that its length is 40 bits and that the offset is 0, since we must start reading from the first bit. Finally we must specify the reading method, by means of Big Endian we specify that we want the most significant byte to indicate the order and by means of Little Endian it is just the opposite, the least significant will be the first to be read.



Once we take into account all these details we can add new properties in our template.



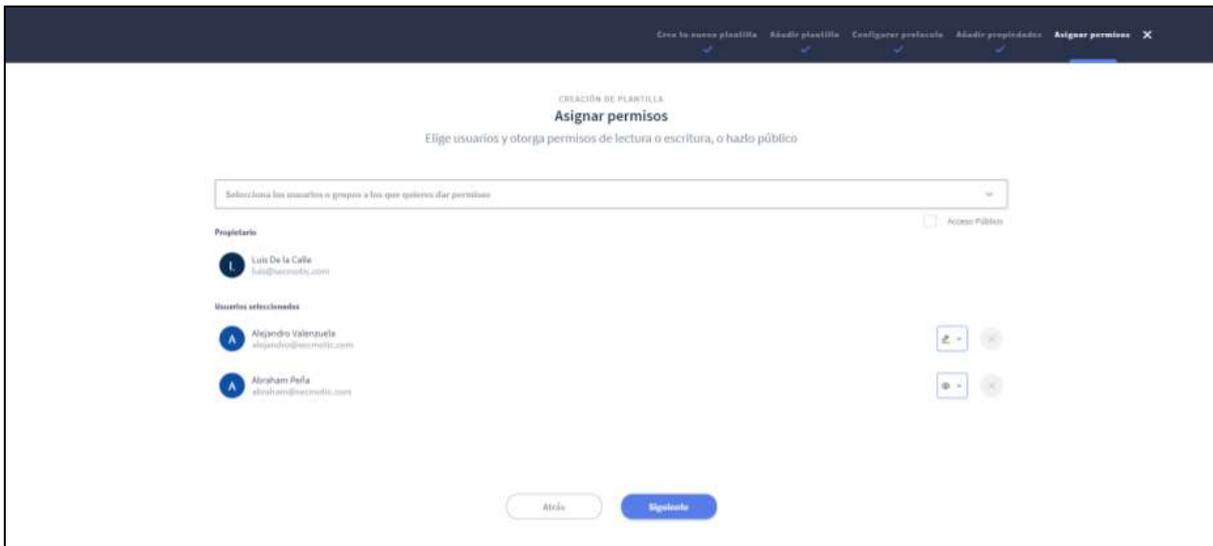
Once we know the types of properties, it is necessary to know that it is possible to add as many properties as needed, being able to use properties of different types. There is also the option to modify or delete the properties already created using the icons located to the right of each one.



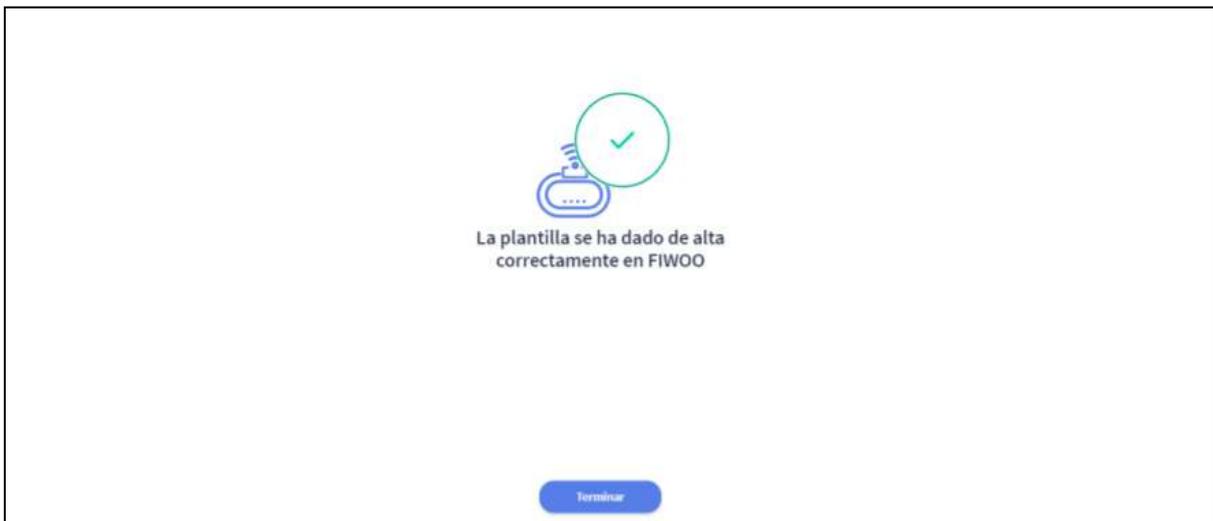
Once all the required properties are in place, we go to the last step by clicking on “Next”. In this step it is possible to indicate which users or groups of users will have permissions to interact with this template and with the devices and/or services generated from it.



Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.

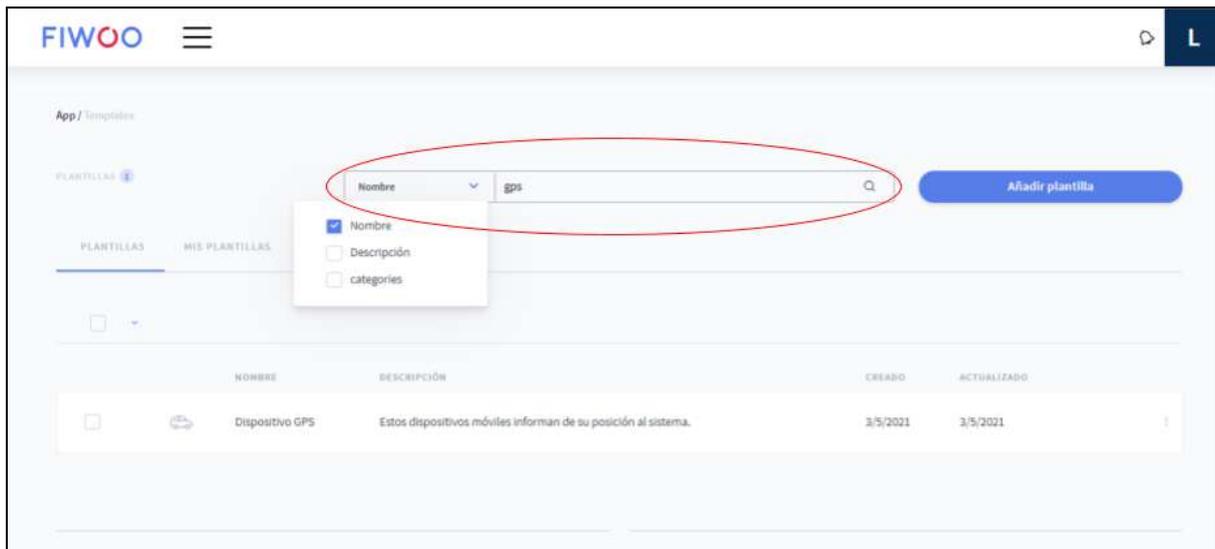


After clicking on the “Next” button, the process will end and the system will display a message to inform you that everything has been saved correctly.



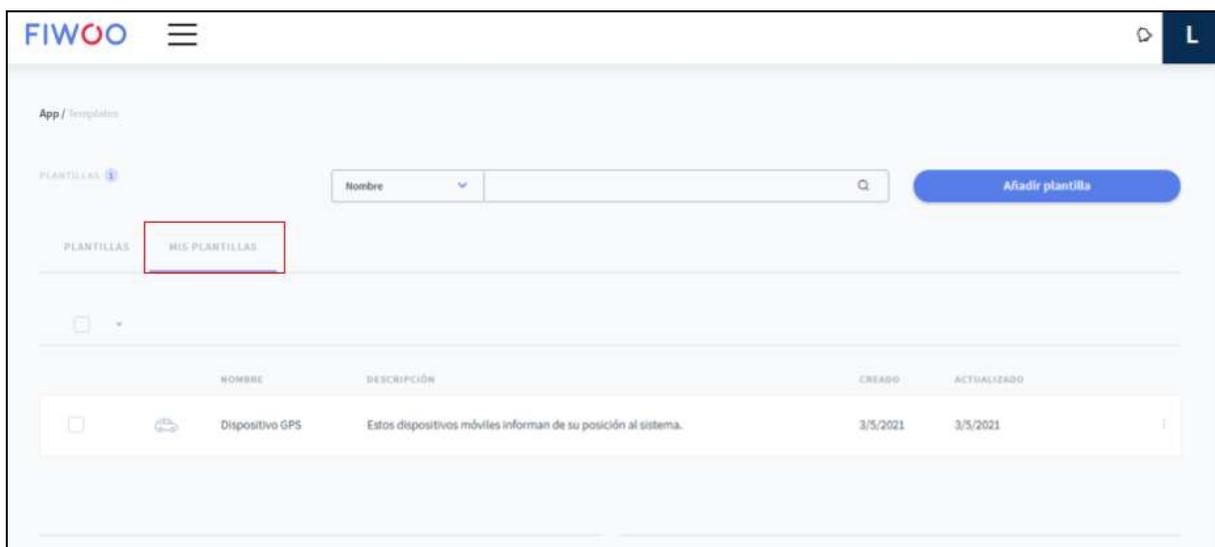
search engine Data model

If we want to filter our list of data models, we can use the search engine at the top and carry out a personalized search. We have three options to filter: Name, Description and Category. Once selected, we will write the text to search for in the search box on the right.



My data models

We have a convenient view that facilitates access to the data models that have been created by the user who has the active session. To enter this view we just have to click on "MY DATA MODELS" from the data model management view.



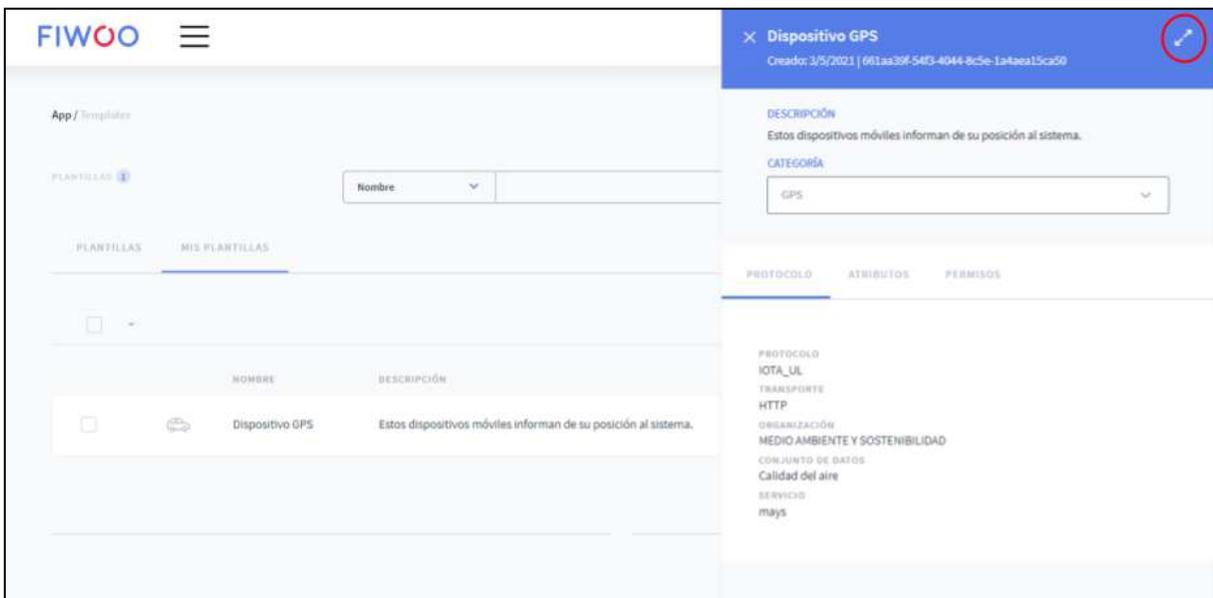
In this view we also have the options for searching and creating templates that we mentioned earlier, however, we can only search among the templates that we own.

Modify a data model

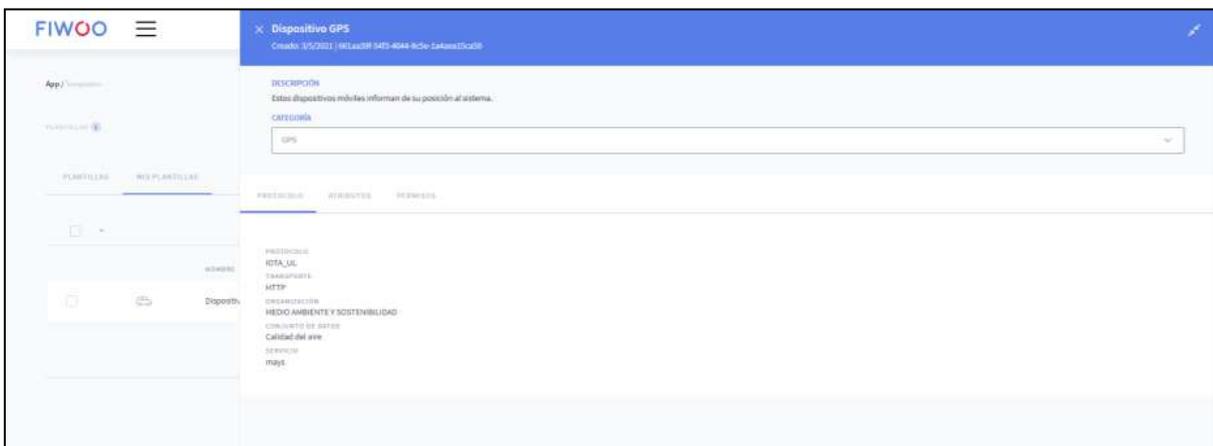
There is the option to change the configuration of the created data models. It is important to highlight that in order to edit them it is necessary that they are owned by us or have permission to do so. To modify a model, just click on the three points to the right of the row of the model you want to modify and select the "Edit" option. This action can be carried out from the Templates view and from the My Templates view.



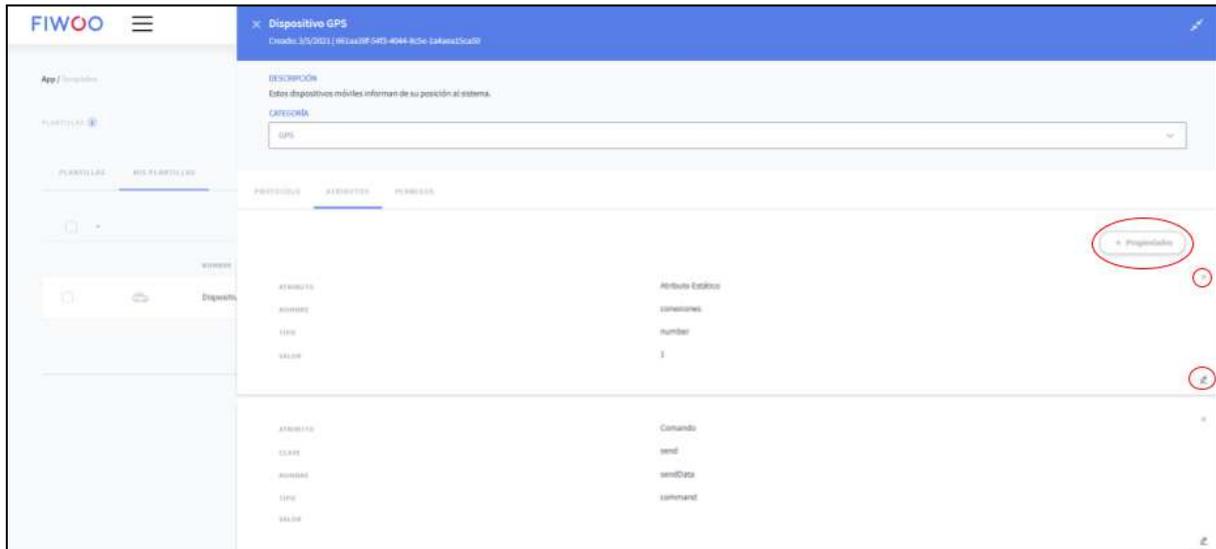
This will display a menu on the right side of the screen where we can see the current characteristics of the template.



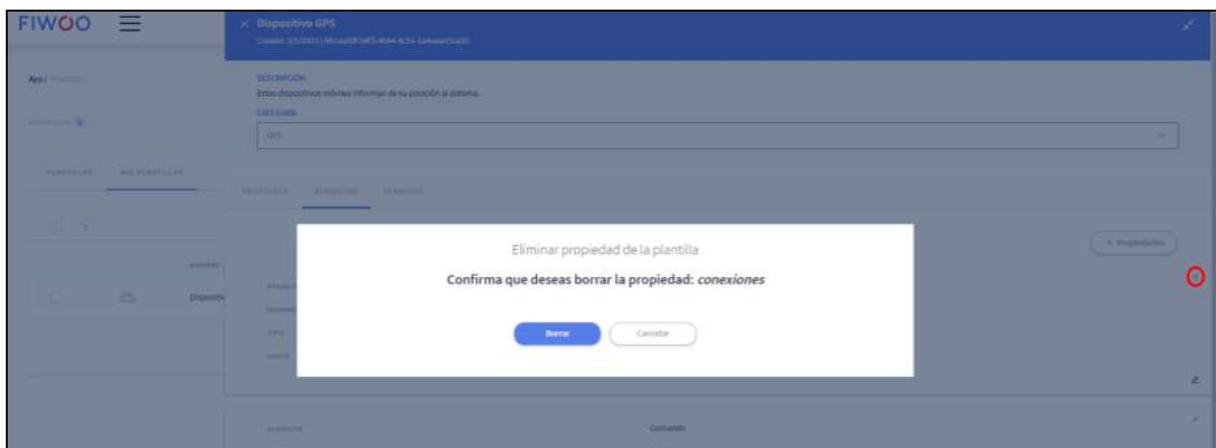
In the upper right corner we have a button that allows us to resize the menu, enlarging said menu in such a way that it is more comfortable to edit the template.



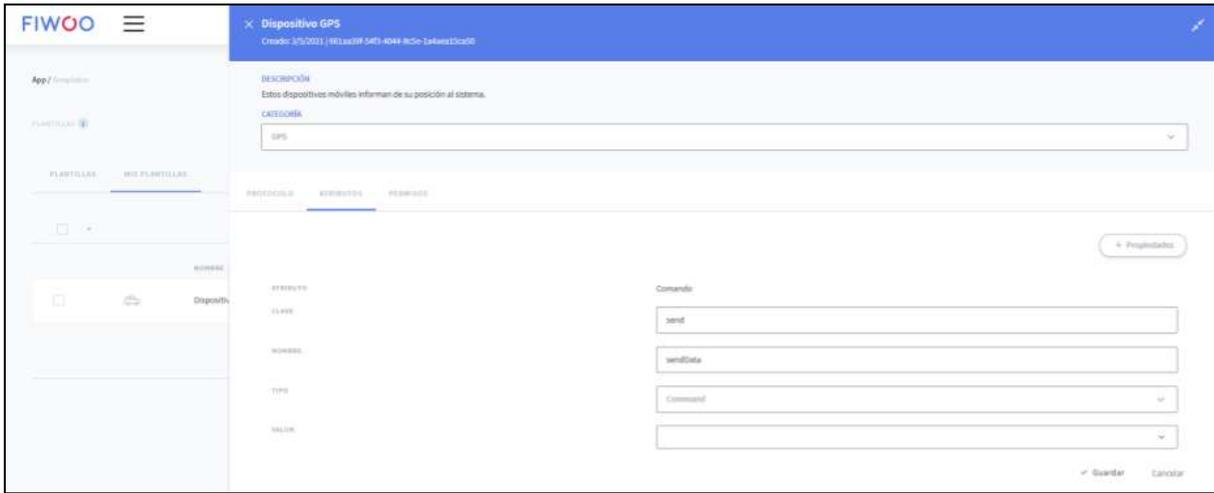
We can appreciate that we have the ability to modify the name of the template, the description and the category. We also have access to three submenus, these are: Protocol, Attributes and Permissions. In the Protocol submenu we only have the ability to view the data, however in the other two we have many more options available.



In the Properties submenu we have a button that allows us to add new attributes to the template and also some icons in the shape of a pencil and a trash can that allow us to edit and delete properties respectively. When trying to delete a property, the system will display a window that will ask you to confirm the performance of said action.



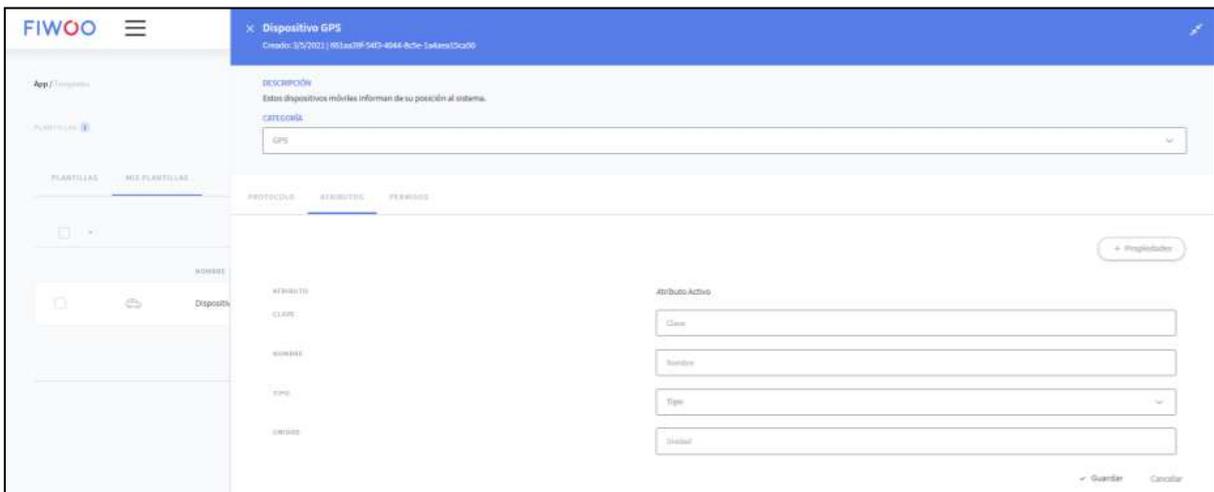
If we click on the pencil icon we will have access to a form that will allow us to modify the values of the property in question.



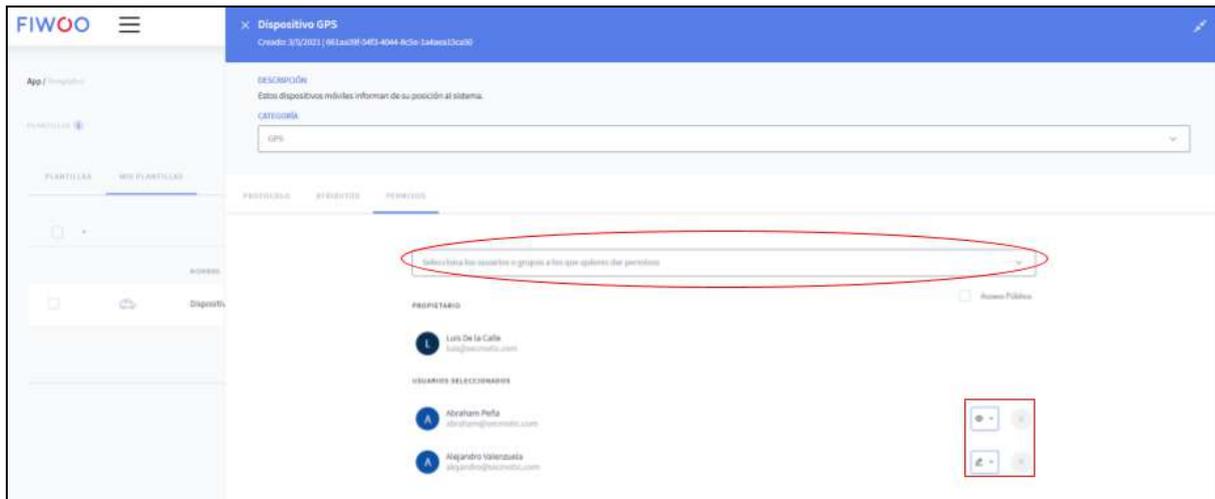
Clicking on the “+ Properties” button will display a small menu with the different types of properties available for our template.



After choosing a type of property, a form will be shown to enter the data for this new attribute.



In the last submenu we will be able to modify the permissions that users have on the template. We have the possibility of using the search bar to give access to new users or groups of users and we also have buttons to specify permissions for users who already have them and even revoke permissions.



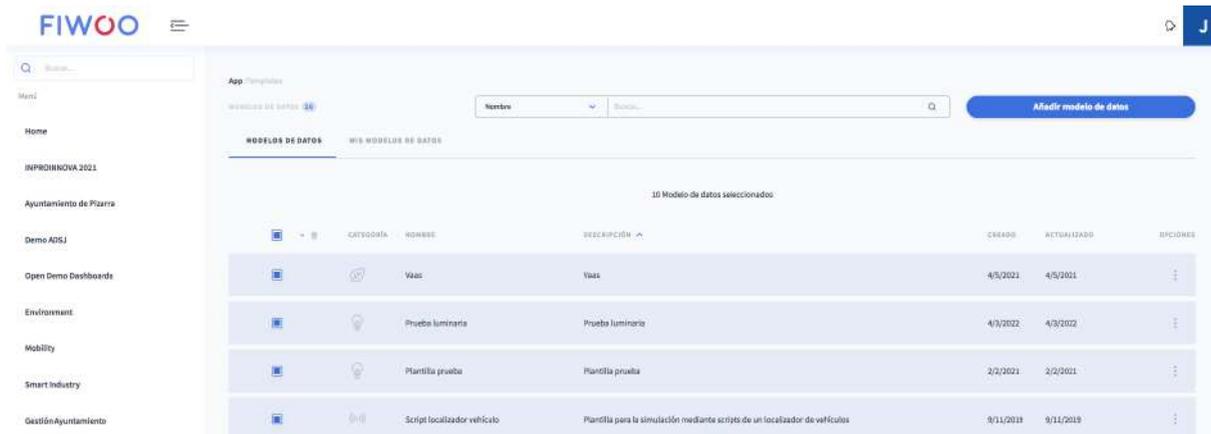
Eliminate data model

When it comes to eliminating data models from the platform, there are two alternatives: one by one or in block.

To delete data models one by one, we simply have to press the three points to the right of the model and select the “Delete” option. A new window will open to confirm that we want to delete it. If we press the "Delete" button again in that window, it will be removed from the system.



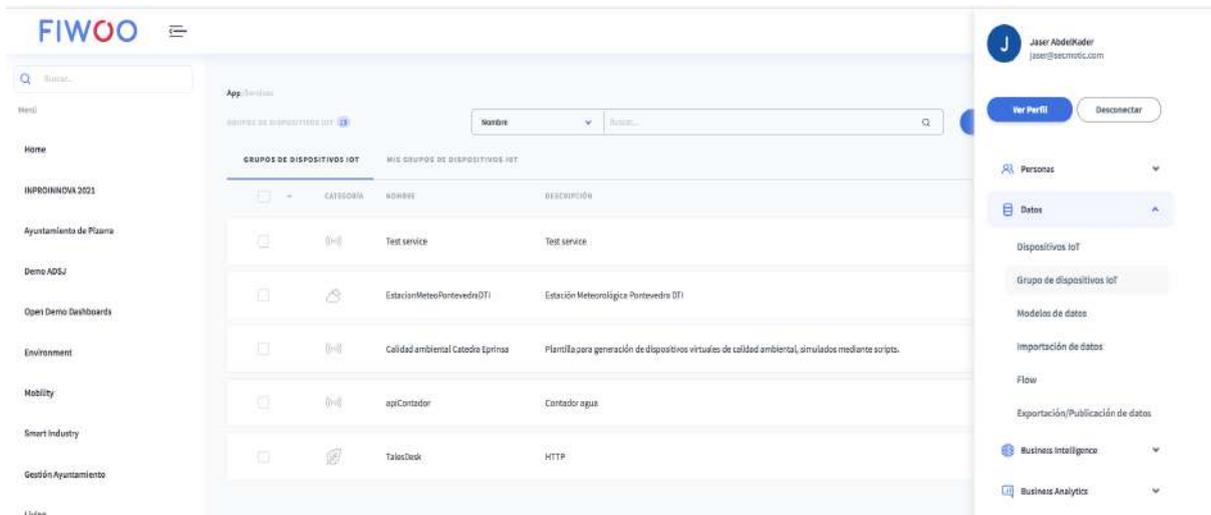
There is also the option to delete multiple models at once. To do this, we select the ones we want to remove using the selection box to the left of each row. Once done, the trash can icon will appear at the top of the menu, with which you can delete all at once. After clicking on this icon, a new window will open to confirm that we want to delete the models. If we press the “Delete” button in that window, they will be removed from the system.



Groups of IoT devices Groups of IoT

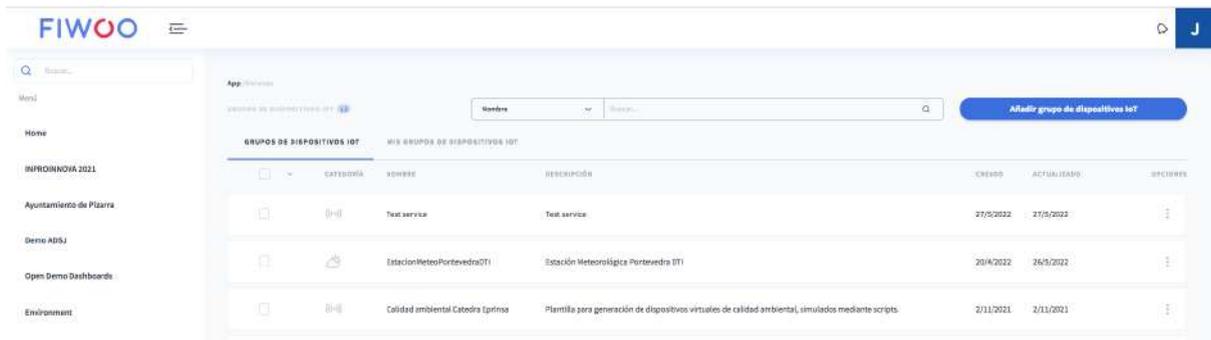
devices can greatly facilitate the management of our devices, so learning to work with them means obtaining more efficient management of our resources. Assuming that our project uses hundreds of devices, registering them in the system one by one would be too laborious a task. A service allows modeling a generic configuration for the devices and associates said configuration with an API Key; If we configure the devices to interact with our system using said key, they will be automatically registered with the established configuration.

We can access the IoT Device Groups manager by selecting the “IoT Device Groups” option from the menu that appears when clicking on the button in the upper right corner.

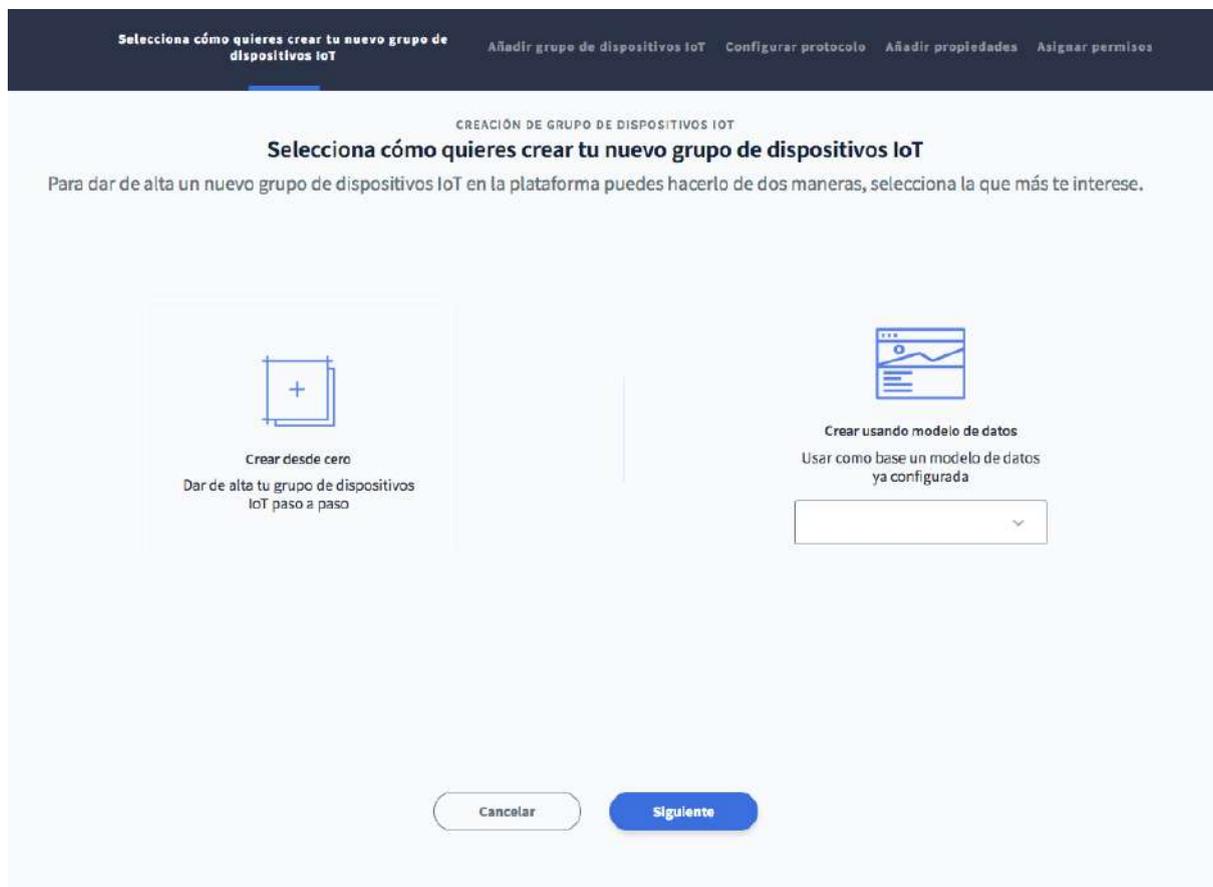


Create a group of IoT devices from scratch

Once we are in the service manager, we can create a new one if we press the “Add IoT device group” button.



This action will start a guided creation process in which we will have to fill in various forms that we will show below. This creation process begins with a window that describes the procedure and allows you to select the creation method.



The upper bar shows the different steps that must be completed before finishing the creation process. In this window there are two creation options available, in the current section we will thoroughly deal with the first one, that is, the creation of a new service from scratch. In the next sections we will work with the option of creating a new service starting from a template that we have previously generated. After pressing the "Create from scratch" button we will advance to the form of the "Add group of devices" step. This form collects the generic information corresponding to the new services.

Selecciona cómo quieres crear tu nuevo grupo de dispositivos IoT
 Añadir grupo de dispositivos IoT
 Configurar protocolo
 Añadir propiedades
 Asignar permisos

CREACIÓN DE GRUPO DE DISPOSITIVOS IOT
Añadir grupo de dispositivos IoT
 Introduce los datos identificativos de su grupo de dispositivos IoT.

Categoría

Otra

Organización

Conjunto de datos

Nombre

introduce un nombre para el dispositivo IoT

Descripción

introduce una descripción

Atrás **Siguiente**

- Category: This section contains information related to the application that is going to be given to a device that has been generated through the group, it has three sections.
 - Category: Identifies the sector to which the work performed by a device is related. Each category is assigned an icon with which the group will later be represented in the widgets.
 - Organization: Represents the type of institution or department in which the device is established. Its main function is to group devices for publication as open data.
 - Data set: It is used to indicate what data will be obtained from the device. It is a second level of grouping, within each organization there will be several data sets, to be able to order them within the open data system.
- Name of the group, so that it is possible to search for it later.
- Description of the group.

The group described in this specific example is a service related to environmental quality that will participate in land use and housing projects and will provide data on air quality in libraries. Click on “Next” to advance to the next step.

In this step it is necessary to indicate the protocol by which we will receive the data of our services. Depending on the selected protocol, more or less information will have to be added; we see that in the first instance we only have to fill in one field.

Selección cómo quieres crear tu nuevo servicio Añadir servicio **Configurar protocolo** Añadir propiedades

CREACIÓN DE SERVICIO

Configurar protocolo

Introduzca el tipo de protocolo y el servicio a vincular.

Protocolo

Elige un protocolo

Atrás Siguiente

The available protocols are the following:

- IOTA-UL: We will choose this protocol if the data sent by our devices is plain text in UltraLight 2.0 format.
- IOTA-JSON: We will use this device if our device sends the information in JSON format.
- SIGFOX: We will choose this option if the device uses the SigFox network to send data to the platform.
- LORA: We will decide on this option if the device establishes a connection through a LoRaWAN type network. FIWOO currently supports connection to The Things Network (TTN).

In the case of deciding on the IOTA UL or JSON protocols, it will be necessary to specify which transport protocol our service will use to send us information. We have available the options: HTTP, MQTT and AMQP. And if we choose SIGFOX it will not be necessary to indicate additional information.

The case of the LORA protocol is more particular and requires more information. To use this protocol we must have an application that works on TTN (The Things Network) and devices linked to said application. If we fulfill these premises, we must specify the following fields in the form:

- EUI of the application: Hexadecimal identifier of the application in the TTN network.
- Application identifier: Application identifier in the TTN network.
- Application key: It is necessary to establish secure communications with the device.
- Credentials: Username and password that allow interaction with the TTN network.
- Data model: CayenneLPP, CBOR or Application Server, indicating the format in which we expect to receive the data.

CREACIÓN DE SERVICIO

Configurar protocolo

Introduzca el tipo de protocolo y el servicio a vincular.

Protocolo

LORA

Modelo de Datos

Application Server

Nombre de usuario

luis@secmotic.com

Contraseña

Application EUI

70 B3 D5 7E D0 02 9B 5E

Application Id

test_app

Application Key

444B8EF16415BF6ED777EAFE695C48

After specifying the necessary information about the protocol, click "Next" to advance in the process. In the current section we must establish the properties that we will receive from the devices that are generated when using our service. We will be presented with the following form to fill out.

CREACIÓN DE SERVICIO

Añadir propiedades

Añada y configure las propiedades que tendrá este servicio.

PROPIEDAD	ID	NOMBRE	TIPO	VALOR	UNIDAD
Propiedad					

From this form we have the possibility to indicate different properties that we will have accessible from the devices. There are three types of properties in total: commands, active attribute, and static attribute. Next we will see what use each property has and also what properties are needed by the different protocols mentioned above.

If our device is going to maintain a constant flow of information we will need a property that is an active attribute. These properties represent the values that we will receive from the devices that we register in the system. This property type will be available on all device connection protocols. It is necessary to establish the following parameters:

- ID: Identifier of the attribute (Required). It has a maximum length of three characters and is the short representation of the device.
- Name: Descriptive label of the property (Required).
- Type: Class of value that is expected to be received from the device, one of the predefined values must be chosen.
 - Null
 - Number
 - String
 - Object
 - Array
 - Boolean
 - Point
 - LineString
 - Polygon
- Unit: Magnitude or measure with which to represent the received value (Optional).

In the event that we had a device that every certain period of time would indicate the level of CO2 in a room, we could define an active attribute of a numerical type that would collect said value, even determining the corresponding unit of measurement.

PROPIEDAD	ID	NOMBRE	TIPO	VALOR	UNIDAD
Atributo Activo	CO2	CO2	Number	-Nulo	ug/cm3

Propiedad: ID: Nombre: Tipo: Valor: Unidad:

It can also be interesting to save device information manually by the user, that is, data of interest but that the device does not send. To accomplish this task, **static attributes**. Through these attributes we will represent values that, although they may be subject to change in the future, remain with the value established by the user. The IoT-A-UL, IoT-A-JSON and SigFox protocols support this type of properties, although it should be noted that the configuration between SigFox and the rest varies a bit. If we use IoT-A-UL or IoT-A-JSON, the parameters that we must complete to define this property are:

- Name: Descriptive label of the property (Required).

- Type: Class of value that is expected to be received from the device, one of the predefined values must be chosen.
 - Null
 - Number
 - String
 - Object
 - Array
 - Boolean
 - Point
 - LineString
 - Polygon
- Value: This parameter indicates the information to be saved (Required).

A practical example of using these values could be to persistently store the height at which the devices are placed.

PROPIEDAD	ID	NOMBRE	TIPO	VALOR	UNIDAD
Atributo Activo	CO2	CO2	Number	--Vacio	ug/cm3
Atributo Estático	--Vacio	Altura	String	3 Metros	--Vacio

The last property type to mention is the **command**. These properties help us standardize communications with our devices so that you can interact with those devices from the platform without having to rely on other applications. Only the IoT-A-UL and IoT-A-JSON protocols currently accept these types of properties. The parameters that must be established to create a command are the following:

- ID: Identifier of the command (Required).
- Name: Descriptive label of the property (Required).
- Type: In this case, only the Command type is available.
- Value: This field represents the information that will be sent to the device when the command is executed. You can set as many aliases for the different values as you want, and even none if they are going to be sent manually. The mission of aliases is to make it easier to recognize the action that said value will perform on the device.

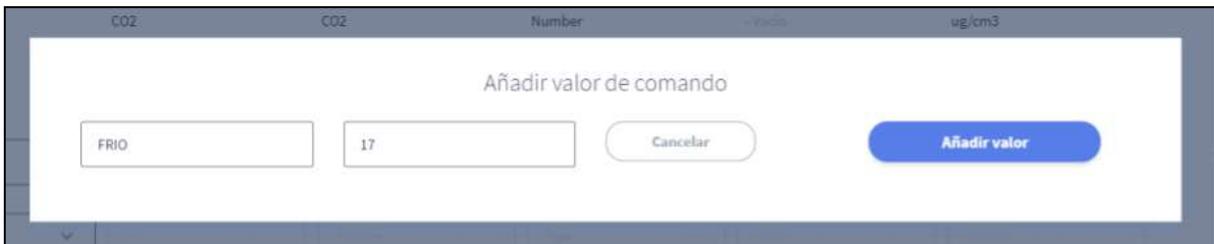
An example could be a command that allows interact with the device by passing information on the desired temperature.



We are going to see how to define several aliases for values that interest us within a command, for this we place ourselves in the “VALUE” field of our command-type property; Once positioned, a menu will appear that will allow us to press an option called “Add command”.



After selecting this option, the system will display a new window where we must enter the desired value and an alias that identifies it.



We can create as many alias-value pairs as we see necessary in the same command.



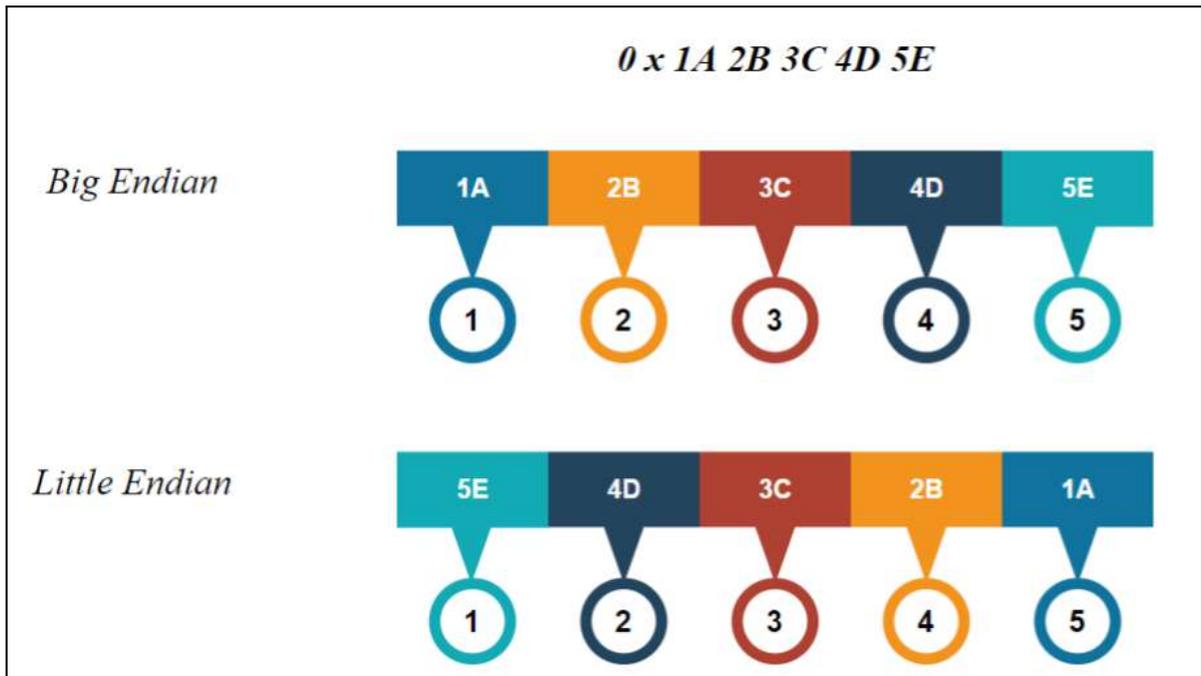
In the case of working with the **SigFox** we must take into account some considerations, the first is that it supports both active and static types and their functions do not vary with respect to the

IOTA-UL and IOTA-JSON protocols; in fact, static attributes are defined in exactly the same way. Where the SigFox protocol differs from the rest is with the active attributes, since this time we expect our devices to communicate with the system through bit frames.

In summary, if we need to establish communication with a device through this protocol, we must specify values such as the size of the frame, the reading method and from which byte to start reading. To declare the active attributes of SigFox the following information must be established:

- ID: Identifier of the attribute (Required). It has a maximum length of three characters and is the short representation of the device.
- Name: Descriptive label of the property (Required).
- Type: Class of value that is expected to be received from the device, one of the predefined values must be chosen.
 - uint
- Parameter: length within the bit frame occupied by the attribute being created. The minimum size is one bit and the maximum is 64 bits or 8 bytes.
- Offset: Through this parameter we indicate in which bit of the byte the information containing the value of the attribute should begin to be read.
- Endian: Method of reading the attribute data.
 - Little Endian: Starting with the least significant byte.
 - Big Endian: Starting with the most significant byte.
- Unit: Magnitude or measure with which to represent the received value (Optional).

Let's see an example, suppose our device sends 40-bit (5B) frames like the following: 0 x 1A 2B 3C 4D 5E; This frame is in hexadecimal, so each letter or number corresponds to 4 bits. If the active attribute that we are creating were made up of all the bytes, we should specify that its length is 40 bits and that the offset is 0, since we must start reading from the first bit. Finally we must specify the reading method, by means of Big Endian we specify that we want the most significant byte to indicate the order and by means of Little Endian it is just the opposite, the least significant will be the first to be read.



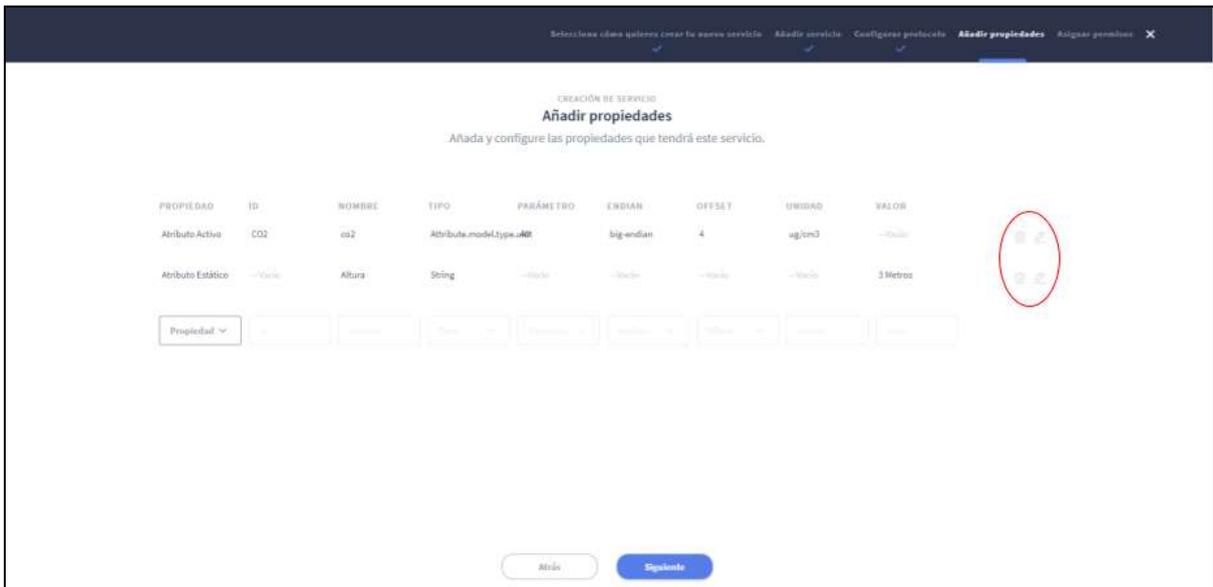
Once we take into account all these details we can add new properties to our service.

Añadir propiedades
Añada y configure las propiedades que tendrá este servicio.

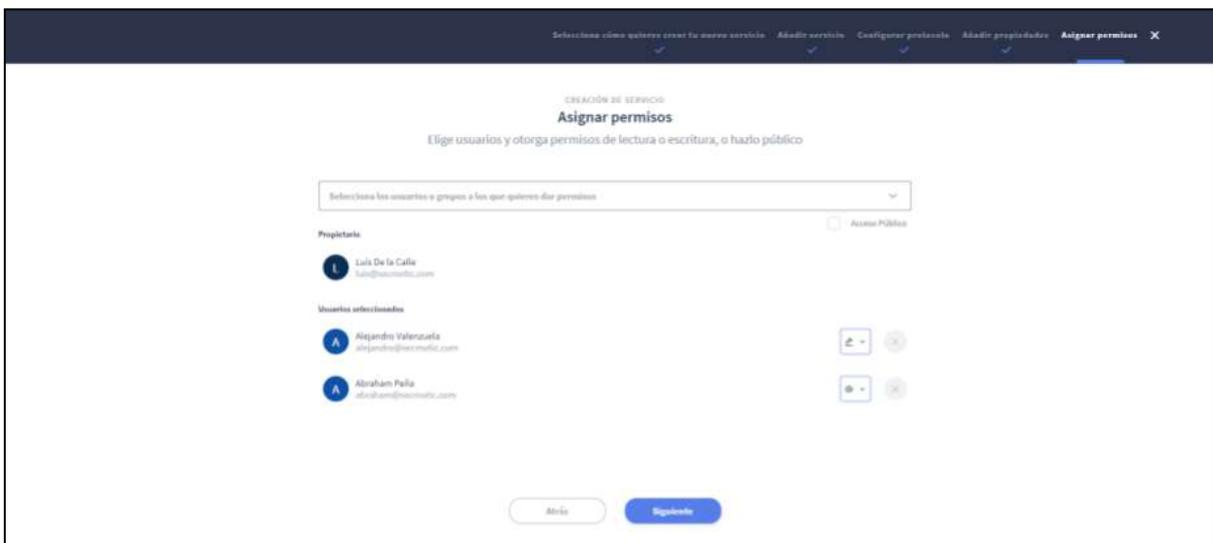
PROPIEDAD	ID	NOMBRE	TIPO	PARÁMETRO	ENDIAN	OFFSET	UNIDAD	VALOR	
Atributo Activo	CO2	co2	Attribute.model.type.u40t		big-endian	4	ug/cm3	--Vacio	 
Atributo Estático	--Vacio	Altura	String	--Vacio	--Vacio	--Vacio	--Vacio	3 Metros	 

Propiedad ▾

Once we know the types of properties, it is necessary to know that it is possible to add as many properties as needed, being able to use properties of different types. There is also the option to modify or delete the properties already created using the icons located to the right of each one.



Once all the required properties are in place, we go to the last step by clicking on “Next”. In this step it is possible to indicate which users or groups of users will have permissions to interact with this group of services and with the devices generated from it. Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.

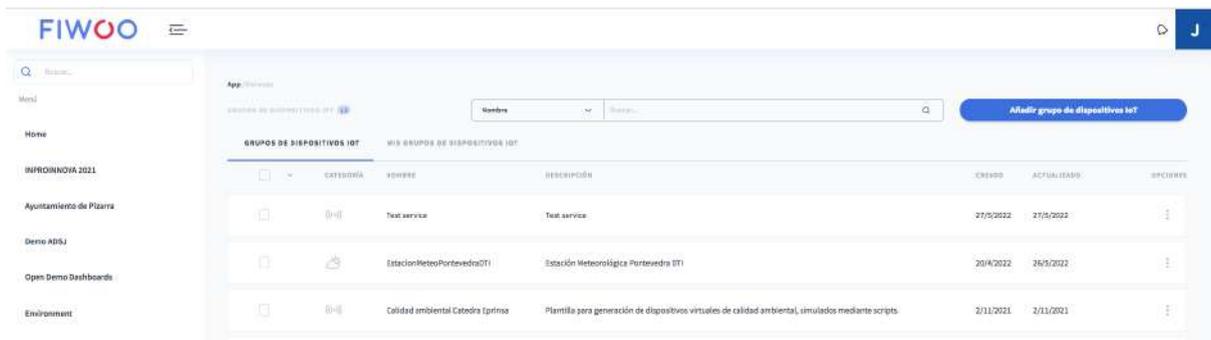


After clicking on the “Next” button, the process will end and the system will display the following message to inform you that everything has been saved correctly.

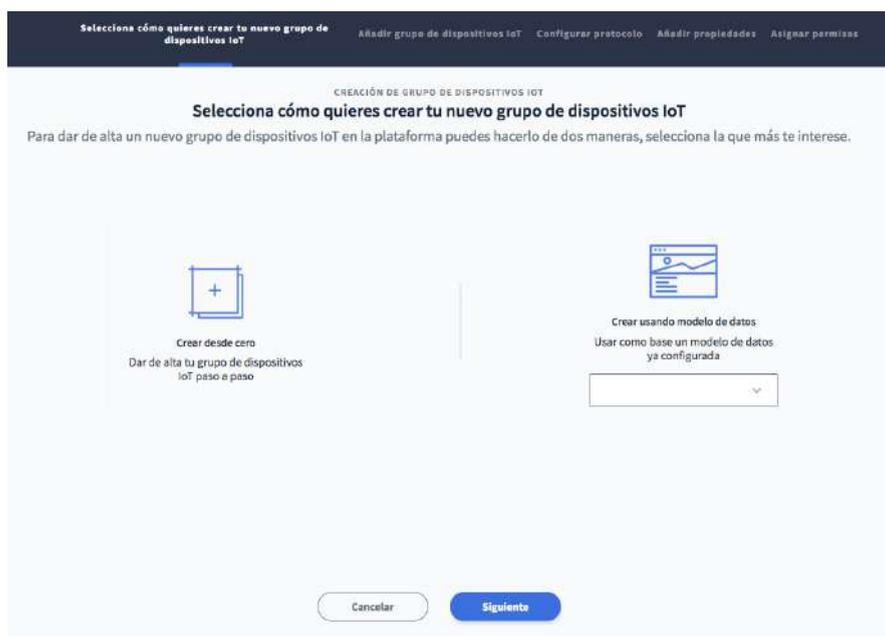


Create group of IoT devices based on model (template)

As can be seen in the section [Data Models](#) There is the possibility of creating a template that serves as a model to generate new groups of devices, thus speeding up the process of registering our services in the FIWOO system. To do this, we go to the device group manager and proceed to create a new one by pressing the "Add device group" button.



This action will start a guided device group creation process that starts with a window that describes the procedure and allows you to select the creation method.



During this process we have an upper bar where the different steps that must be completed before finishing the creation process are shown.

In this window there are two creation options available, currently we will thoroughly deal with the second one, that is, the creation of a new group starting from a model that we have previously generated. Creating a device group without data models is detailed in [Create device group from scratch](#).

To work with a data model we will select one using the drop-down menu that is indicated in the previous image, this menu has a search bar that allows us to quickly find the desired model (template). After choosing the data model and pressing the "Create using the data model" button, we will advance to the form of the "Add group of IoT devices" step. This form collects the generic information corresponding to the new services.

The screenshot shows a web application interface for creating an IoT device group. At the top, a dark navigation bar contains five steps: 'Selecciona cómo quieres crear tu nuevo grupo de dispositivos IoT' (with a checkmark), 'Añadir grupo de dispositivos IoT' (highlighted in blue), 'Configurar protocolo', 'Añadir propiedades', and 'Asignar permisos'. Below this, the main content area is titled 'CREACIÓN DE GRUPO DE DISPOSITIVOS IoT' and 'Añadir grupo de dispositivos IoT'. A subtitle reads 'Introduzca los datos identificativos de su grupo de dispositivos IoT.' The form includes several fields: 'Categoría' (dropdown menu with 'Otra' selected), 'Organización' (dropdown menu), 'Conjunto de datos' (dropdown menu), 'Nombre' (text input with placeholder 'introduce un nombre para el dispositivo IoT'), and 'Descripción' (text area with placeholder 'introduce una descripción'). At the bottom, there are two buttons: 'Atrás' (light blue) and 'Siguiente' (dark blue).

When entering the form we check how the data was filled automatically. It should be noted that if the data model does not perfectly suit our needs, we can modify the values of the form, we are not obliged to follow the model at all times. After specifying the identifier we can go to the next step by clicking on "Next".

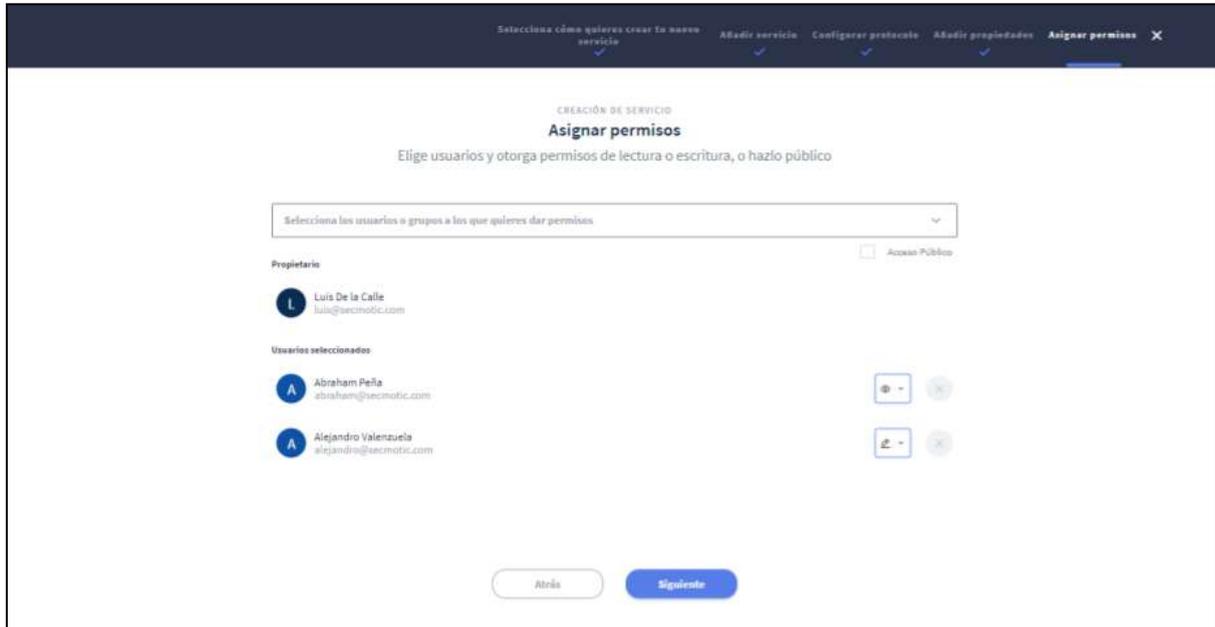
The data model (template) has automatically completed both the protocol that the devices generated from this service will use, and the transport protocol by which the data will be sent. If necessary, these pre-established values could be modified and the ones we want configured. Once the protocols have been decided, click on “Next” to advance to step 4.

PROPIEDAD	ID	NOMBRE	TIPO	VALOR	UNIDAD	
Atributo Activo	T	Temperatura	Number		k	
Atributo Estático		Peso	String	100K		

In this step we have also received the help of the data model, we can see how the properties have been included automatically. We must be aware that if a protocol other than the one configured in the data model had been selected in the previous step, the current form would be empty and we would have to fill in the fields manually. This is because each protocol accepts different types of properties.

It is possible to add as many properties as needed. There is also the option to modify or delete properties already created using the icons to the right of the properties. Once all the required properties are in place, we go to the last step by clicking on “Next”.

In this step we must indicate the users and/or user groups that will have access to interact in some way with the devices that are registered from the service. In this step we have also received help from the template.

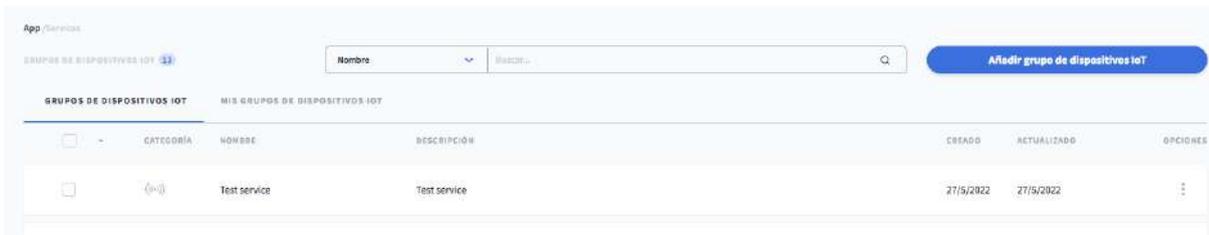


After clicking on the “Next” button, the process is finished and the system will display a message to inform you that everything has been saved correctly. This screen also shows the Api Key associated with the group of devices, this key will be used by the devices to register automatically.



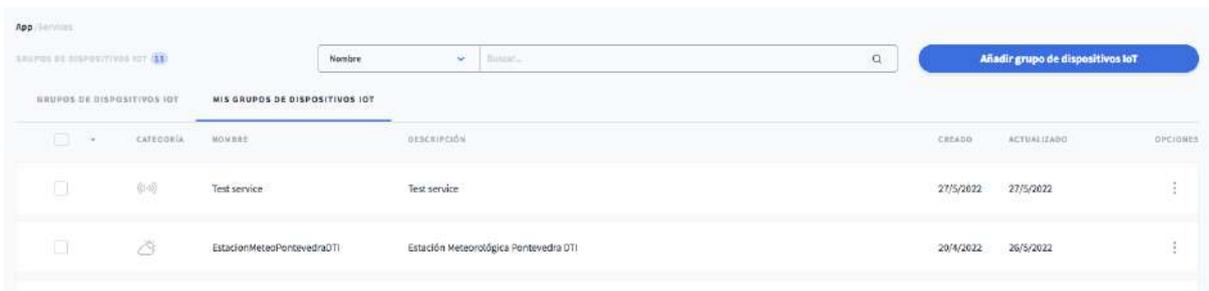
search engine IoT device group

If we want to filter our list of device groups, we can use the search engine at the top and carry out a personalized search. We have three options to filter: Name, Description and Category. Once selected, we will write the text to search for in the search box on the right.



My IoT device groups

We have a convenient view that facilitates access to the groups created by the user who has the active session. To enter this view we just have to click on "MY DEVICE GROUPS" from the service management view.

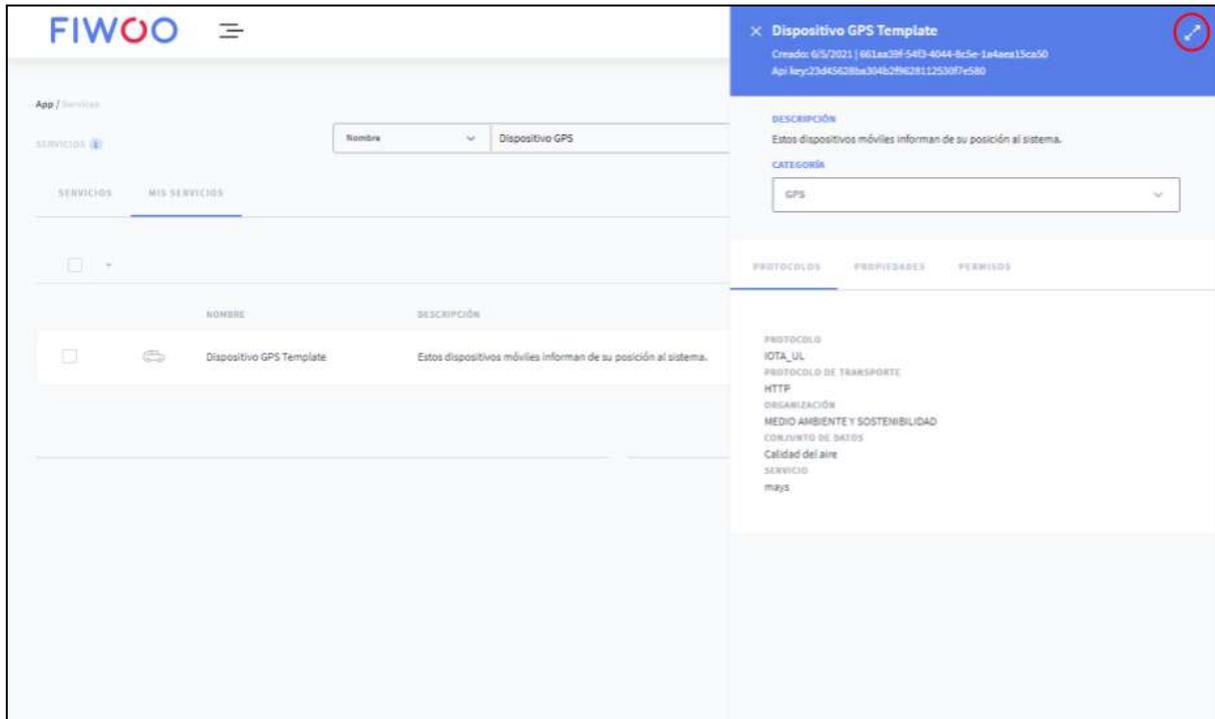


Modify a group of IoT devices

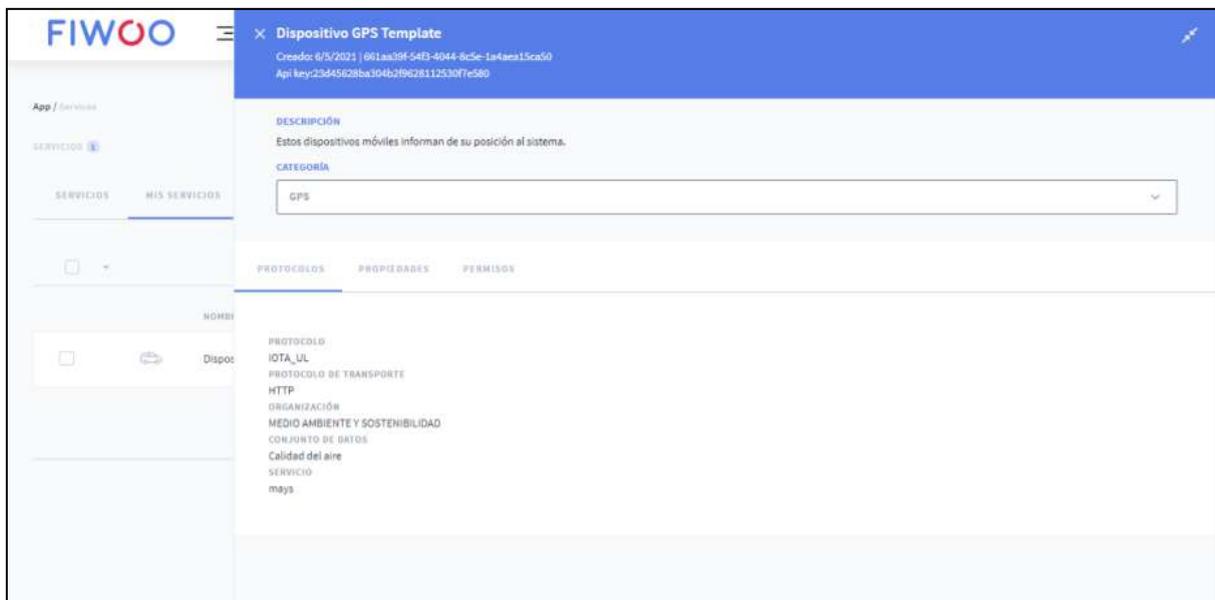
There is the option to change the configuration of the groups created, but to be able to edit them it is necessary that they are owned by us or have permission to do so. To see the available editable options, just click on the three points to the right of the row of the service you want to modify and select the "Edit" option.



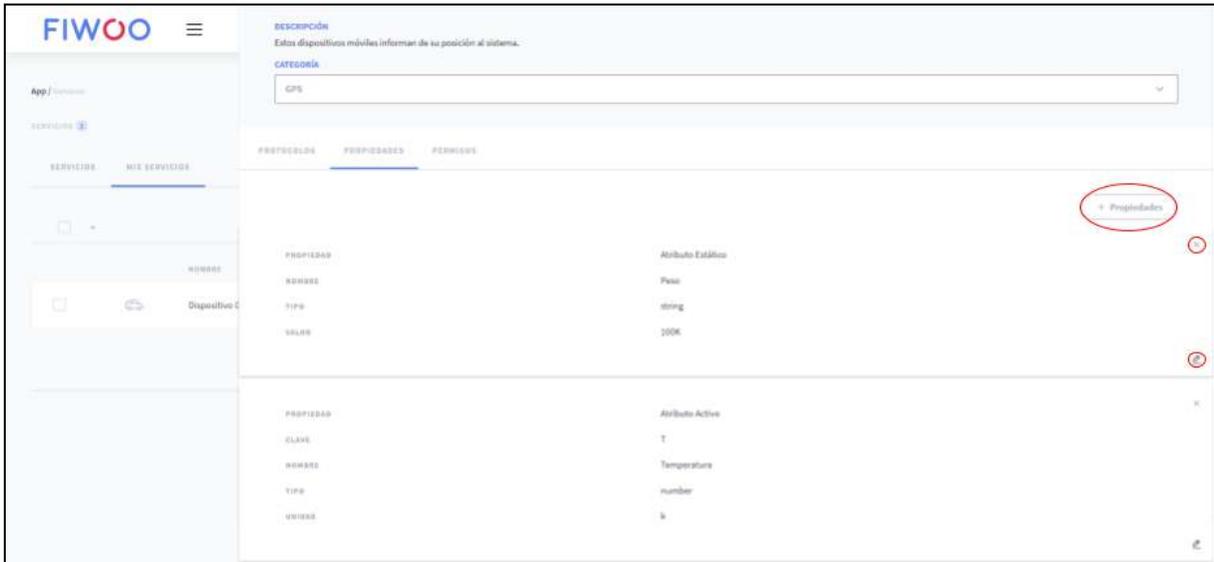
This will display a menu on the right side of the screen where we can see the current characteristics of the service.



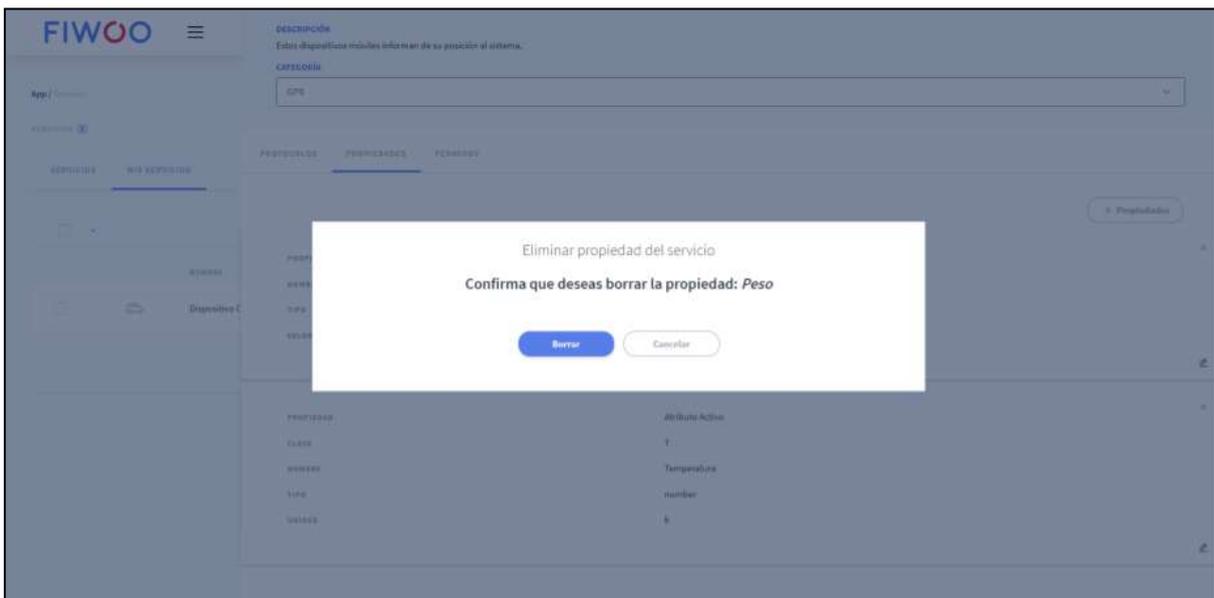
In the upper right corner we have a button that allows us to resize the menu, enlarging said menu in such a way that it is more comfortable to edit the device.



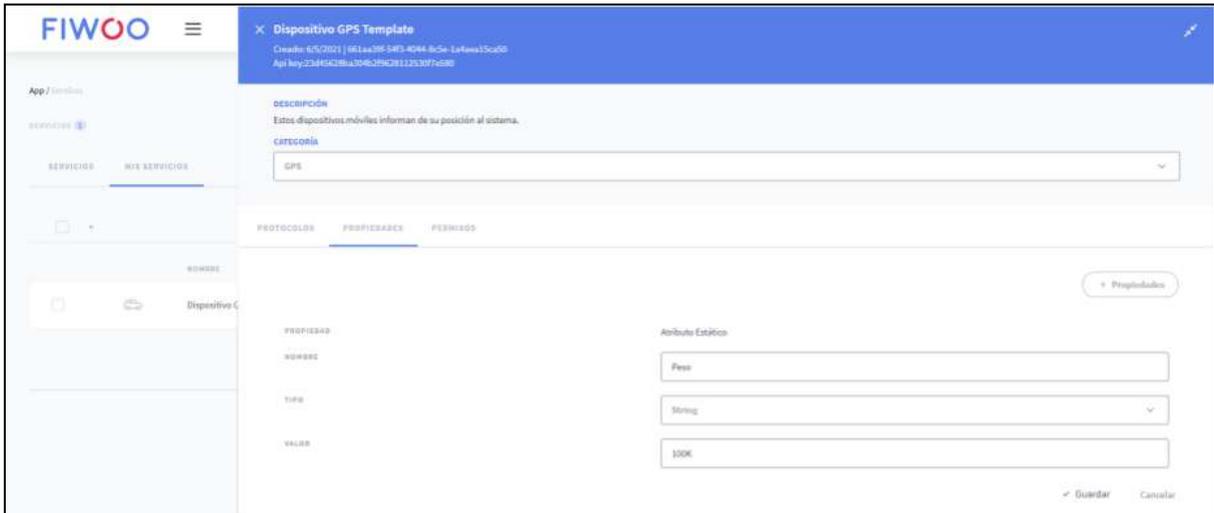
We can appreciate that we have the ability to modify the name of the group, the description and the category. From this view we can review the API Key that is generated when registering a service and we also have access to three submenus, these are: Protocols, Properties and Permissions. In the Protocol submenu we only have the ability to view the data, however in the other two we have many more options available.



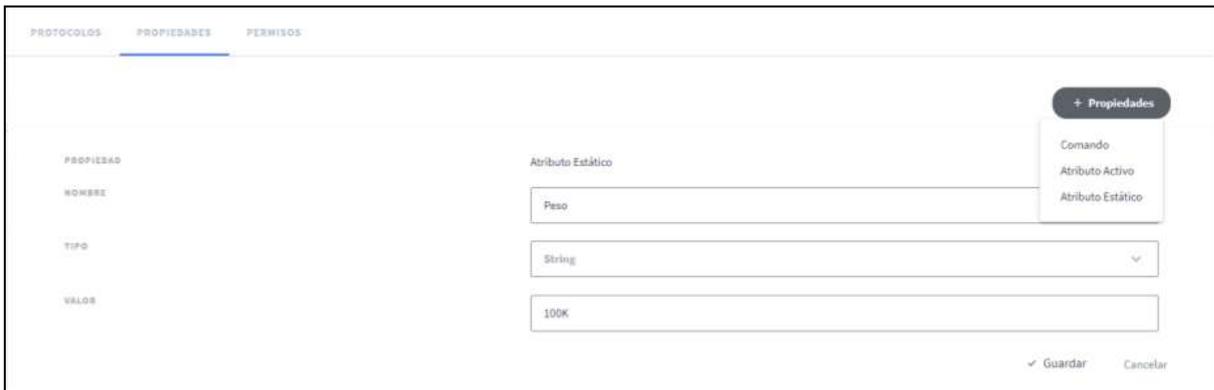
In the Properties submenu we have a button that allows us to add new attributes to the service and also some icons in the shape of a pencil and a trash can that allow us to edit and delete properties respectively. When trying to delete a property, the system will display a window that will ask you to confirm the performance of said action.



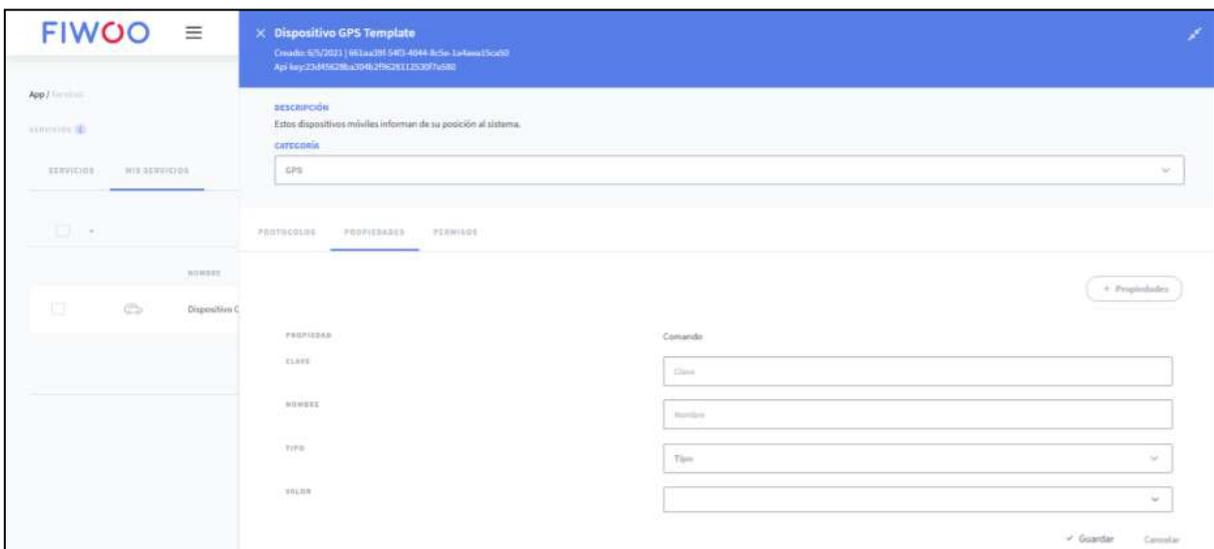
If we click on the pencil icon we will have access to a form that will allow us to modify the values of the property in question.



By clicking on the “+ Properties” button, a small menu will be displayed with the different types of properties available for our service.

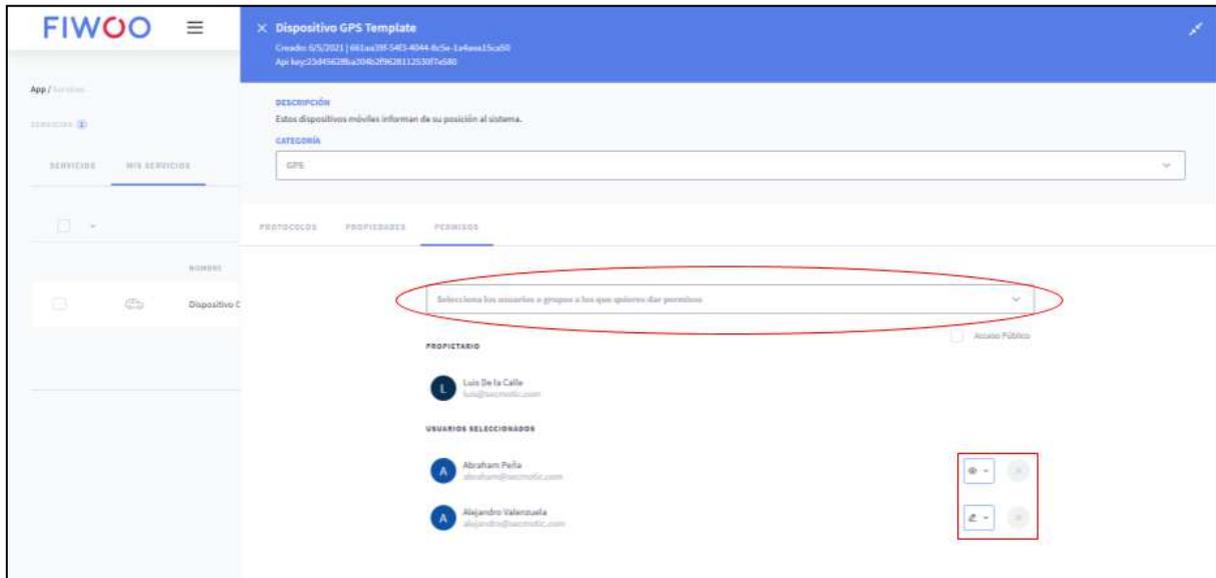


After choosing a type of property, a form will be shown to enter the data for this new attribute.



In the last submenu we will be able to modify the permissions that users have on the service. We have the possibility of using the search bar to give access to new users or groups of users and we

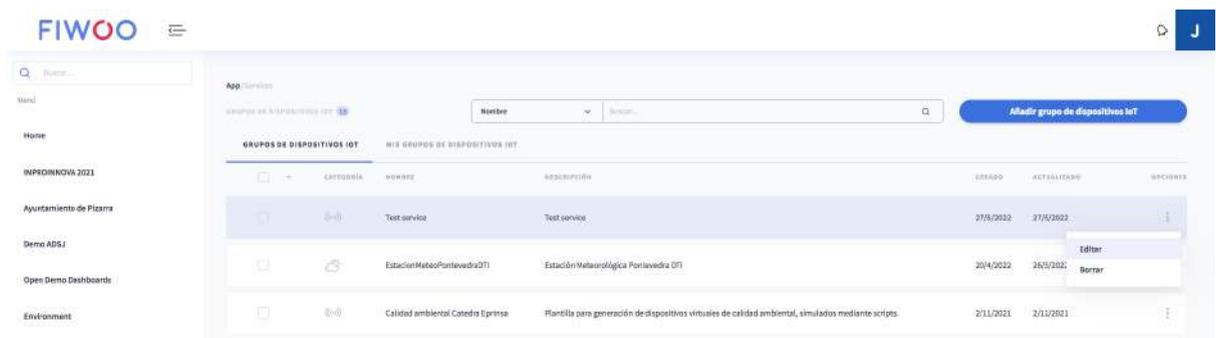
also have buttons to specify permissions for users who already have them and even revoke permissions.



We must know that the fact of modifying a group of devices does not modify the devices already generated, but these changes will be reflected in the new devices that are registered.

Creating a device from a service

In the sections [Create a group of IoT devices from scratch](#) and [Create a device based on a model](#), we saw how when registering a group of devices, a key or API Key was generated, which is necessary to be able to connect a device to the system. . To review the API Key we can do it if we click on the three dots to the right of a group and select the “Edit” option.



This action will display a menu to the right of the screen that contains the API Key of the service at the top.

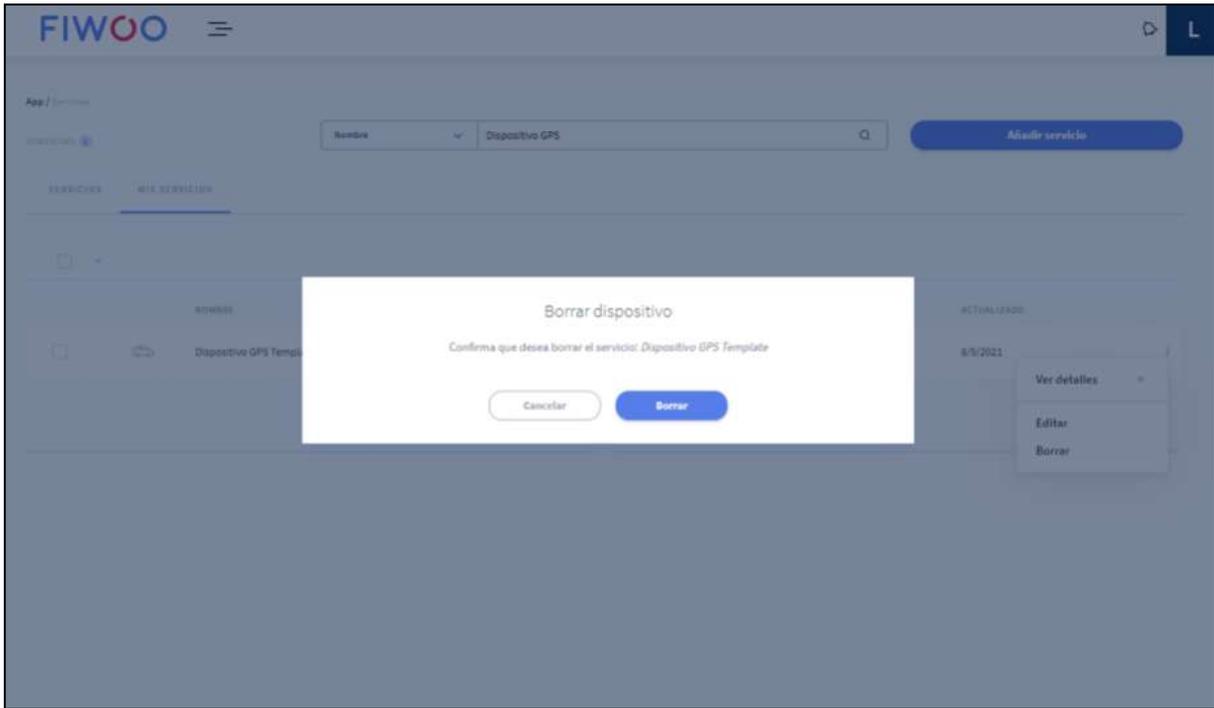
Once we know the API Key of the service, we must provide it to all the devices that we want to register in the system. When these devices start sending information, the system will automatically check which service the key corresponds to and will execute the necessary actions to generate a new device. .

Deleting a group of IoT devices

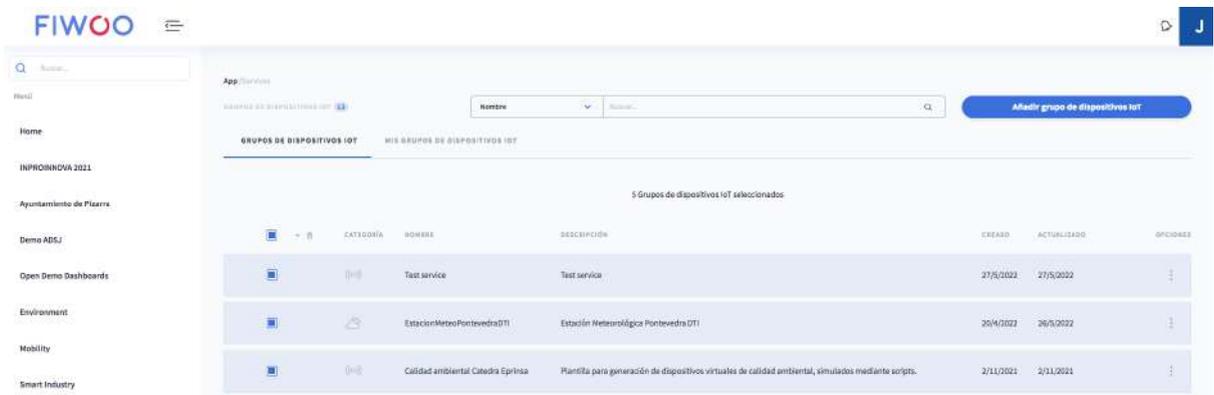
When deleting a group of devices from the platform, there are two alternatives: one by one or en bloc.

To delete groups one by one, we simply have to press the three points to the right of the service and select the “Delete” option. A new window will open to confirm that we want to delete it. If we press the "Delete" button again in that window, it will be removed from the system.

The window that will ask us for confirmation will be similar to the following.



There is also the option to delete multiple groups at once. To do this, we select the ones we want to remove using the selection box to the left of each row. Once done, the trash can icon will appear at the top of the menu, with which you can delete all at once. After clicking on this icon, a new window will open to confirm that we want to delete the services. If we press the “Delete” button in that window, they will be removed from the system.



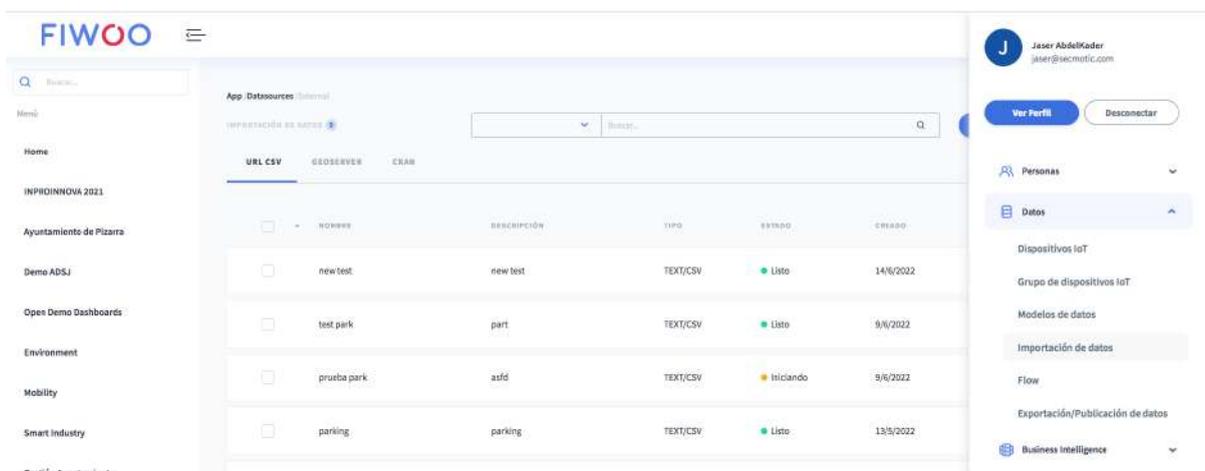
We must know that the fact of deleting a group affects the devices associated with it, unsubscribing from the system together with said service.

Data import

FIWOO is capable of importing information hosted on CKAN or Geoserver servers, as well as CSV files. Once we add these resources to our system, we will be able to work with them in the Flow [ETL](#).

For greater visual comfort, we have worked in this section with the side menu minimized, in this way the screen only shows the information that is being processed and nothing else. To carry out this action, simply click on the icon that appears in the upper left corner, right next to the FIWOO logo.

We can access the External data import manager by selecting the “Data import” option in the Data section, from the menu that appears when clicking on the button in the upper right corner.



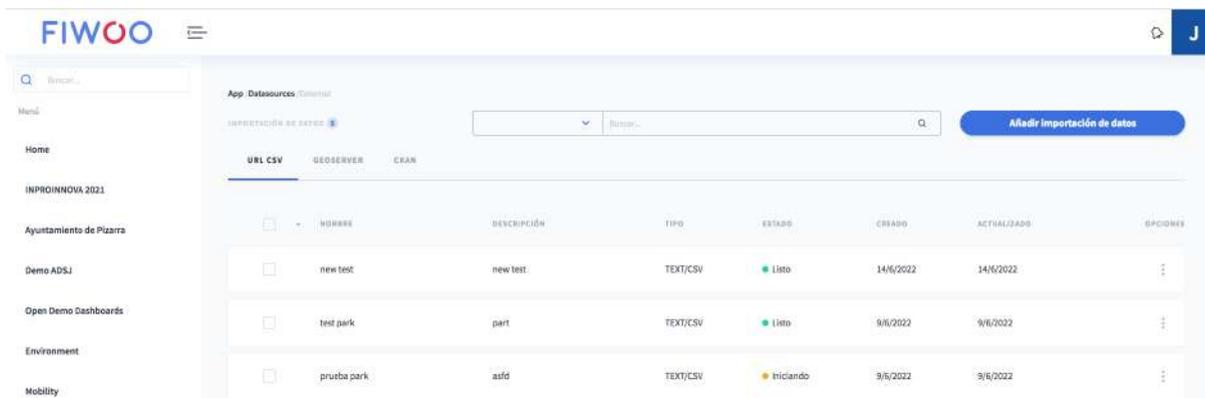
The screenshot shows the FIWOO Data Import Manager interface. The top navigation bar includes the FIWOO logo and a search bar. The main content area is titled "App | Datasources | Importar" and features a search bar and a "Buscar..." button. Below this, there are tabs for "URL CSV", "GEOSERVER", and "CRAN". The "URL CSV" tab is active, displaying a table of data sources. The table has columns for "URL CSV", "DESCRIPCIÓN", "TIPO", "ESTADO", and "CREADO". The data rows are as follows:

URL CSV	DESCRIPCIÓN	TIPO	ESTADO	CREADO	
<input type="checkbox"/>	new test	new test	TEXT/CSV	Listo	14/6/2022
<input type="checkbox"/>	test park	part	TEXT/CSV	Listo	9/6/2022
<input type="checkbox"/>	prueba park	asdf	TEXT/CSV	Iniciando	9/6/2022
<input type="checkbox"/>	parking	parking	TEXT/CSV	Listo	13/5/2022

The right sidebar contains user information for "Jeser AbdelKoder" and a "Ver Perfil" button. Below this is a "Personas" dropdown menu and a "Datos" section with various options like "Dispositivos IoT", "Grupo de dispositivos IoT", "Modelos de datos", "Importación de datos", "Flow", and "Exportación/Publicación de datos".

Add data import

Once we are in the data import manager, we can create a new one by pressing the “Add data import” button.



The screenshot shows the FIWOO Data Import Manager interface with the "Añadir importación de datos" button highlighted in blue. The table of data sources is the same as in the previous screenshot, but it now includes an "ACTUALIZADO" column and an "OPCIONES" column with vertical ellipsis icons. The data rows are as follows:

URL CSV	DESCRIPCIÓN	TIPO	ESTADO	CREADO	ACTUALIZADO	OPCIONES	
<input type="checkbox"/>	new test	new test	TEXT/CSV	Listo	14/6/2022	14/6/2022	⋮
<input type="checkbox"/>	test park	part	TEXT/CSV	Listo	9/6/2022	9/6/2022	⋮
<input type="checkbox"/>	prueba park	asdf	TEXT/CSV	Iniciando	9/6/2022	9/6/2022	⋮

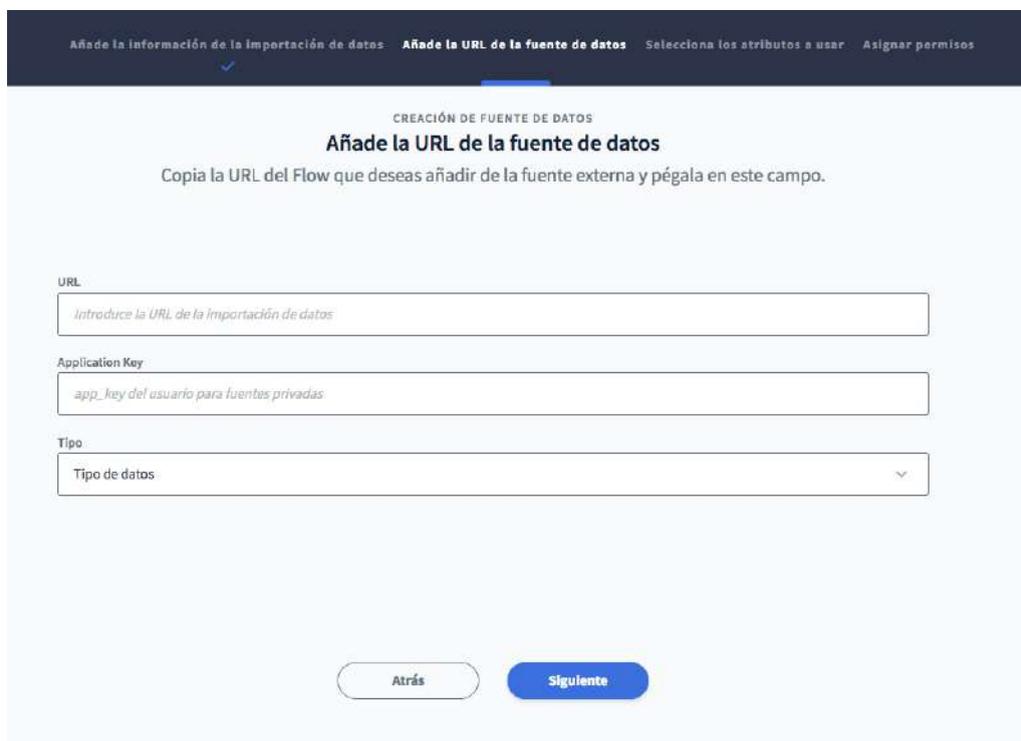
This action will start a guided creation process in which we will have to fill in various forms that we will discuss below. This creation process begins with a window in which the system requests information related to the functions of the data source.

The process varies depending on the type of source that we choose, in this section we will see in detail the configuration of requirements for each of these types.



The screenshot shows a web interface for creating a data source. At the top, a dark navigation bar contains the steps: 'Añade la información de la fuente de datos', 'Añade la URL de la fuente de datos externa', 'Selecciona los atributos a usar', and 'Asignar permisos'. The current step is 'Añade la información de la fuente de datos'. Below the navigation bar, the main content area has the title 'CREACIÓN DE FUENTE DE DATOS' and the subtitle 'Añade la información de la fuente de datos'. A prompt reads 'Introduce la información identificativa de la fuente de datos a añadir:'. The form includes three fields: 'Nombre' (with a placeholder 'Nombre de datos'), 'Descripción' (with a placeholder 'Introduce una descripción'), and 'Tipo' (a dropdown menu with 'Tipo de fuente de datos' selected). Below the dropdown, there are three radio button options: 'Servicio', 'CKAN', and 'Fuente de Datos', with 'Servicio' selected.

If we choose to use a data source of type CKAN, then we must specify a URL with which we can obtain the relevant information. The URL that we specify will serve us to obtain data of type CSV or of type Table. If necessary, we can enter an application key with which to identify ourselves in the URL.

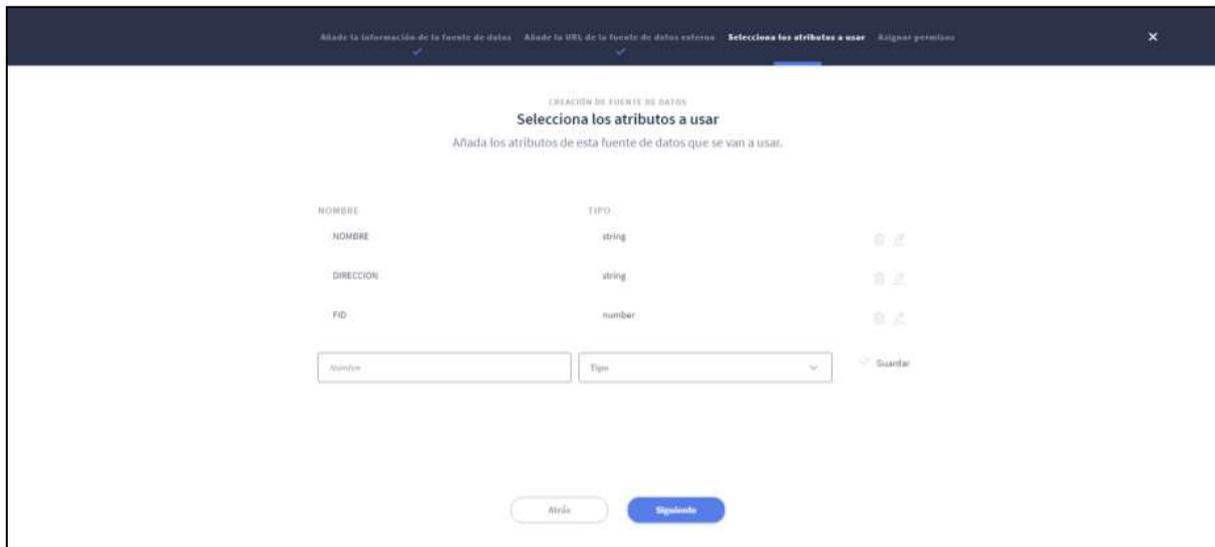


The screenshot shows the next step in the data source creation process. The navigation bar now has a checkmark under 'Añade la información de la importación de datos' and the current step is 'Añade la URL de la fuente de datos'. The main content area has the title 'CREACIÓN DE FUENTE DE DATOS' and the subtitle 'Añade la URL de la fuente de datos'. A prompt reads 'Copia la URL del Flow que deseas añadir de la fuente externa y pégala en este campo.'. The form includes three fields: 'URL' (with a placeholder 'Introduce la URL de la importación de datos'), 'Application Key' (with a placeholder 'app_key del usuario para fuentes privadas'), and 'Tipo' (a dropdown menu with 'Tipo de datos' selected). At the bottom, there are two buttons: 'Atrás' and 'Siguiente'.

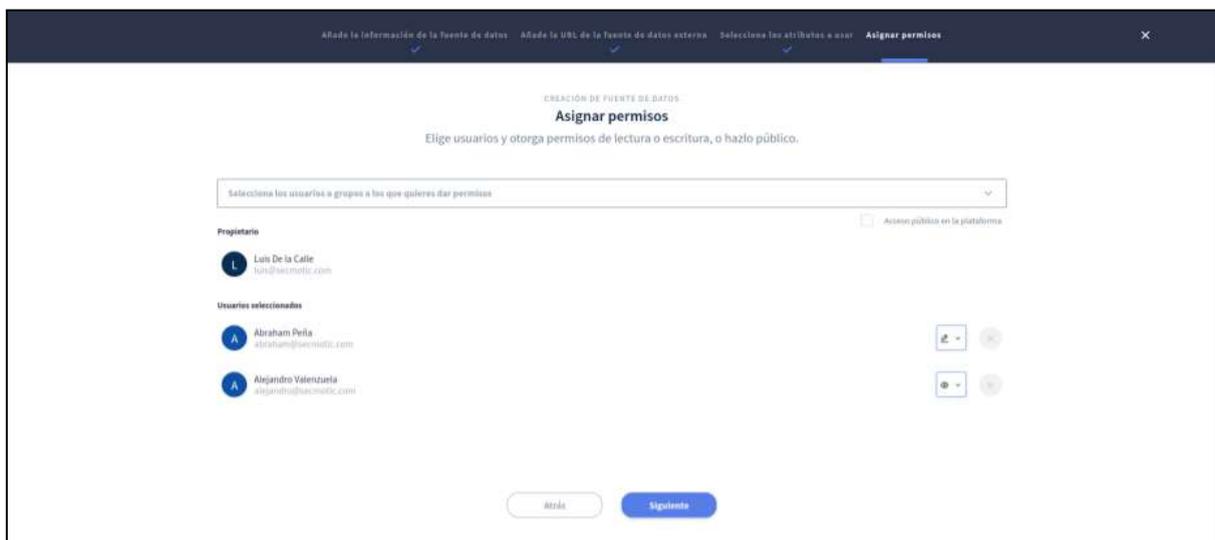
In the next step of the creation process, the system will ask us to enter the name of the properties to be read and also to specify the type of property it has.

We can include as many properties as we need, the available types are the following:

- Boolean
- Numeric
- Text String
- Array



Once we have established the attributes of our external data source, we can click on the “Next” button to advance to the “Assign Permissions” step. In this step it is possible to indicate which users will have permissions to interact with the data source. Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.



After clicking “Next”, the system will display a message informing us that the data source has been successfully added.



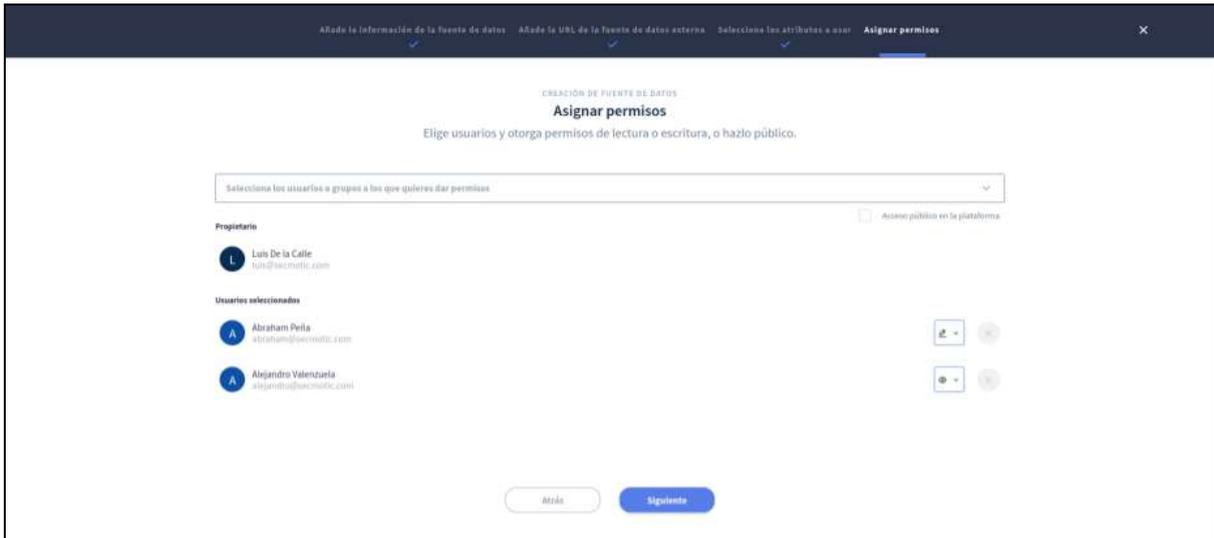
If instead of using the CKAN type, we decide to use a "Geoserver Source" type data source, we must fill out a form in which we will specify the necessary requirements to request the data from the server that we are going to use. Specifically, we must enter the following data:

- Server URL.
- Username and password to access the server.
- Workspace whose data we want to obtain.

A screenshot of a web application interface. At the top, a dark blue navigation bar contains the text "Añade la información de la fuente de datos" (with a checkmark), "Selección de capas a usar" (with a blue underline), "Selección de capas a usar", and "Asignar permisos" (with an 'x' icon). The main content area has a white background and is titled "CREACIÓN DE FUENTES DE DATOS" and "Selección de capas a usar". Below the title, it says "Selecciona las capas GIS que quieres usar como fuente de datos". The form contains three input fields: "URL" (with a placeholder "Introduce la URL de la fuente de datos"), "Nombre de usuario" (with a placeholder "Introduce el nombre de usuario"), and "Contraseña" (with a placeholder "Introduce la contraseña de usuario"). Below these is a field for "Espacio de trabajo" (with a placeholder "Introduce el nombre del espacio de trabajo"). A blue button labeled "Importar capas" is positioned below the form. At the bottom, there are two buttons: "Anterior" and "Siguiente".

Once we enter the data, the system will validate the connection with the server and will ask us to enter the layers with the information we want to receive in another form.

Once we have established the attributes of our external data source, we can click on the "Next" button to advance to the "Assign Permissions" step. In this step it is possible to indicate which users will have permissions to interact with the data source. Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.

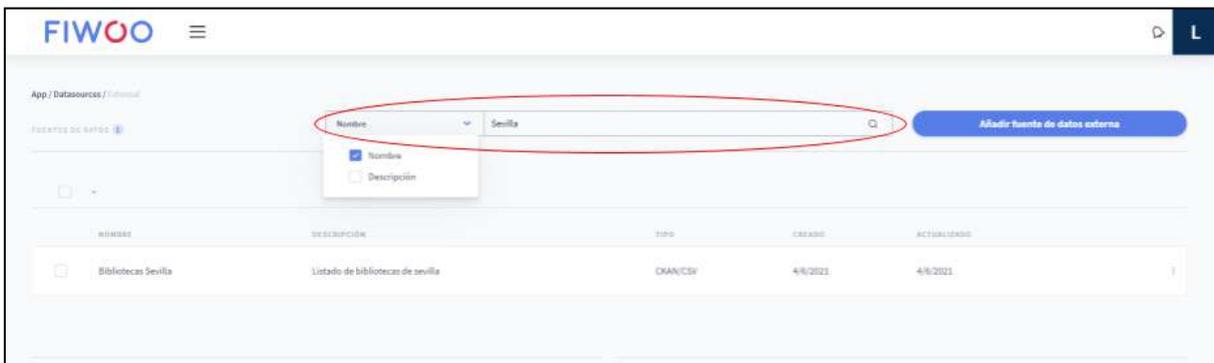


After clicking “Next”, the system will display a message informing us that the data source has been successfully added.



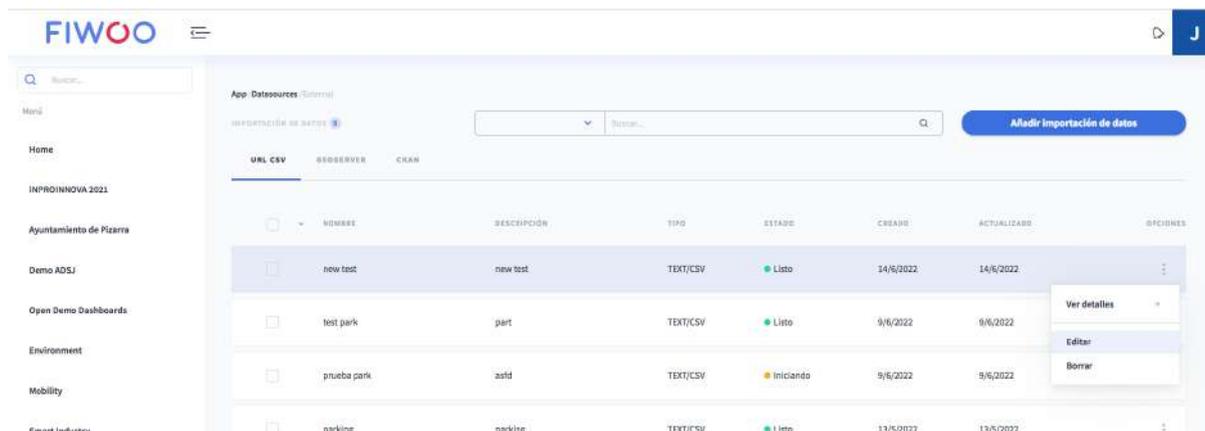
Imported data search engine

If we want to filter our list of imported data we can use the search engine at the top and carry out a personalized search. We have two options to filter: Name and Description. Once selected, we will write the text to search for in the search box on the right.

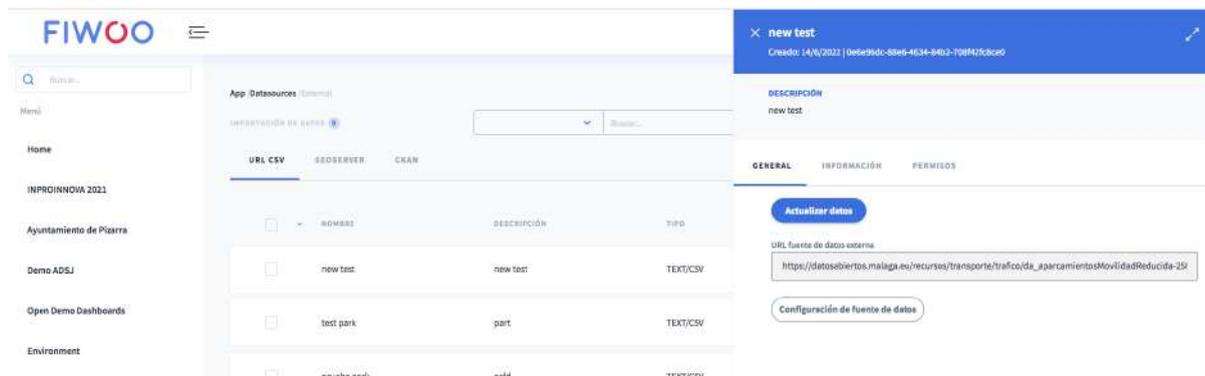


Modify data source permission settings

There is an option to change the settings of the created data sources. It is important to highlight that in order to edit them it is necessary that they are owned by us or have permission to do so. To modify a font, just click on the three dots to the right of the row of the font you want to modify and select the “Edit” option.

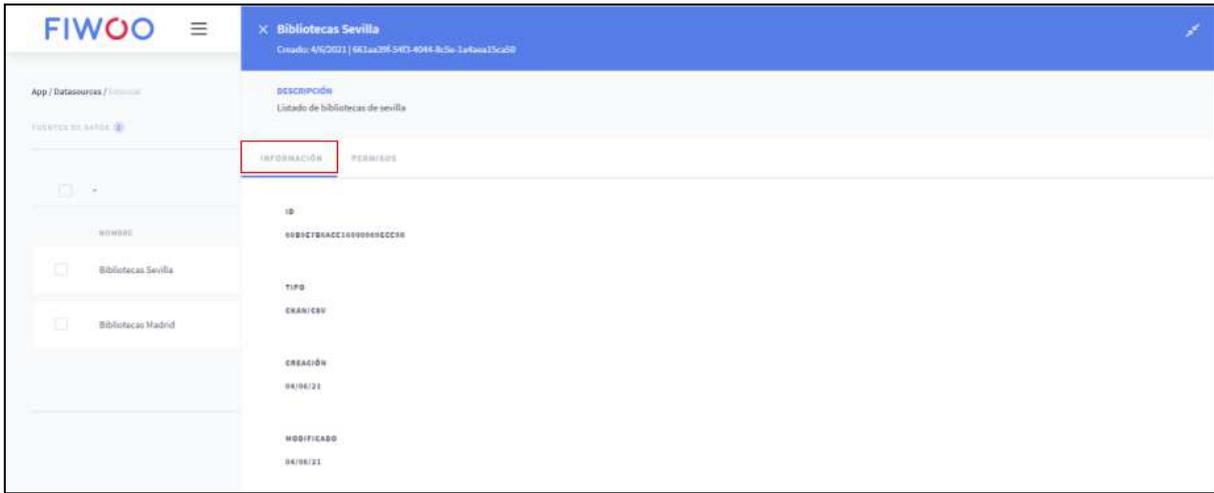


This will display a menu on the right side of the screen where we can see the current characteristics of the source.

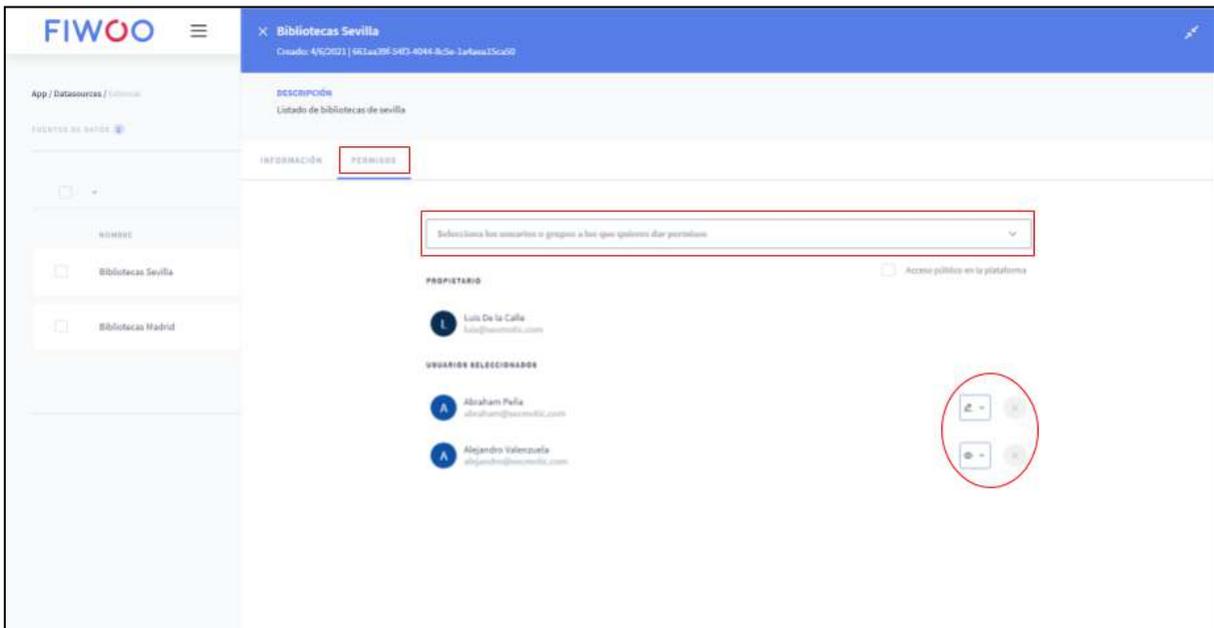


We can see that in the upper left part of the menu that the system shows us, we have the ability to modify the name and description. In the upper right corner we have a button that allows us to resize the menu, enlarging said menu in such a way that it is more comfortable to edit the source.

In the “Information” submenu we have access to the source identifier, the type of source and the dates of modification and creation. This menu is informative, so we will not be able to modify anything in it.



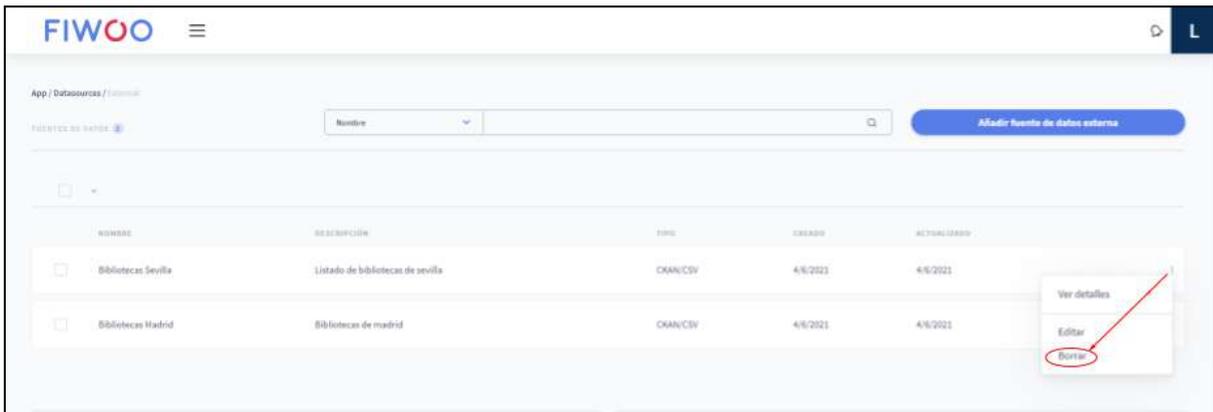
In the last submenu we will be able to modify the permissions that users have on the source. We have the possibility of using the search bar to give access to new users or groups of users and we also have buttons to specify permissions for users who already have them and even revoke permissions.



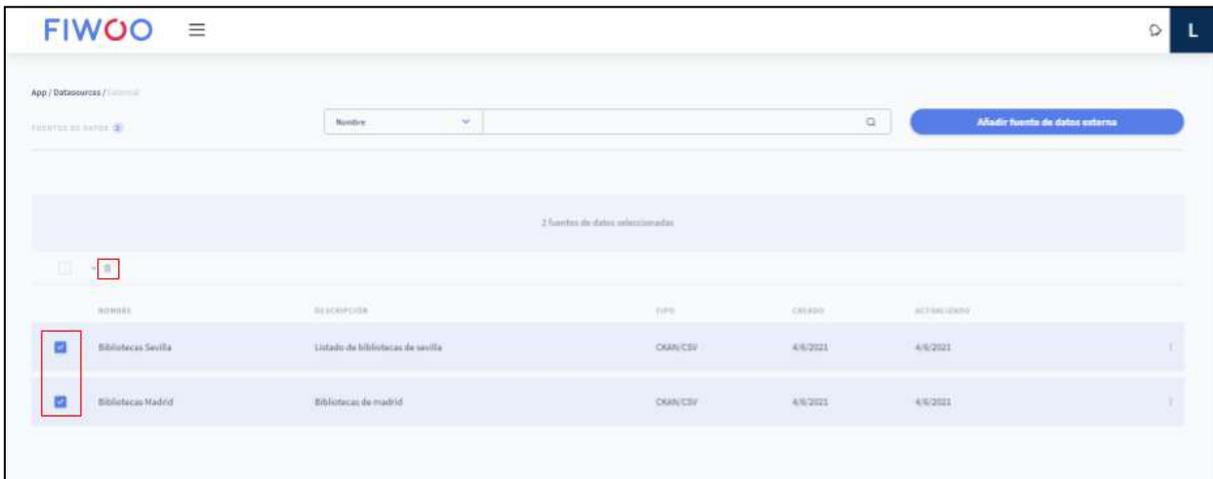
Eliminate data source

When it comes to eliminating an external data source from the platform, there are two alternatives: one by one or en bloc.

To delete sources one by one, we simply have to press the three points to the right of the source and select the "Delete" option. A new window will open to confirm that we want to delete it. If we press the "Delete" button again in that window, it will be removed from the system.



There is also the option to remove multiple fonts at once. Para ello, seleccionamos las que queramos eliminar usando el cuadro de selección a la izquierda de cada fila. Once done, the trash can icon will appear at the top of the menu, with which you can delete all at once. After clicking on this icon, a new window will open to confirm that we want to delete the fonts. If we click on the "Delete" button in that window, they will be removed from the system.



Flow

For the creation of the ETL Flows we are going to use the Apache Nifi tool.

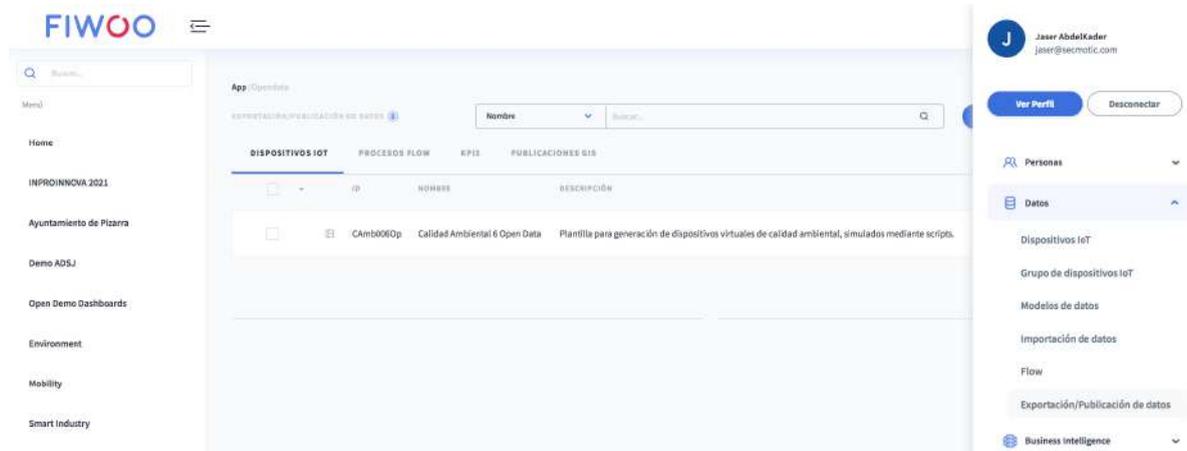
It is an external tool to FIWOO but it will allow us to carry out the ETL processes and export these results to be able to work later in FIWOO.

This tool will allow us to create Flow in which we can process and prepare the data sets to be exploited.

For more information see <https://nifi.apache.org/docs.html>

Data Export/Publication

We can access the data Export/Publication manager by selecting the “Data Export/Publication” option from the menu that appears when clicking on the button in the upper right corner.



Add data export

Once we are in the data export/publication manager, we can create a new one if we press the “Add Data Export” button.



This action will start a guided creation process that starts the system asking for the type of source from which the data will be extracted. We have four options available: Devices, ETL's, KPI's and Layer Gis. During this section we will explain what requirements must be configured for each of these types.



If we choose to use a device as a source, the system will show us a form in which we must indicate which device we are going to use, then we can select the properties that most interest us.



Once we specify the device and its attributes, we can finish the data publication/export creation process.

If we choose to use a FLOW ETL as a source, the system will show us a form in which we must indicate which ETL we are going to use, then we can select the properties that most interest us.



Once we specify the ETL stream and its attributes, we can finish the process of creating the data source.

If we choose to use a KPI as a source, the system will show us a form in which we must indicate which KPI we are going to use, then we can select the properties that most interest us.



Once we specify the KPI and its attributes, we can finish the process of creating the data source.

If we choose to use a Gis Layer as a source, the system will show us a form in which we must indicate...



Data Export/Publication Search Engine

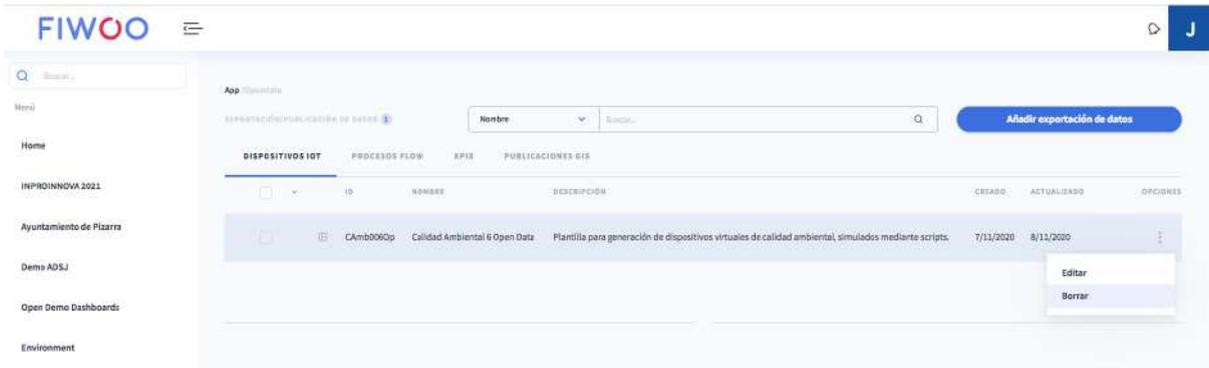
If we want to filter our list of data sources we can use the search engine at the top and perform a custom search. We have four options to filter: Id, Name, Description and Category. Once selected, we will write the text to search for in the search box on the right.



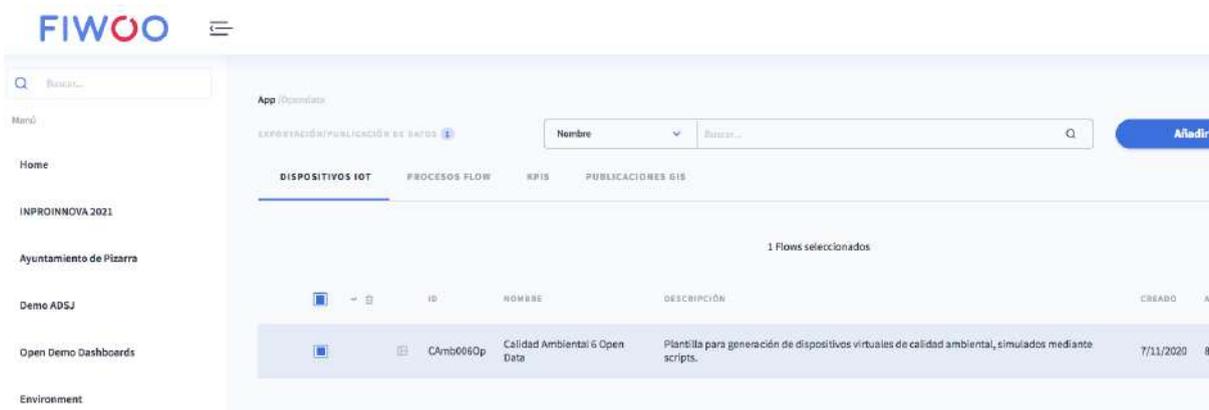
Eliminate Open Data

When it comes to eliminating an export/publication from the platform, there are two alternatives: one by one or in block.

To delete exports/publications one by one, we simply have to press the three points to the right of the source and select the "Delete" option. A new window will open to confirm that we want to delete it. If we press the "Delete" button again in that window, it will be removed from the system.



There is also the option to remove multiple fonts at once. To do this, we select the ones we want to remove using the selection box to the left of each row. Once done, the trash can icon will appear at the top of the menu, with which you can delete all at once. After clicking on this icon, a new window will open to confirm that we want to delete the sources. If we press the “Delete” button in that window, they will be removed from the system.



Business Intelligence

This section brings together all the necessary tasks to carry out Business Intelligence processes contemplated by our FIWOO platform.

In the image we can see how this content is accessed.



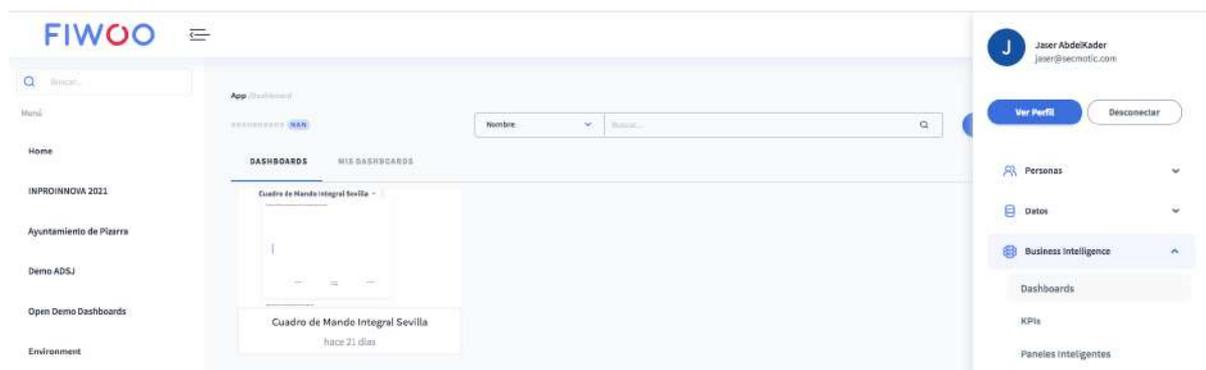
Next, we will present these functionalities in detail.

Dashboard Management

At FIWOO we have the ability to work with various data sources that are constantly changing. In order to correctly visualize said data and be able to work with several heterogeneous data sources simultaneously, we have dashboards.

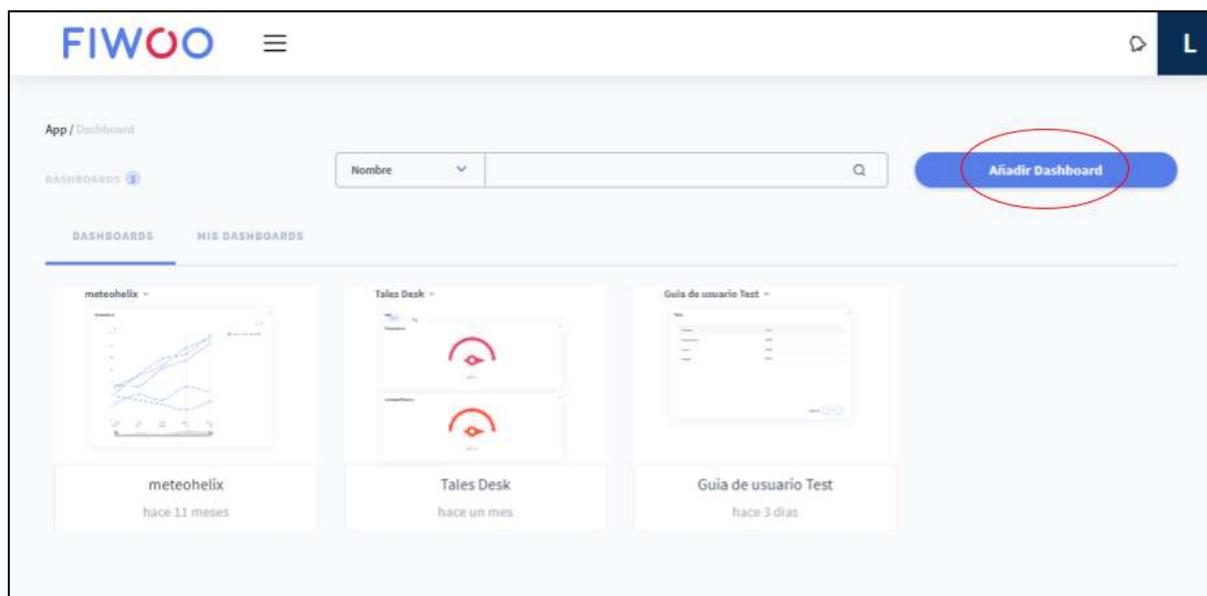
A dashboard or control panel is a workspace in which we can configure elements that allow us to use business intelligence techniques to obtain knowledge of our data. We call these elements widgets, powerful tools when viewing information. There are many widget categories that we will cover in depth throughout this section.

We can access the Dashboards manager by selecting the “Dashboards” option from the menu that appears when clicking on the button in the upper right corner.

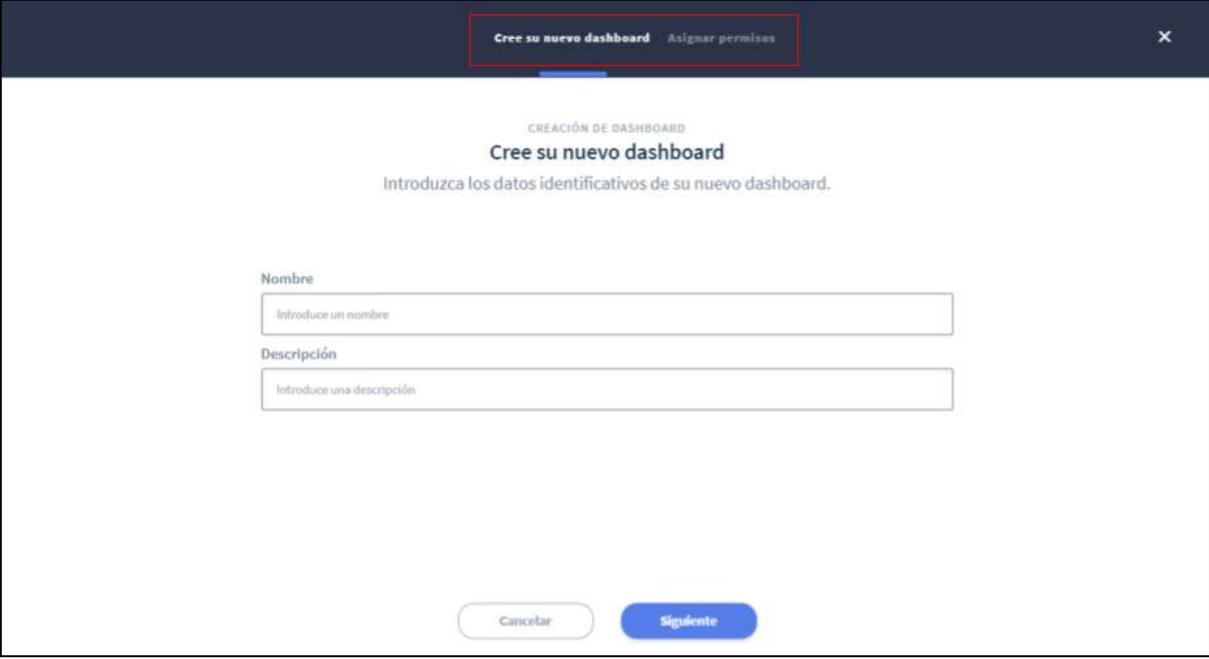


Create dashboard

Once we are in the dashboard manager, we can create a new one if we press the “Add Dashboard” button.



This action will start a guided creation process in which we will have to fill in various forms that we will discuss below. This creation process begins with a window in which the system requests information related to the functions of the dashboard.

A screenshot of the 'Cree su nuevo dashboard' form. The form is titled 'CREACIÓN DE DASHBOARD' and 'Cree su nuevo dashboard'. Below the title, it says 'Introduzca los datos identificativos de su nuevo dashboard.' There are two input fields: 'Nombre' with the placeholder text 'Introduce un nombre' and 'Descripción' with the placeholder text 'Introduce una descripción'. At the bottom of the form, there are two buttons: 'Cancelar' and 'Siguiente'.

The top bar shows the various steps that need to be completed before the creation. The data to be entered is all mandatory, and is responsible for collecting the following data:

- Name of the dashboard, so that it can be searched later.

- Dashboard description.

The screenshot shows a web interface for creating a new dashboard. At the top, there are two tabs: 'Cree su nuevo dashboard' (highlighted with a red box) and 'Asignar permisos'. Below the tabs, the page title is 'CREACIÓN DE DASHBOARD' and the main heading is 'Cree su nuevo dashboard'. The instruction reads: 'Introduzca los datos identificativos de su nuevo dashboard.' There are two input fields: 'Nombre' with the value 'Cuadro de mandos para datos ambientales' and 'Descripción' with the value 'Este cuadro de mandos mostrará gráficas que nos ayuden a visualizar nuestra información'. At the bottom, there are two buttons: 'Cancelar' and 'Siguiente'.

Once we fill in the pertinent information, we can click on the “Next” button to advance to the “Assign Permissions” step. In this step it is possible to indicate which users will have permissions to interact with the Dashboard. Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.

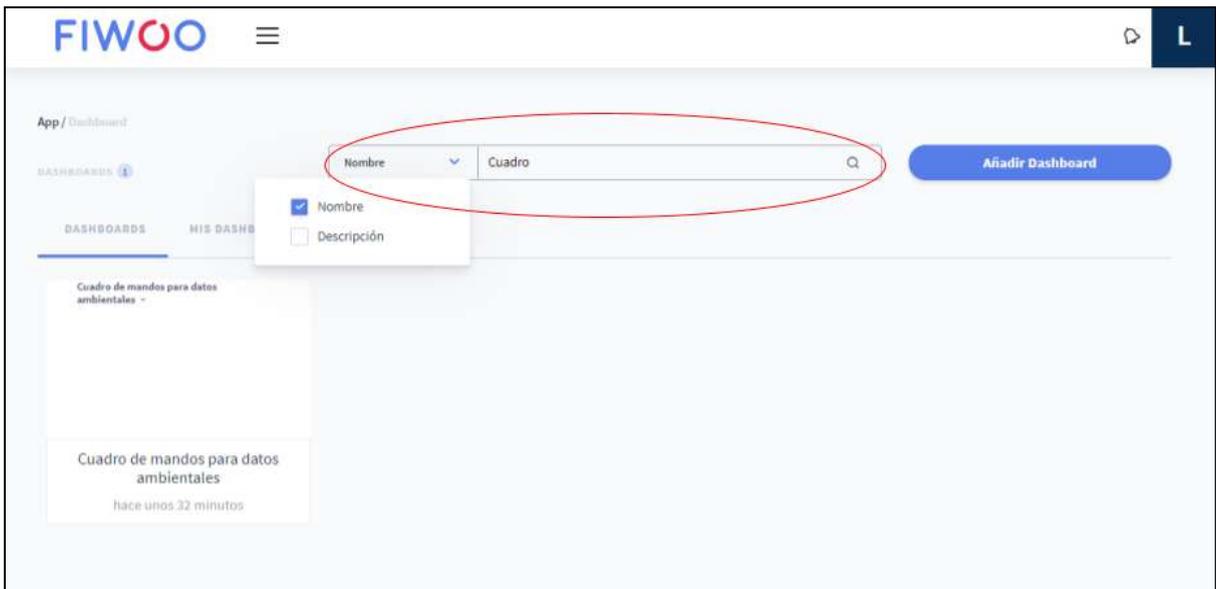
The screenshot shows the 'Asignar permisos' step of the dashboard creation process. The tabs at the top are 'Cree su nuevo dashboard' and 'Asignar permisos' (highlighted with a blue box). The page title is 'CREACIÓN DE DASHBOARD' and the main heading is 'Asignar permisos'. The instruction reads: 'Seleccione que usuarios o grupos tienen acceso.' There is a search bar with the placeholder text 'Selecciona los usuarios o grupos a los que quieres dar permisos'. Below the search bar, there is a checkbox labeled 'Acceso público en la plataforma'. Under the heading 'Propietario', there is a user profile for 'Luis De la Calle' with email 'luis@secmotric.com'. Under the heading 'Usuarios seleccionados', there are two user profiles: 'Alejandro Valenzuela' with email 'alejandrov@secmotric.com' and 'Abraham Peña' with email 'abraham@secmotric.com'. Each selected user has a plus icon and a minus icon. At the bottom, there are two buttons: 'Atrás' and 'Siguiente'.

After clicking on the “Next” button, the process will end and the system will display the following message to inform you that everything has been saved correctly.



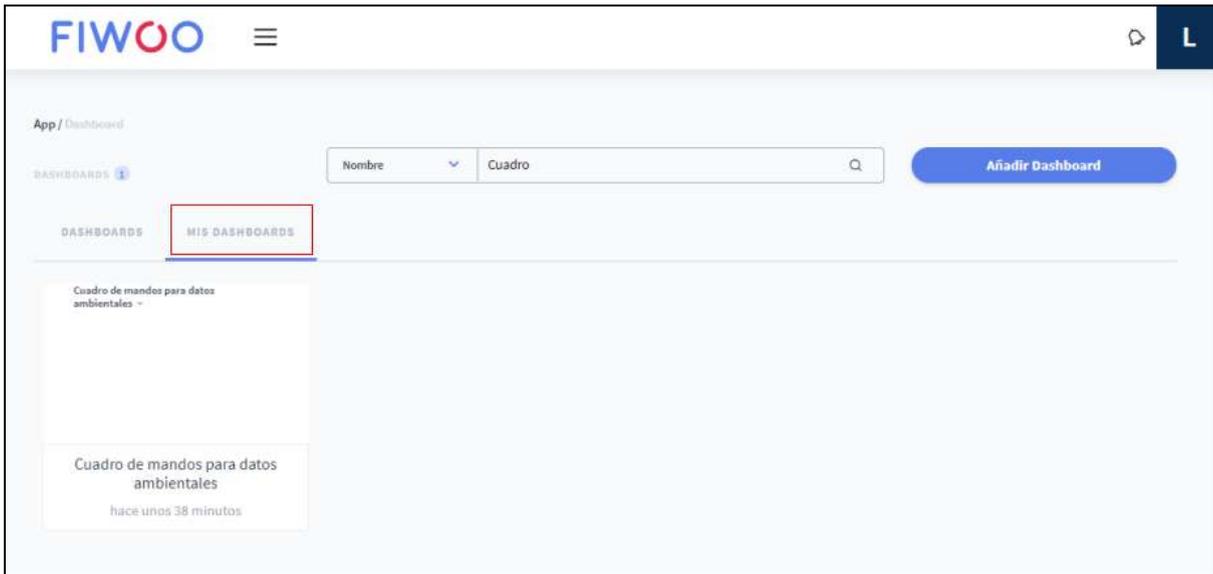
Dashboard search engine

If we want to filter our list of dashboards, we can use the search engine at the top and carry out a personalized search. We have two options to filter: Name and Description. Once selected, we will write the text to search for in the search box on the right.



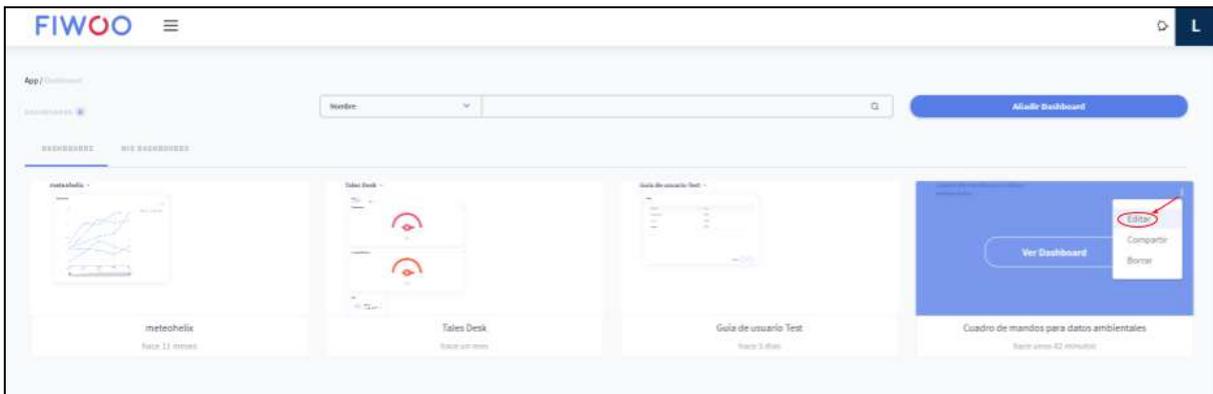
My dashboards

We have a convenient view that facilitates access to the dashboards created by the user who has the active session. To enter this view we just have to click on "MY DASHBOARDS" from the dashboard management view.

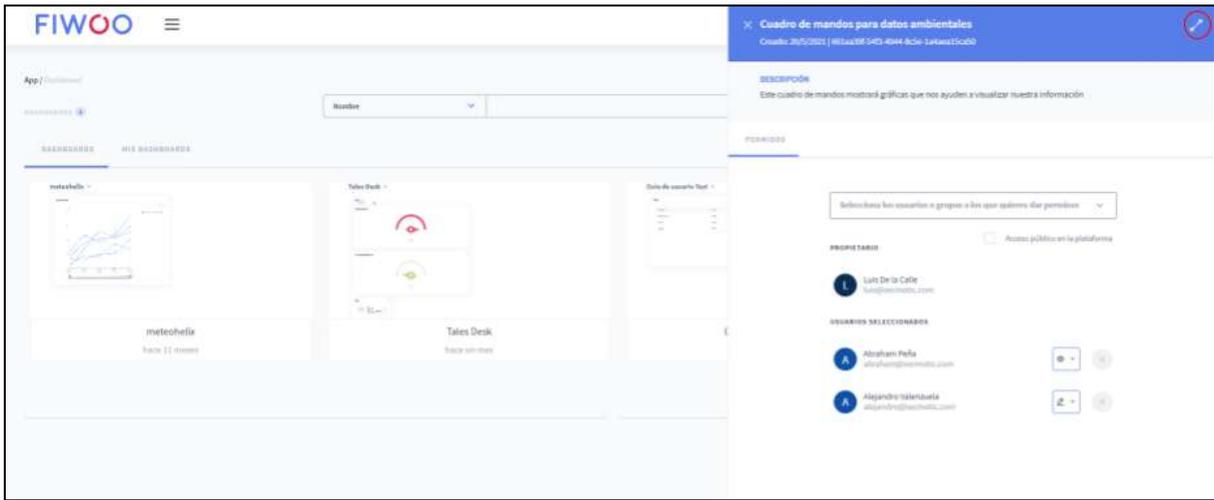


Modify a dashboard configuration

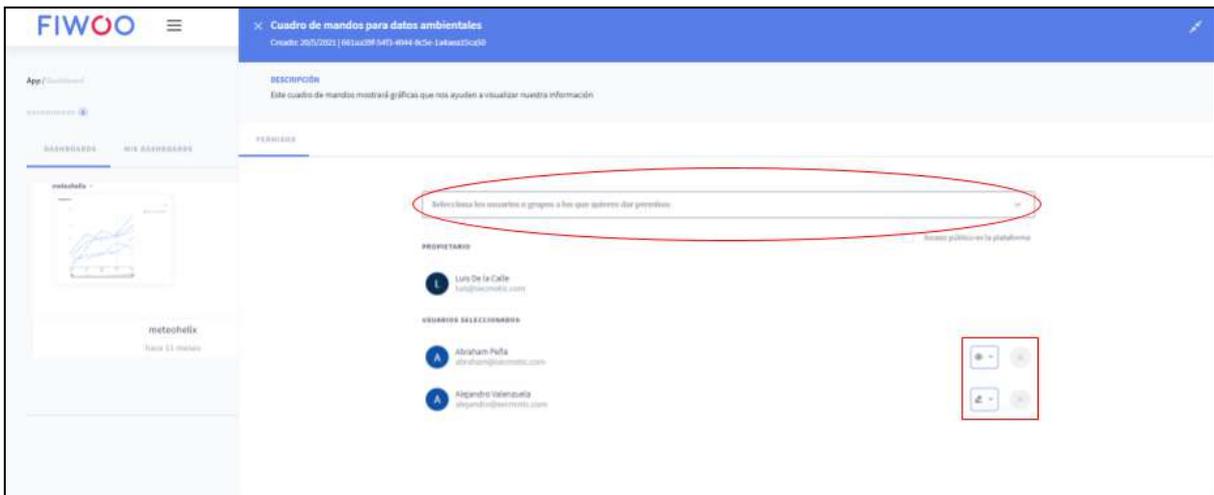
To modify a dashboard, just click on the three points to the right of the row of the device you want to modify and select the “Edit” option. This action can be carried out from the dashboards view and from the My Dashboards view.



This will display a menu on the right side of the screen where we can see the current characteristics of the dashboard.



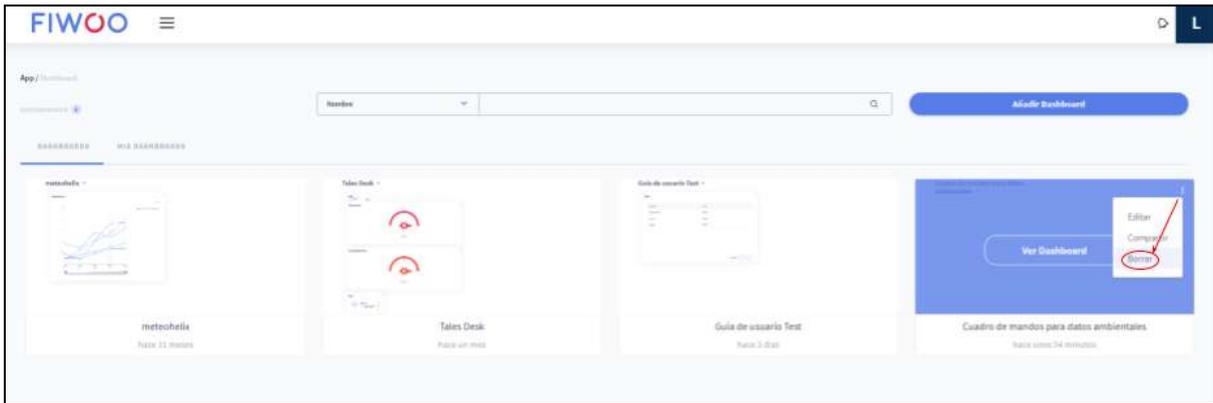
In the upper right corner we have a button that allows us to resize the menu, enlarging said menu in such a way that it is more comfortable to edit the dashboard.



At the top of this menu, we have the options to modify the name and description of the dashboard. In addition, we have a single submenu, where we will be able to modify the permissions that users have on the dashboard. We have the possibility of using the search bar to give access to new users or user groups and we also have buttons to specify permissions for users who already have them and even revoke permissions.

Delete dashboard

To delete a dashboard, we simply have to press the three points to the right of the dashboard and select the “Delete” option. A new window will open to confirm that we want to delete it. If we press the "Delete" button again in that window, it will be removed from the system.

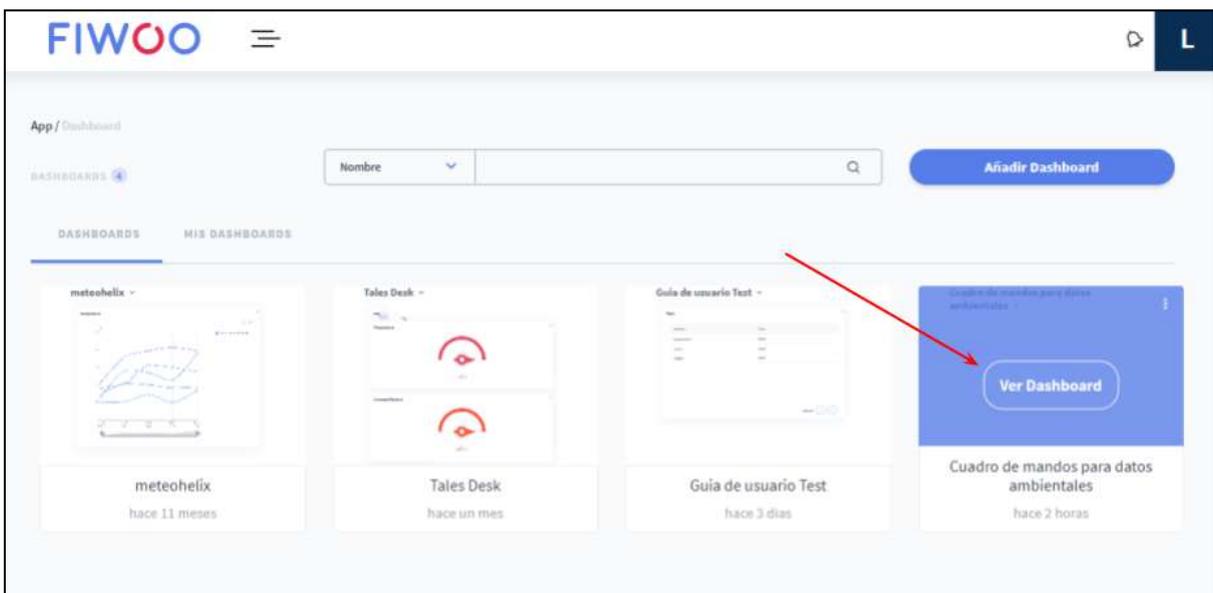


Dashboard content editing

We can think of dashboards as canvases on which to represent our data, analyze it and obtain information. This representation will be carried out by means of elements called “Widgets”, which are responsible for displaying the information collected by the different data sources. In this section we will see that there are several types of widgets and different configurations for each of them.

Accessing a dashboard

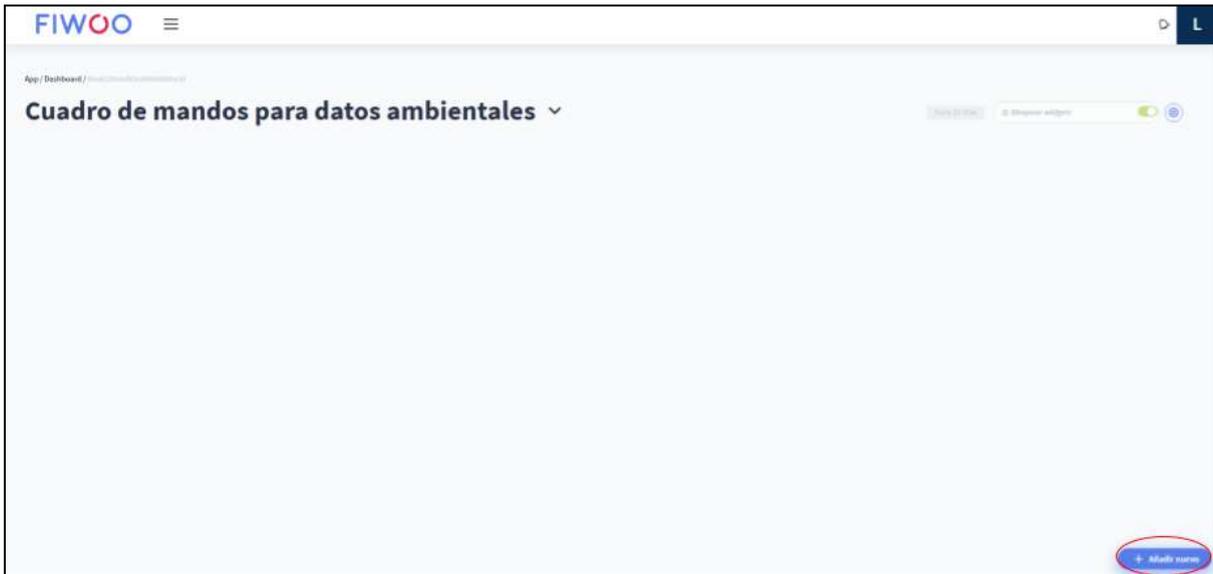
We can enter the dashboard if we hover over it with the mouse and click on “View Dashboard”.



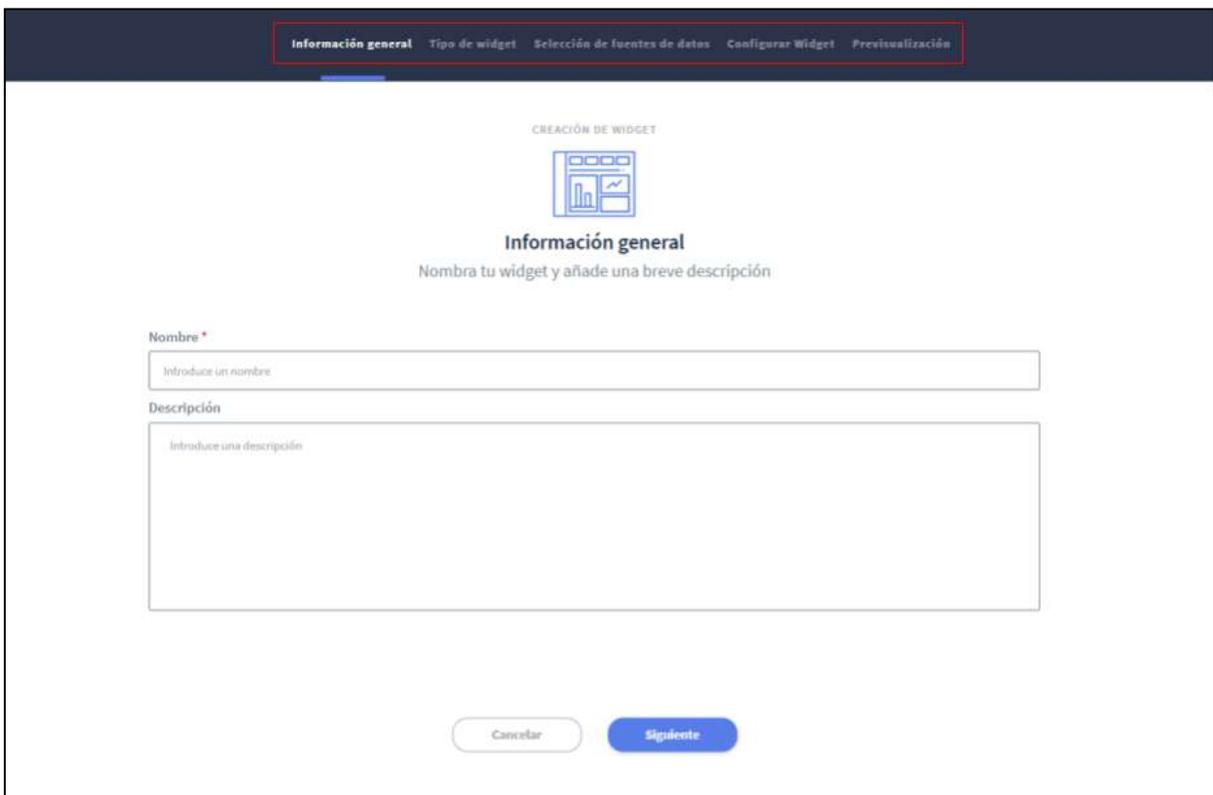
This action will take us to a window where it is possible to create and edit widgets in our dashboard.

Widget creation

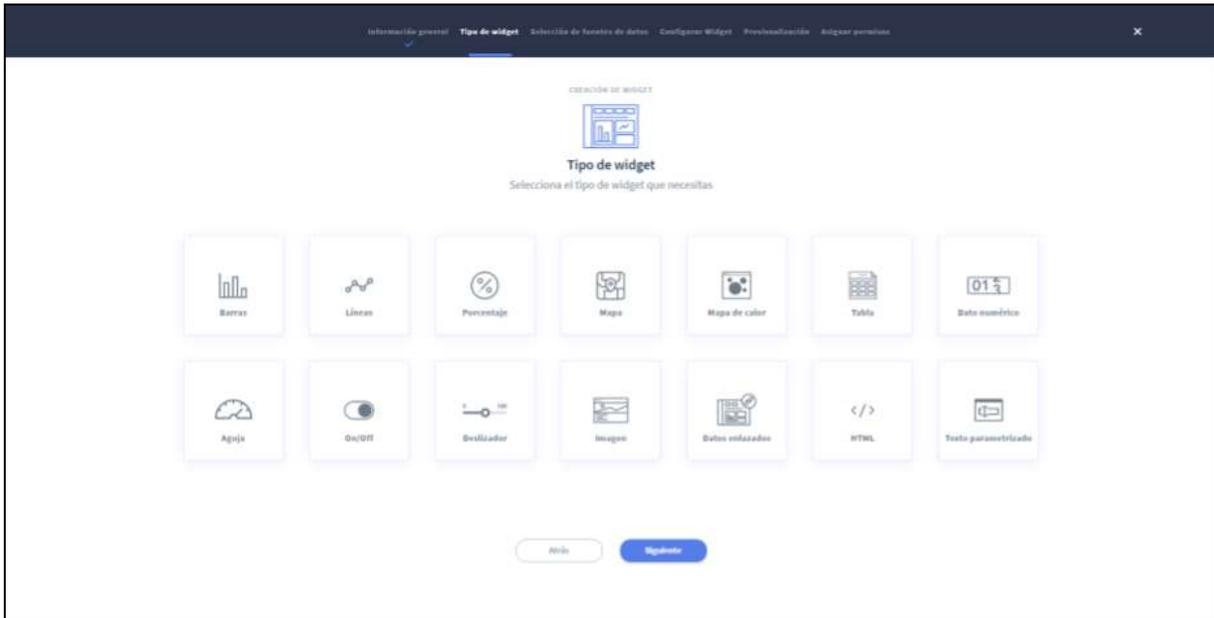
To create a new widget we must be located within a dashboard. In this window we have a button with the text “+ Add new” with which we can start the process of creating a widget.



When pressing the button, the system takes us to a form in which we must specify the name and description of the widget. At the top we have a bar that tells us what step of the creation process we are in.



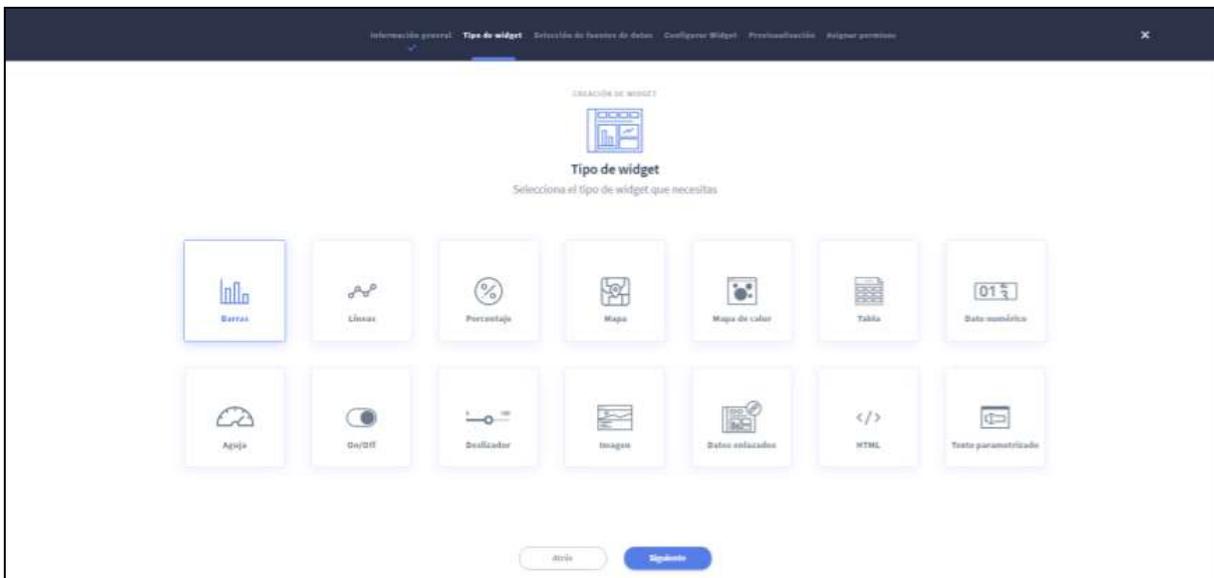
After pressing the "Next" button, we advance to step 2. In this step we must choose what type of widget we are going to create. There is a wide variety of widgets so we will cover them in individual sections.



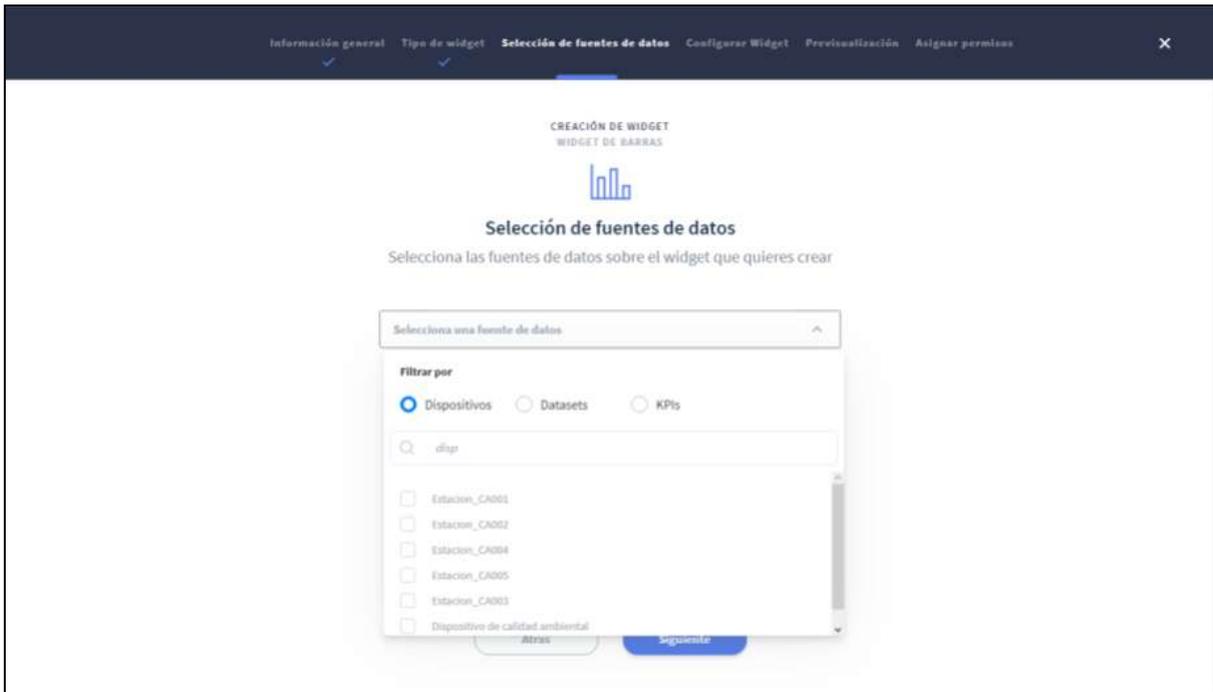
When clicking on one of them we appreciate that the upper bar adapts to the configuration of said widget. In the following sections we will see the creation and basic configuration of the different types of widget.

Bars Widget

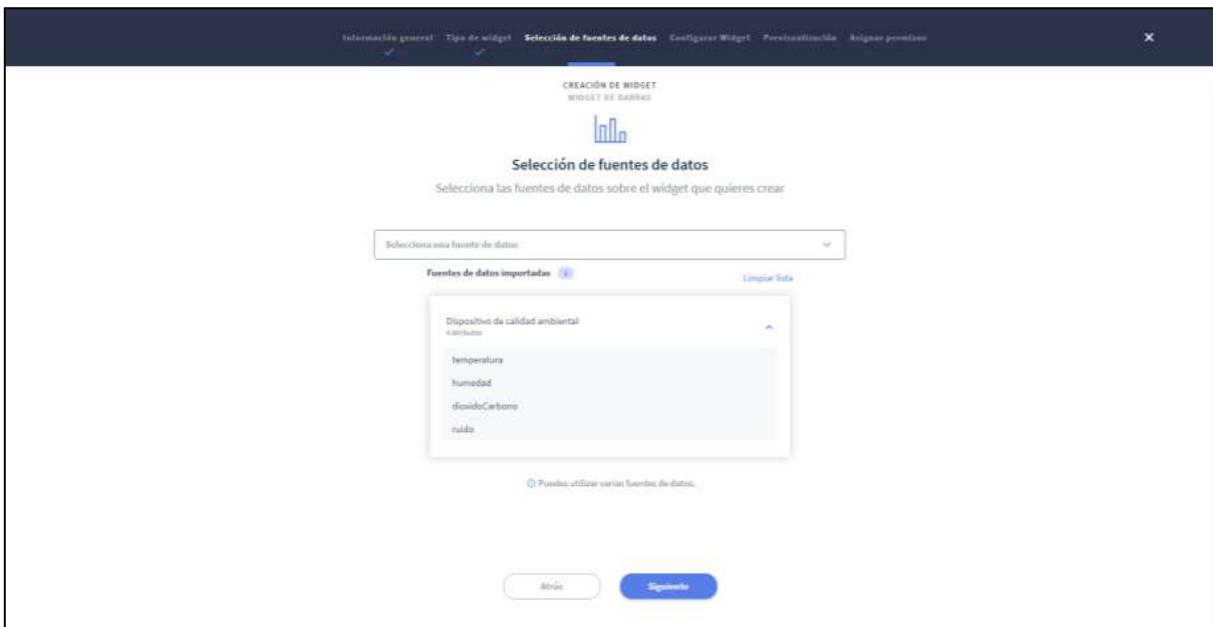
Located in step 2 of the creation process, click on the “Bars” widget type. When pressed, the surrounding region will light up indicating that it is selected, and the upper bar will adapt to the steps necessary to configure this type of widget.



By clicking on “Next” we advance to step 3, where we must choose one or more data sources. The form of the current window consists of a drop-down menu in which we can perform a search of our data sources by filtering by type and entering its name.



Once we choose the fonts, the system will show us them along with the properties they contain.

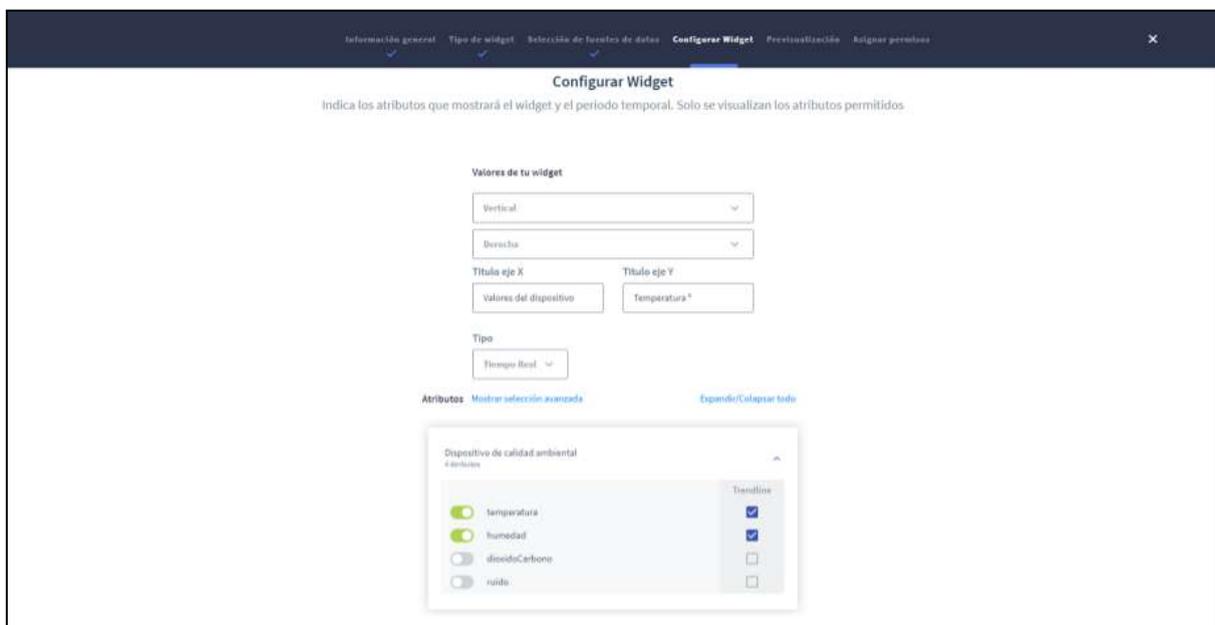


When we make sure that the data is correct, we can click on “Next” to advance to the next step.

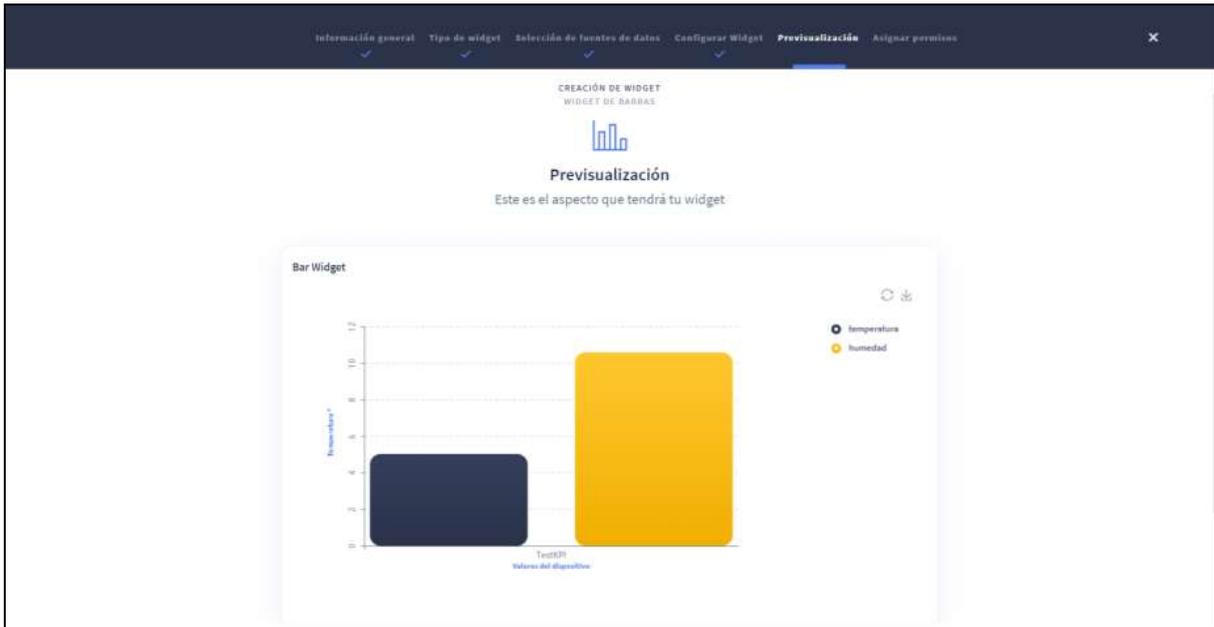
In this section we must establish the configuration of our bar chart. We have to specify the following fields in the form that the system shows us:

- Direction of the diagram bars: the possible values are “Vertical” or “Horizontal”.
- Legend placement: can be placed at the top, bottom, or right of the diagram.
- X-Axis Title: an explanatory text that will be displayed below the diagram.

- Y-Axis Title: an explanatory text that will be displayed to the left of the
- Type diagram, where we have two options available: “Real Time” and “Historical”.
 - “Real Time”: We indicate that we want to see the latest values that the data source has.
 - Historical: to show the values of a specific period of time and group according to their average. We can tell the system to take the latest values in a period of time or specify a date range. Our bar chart will have a column for each time interval.
- Properties: we must choose the properties that we want to show in the diagram, each property is equivalent to a different bar.
- Trendline, if we activate this option, a line will be displayed that indicates the trend of the attributes shown in our diagram when historical records are being displayed.

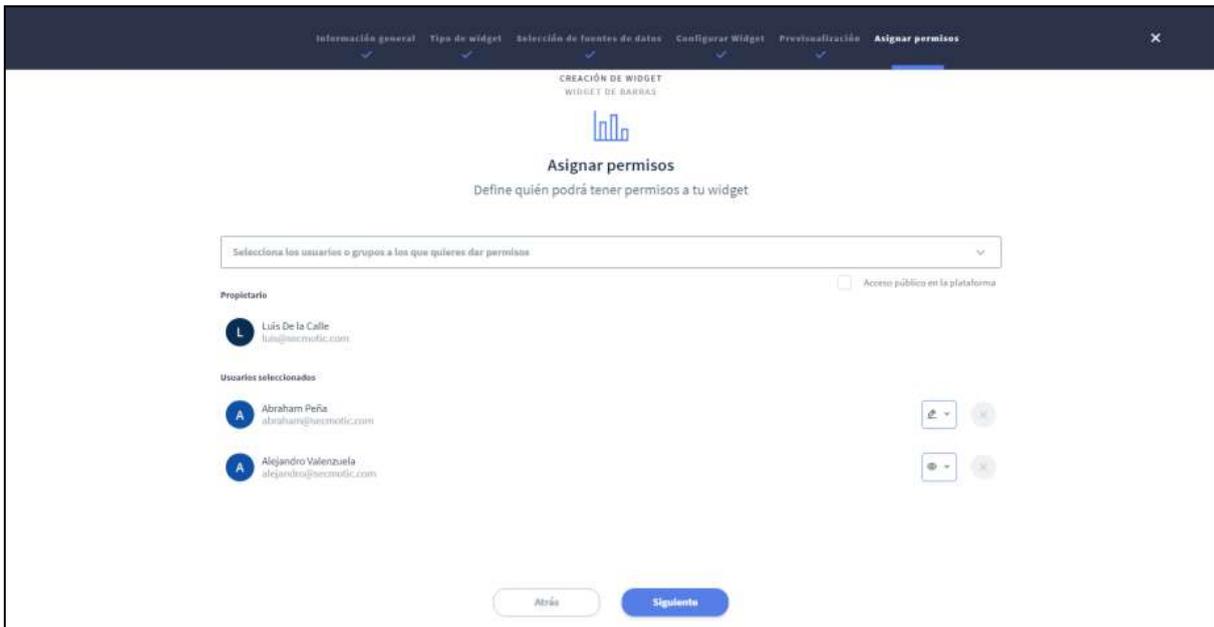


Once we have the configuration of the diagram, we click on “Next” and the system will show us a window with the preview of the diagram.



Click on “Next” to advance to the last step, the permissions configuration. In this step it is possible to indicate which users or groups of users will have permissions to interact with the diagram.

Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.



After clicking "Next" the system will display a message informing us that the Widget has been successfully added.



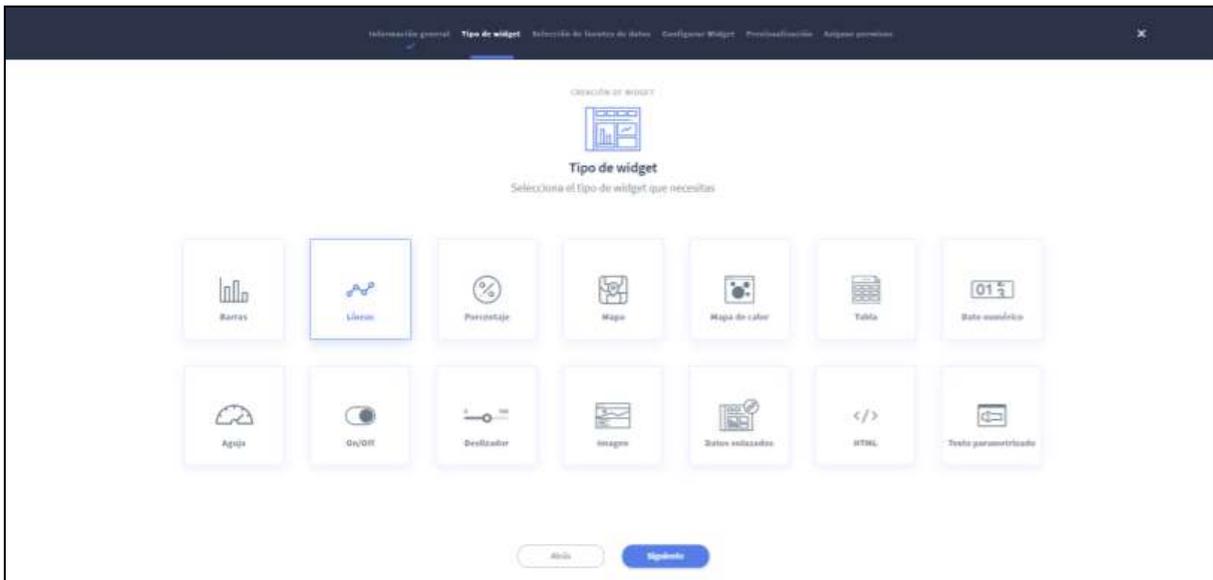
Now when we enter our dashboard we will have the new widget that we just added.



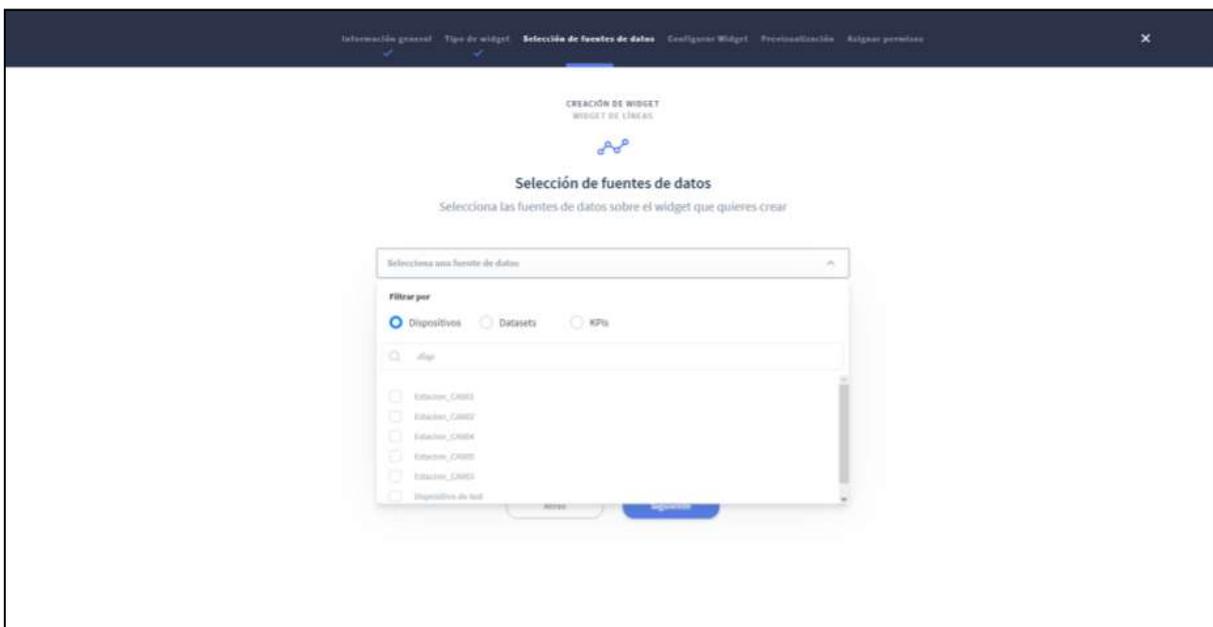
The bar widget is interactive: if we click on the legends we can hide the columns and show them as we please, also, when moving the cursor over a column, the value of said property will be shown. We have two buttons at the top right of the diagram, the button on the far right allows you to download the graph as an image, the other button allows you to reload the diagram.

Widget Lines

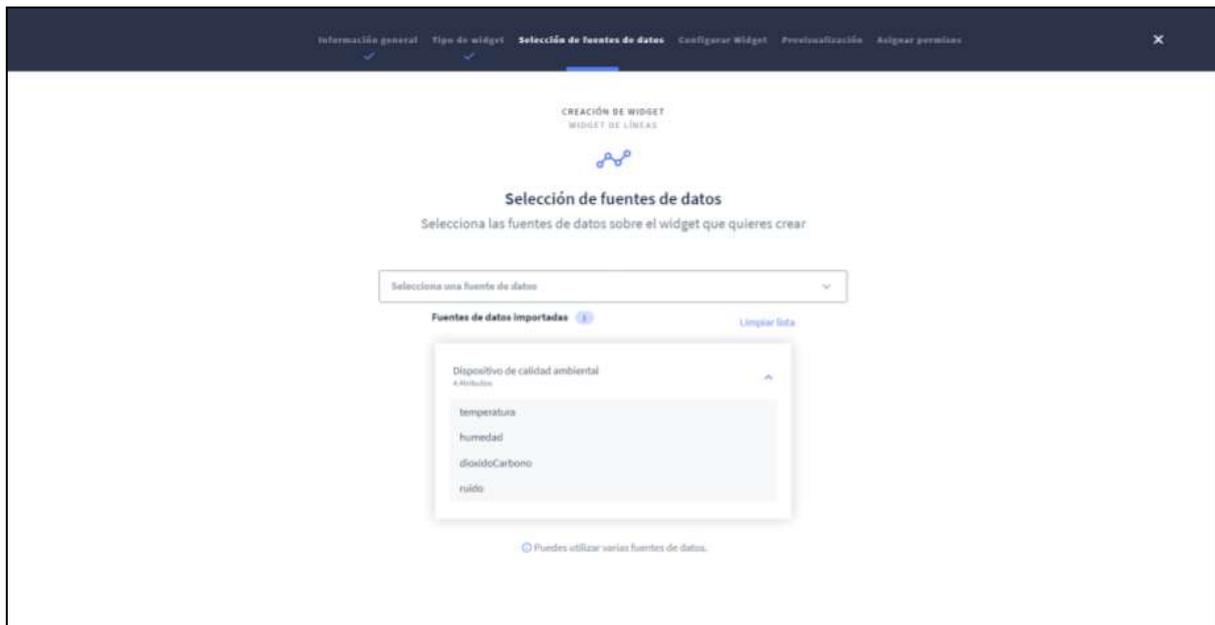
Located in step 2 of the creation process, we click on the type of widget "Lines". When pressed, the surrounding region will light up indicating that it is selected, and the upper bar will adapt to the steps necessary to configure this type of widget.



By clicking on “Next” we advance to step 3, where we must choose one or more data sources. The form of the current window consists of a drop-down menu in which we can perform a search of our data sources by filtering by type and entering its name.



Once we choose the fonts, the system will show us them along with the properties they contain.



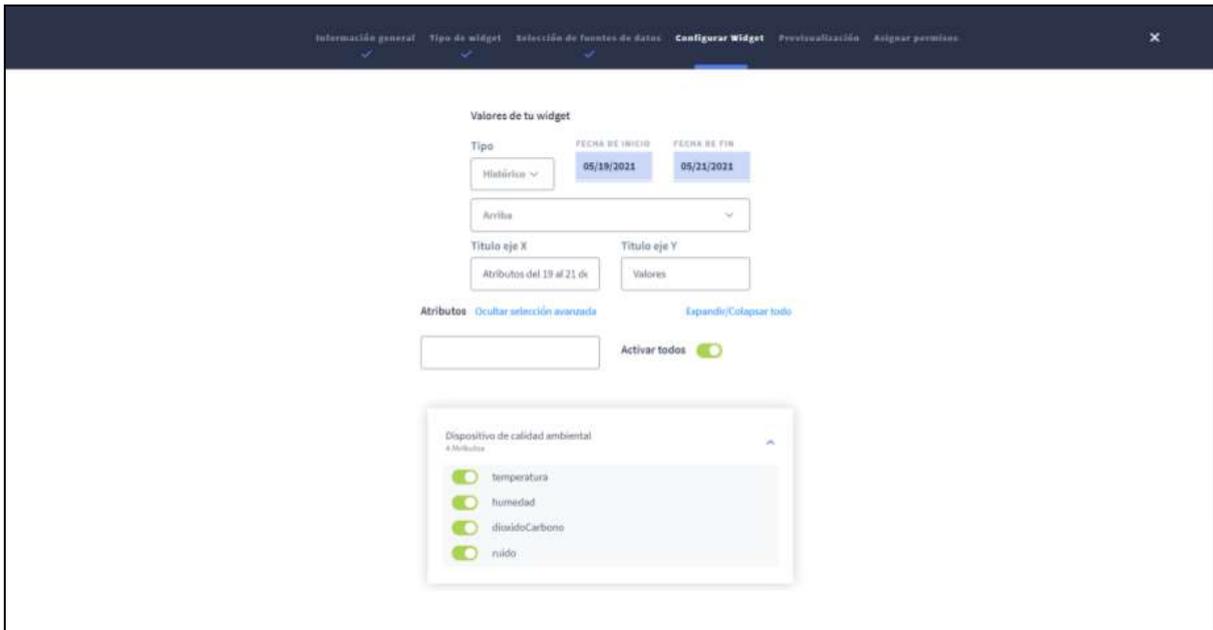
When we make sure that the data is correct, we can click on “Next” to advance to the next step.

In this section we must establish the configuration of our line diagram. We have to fill in several fields in the form that the system shows us.

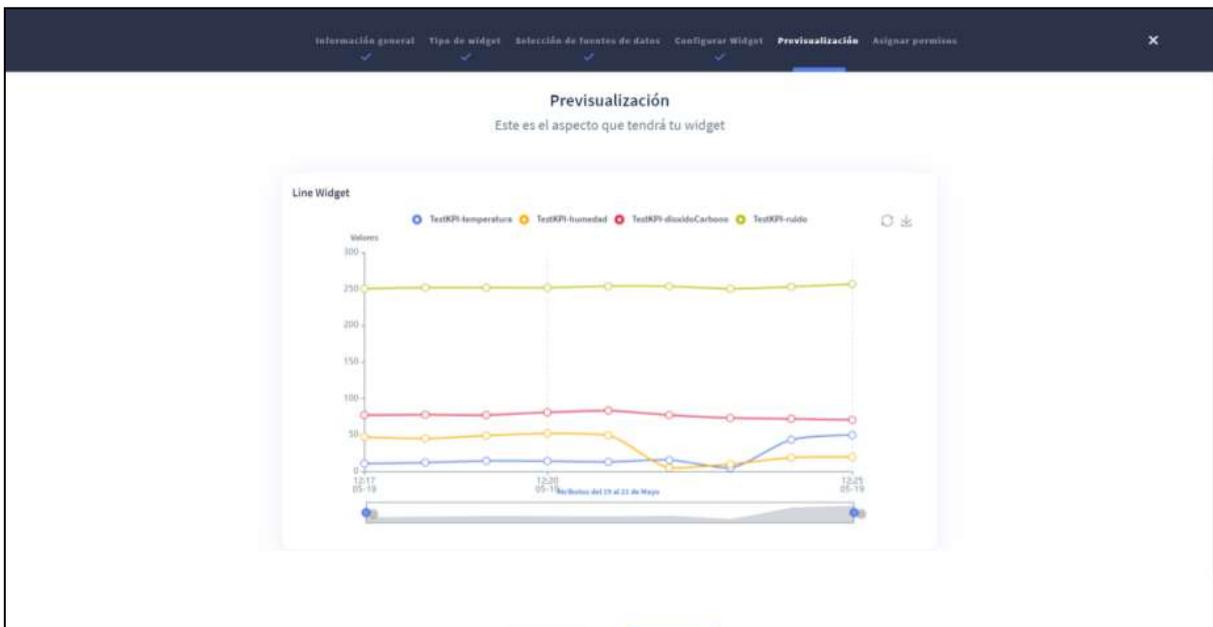
We must specify if we want to show a history of the data, that is, the values saved in a range of dates that we specify. Or, if we want to show the values in real time, where we choose a period of time from a point in the past to the current moment, for example, the values of the last hour or the last fifteen days.

After this, we must specify the position of the legend of the diagram, which can be located at the top, at the bottom or to the right of the diagram. We must also specify the descriptive texts for the X and Y axes.

Finally, we have to tell the system which properties of our data source we are going to use. We have an advanced selection that allows us to filter the attributes using a search box. We also have a button with which to mark or unmark all the attributes.

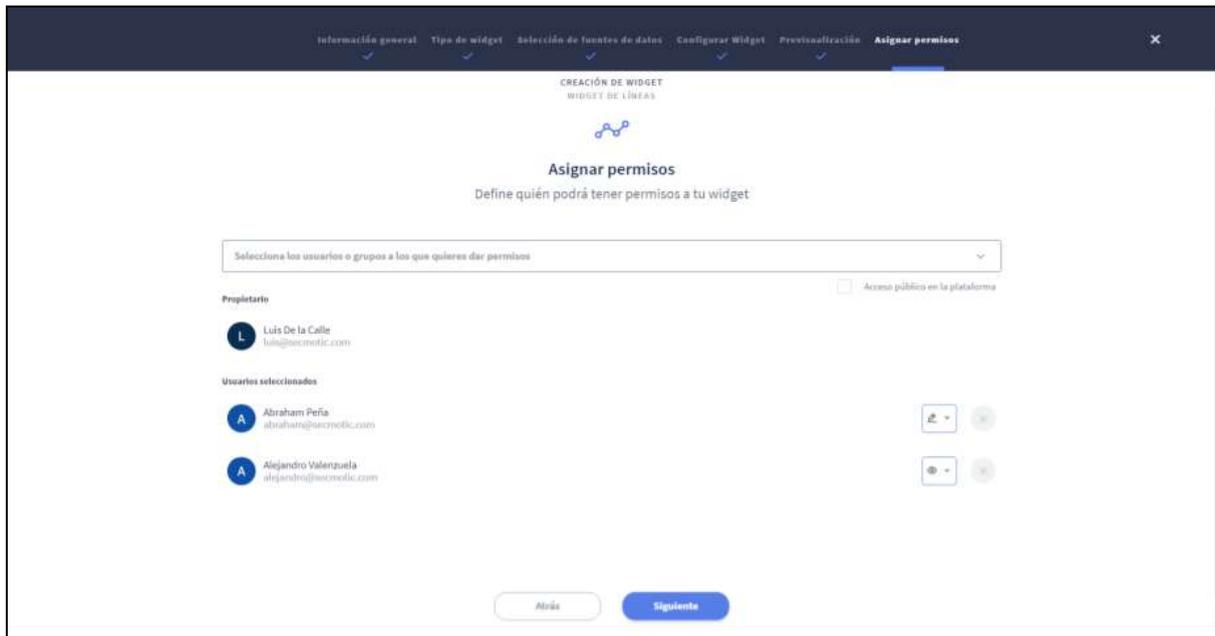


Once we have the widget configuration, we click on “Next” and the system will show us a window with its preview.



Click on “Next” to advance to the last step, the permissions configuration. In this step it is possible to indicate which users or groups of users will have permissions to interact with the diagram.

Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.



After clicking "Next" the system will display a message informing us that the Widget has been successfully added.

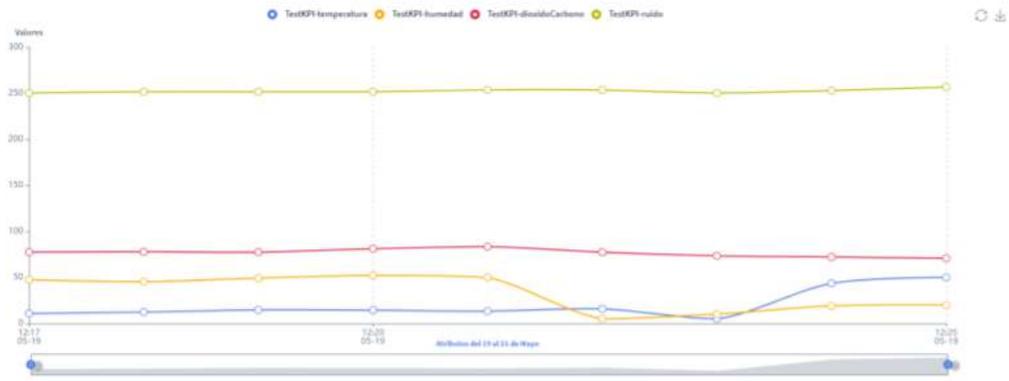


Now when we enter our dashboard we will have the new widget that we just added. This diagram is interactive, if we click on the legends we can hide the lines and show them as we please. Also, passing the cursor over a point will show us the value of that property at that instant in time.

We have two buttons at the top right of the diagram, the button on the far right allows you to download the graph as an image, the other button allows you to reload the diagram.

At the bottom of the diagram there is a bar with which we can limit the time shown. To do this, we must click on one of the extremes and move the mouse to the right or to the left while keeping it pressed. We will be able to observe how the diagram changes at the same time that the interval is resized.

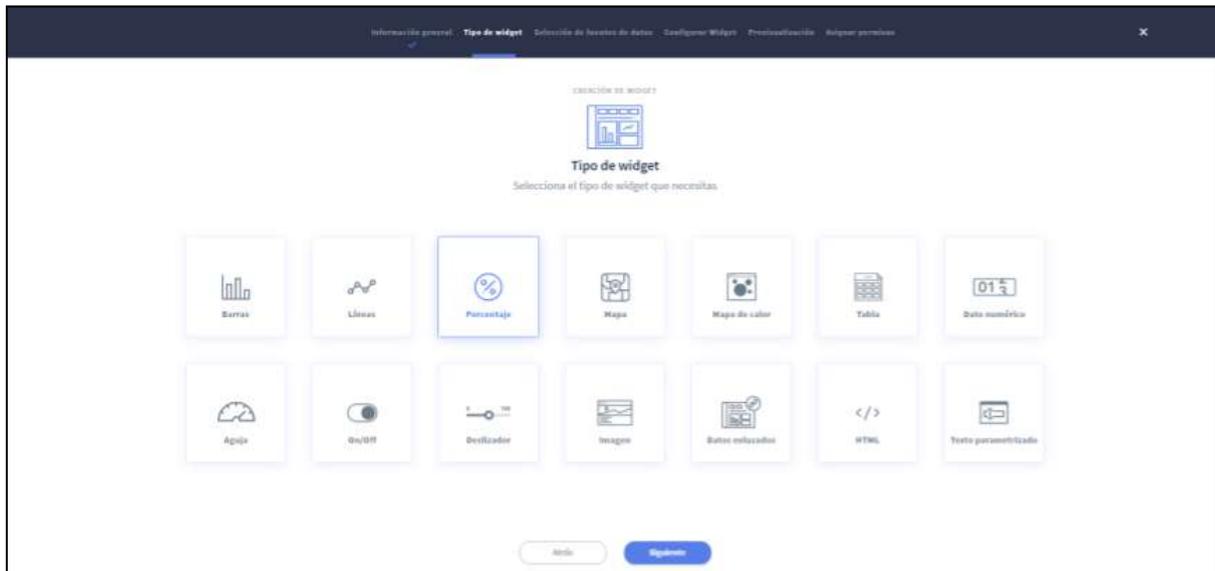
Line Widget



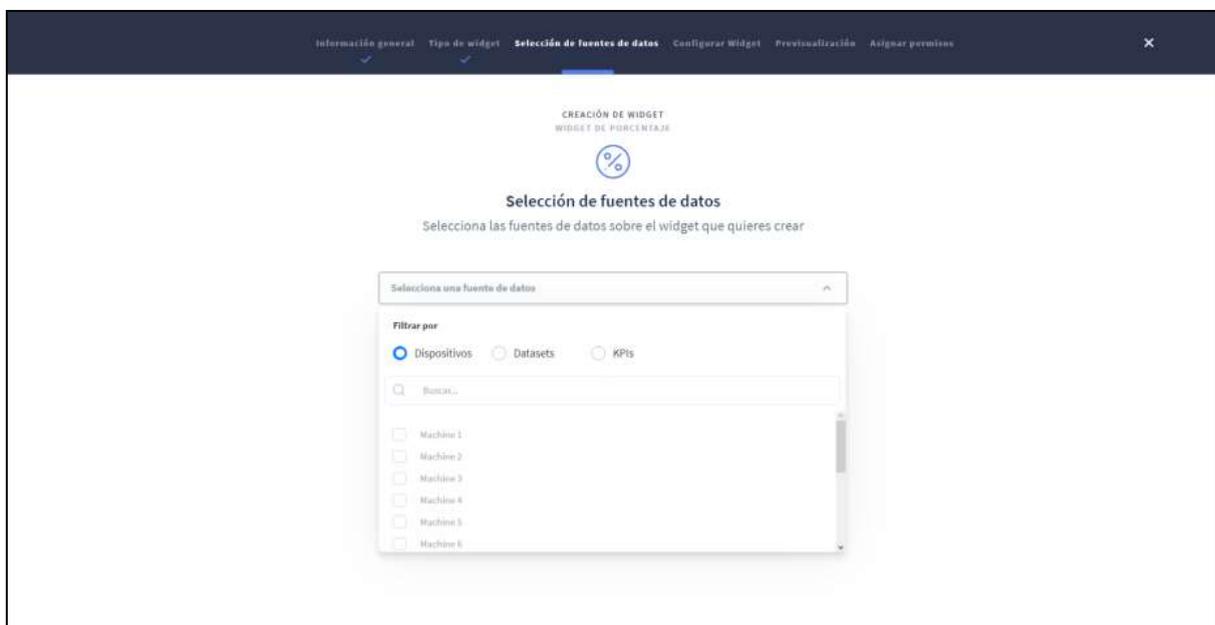
+ Añadir series

Widget Percentage

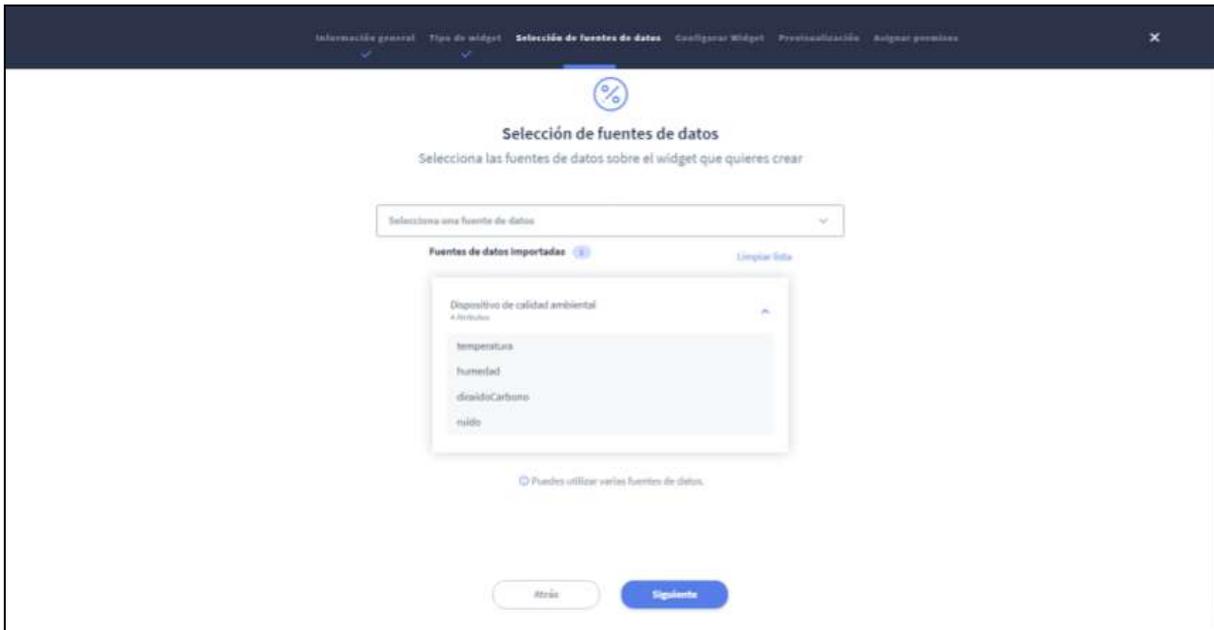
Located in step 2 of the creation process, we click on the type of widget “Percentage”. When pressed, the surrounding region will light up indicating that it is selected, and the upper bar will adapt to the steps necessary to configure this type of widget.



By clicking on “Next” we advance to step 3, where we must choose a data source. The form of the current window consists of a drop-down menu in which we can perform a search of our data sources by filtering by type and entering its name.

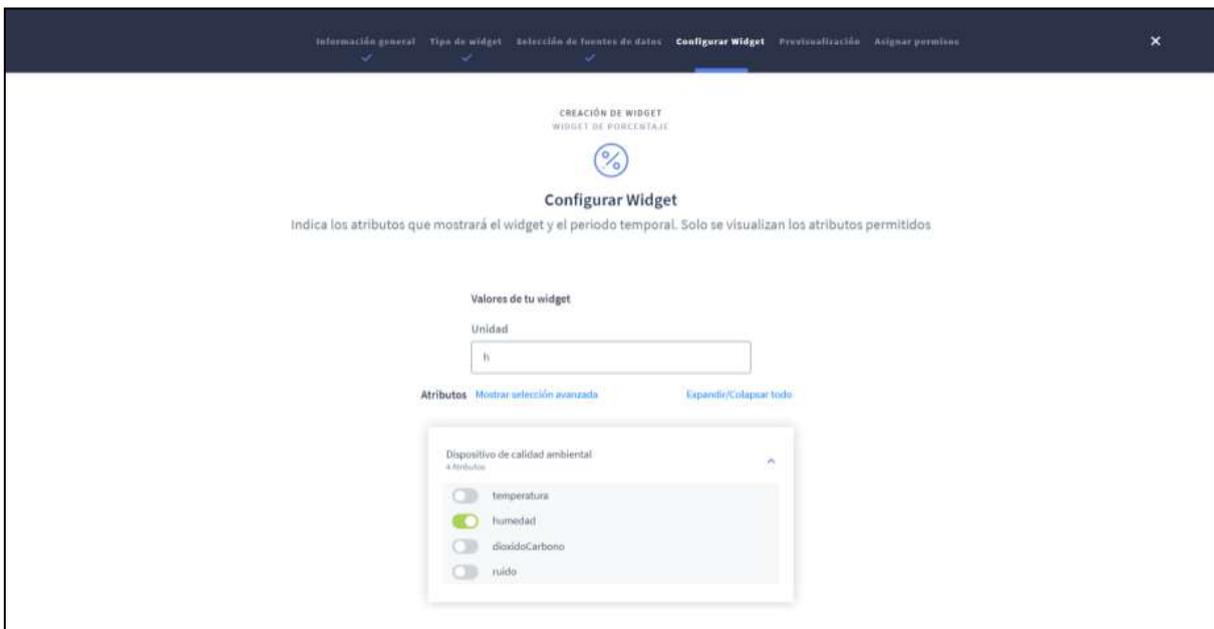


Once we choose the font, the system will show us them along with the properties they contain.

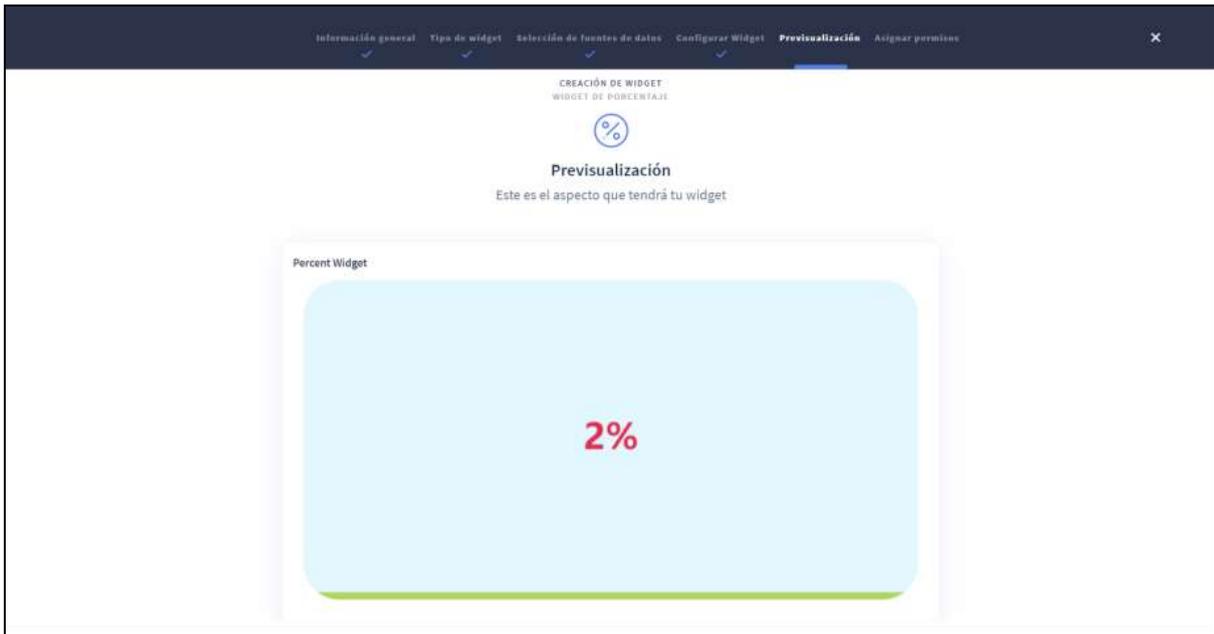


When we make sure that the data is correct, we can click on “Next” to advance to the next step.

In this section we must establish the configuration of our percentage widget. In the form that is shown to us, we must specify the property whose percentage we want to obtain and the unit of measure that represents it.

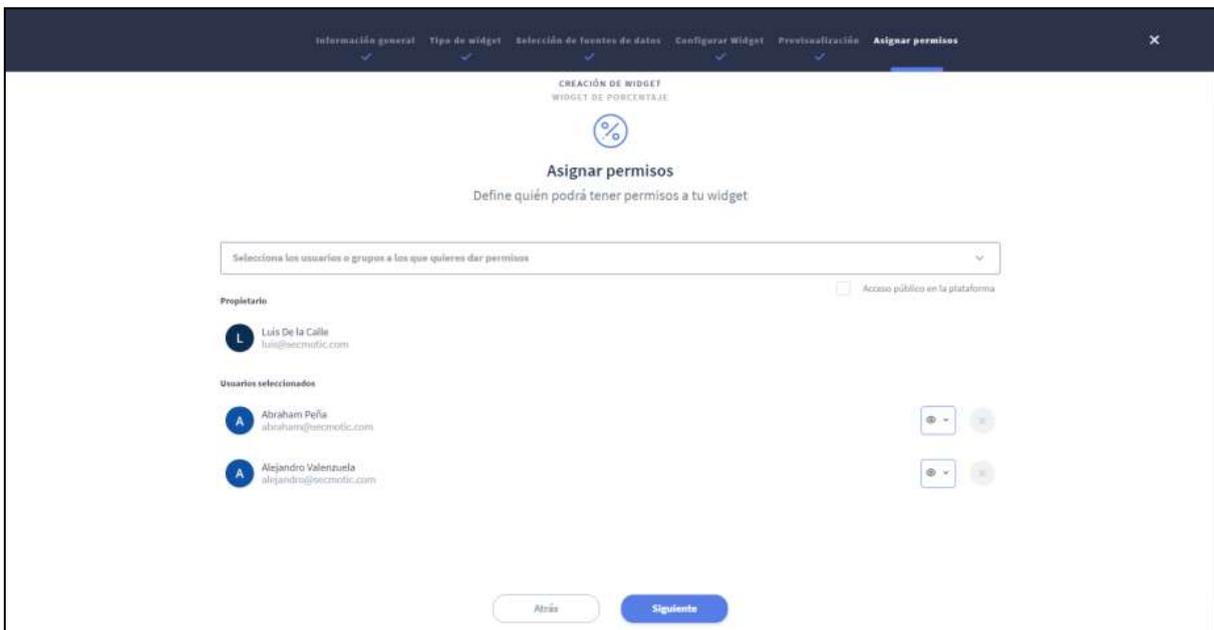


Once we have the widget configuration, we click on “Next” and the system will show us a window with the preview of the result.



If the diagram is to our liking, we click on “Next” to advance to the last step, the permissions configuration. In this step it is possible to indicate which users or groups of users will have permissions to interact with the diagram.

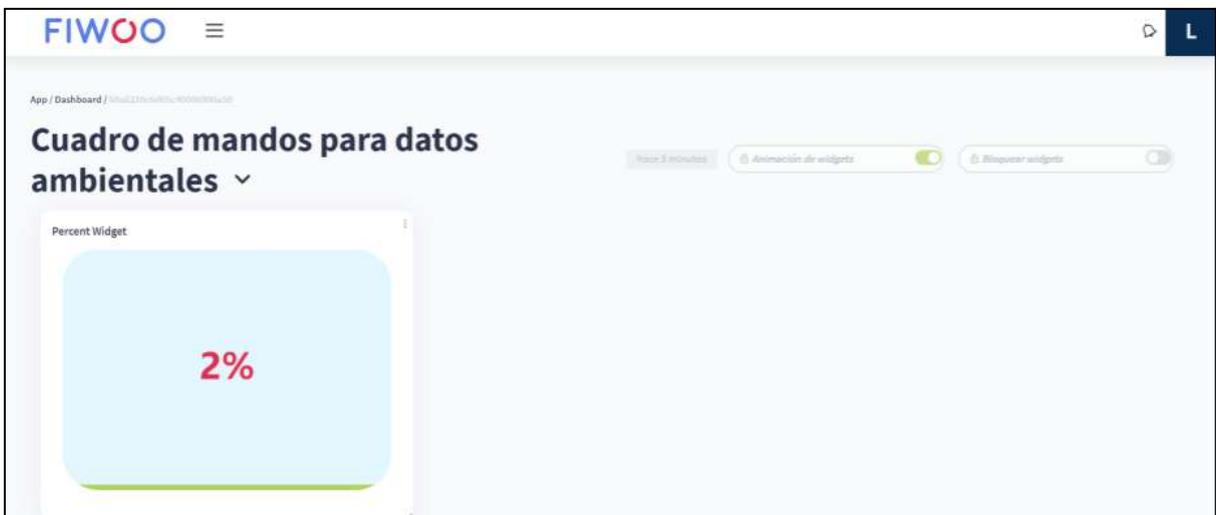
Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.



After clicking "Next" the system will display a message informing us that the Widget has been successfully added.

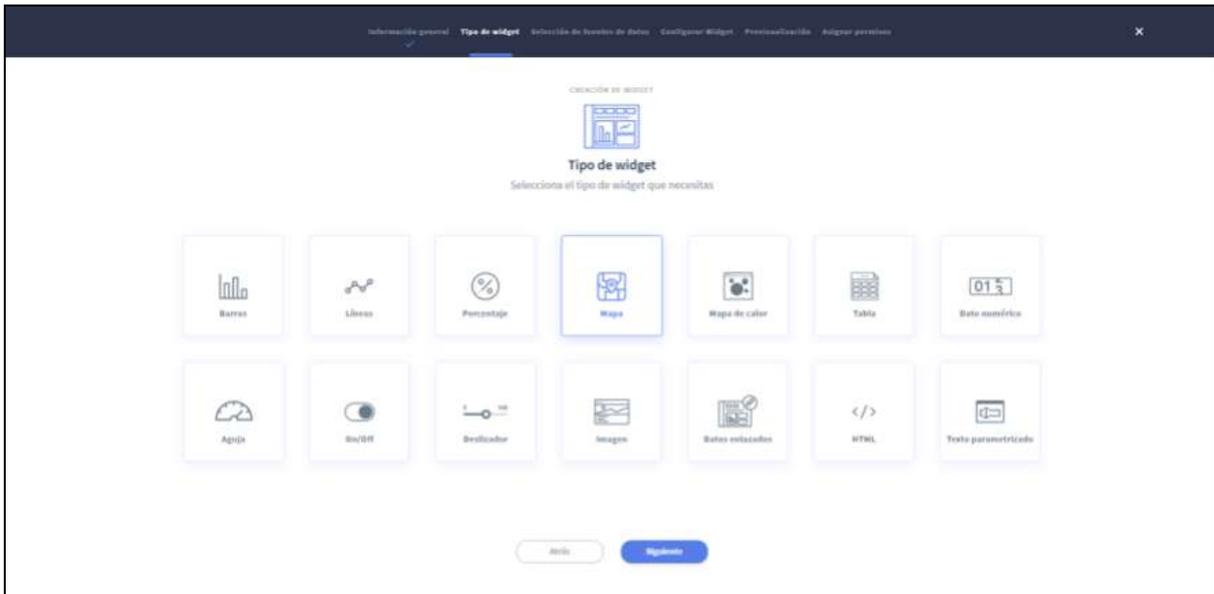


Now when we enter our dashboard we will have the new widget that we just added.

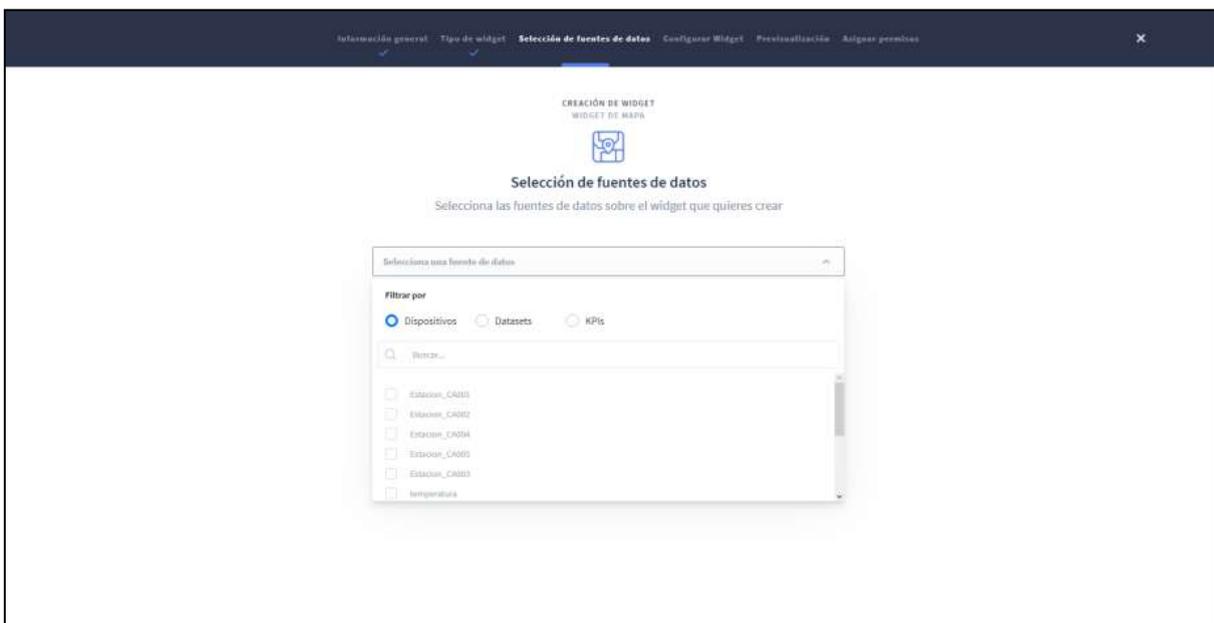


Widget Map

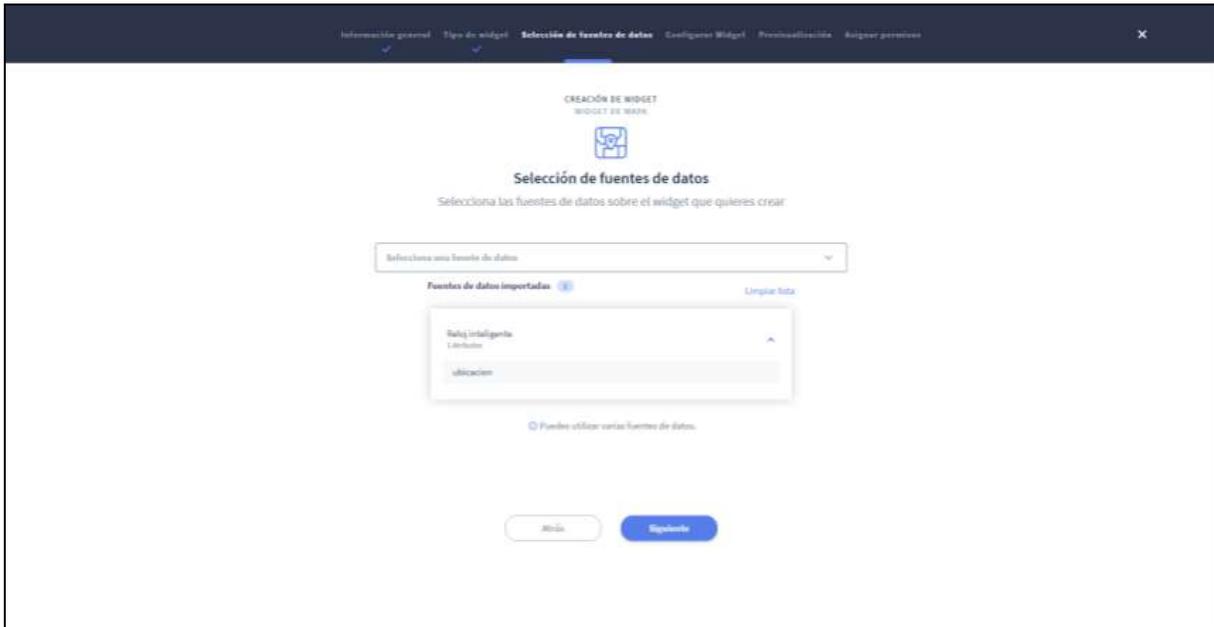
Located in step 2 of the creation process, click on the type of "Map" widget. When pressed, the surrounding region will light up indicating that it is selected, and the upper bar will adapt to the steps necessary to configure this type of widget.



By clicking on “Next” we advance to step 3, where we must choose one or more data sources. The form of the current window consists of a drop-down menu in which we can perform a search of our data sources by filtering by type and entering its name.



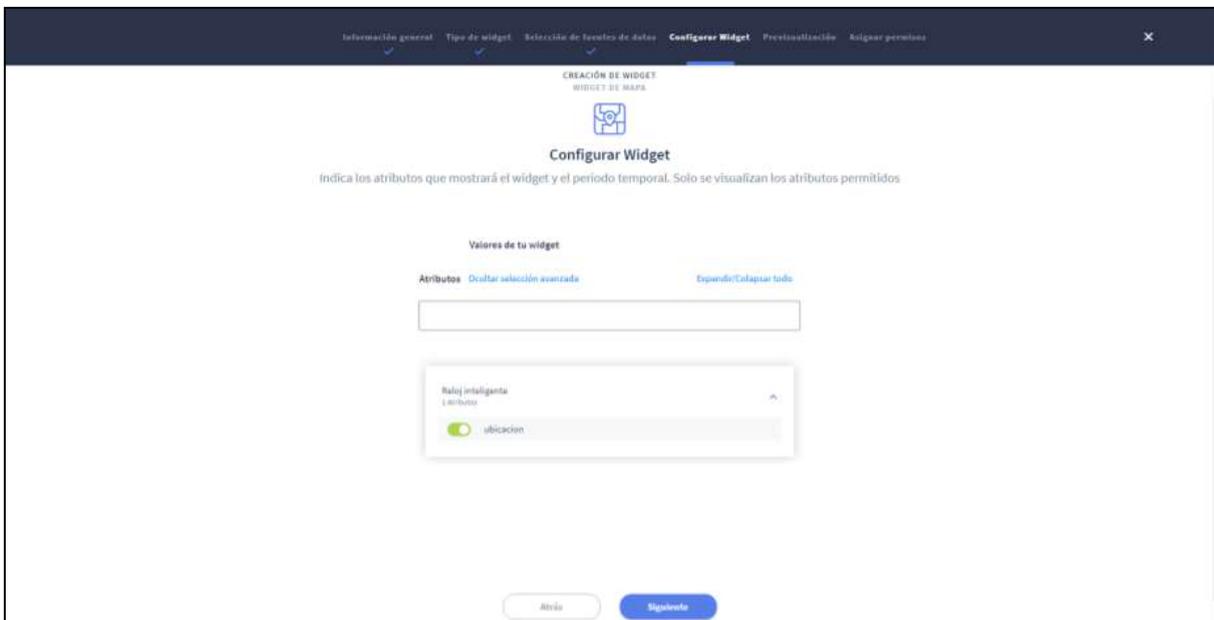
Once we choose the fonts, the system will show us them along with the properties they contain.



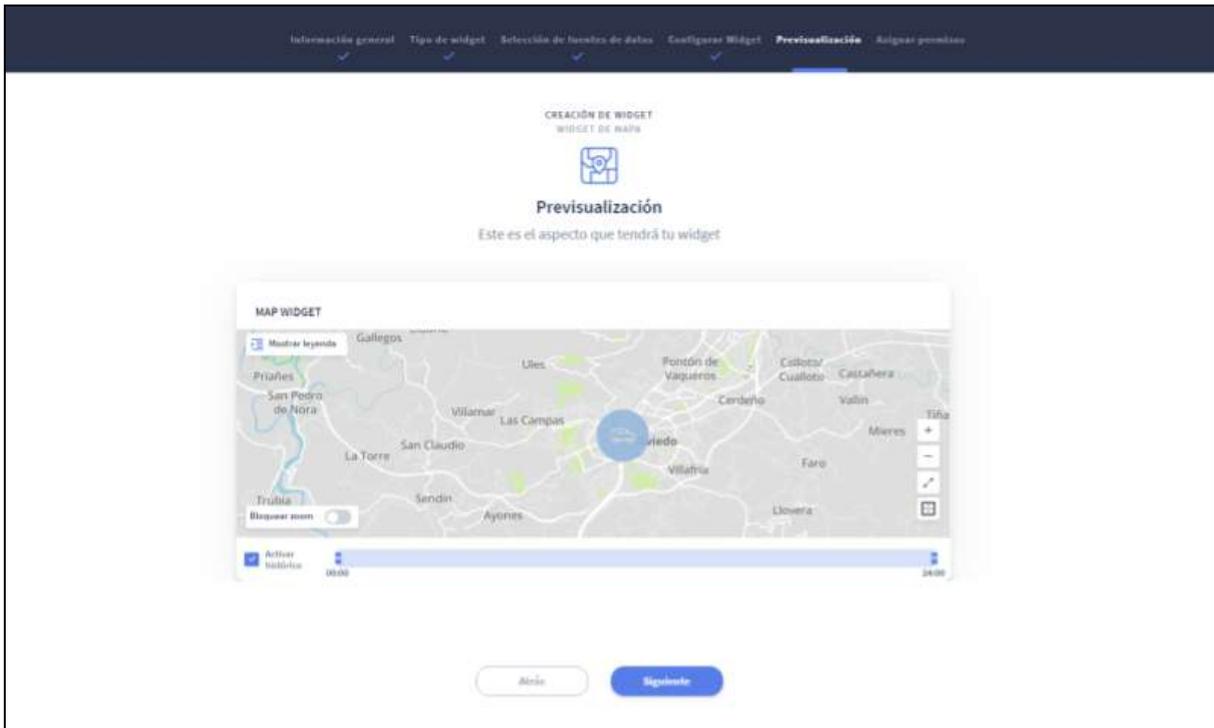
When we make sure that the data is correct, we can click on “Next” to advance to the next step.

In this section we must establish the configuration of our map. We have to fill in several fields in the form that the system shows us.

We must tell the system which properties of our data sources we are going to use, we have an advanced selection that allows us to filter the attributes using a search box. We also have a button with which to mark or unmark all the attributes.

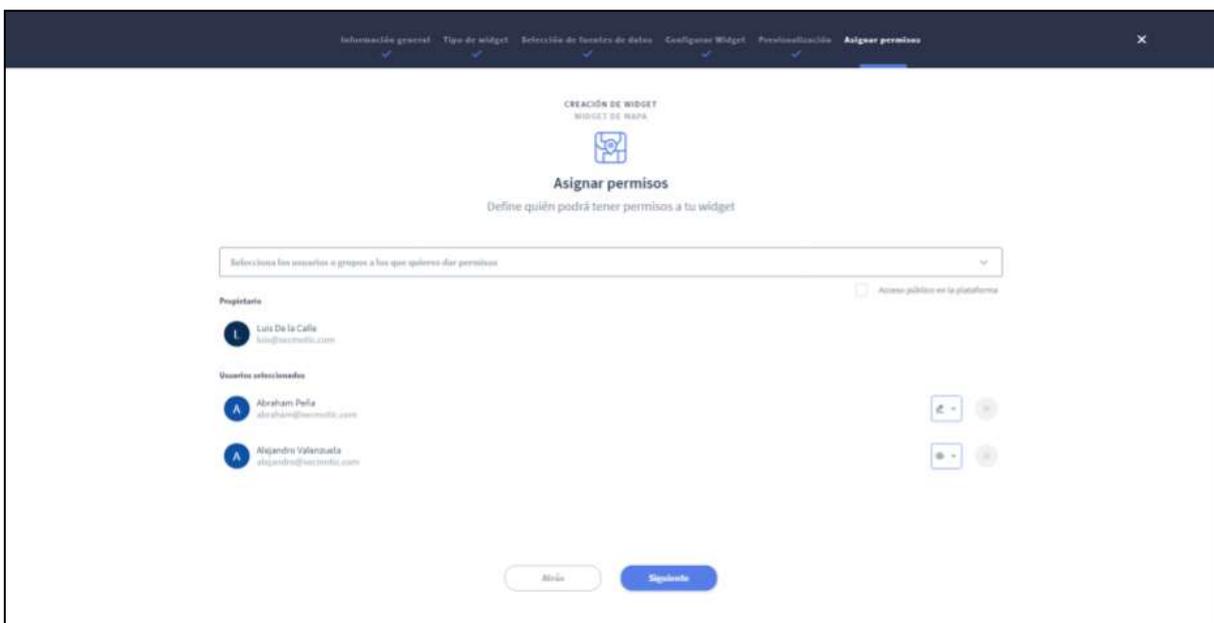


Once we have the widget configuration, we click on “Next” and the system will show us a window with the map preview.



If the map is to our liking, we click on “Next” to advance to the last step, the permissions configuration. In this step it is possible to indicate which users or groups of users will have permissions to interact with the diagram.

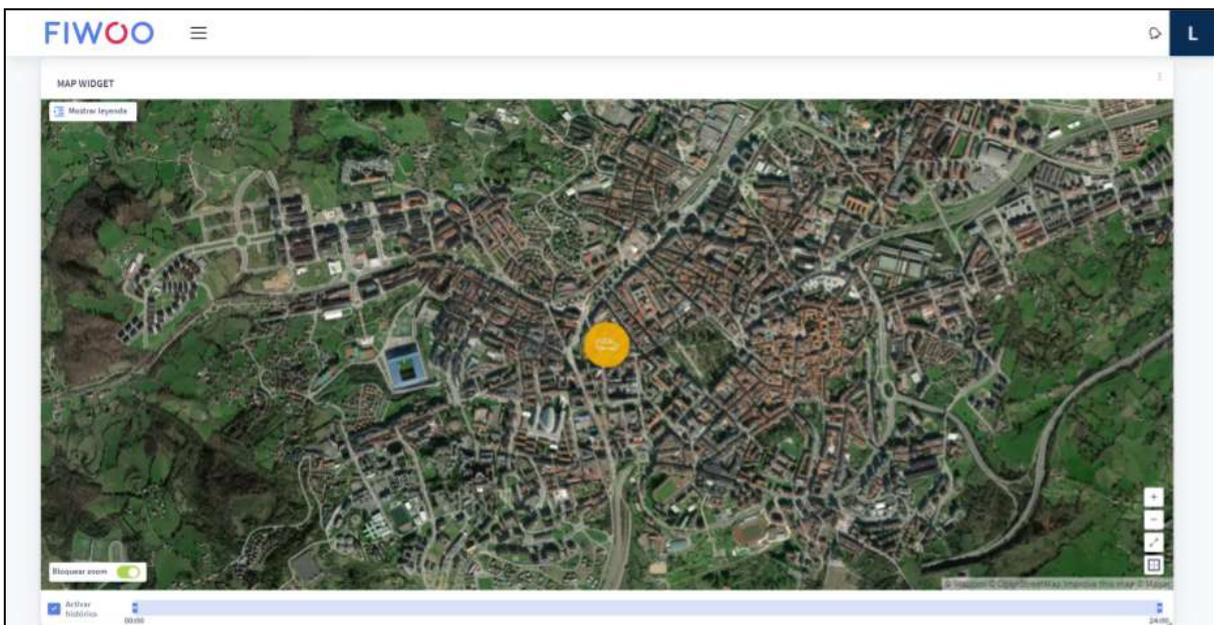
Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.



After clicking "Next" the system will display a message informing us that the Widget has been successfully added.



Now when we enter our dashboard we will have the new widget that we just added.

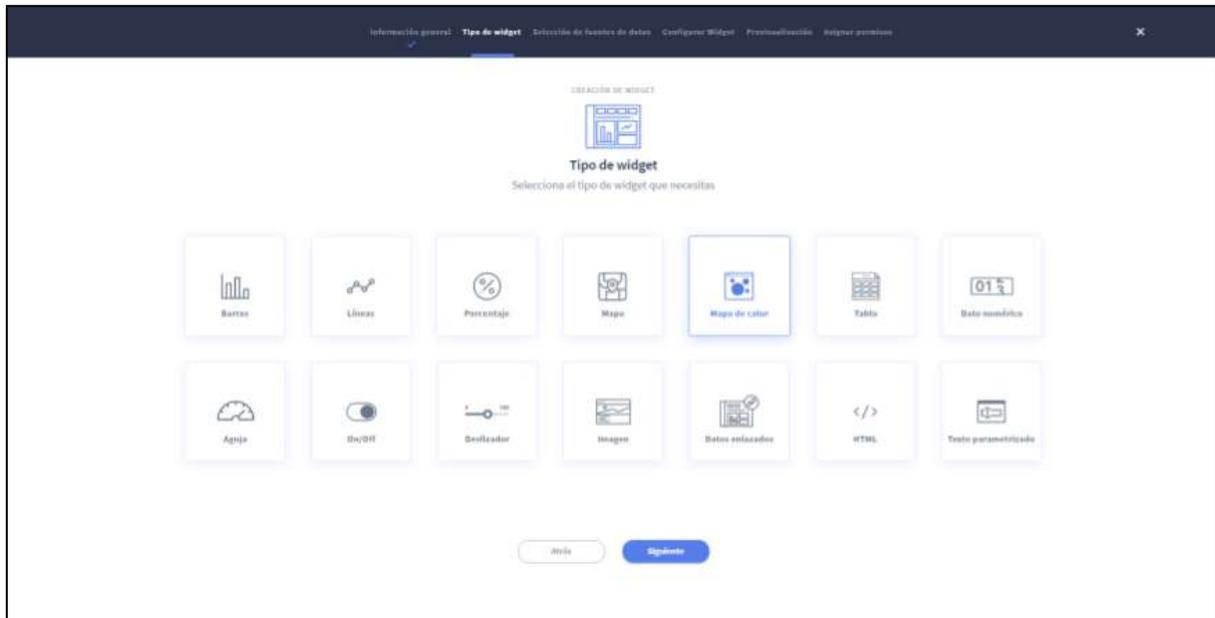


Like most, this widget is interactive, and we can click on the buttons located in the lower right corner of the map to zoom or put the full screen. In the upper left corner, we have access to a legend that allows us to view the different categories of devices and their configurations, as well as filter which categories we want to show on the map.

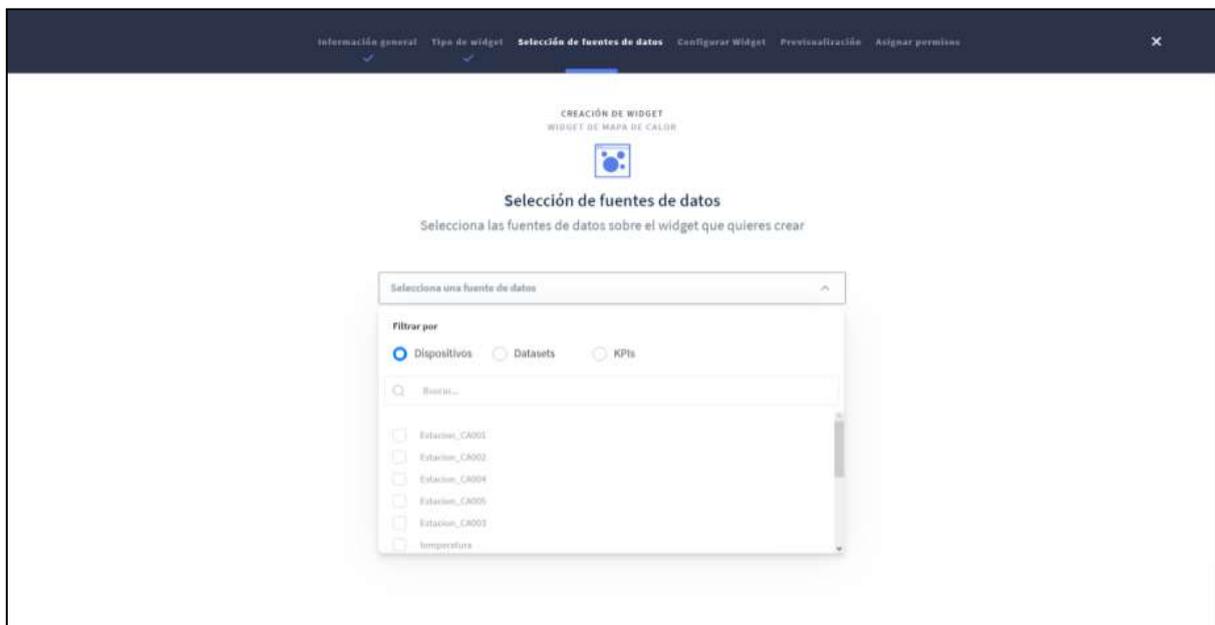
Through the bar located below the map we can indicate what time range within the last 24 hours should be shown on the map if historical display is selected.

Heat Map Widget

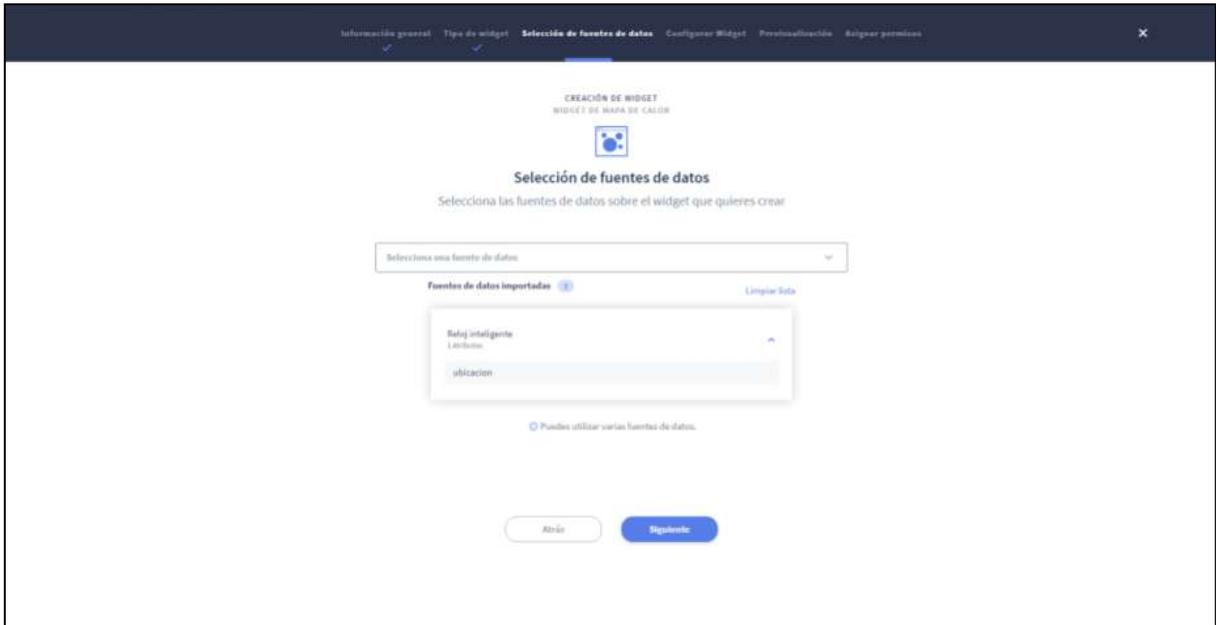
Located in step 2 of the creation process, click on the “Heat Map” widget type. When pressed, the surrounding region will light up indicating that it is selected, and the upper bar will adapt to the steps necessary to configure this type of widget.



By clicking on “Next” we advance to step 3, where we must choose one or more data sources. The form of the current window consists of a drop-down menu in which we can perform a search of our data sources by filtering by type and entering its name.



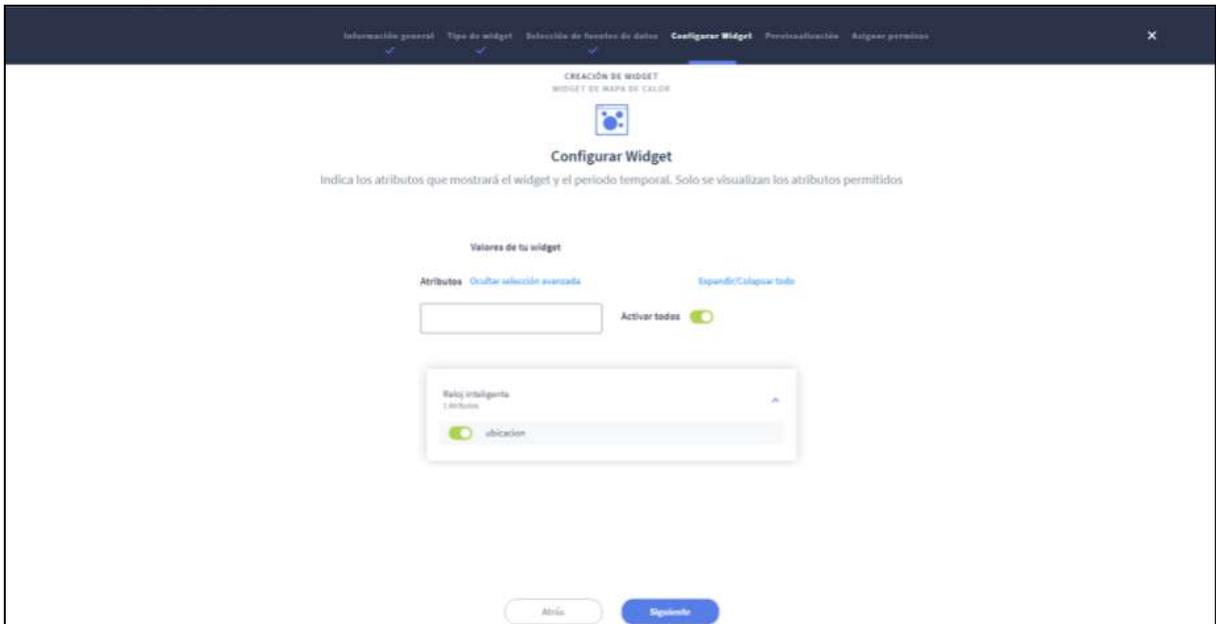
Once we choose the fonts, the system will show us them along with the properties they contain.



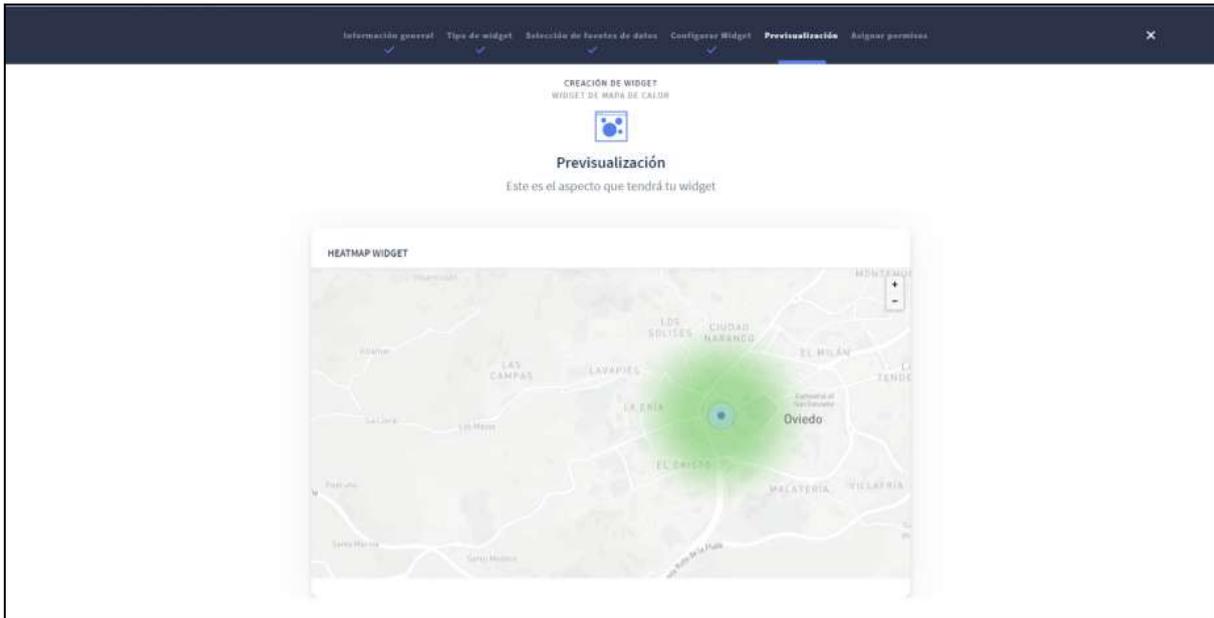
When we make sure that the data is correct, we can click on “Next” to advance to the next step.

In this section we must establish the configuration of our map. We have to fill in several fields in the form that the system shows us.

We must tell the system which properties of our data sources we are going to use, we have an advanced selection that allows us to filter the attributes using a search box. We also have a button with which to mark or unmark all the attributes.

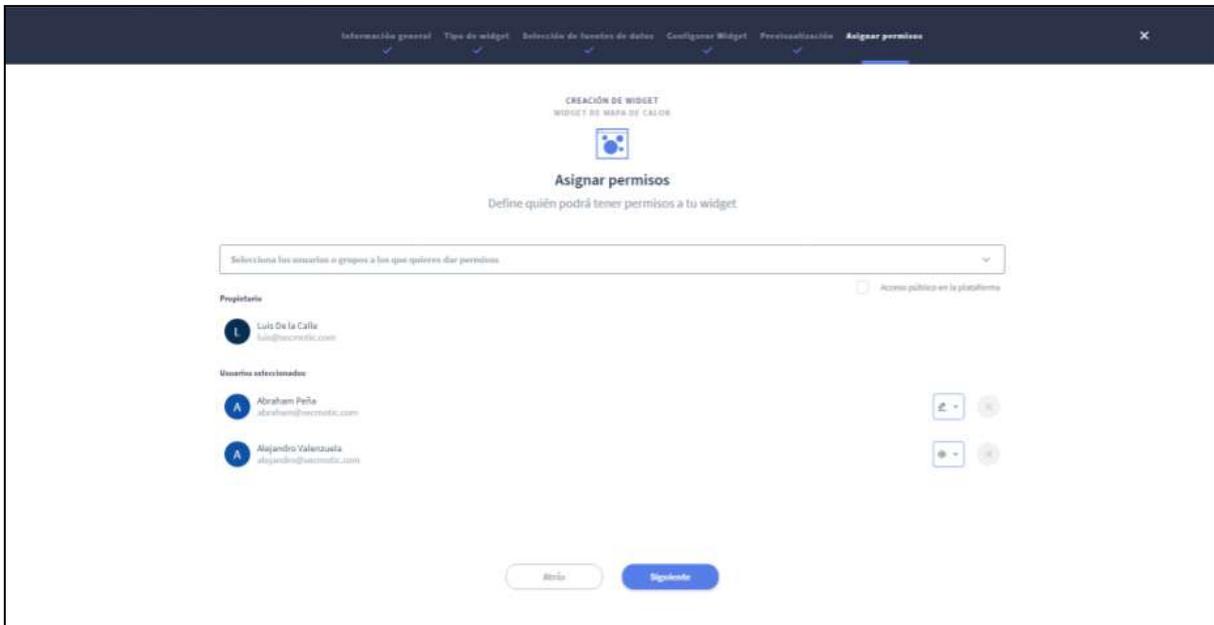


Once we have the widget configuration, we click on “Next” and the system will show us a window with the map preview.



If the map is to our liking, we click on “Next” to advance to the last step, the permissions configuration. In this step it is possible to indicate which users or groups of users will have permissions to interact with the map.

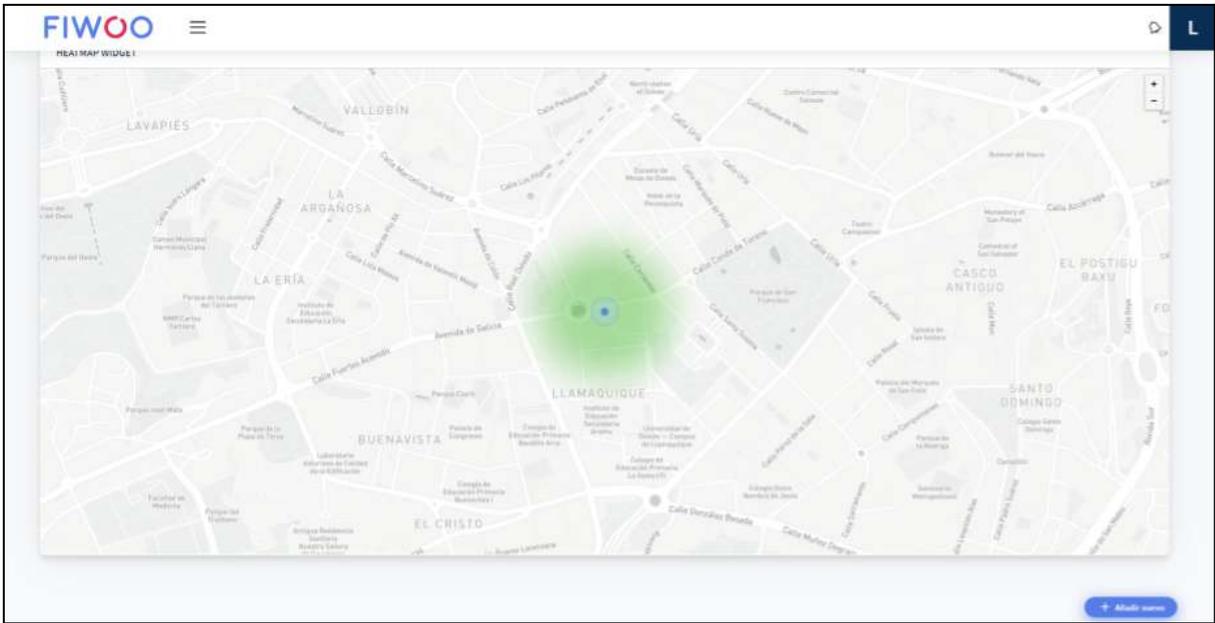
Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.



After clicking "Next" the system will display a message informing us that the Widget has been successfully added.



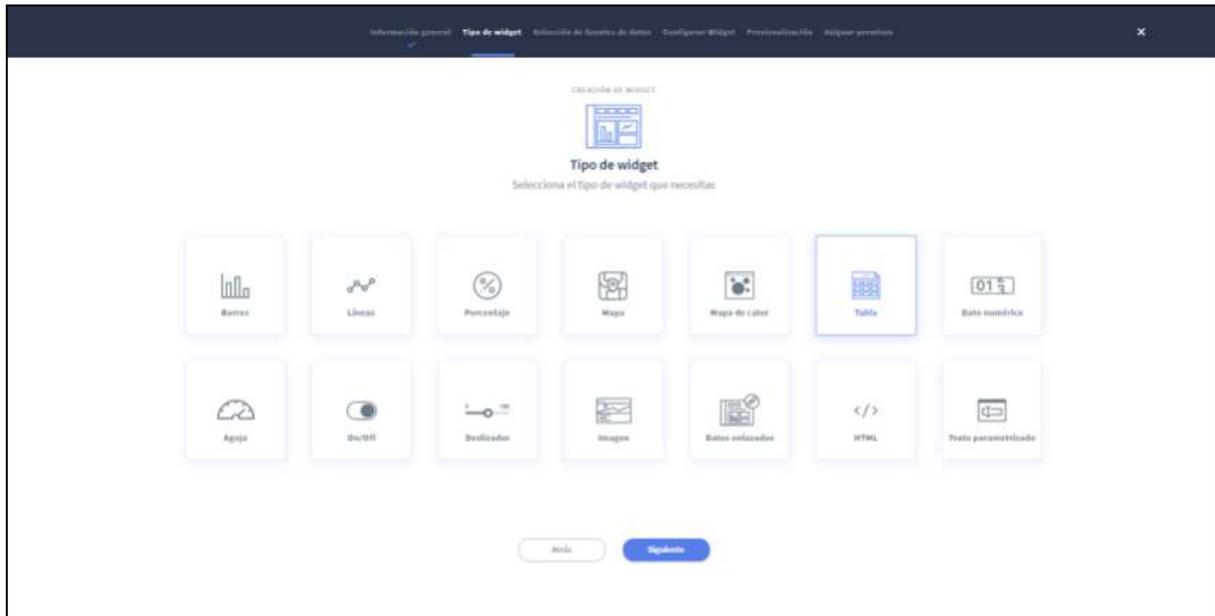
Now when we enter our dashboard we will have the new widget that we just added.



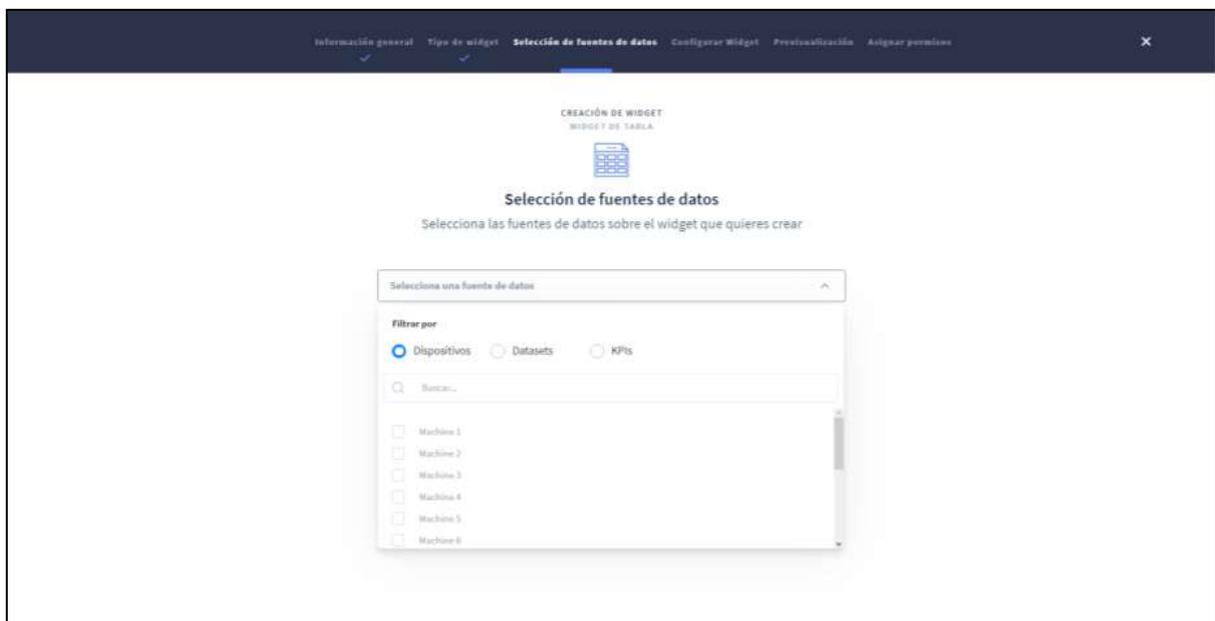
Once added, we can click on the buttons located in the upper right corner of the map to zoom.

Table Widget

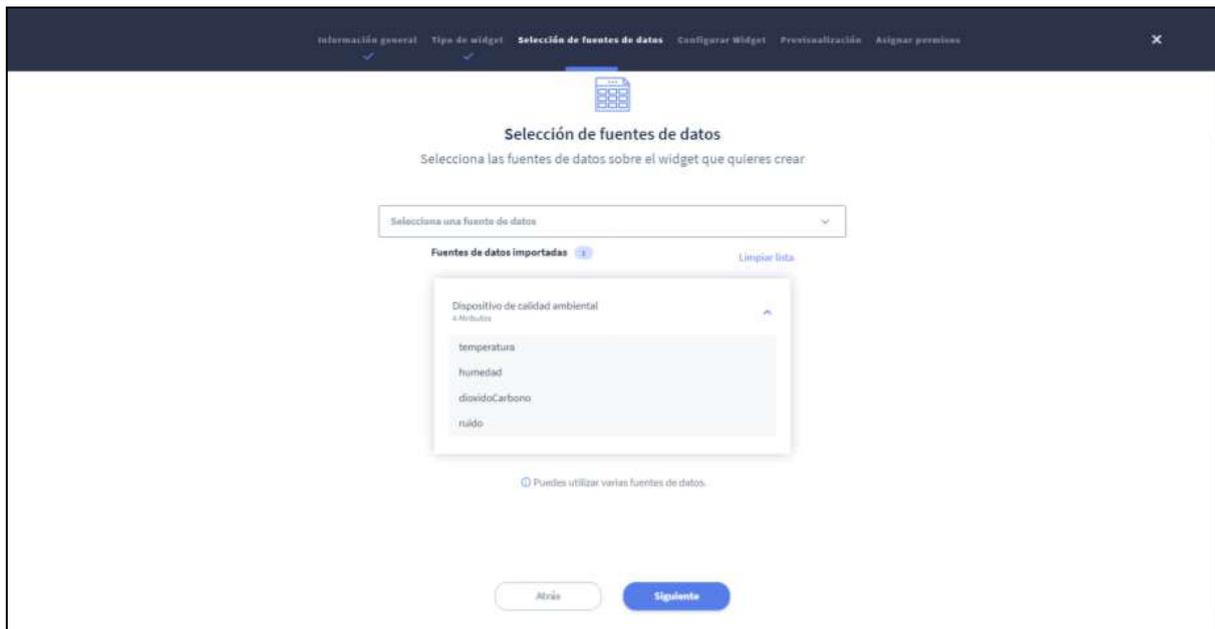
Located in step 2 of the creation process, click on the type of “Table” widget. When pressed, the surrounding region will light up indicating that it is selected, and the upper bar will adapt to the steps necessary to configure this type of widget.



By clicking on “Next” we advance to step 3, where we must choose one or more data sources. The form of the current window consists of a drop-down menu in which we can perform a search of our data sources by filtering by type and entering its name.



Once we choose the fonts, the system will show us them along with the properties they contain.



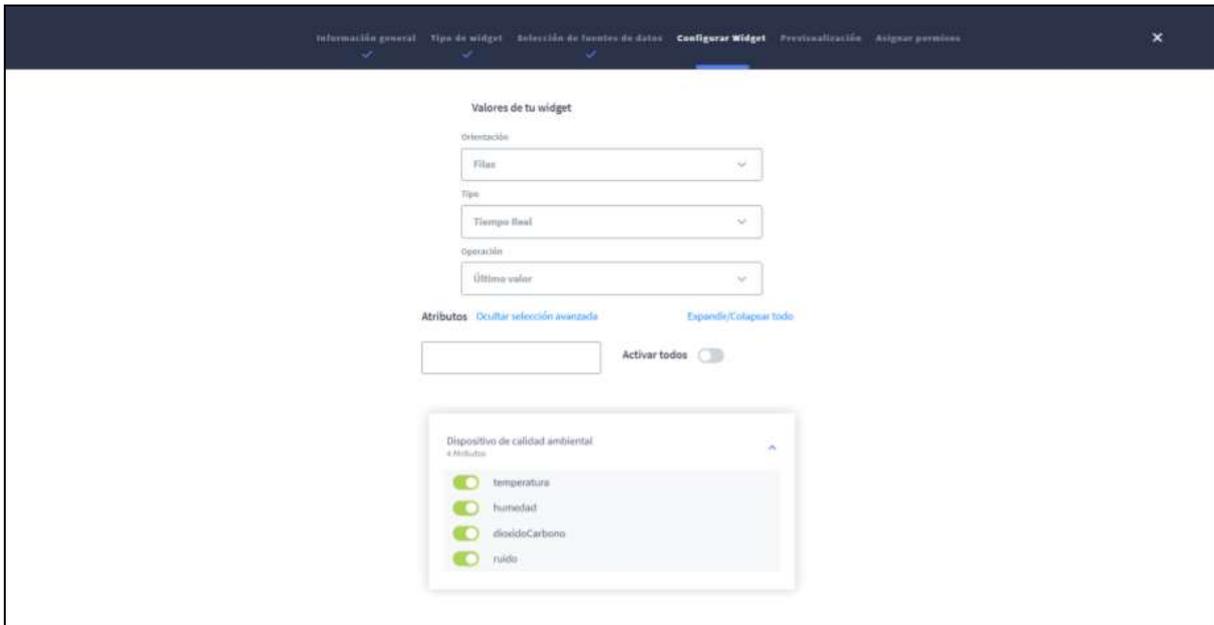
When we make sure that the data is correct, we can click on “Next” to advance to the next step.

In this section we must establish the configuration of our table. We must first specify if we want to show the values in real time, that is, we will show the most current values that we receive from the data source. Or, if we want to show the values in a history, in this option we choose a period of time from a point in the past to the current moment, for example, the values of the last hour or the last fifteen days.

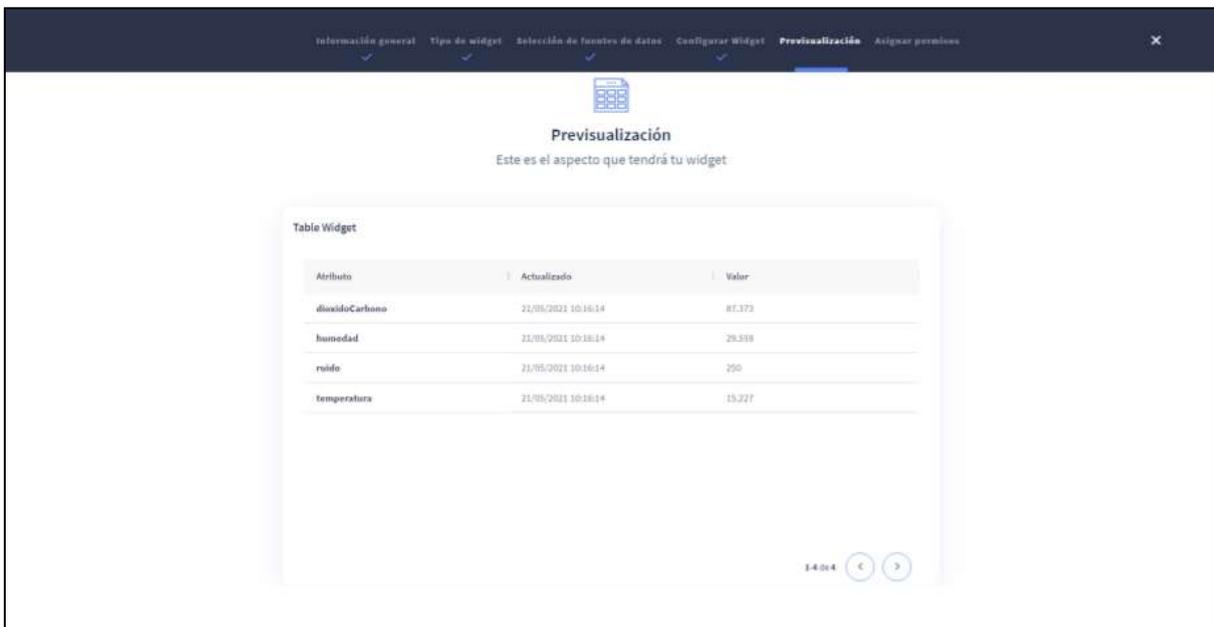
After this, we must specify the orientation of our table, that is, if we want the table header to be on the left as rows or on the top as columns.

The operation defines how we will collect the data from the data source, in the case of having chosen the "Real time" option we can only collect the latest values, on the other hand, through the "Historical" option we can indicate that it obtains the minimum value, the maximum value or the average value of a certain period of time.

Finally we have to tell the system which properties of our data source we are going to use, we have an advanced selection that allows us to filter the attributes using a search box. We also have a button with which to mark or unmark all the attributes.

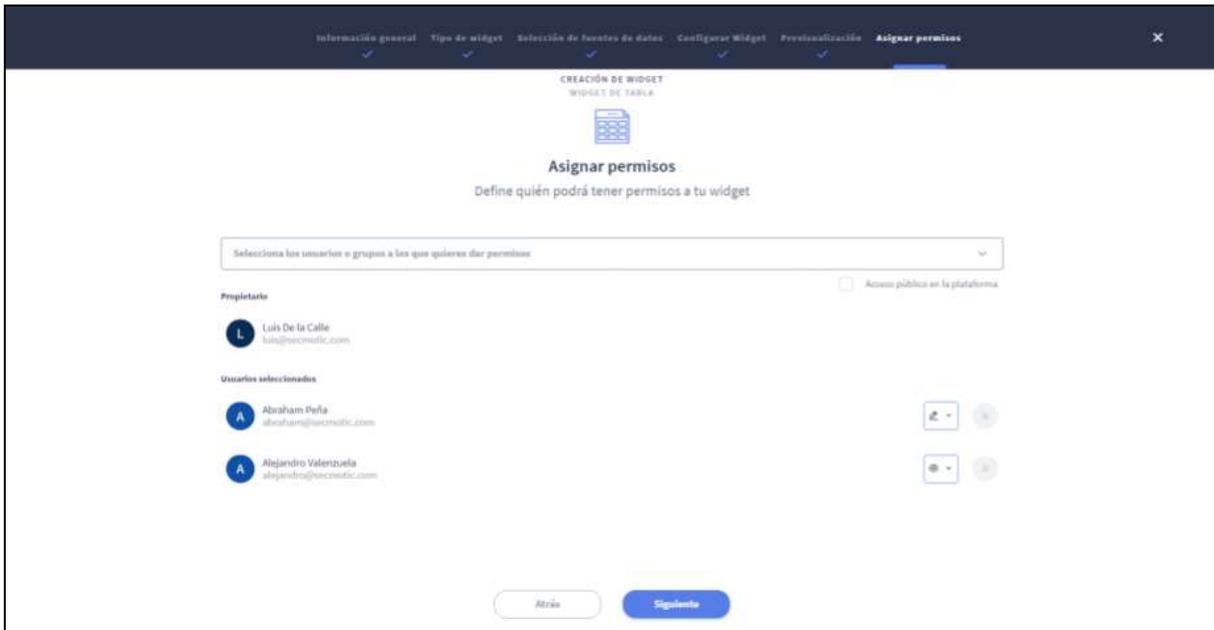


Once we have the configuration of the diagram, we click on “Next” and the system will show us a window with the preview of the table.



If the table is to our liking, we click on “Next” to advance to the last step, the permissions configuration. In this step it is possible to indicate which users or groups of users will have permissions to interact with the diagram.

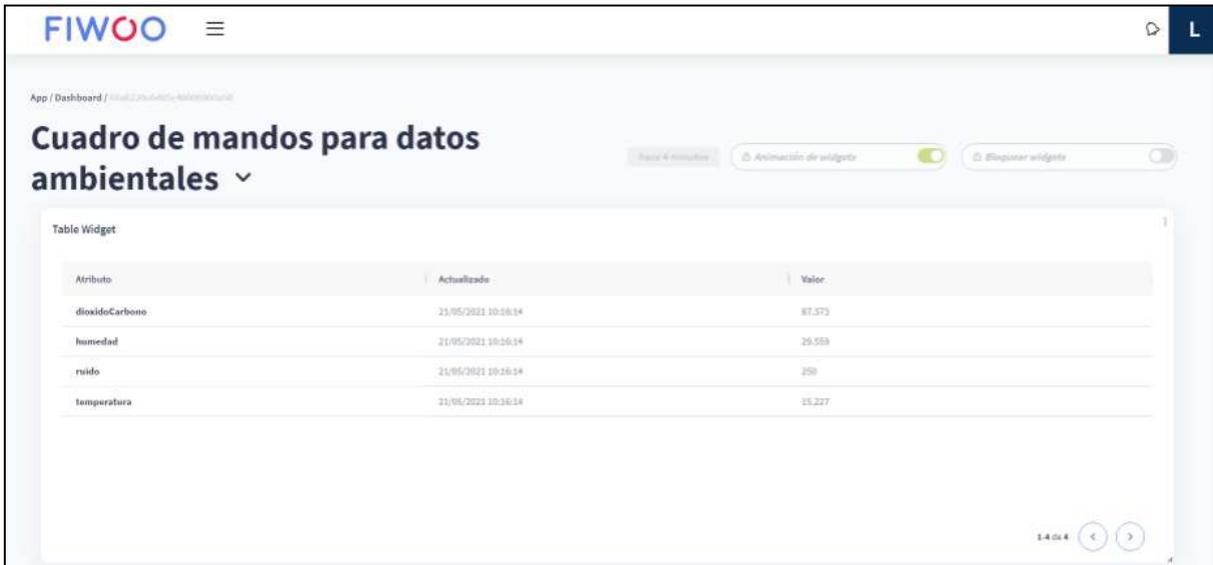
Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.



After clicking "Next" the system will display a message informing us that the Widget has been successfully added.



Now when we enter our dashboard we will have the new widget that we just added.

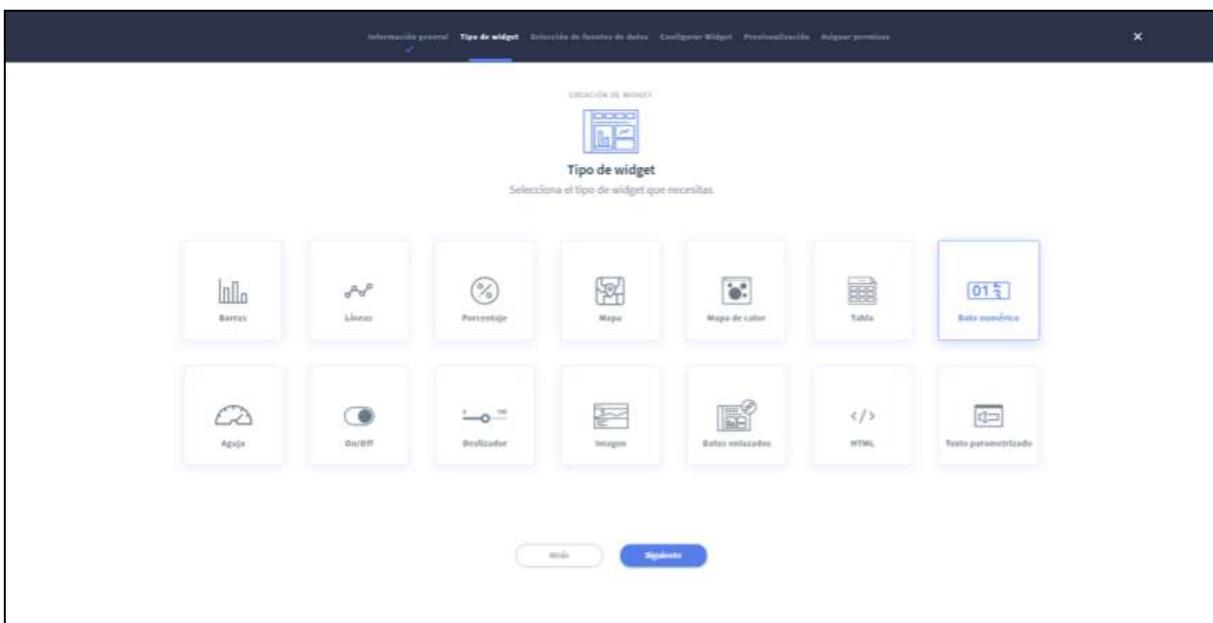


This widget is interactive, if we click on the columns we can sort them ascending or descending according to their value, and use filters in each column to keep specific data. We can also resize the column or change its position.

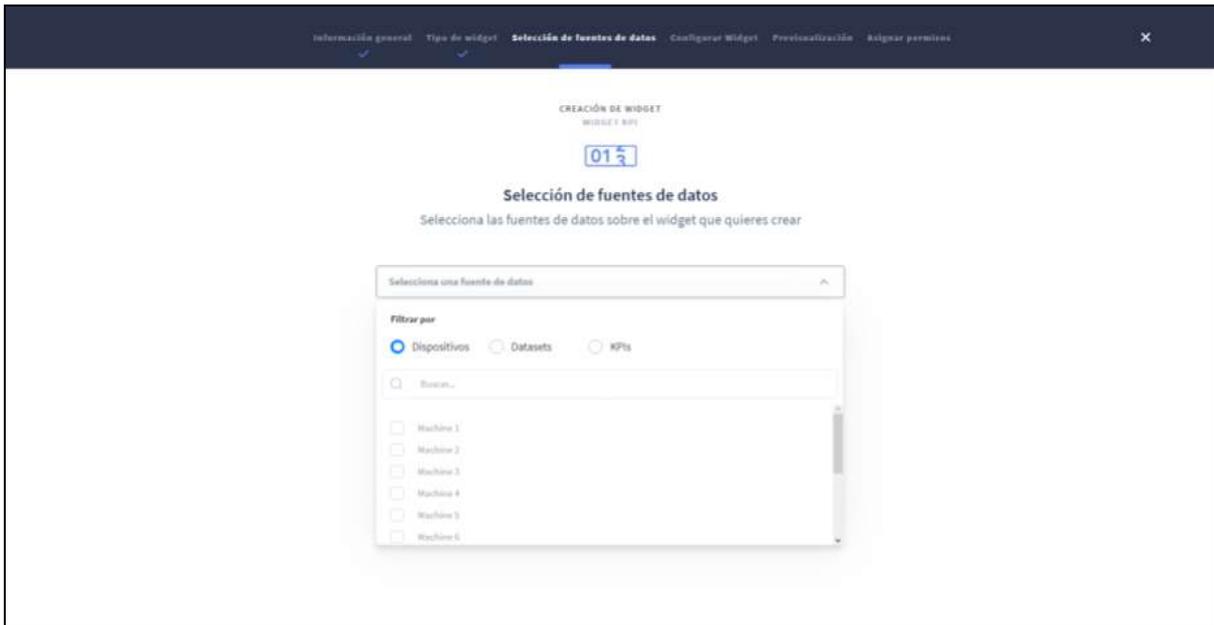
At the bottom of the diagram there are some buttons that allow you to see more rows of the table if it were to have many values.

Numerical Data Widget

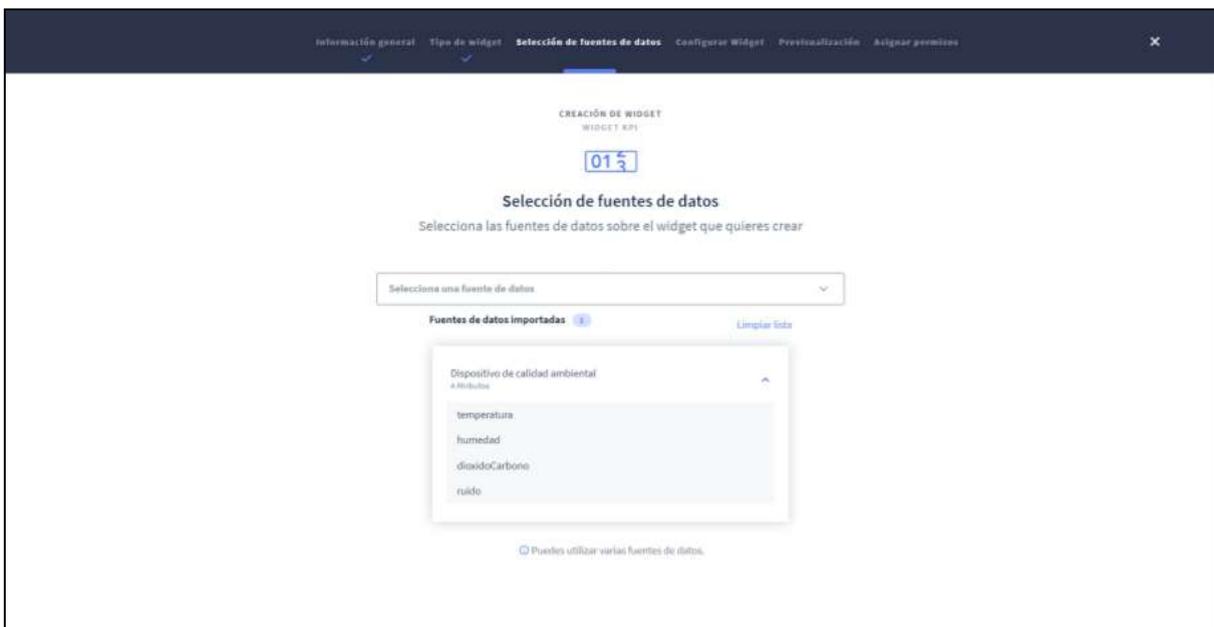
In step 2 of the creation process, click on the type of “Numeric Data” widget. When pressed, the surrounding region will light up indicating that it is selected, and the upper bar will adapt to the steps necessary to configure this type of widget.



By clicking on “Next” we advance to step 3, where we must choose a data source. The form of the current window consists of a drop-down menu in which we can perform a search of our data sources by filtering by type and entering its name.

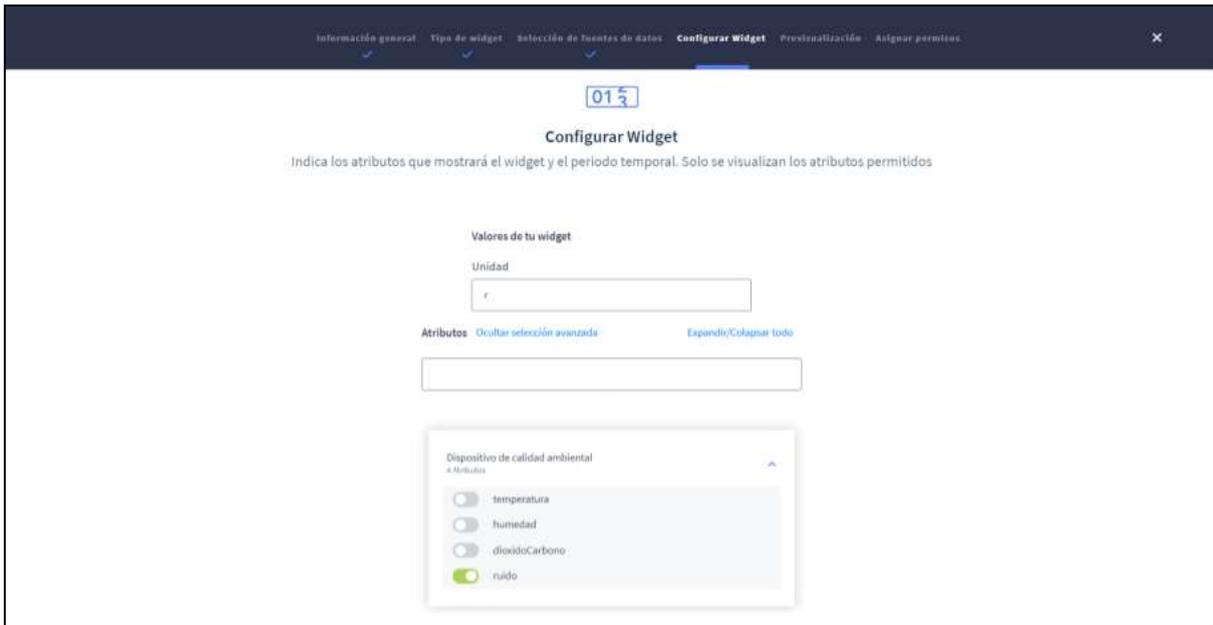


Once we choose the fonts, the system will show us them along with the properties they contain.

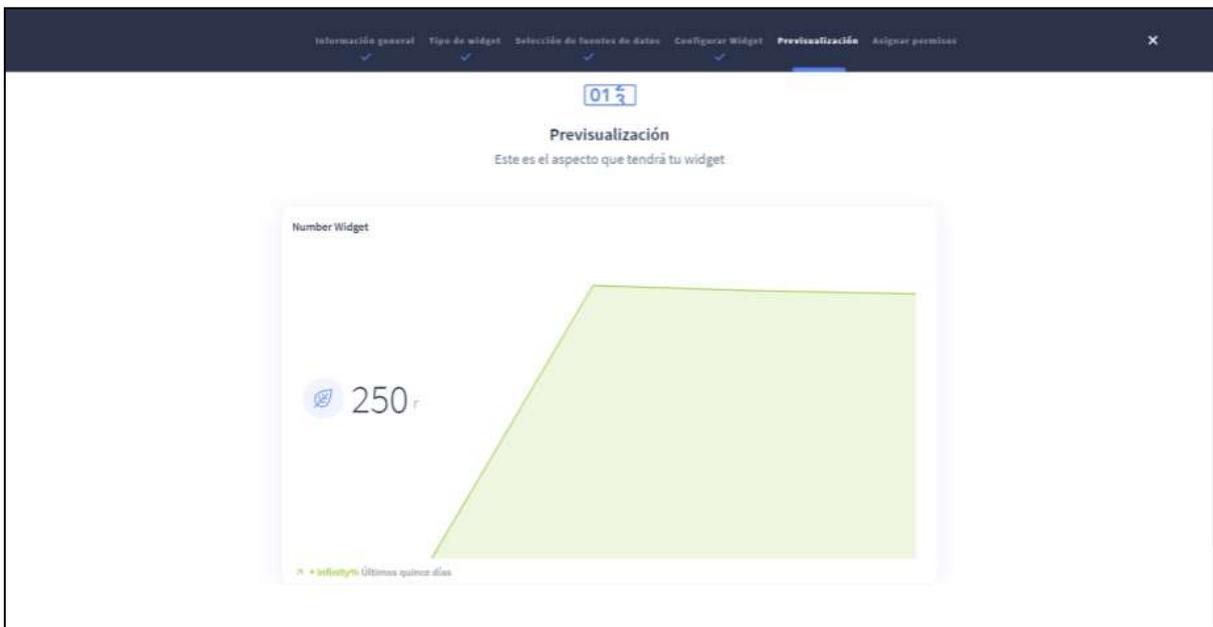


When we make sure that the data is correct, we can click on “Next” to advance to the next step.

In this section we must establish the configuration of our numerical data widget. In the form that is shown to us, we must specify the property whose value we want to obtain and the unit of measure that represents it.

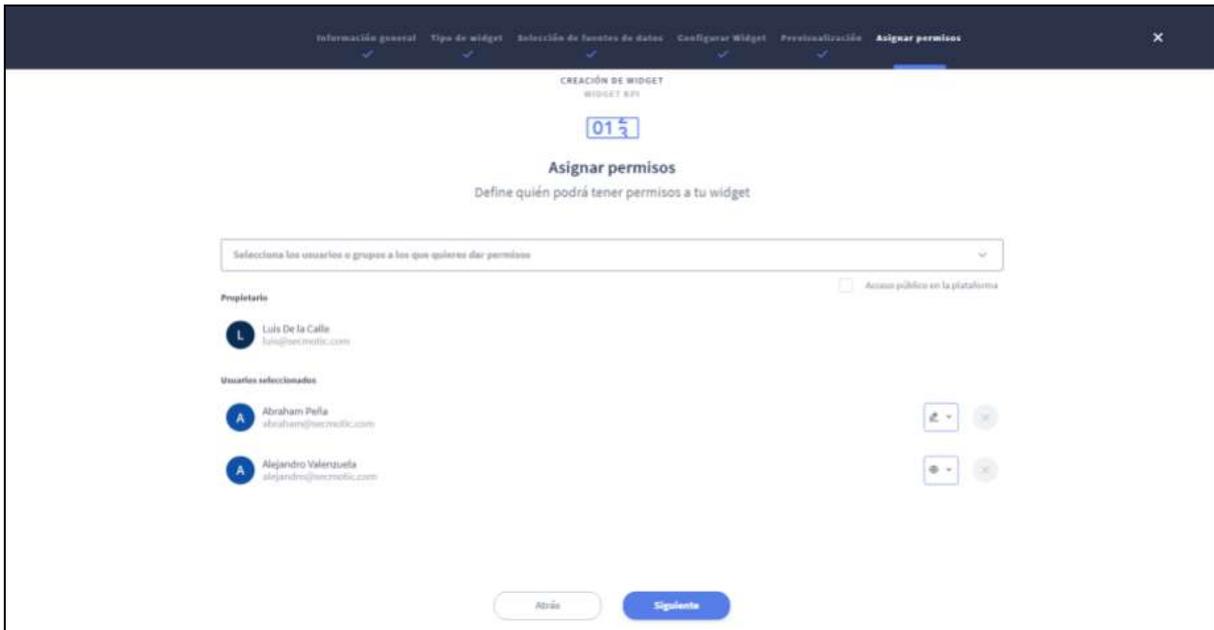


Once we have the widget configuration, we click on “Next” and the system will show us a window with the preview of the result.



If the diagram is to our liking, we click on “Next” to advance to the last step, the permissions configuration. In this step it is possible to indicate which users or groups of users will have permissions to interact with the diagram.

Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.



After clicking "Next" the system will display a message informing us that the Widget has been successfully added.

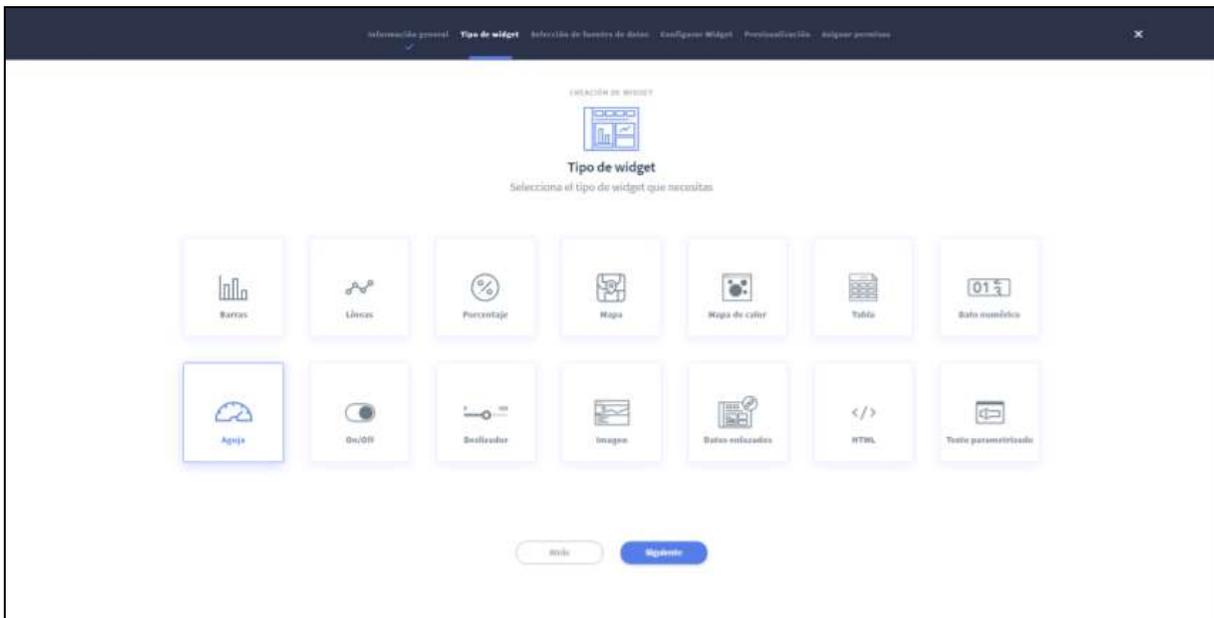


Now when we enter our dashboard we will have the new widget that we just added.

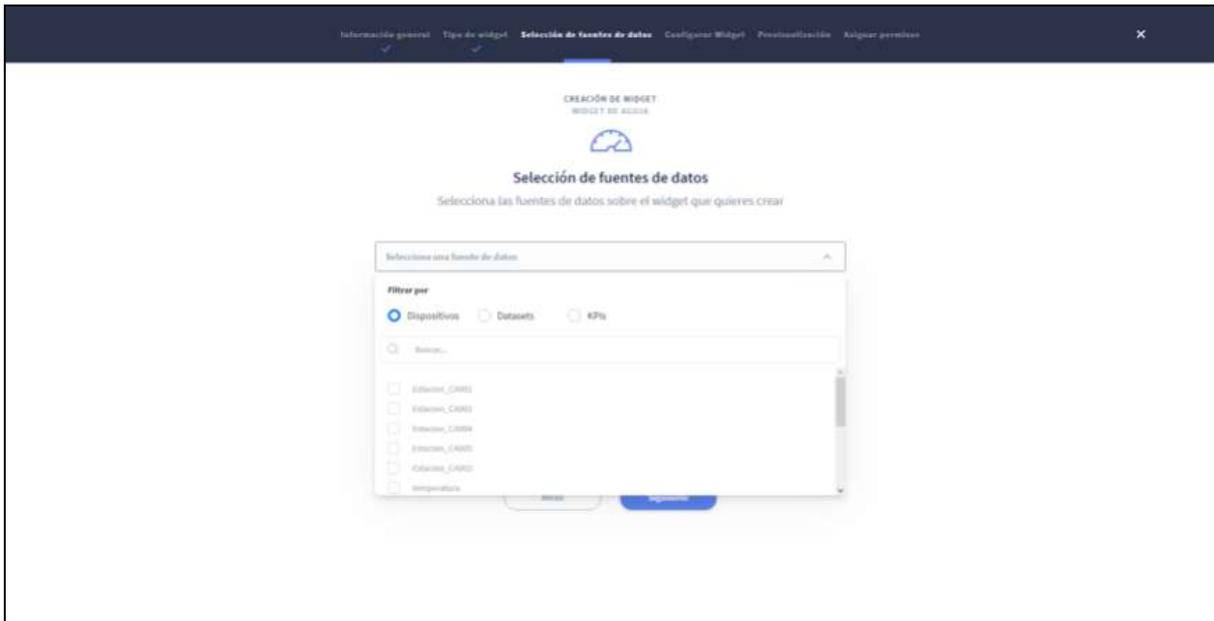


Needle Widget

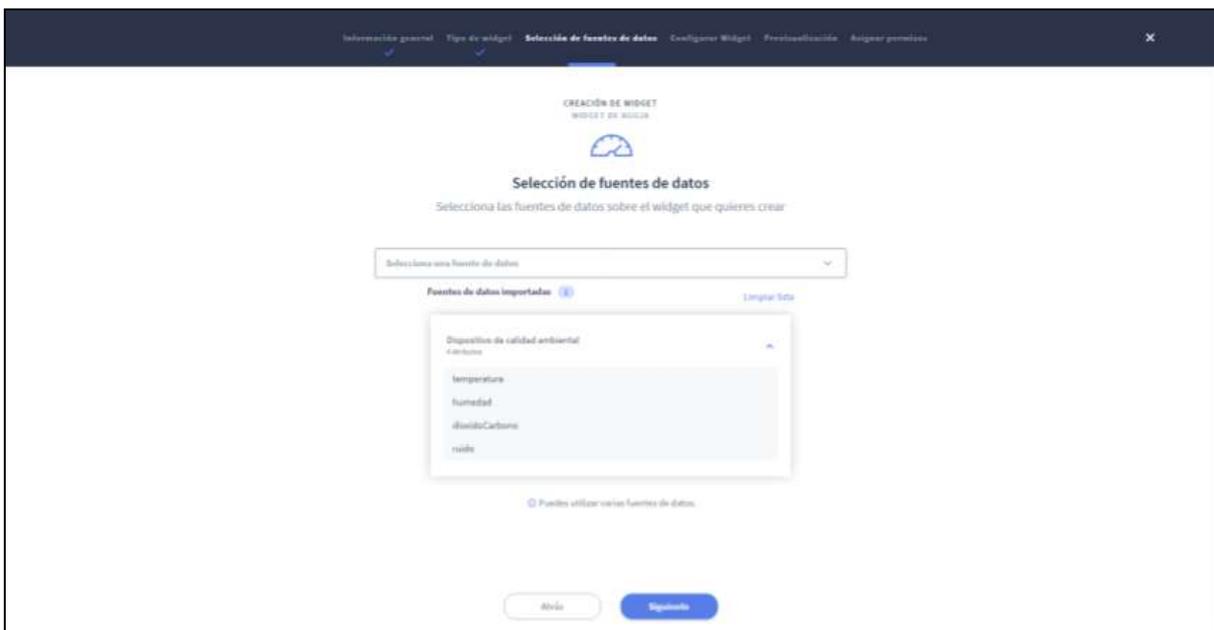
Located in step 2 of the creation process, click on the “Needle” widget type. When pressed, the surrounding region will light up indicating that it is selected, and the upper bar will adapt to the steps necessary to configure this type of widget.



By clicking on “Next” we advance to step 3, where we must choose a data source. The form of the current window consists of a drop-down menu in which we can perform a search of our data sources by filtering by type and entering its name.

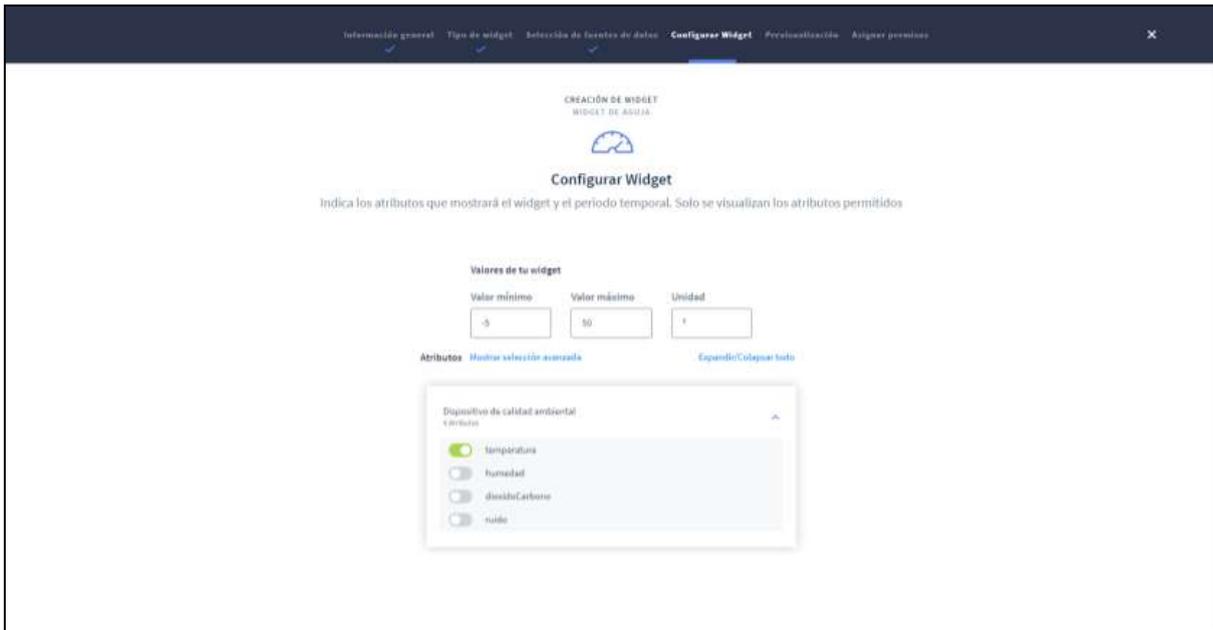


Once we choose the fonts, the system will show us them along with the properties they contain.

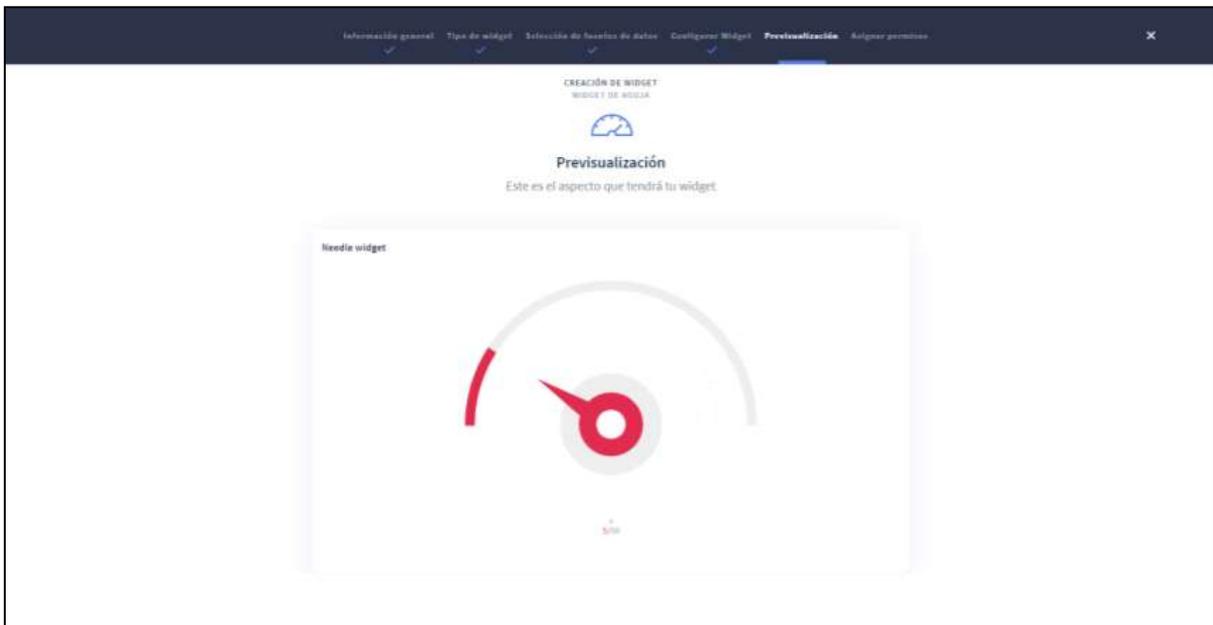


When we make sure that the data is correct, we can click on “Next” to advance to the next step.

In this section we must configure the configuration of our Needle widget. In the form that is shown to us, we must specify the property whose value we want to obtain, the unit of measure that represents it and the range of values (minimum and maximum) that it can reach.

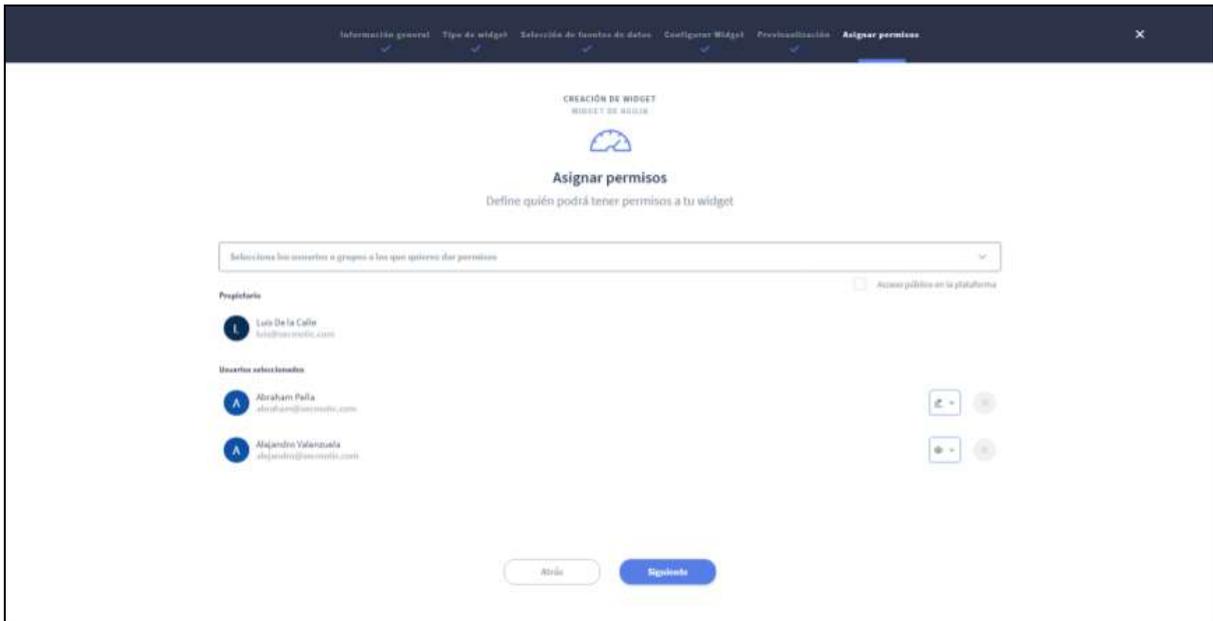


Once we have the widget configuration, we click on “Next” and the system will show us a window with the preview of the result.



If the diagram is to our liking, we click on “Next” to advance to the last step, the permissions configuration. In this step it is possible to indicate which users or groups of users will have permissions to interact with the diagram.

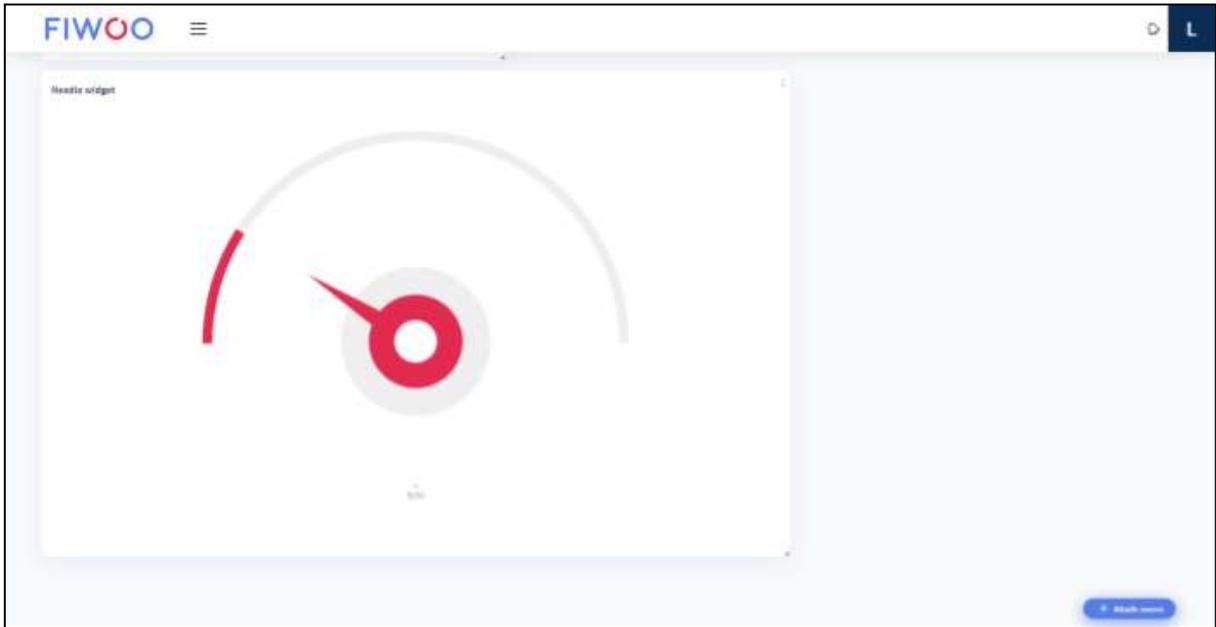
Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.



After clicking "Next" the system will display a message informing us that the Widget has been successfully added.

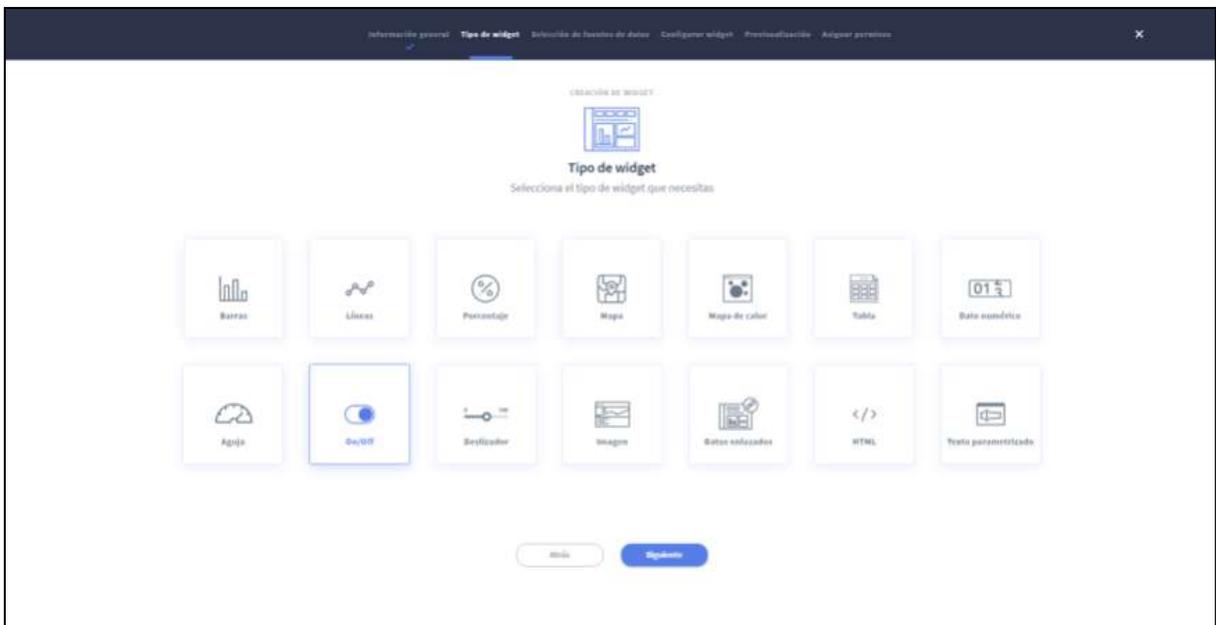


Now when we enter our dashboard we will have the new widget that we just added.

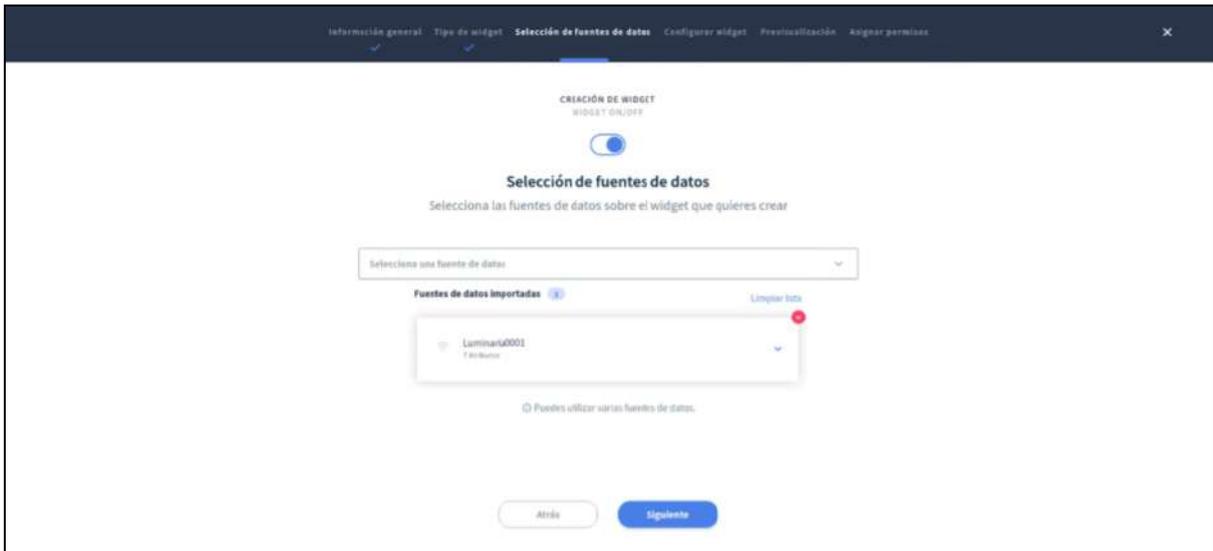


Widget On/Off

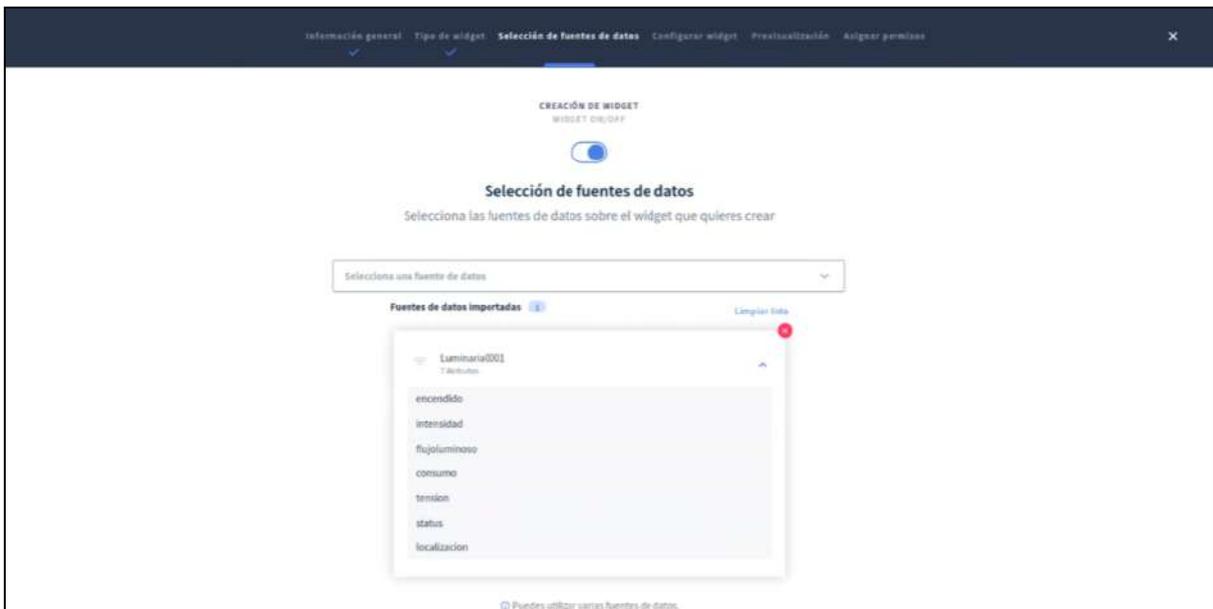
Located in step 2 of the creation process, we click on the type of widget "On/Off". When pressed, the surrounding region will light up indicating that it is selected, and the upper bar will adapt to the steps necessary to configure this type of widget.



By clicking on "Next" we advance to step 3, where we must choose one or more devices as a data source. The form of the current window consists of a drop-down menu in which we can perform a search of our data sources by filtering by type and entering its name.



Once we choose the fonts, the system will show us them along with the properties they contain.



When we make sure that the data is correct, we can click on “Next” to advance to the next step.

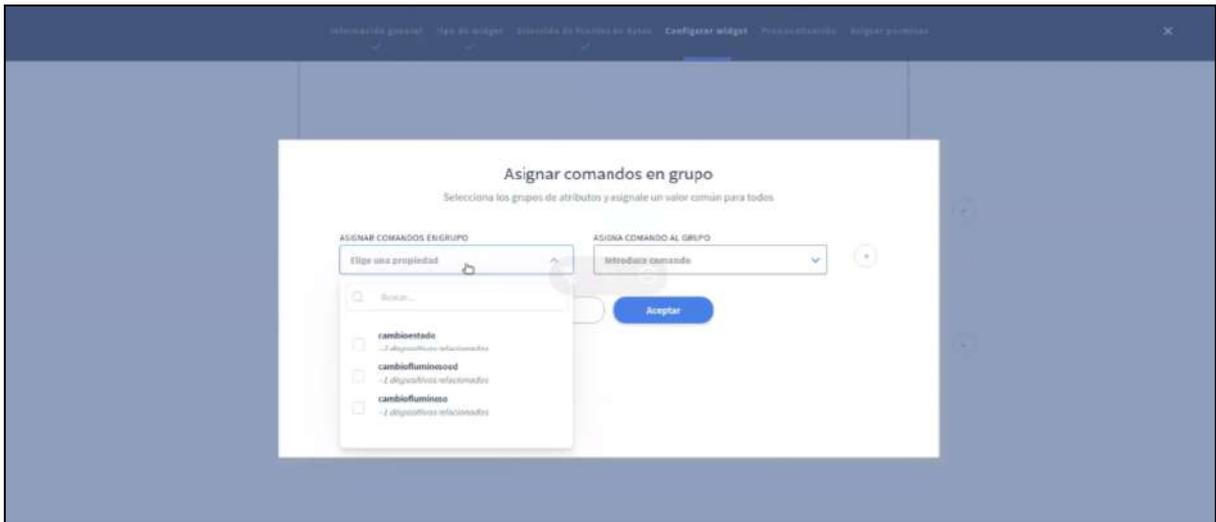
In this section we must establish the configuration of our On/Off widget. In the form that is shown to us, we must specify a description of the action that our widget is going to carry out. After this, we must specify which command or commands will be sent each time the button changes state.

To establish what action will be carried out after pressing the button, we must specify the following fields in the form to the right of each state:

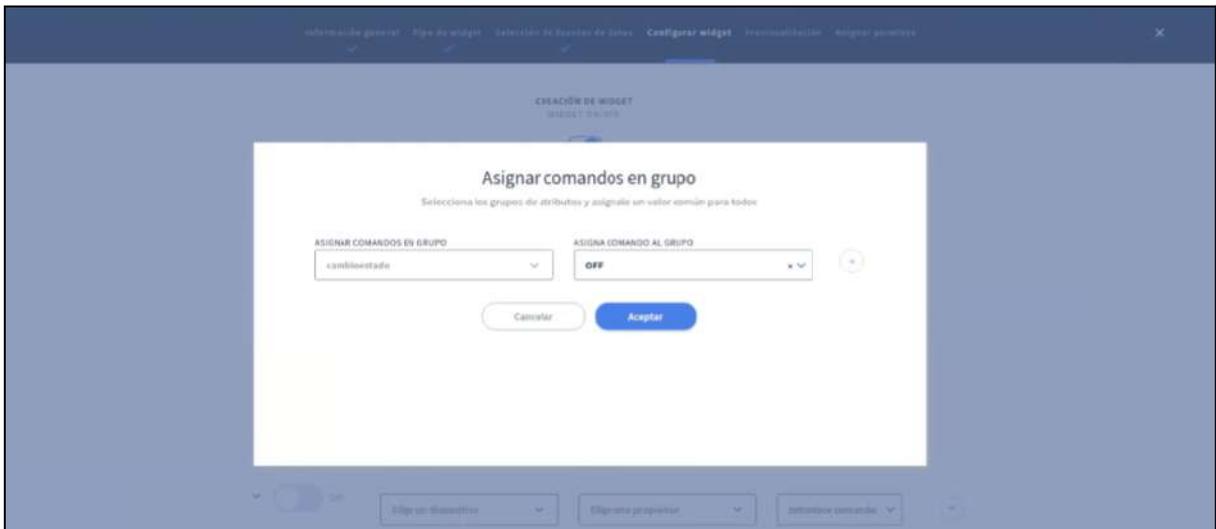
- Device that will receive the command.
- Command to be sent.
- Value of said command. It can be an already established one or a new value that we specify.

We can set that each time the button is pressed several commands are sent to several devices. To do this, simply press the "+" symbol to the right of each action.

It could be the case that we want to configure many actions for several devices, for example, we could have 10 lamps and control the switching on and off of these by means of a button. This example involves configuring 10 actions for the off state and another 10 for the on state, to make this task much simpler, the "Group commands" come into play. If we press the "Assign Group Command" button, the system will show us a form in which we can specify a command and the value that will be sent.



By selecting a command we will be able to see how many devices share that command, the value we specify will be sent to all these devices

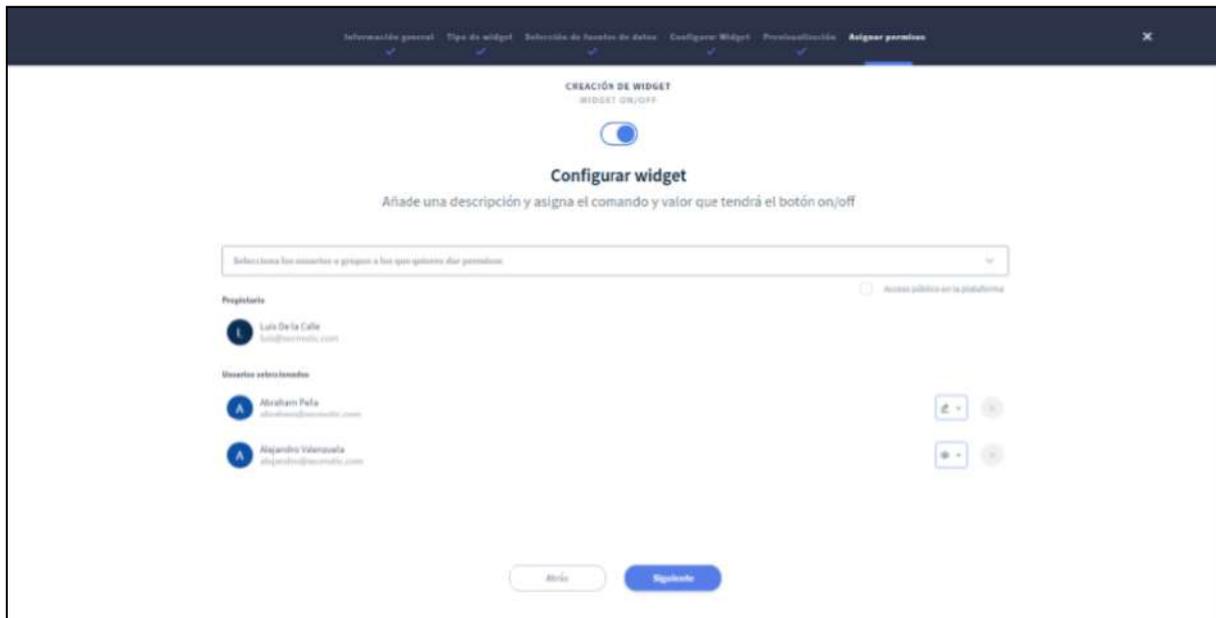


Once we have configured the actions of the widget, we click on "Next" and the system will show us a window with the preview of the result.



If the widget is to your liking, click on "Next" to proceed to the last step, the permissions configuration. In this step it is possible to indicate which users or groups of users will have permissions to interact with the diagram.

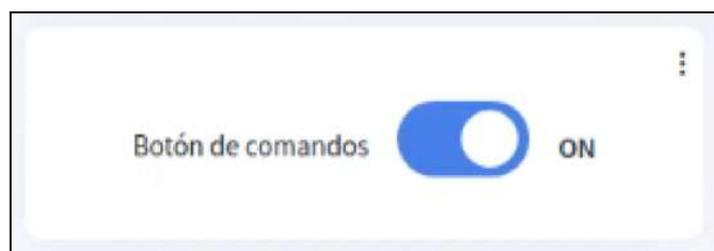
Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.



After clicking "Next" the system will display a message informing us that the Widget has been successfully added.

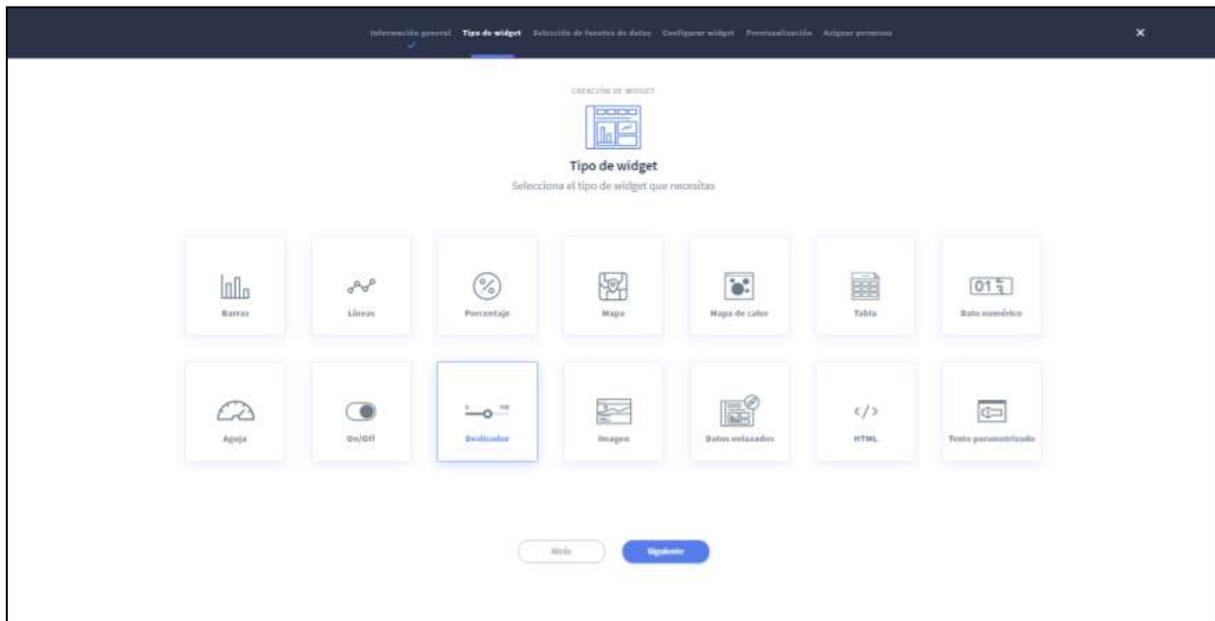


Now when we enter our dashboard we will have the new widget that we have just added.

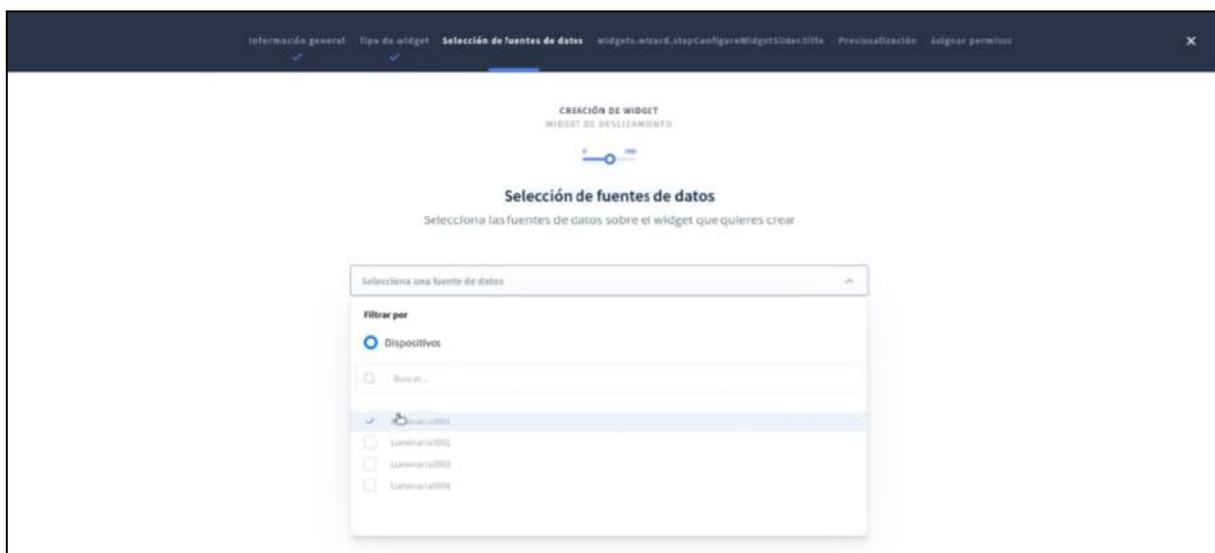


Slider Widget

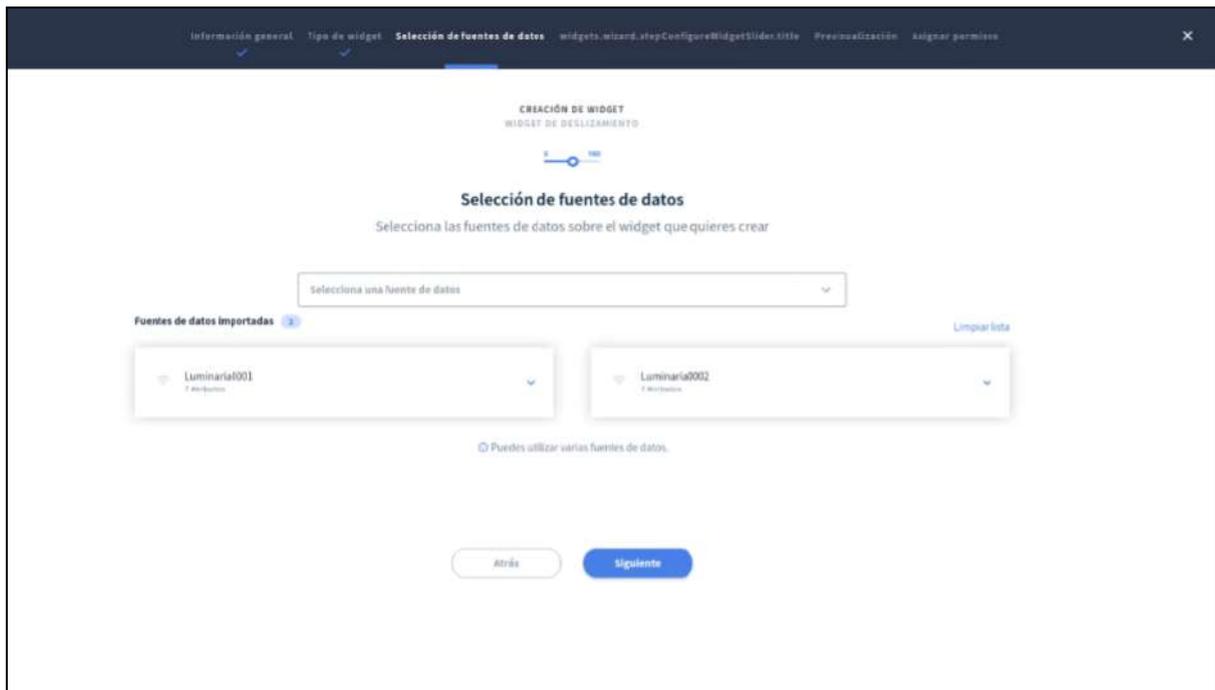
Located in step 2 of the creation process, click on the “Slider” widget type. When pressed, the surrounding region will light up indicating that it is selected, and the upper bar will adapt to the steps necessary to configure this type of widget.



By clicking on "Next" we advance to step 3, where we must choose one or more devices as a data source. The form of the current window consists of a drop-down menu in which we can perform a search of our data sources by filtering by type and entering its name.

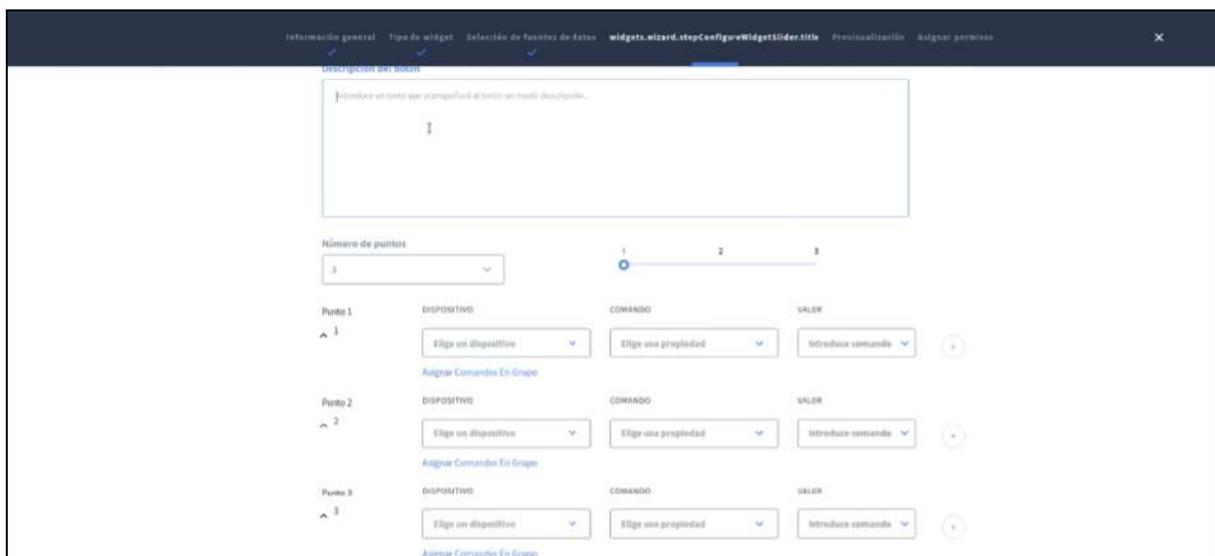


Once we choose the fonts, the system will show us them along with the properties they contain.



When we make sure that the data is correct, we can click on “Next” to advance to the next step.

In this section we must establish the configuration of our Slider widget. In the form that is shown to us, we must specify a description of the action that our widget is going to carry out. After this, we must specify which command or commands will be sent each time the indicator varies.



Once the widget description is set, we need to enter the number of possible states for the slider. The range of possible states is between 2 and 10, both options included. While we are adjusting the number of states, on the right we will see an image with the result of our configuration.

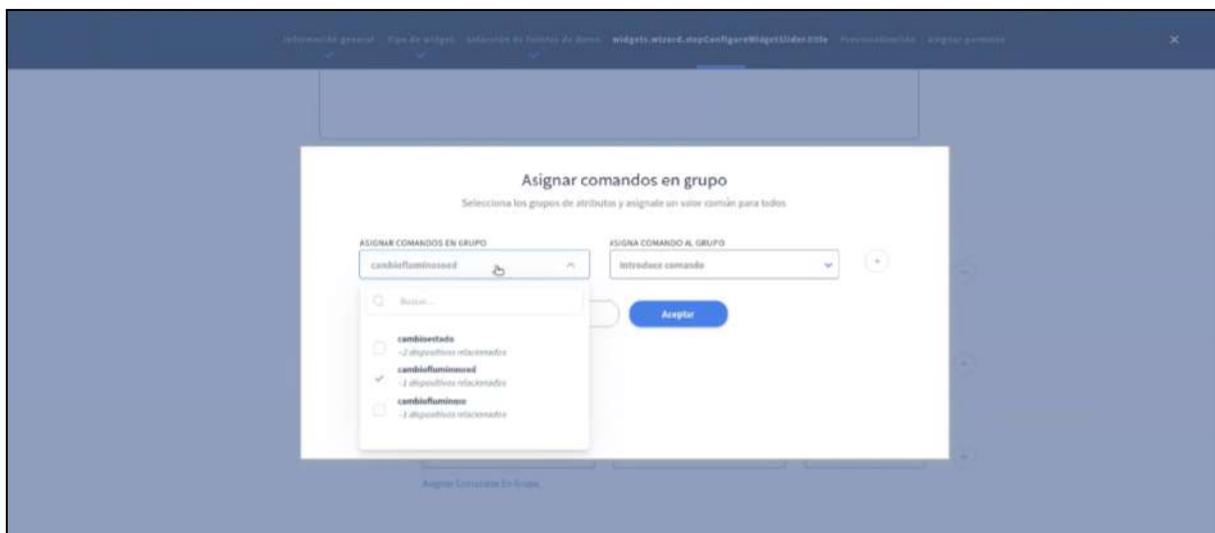
To establish what action will be carried out after changing state, we must specify, in the form to the right of each state, the following fields:

- Device that will receive the command.

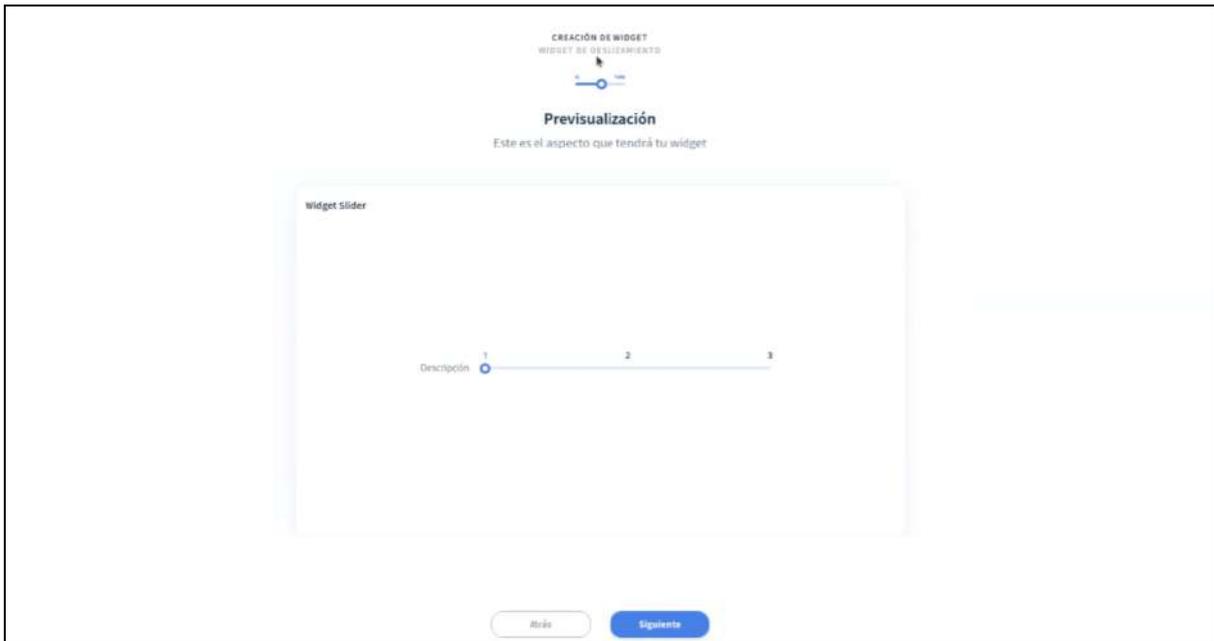
- Command to be sent.
- Value of said command. It can be an already established one or a new value that we specify.

We can establish that each time the button is pressed, several commands are sent to several devices. For this we simply have to press the “+” symbol located to the right of each action.

It could be the case that you want to configure many actions for several devices, for example, we could have ten lamps and control the light intensity of these by means of a slider. This example involves configuring ten actions for the off state and another ten for the on state, to make this task much easier, the “Group Commands” come into play. If we press the “Assign command in Group” button, the system will show us a form in which we can specify a command and the value that will be sent.

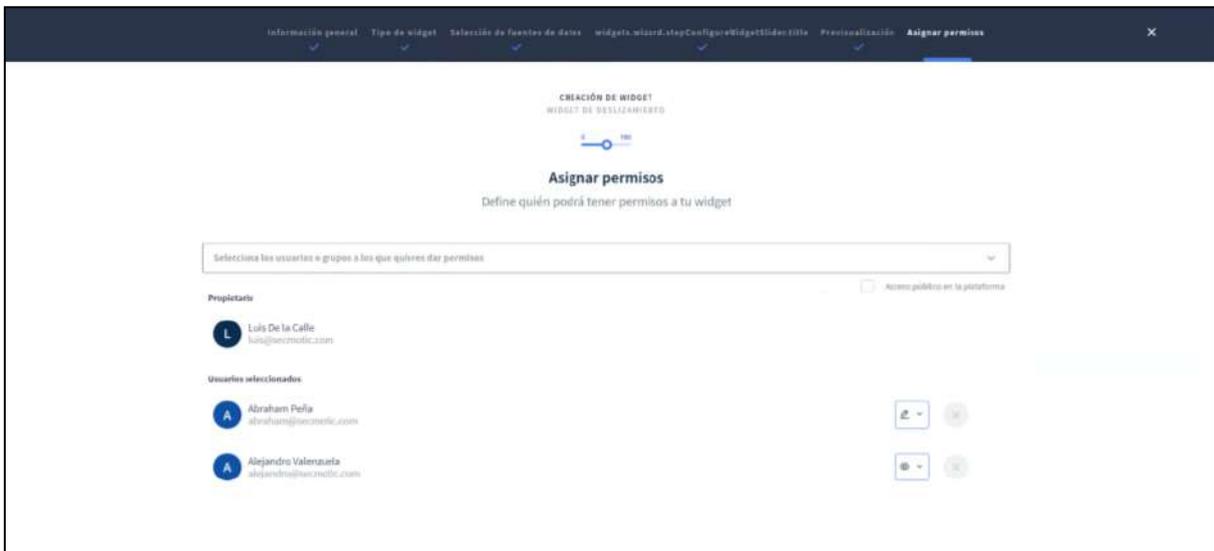


By selecting a command we can see how many devices share that command, the value we specify will be sent to all these devices. Once we have the configuration of the widget actions, we click on “Next” and the system will show us a window with the preview of the result.



If the widget is to our liking, we click on “Next” to advance to the last step, the permissions configuration. In this step it is possible to indicate which users or groups of users will have permissions to interact with the diagram.

Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.



After clicking "Next" the system will display a message informing us that the Widget has been successfully added.



Now when we enter our dashboard we will have the new widget that we just added.

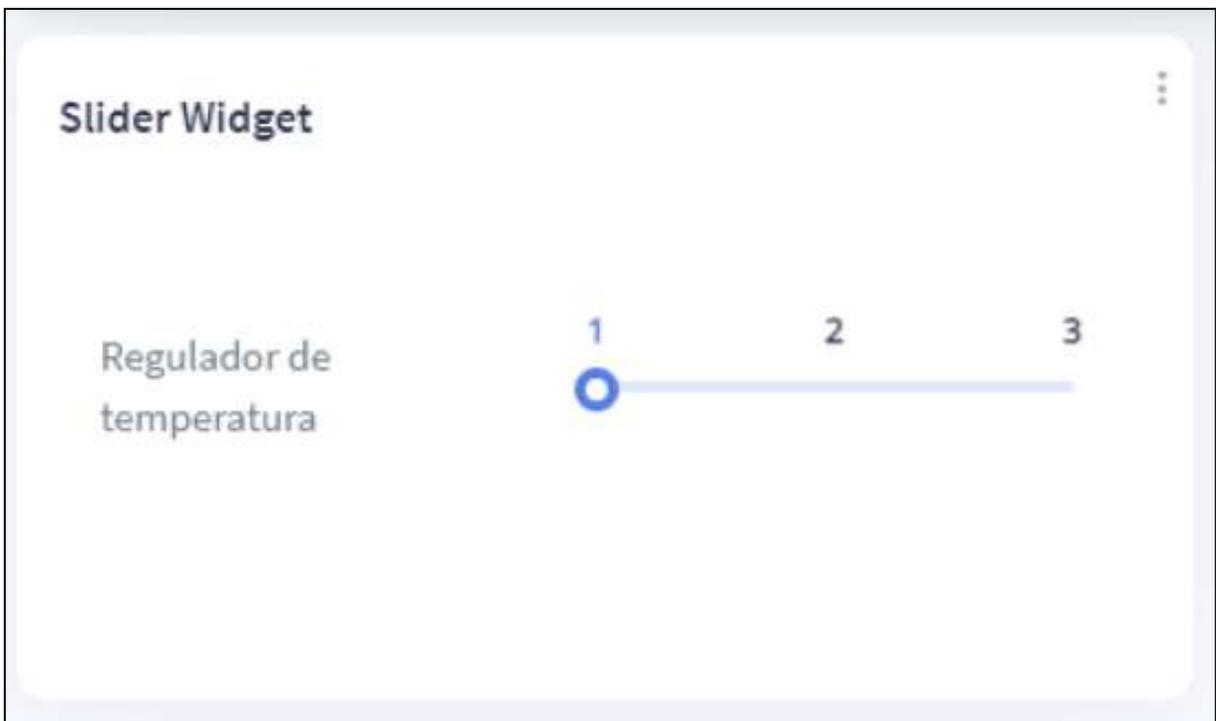
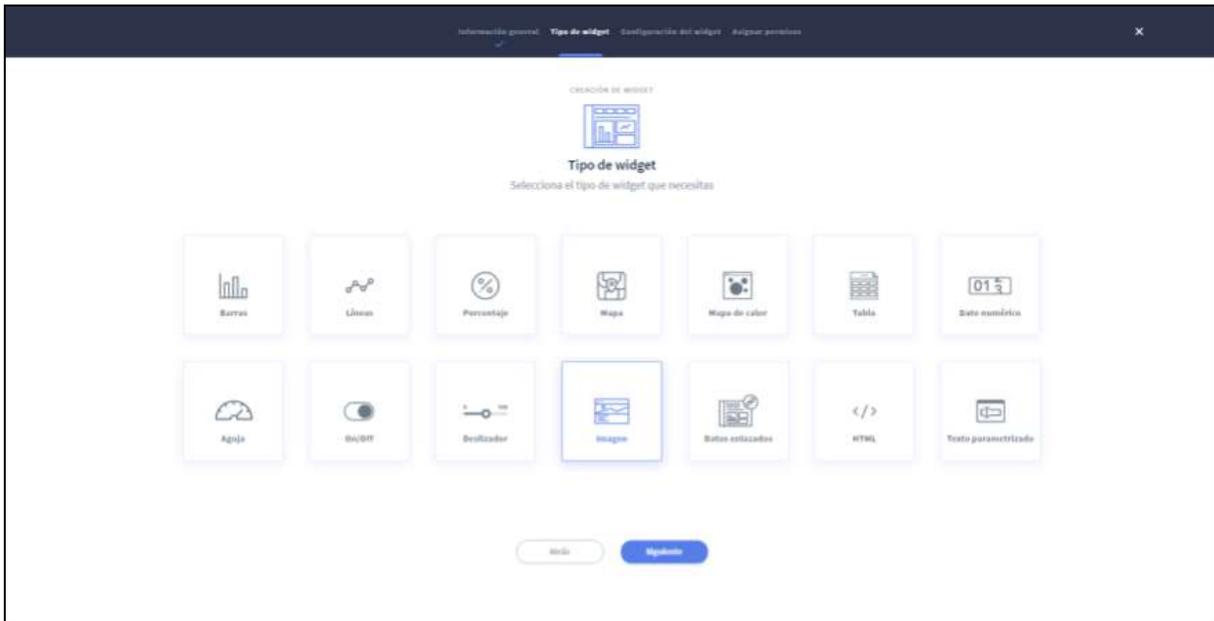
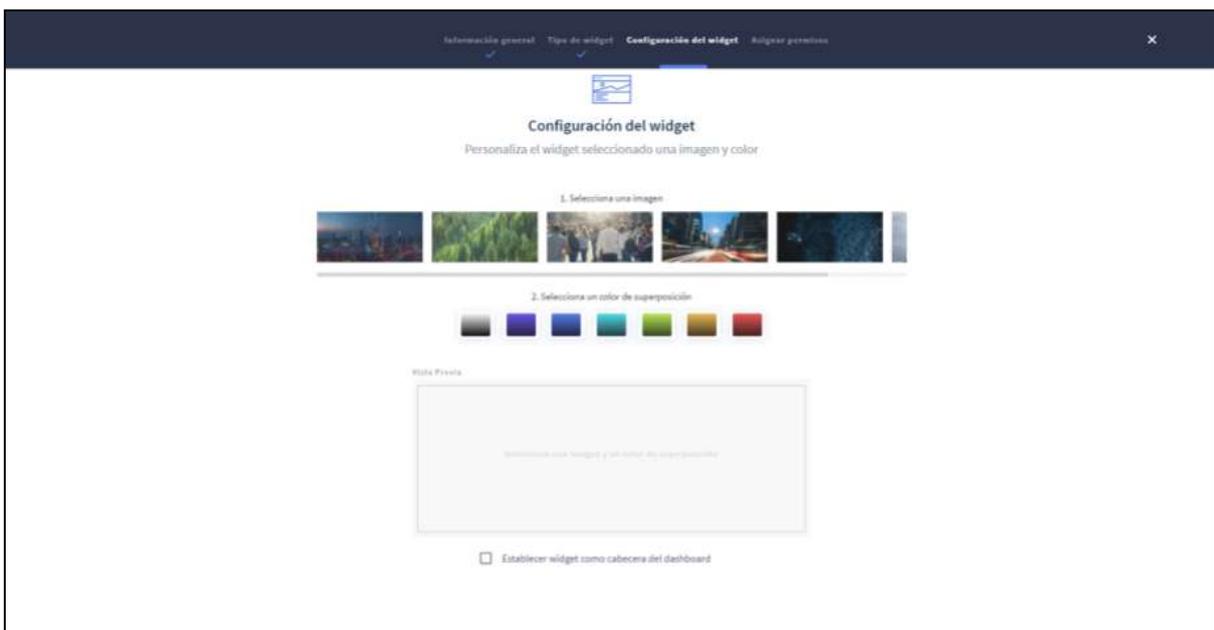


Image Widget

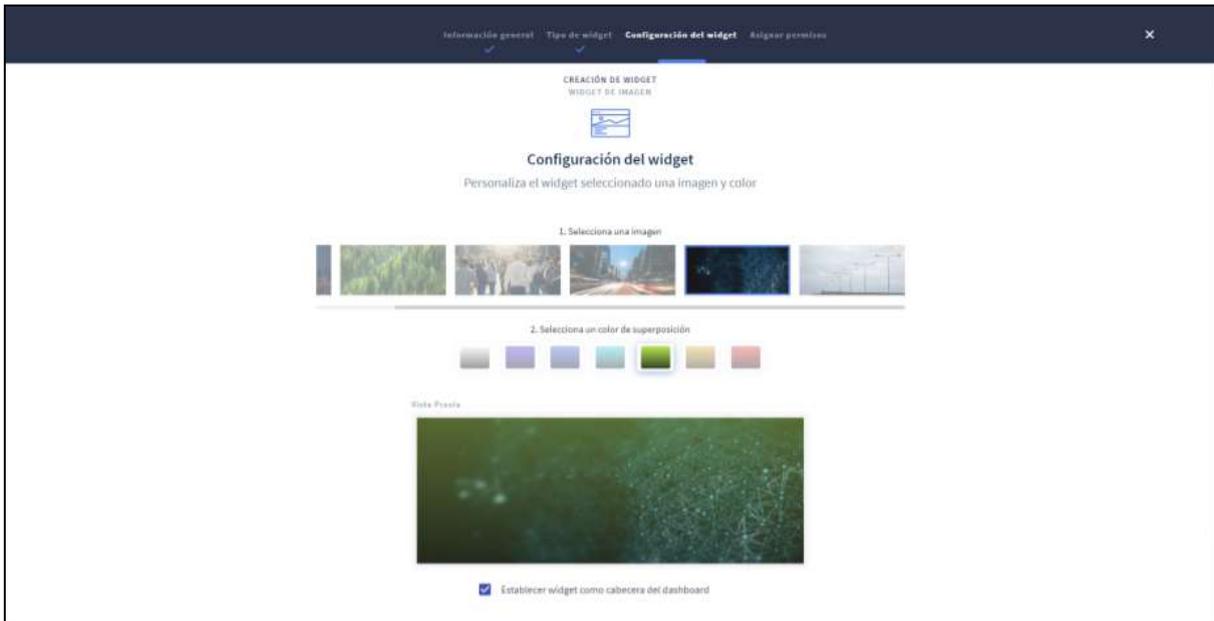
Located in step 2 of the creation process, click on the "Image" widget type. When pressed, the surrounding region will light up indicating that it is selected, and the upper bar will adapt to the steps necessary to configure this type of widget.



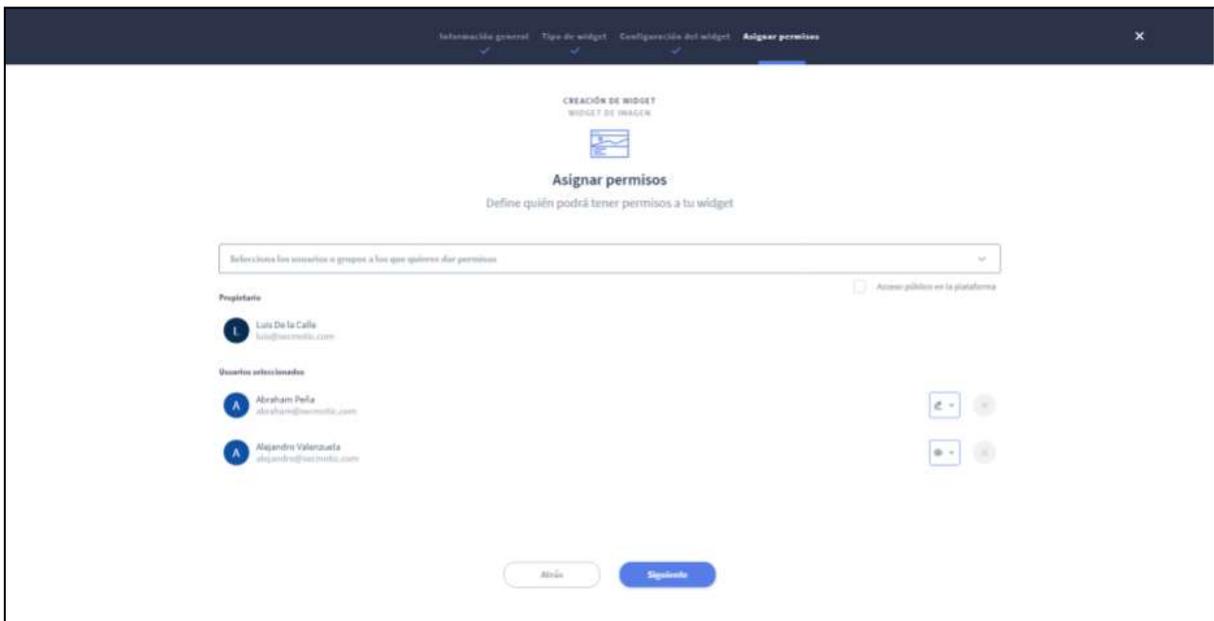
By clicking on “Next” we advance to step 3, where we must choose a configuration for our widget.



The image that will contain our widget must be one of those established in the system, we can select the one that we like the most by clicking on it. Additionally, we need to select a color that will overlay the image. A preview of the image is displayed at the bottom of the window.



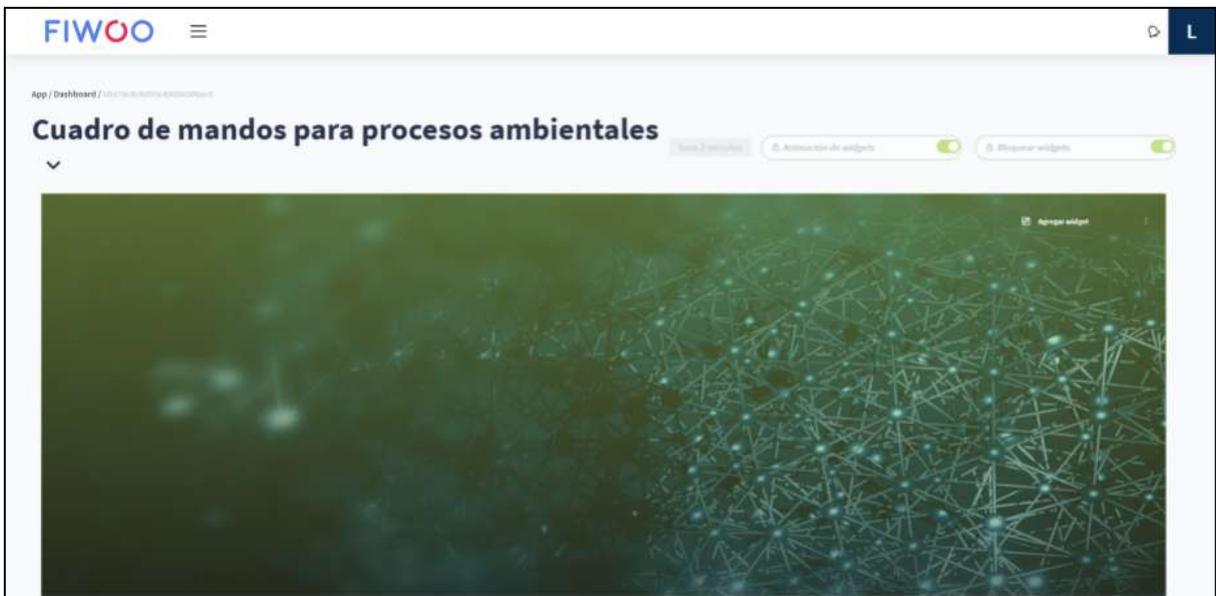
When the image is to our liking, we press “Next” to advance to the last step of the creation process, in which we will indicate which users will have permissions to our widget. Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.



After clicking "Next" the system will display a message informing us that the Widget has been successfully added.



Now when we enter our dashboard we will have the new widget that we just added.



If we click on the “Add widget” button, located in the upper right part of the image, we can add new widgets that will be displayed in the image that we just added. There are only two types of widgets available, number and paragraph.

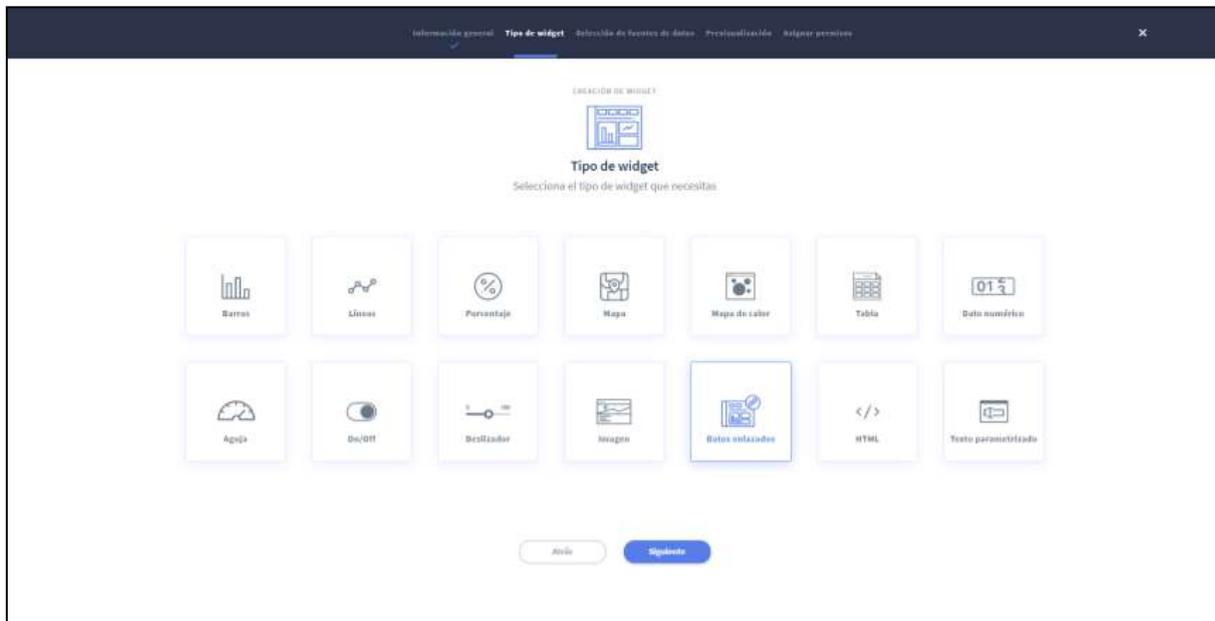
Cuadro de mandos para procesos ambientales

Inicio / Controlar Botones para widgets Widgets

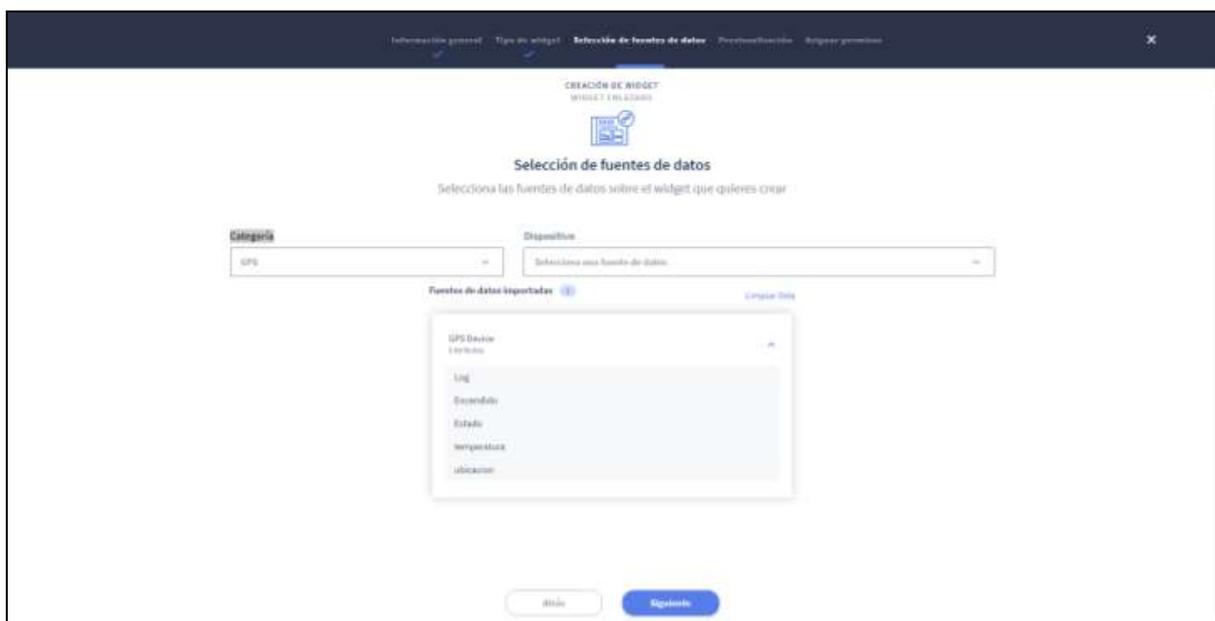


Linked Data Widget

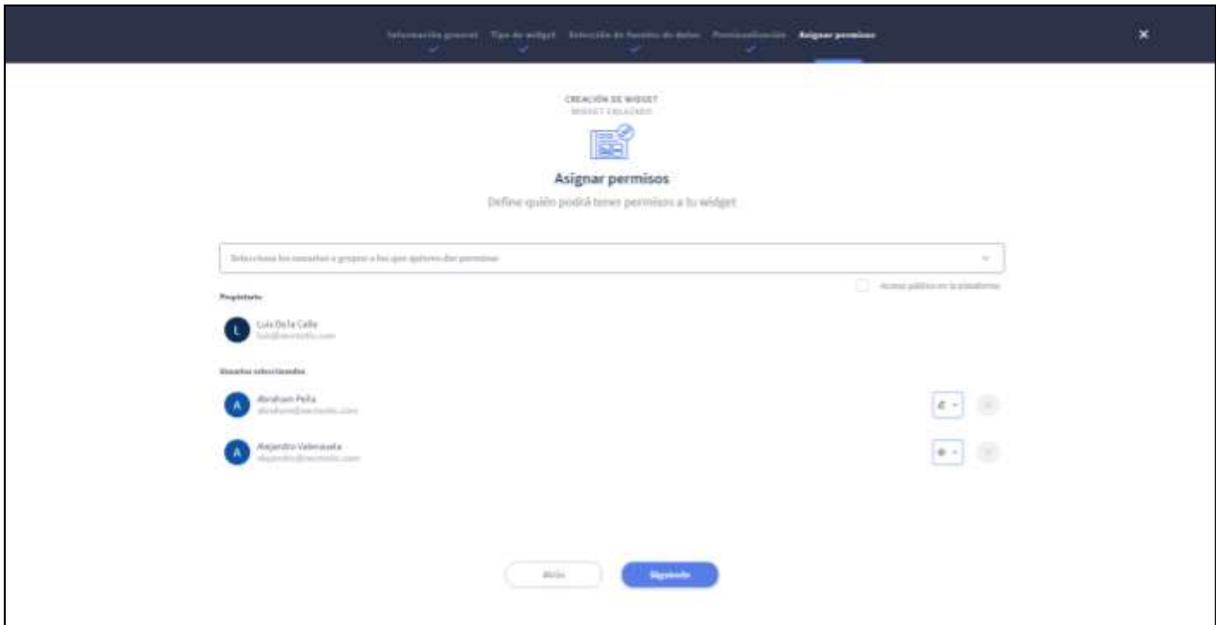
Located in step 2 of the creation process, click on the “Linked Data” widget type. When pressed, the surrounding region will light up indicating that it is selected, and the upper bar will adapt to the steps necessary to configure this type of widget.



By clicking on “Next” we advance to step 3, where we must choose one or more data sources. The form of the current window consists of two dropdown menus in which we can perform a search to specify the category and the devices that we want to add. We can have devices of various categories.



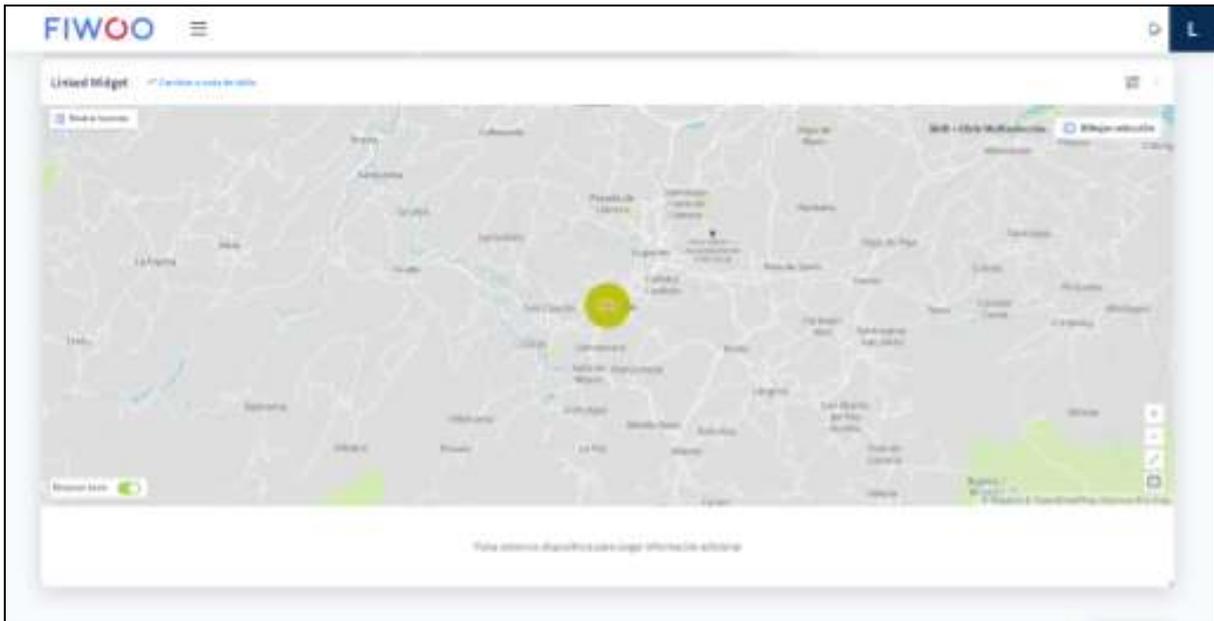
When we have selected the data we can click on “Next” to advance to the next step and the system will show us a window with the preview of the diagram. This visualization consists of a map view to



After clicking "Next" the system will display a message informing us that the Widget has been successfully added.

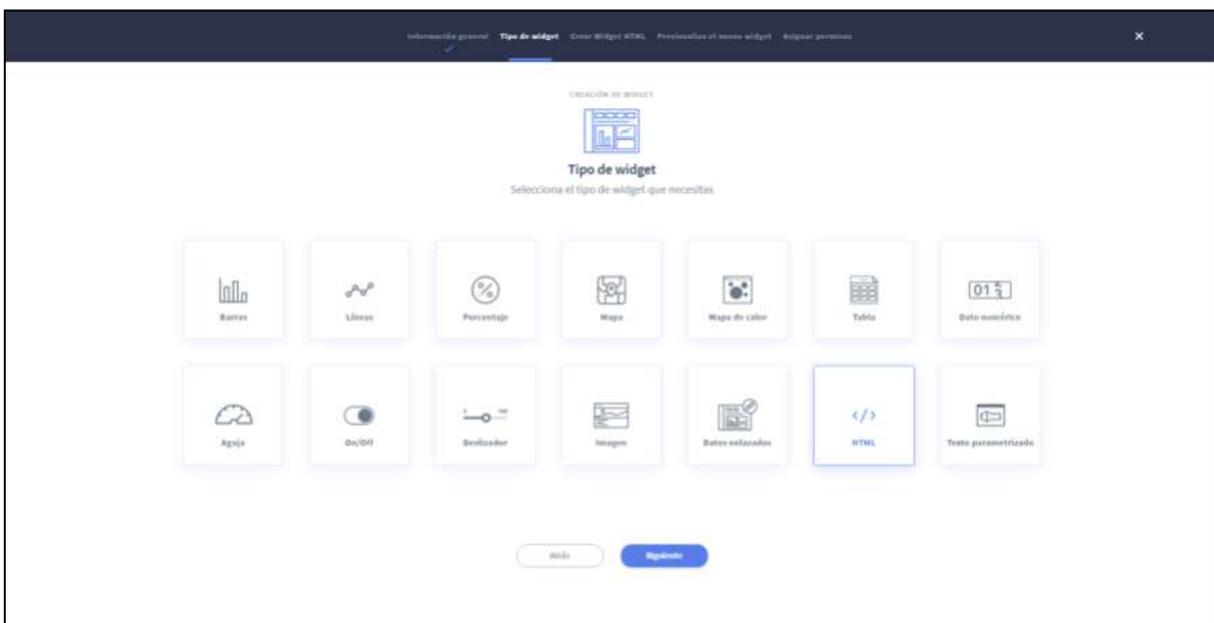


Now when we enter our dashboard we will have the new widget that we just added.



HTML Widgets

Located in step 2 of the creation process, click on the “HTML” widget type. When pressed, the surrounding region will light up indicating that it is selected, and the upper bar will adapt to the steps necessary to configure this type of widget.



By clicking on “Next” we advance to step 3, where the system shows us a form in which we must enter a name for the Widget, a description of what the code is going to represent, links to the CSS and JavaScript sources in the case if necessary and finally the HTML source code that we want to display in the dashboard.

CREACIÓN DE WIDGET
WIDGET DE HTML

Introduce el código HTML que quieres que se muestre en el widget. También puedes indicar una hoja de estilos o un fichero Javascript.

Nombre: HTML Widget

Descripción: Tabla con los permisos de los usuarios

Referencia CSS: Introduce un enlace a tu CSS

Referencia JS: Introduce un enlace a un fichero javascript

```

<table class="table table-bordered">
  <thead>
    <tr>
      <th class="text">ID</th>
      <th class="text">Nombre</th>
      <th class="text">Apellidos</th>
      <th class="text">Permisos</th>
    </tr>
  </thead>
  <tbody>
    <tr>
      <td class="text">1</td>
      <td class="text">Mark</td>
      <td class="text">Otto</td>
      <td class="text">Lectura</td>
    </tr>
    <tr>
      <td class="text">2</td>
      <td class="text">Jacob</td>
      <td class="text">Thomson</td>
      <td class="text">Escritura</td>
    </tr>
    <tr>
      <td class="text">5</td>
      <td class="text">Larry</td>
      <td class="text">John</td>
      <td class="text">Lectura</td>
    </tr>
  </tbody>
</table>

```

When we have completed the form with the pertinent information, we can click on the “Next” button to see a preview of the result.

CREACIÓN DE WIDGET
WIDGET DE HTML

Previsualiza el nuevo widget

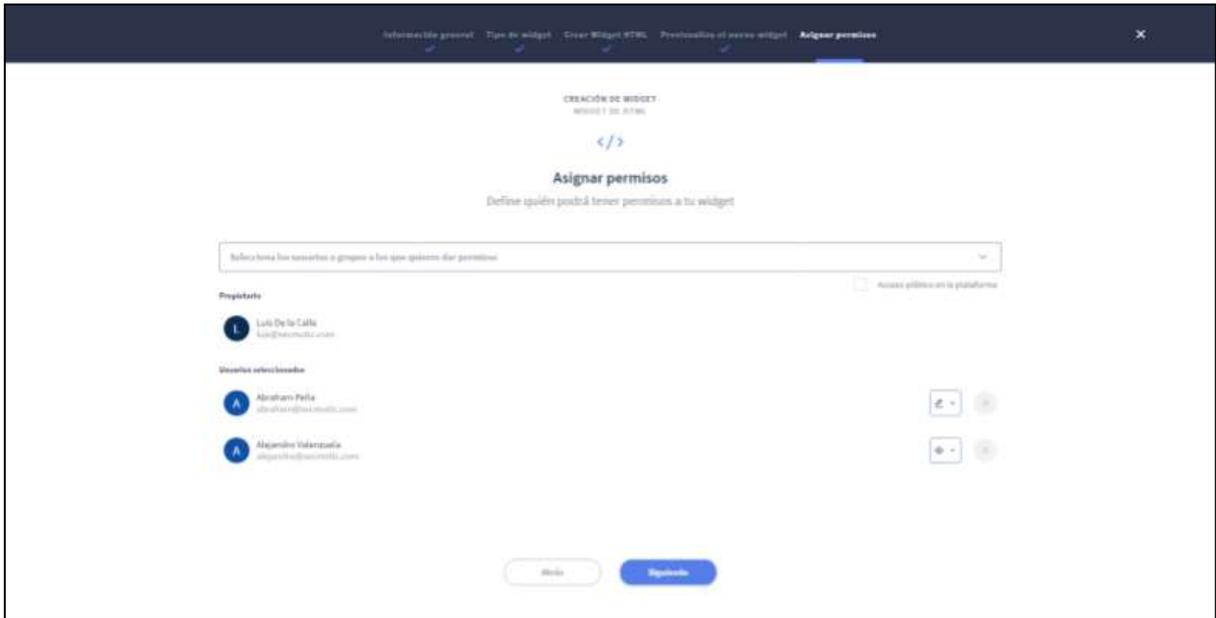
Previsualiza el nuevo widget. Siempre puedes volver hacia atrás si algo no te gusta.

ID	NOMBRE	APELLIDOS	PERMISOS
1	Mark	Otto	Lectura
2	Jacob	Thomson	Escritura
5	Larry	John	Lectura

Antes Siguiente

When we make sure that everything is displayed correctly, we will click on "Next" to advance to the last step, the permissions configuration. In this step it is possible to indicate which users or groups of users will have permissions to interact with the diagram.

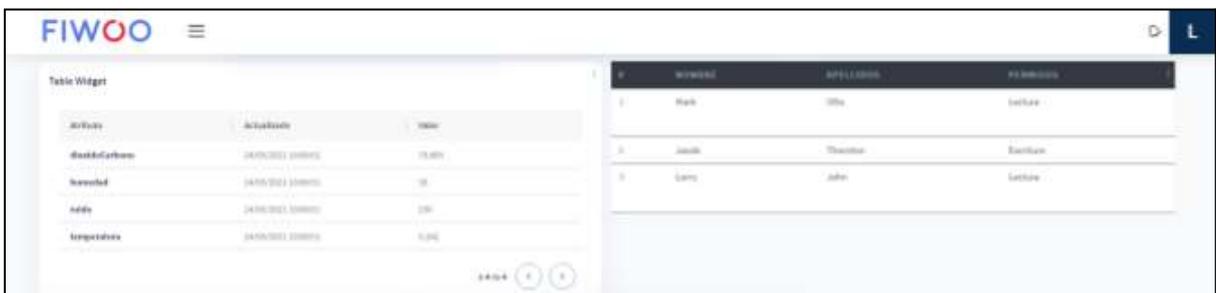
Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.



After clicking "Next" the system will display a message informing us that the Widget has been successfully added.

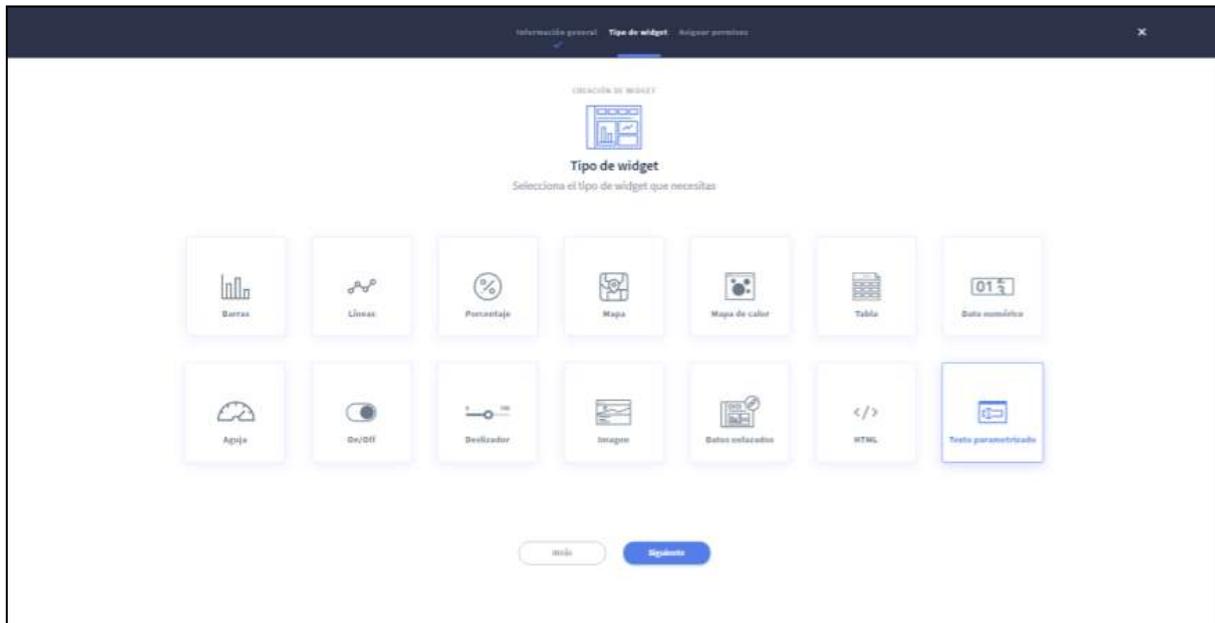


Now when we enter our dashboard we will have the new widget that we just added.



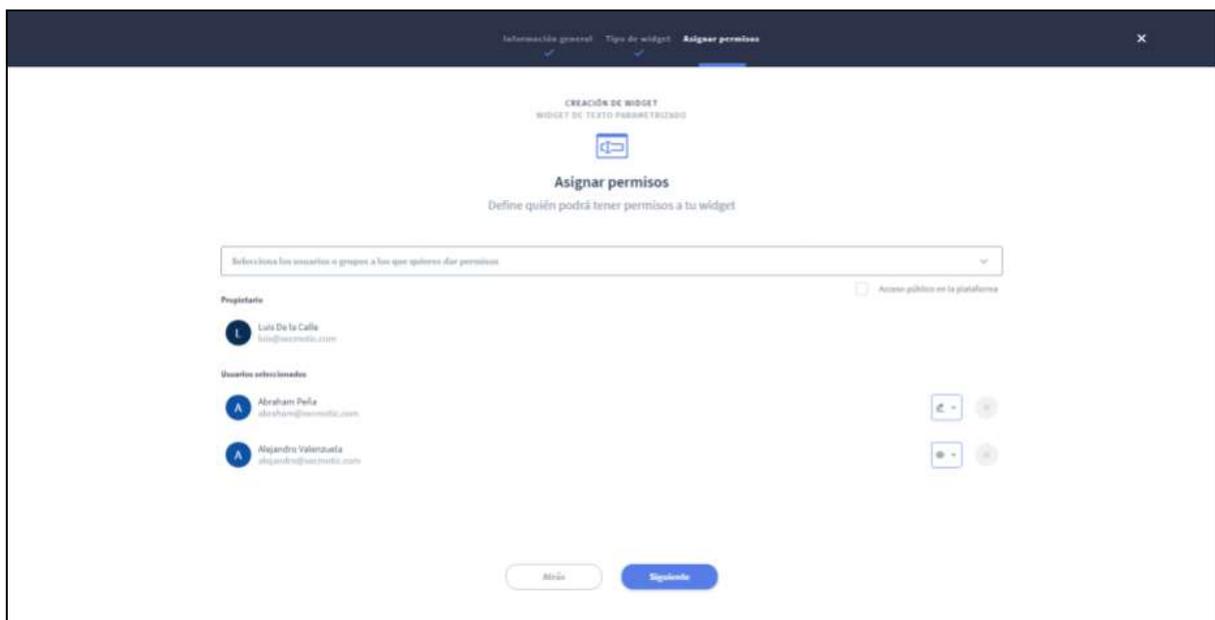
Parameterized Text Widgets

Located in step 2 of the creation process, we click on the “Parameterized Text” widget type. When pressed, the surrounding region will light up indicating that it is selected, and the upper bar will adapt to the steps necessary to configure this type of widget.



By clicking on “Next” we advance to the only configuration step that these widgets have, the permissions configuration.

Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.



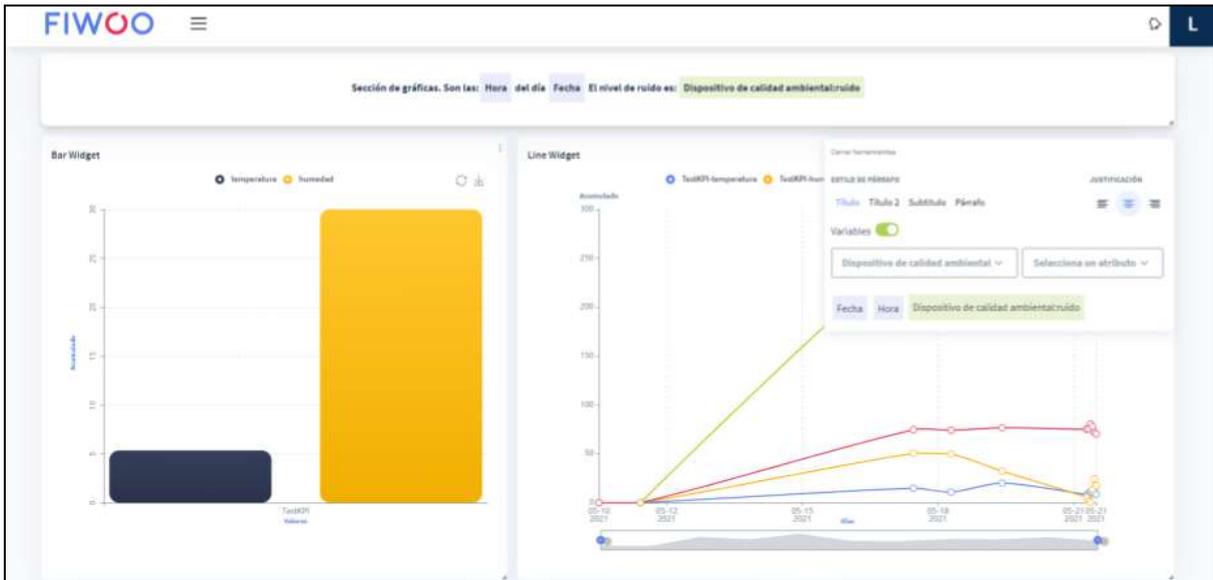
After clicking "Next" the system will display a message informing us that the Widget has been successfully added.



Now when we enter our dashboard we will have the new widget that we just added. We will see that at the moment it is an empty field that we can edit to add text.



To write in this widget we must click on the three points located in the upper right corner of the widget, and we will choose the "Edit" option from the menu. The system will show us a small window in which we will be able to adjust the type of text that the widget contains, the alignment of the text and it will also allow us to introduce variables to the text, being able to visualize the last value properties of data sources, as well as 2 variables that By default, the current date and time appear.



When we have configured our message, click on "Close tools" to make these changes persistent.



Incident Widgets.

The Issues widget features a table layout along with a filter at the top of the table. The table is filled with the incidents that are generated automatically through rules or by those incidents generated by the user himself. The header filter allows us to filter these incidents depending on the status of the incident that we want to show.

The configuration of the Incidents widget is based on selecting the different filters by which we want to filter the incidents.

A posteriori you can configure both the header color and the columns that we want to show/hide from the table. We can also edit the previously configured filters or add new ones.

The incidents widget, in addition to the information provided by the incidents, allows us to view the attached files or edit the data of the incident.

lista de incidencias

Todas Abiertas En curso Cerradas

Fecha	Categoría	Familia	Fuente	Descripción	Estado
09/11/2021	Otra	Alumbrado	Desconocida	asdfasdf	Abierta
09/11/2021	Otra	Alumbrado	Desconocida	asdfasdf	Abierta
09/11/2021	Otra	Alumbrado	Desconocida	asdfasdf	Abierta

Edit widget configuration

As can be seen in the widget creation section, the platform has a wide variety of widgets, each of which can also be configured in many different ways. In the current section we will take care of breaking down all these possibilities.

Modify Position and Size

Our dashboard can contain a wide variety of widgets, which can be organized in such a way that we are able to visualize the information that is of interest to us in the simplest way possible.

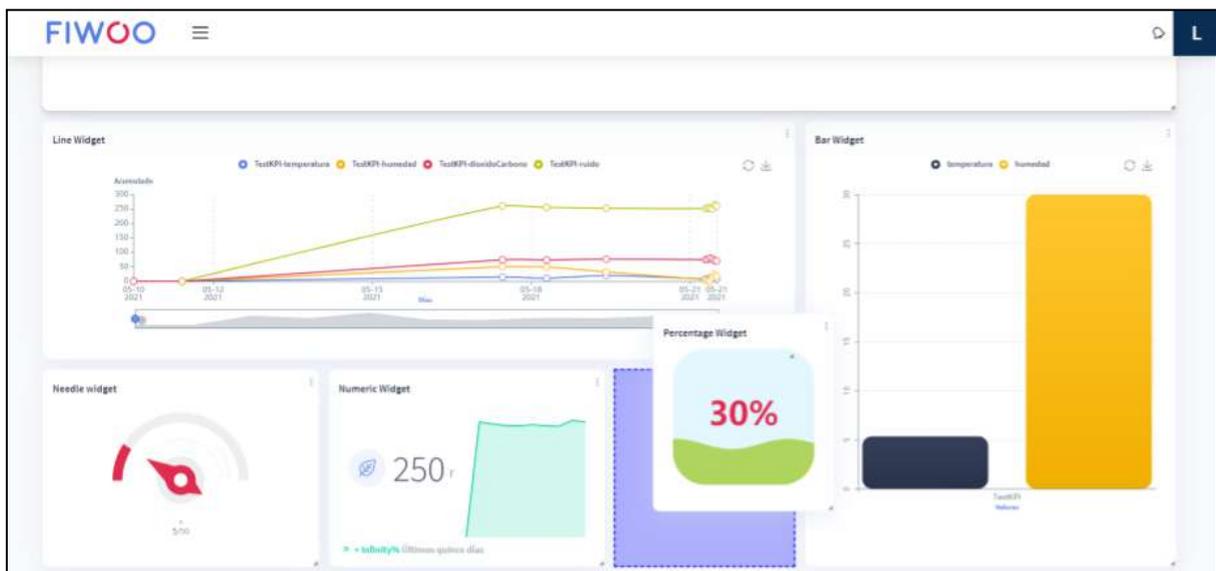
To be able to modify the organization of the widgets in the dashboard, we must press the “Block widgets” button, if it is shown in gray it means that we can modify the size and location of these.



symbol has appeared in the lower right corner that allows us to modify its size if we click on it.



Additionally, if we click on another part of the widget, we can select it and change it to another position by dragging with the mouse. The system will show us the silhouette of the space it occupies and will also move the widgets that interfere with the location where we leave the element.



The distribution that we give to the widgets will be persistent, so we can always enjoy a well-organized dashboard.

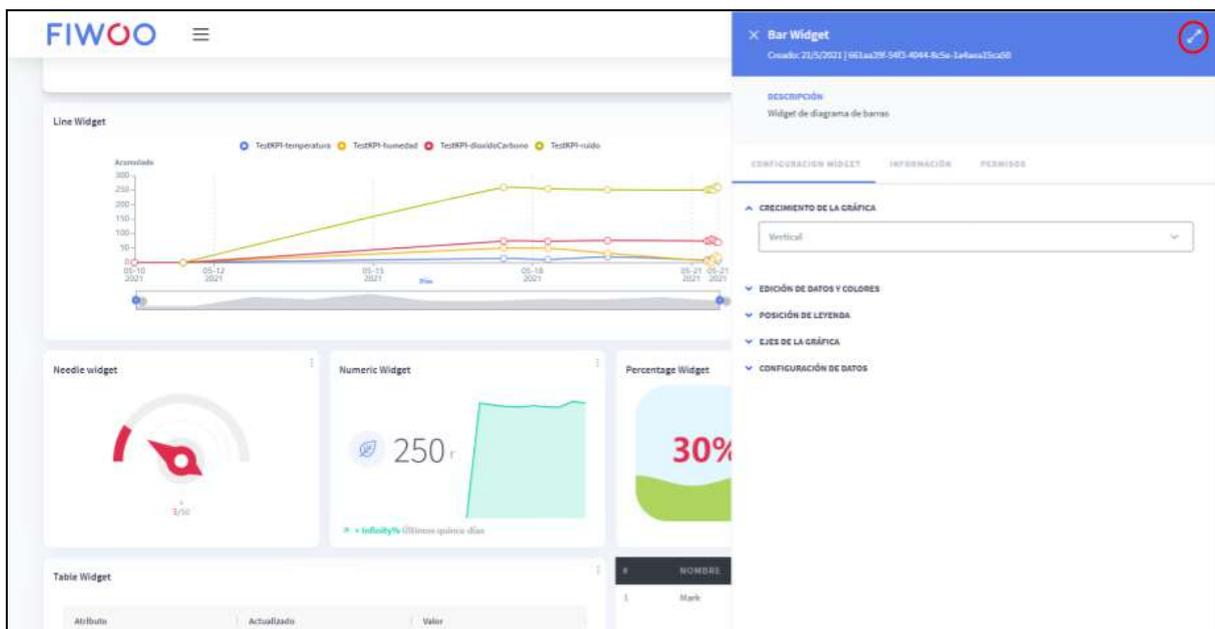
We have the possibility of deactivating the animations of the widgets if we check the option “Animation of widgets” that appears after clicking on the gear-shaped button located in the upper right corner of the screen. If the option is grey, it means that the animations are disabled.

Bar Widget

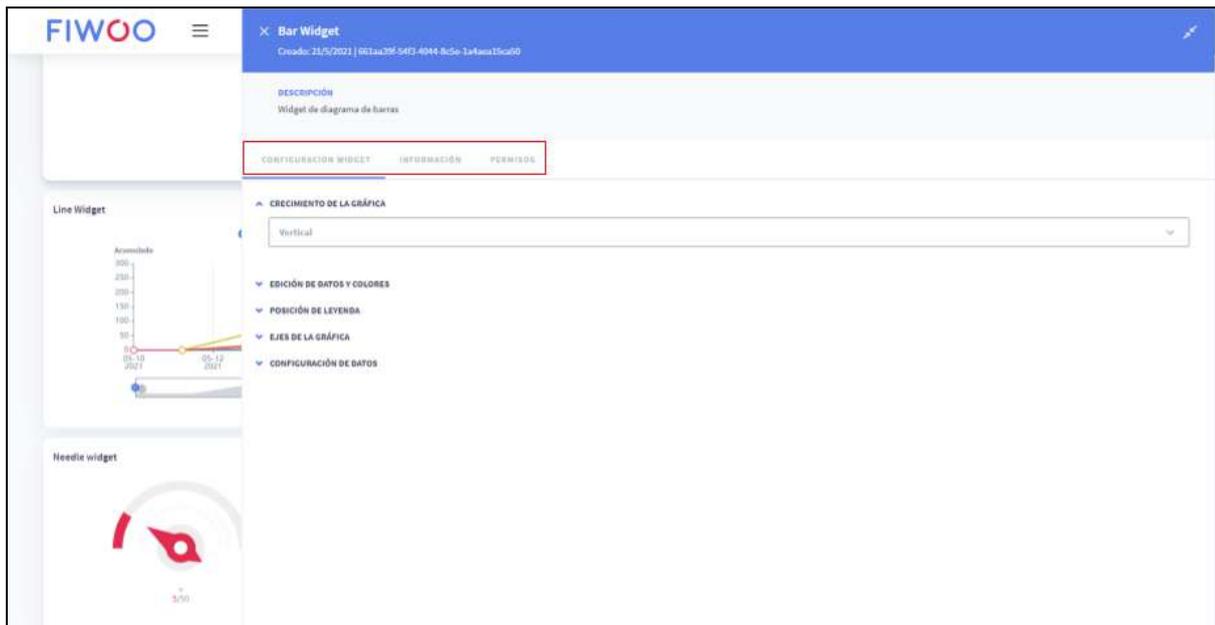
To edit this type of widget we must press the three points located in the upper right corner of said widget. This will show us a menu where we will select the “Edit” option.



A menu will be displayed on the right side of the screen where we can see the current features of the widget.



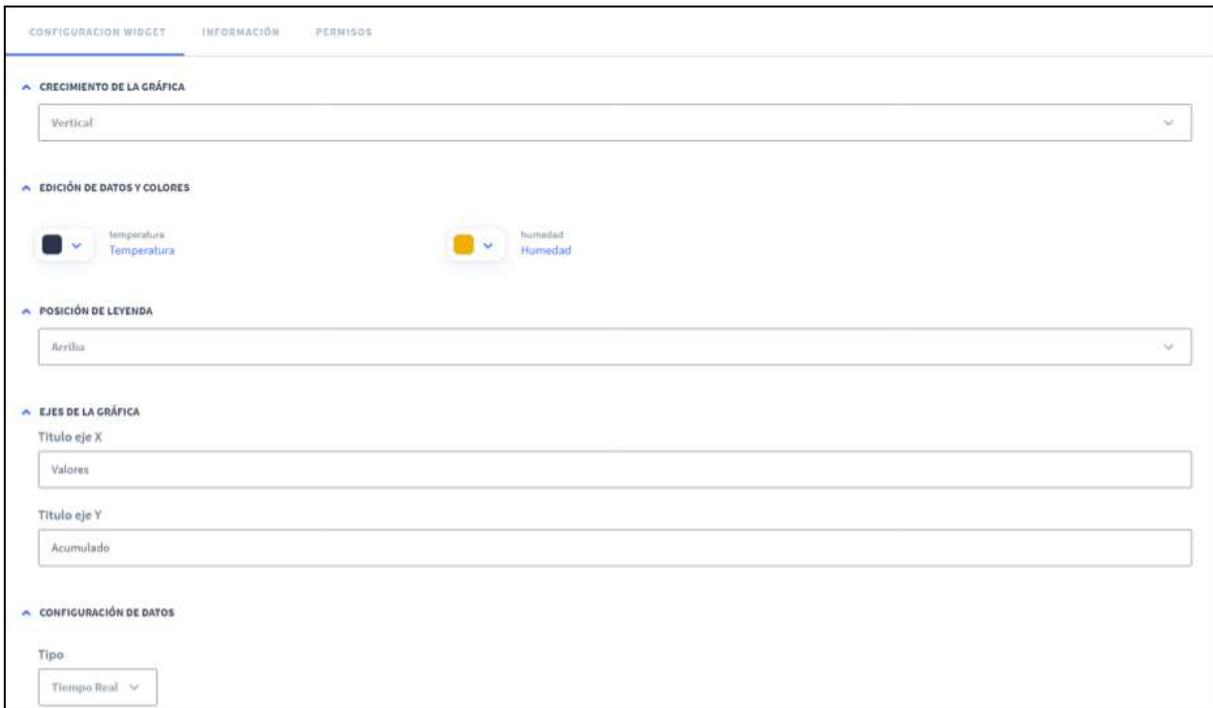
In the upper right corner we have a button that allows us to resize the menu, enlarging said menu in such a way that it is more comfortable to edit the widget.



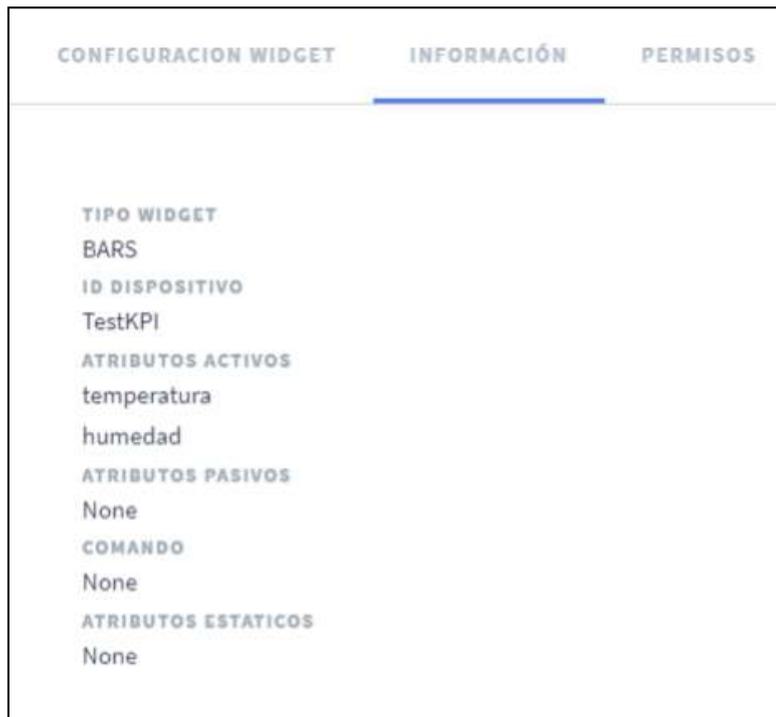
At the top of the menu we can modify the name and description that we gave the widget when we created it. We also have three submenus where we can edit different types of settings.

The first submenu is “Widget configuration” and it allows us to adjust the parameters related to the bar chart. The available configuration options are:

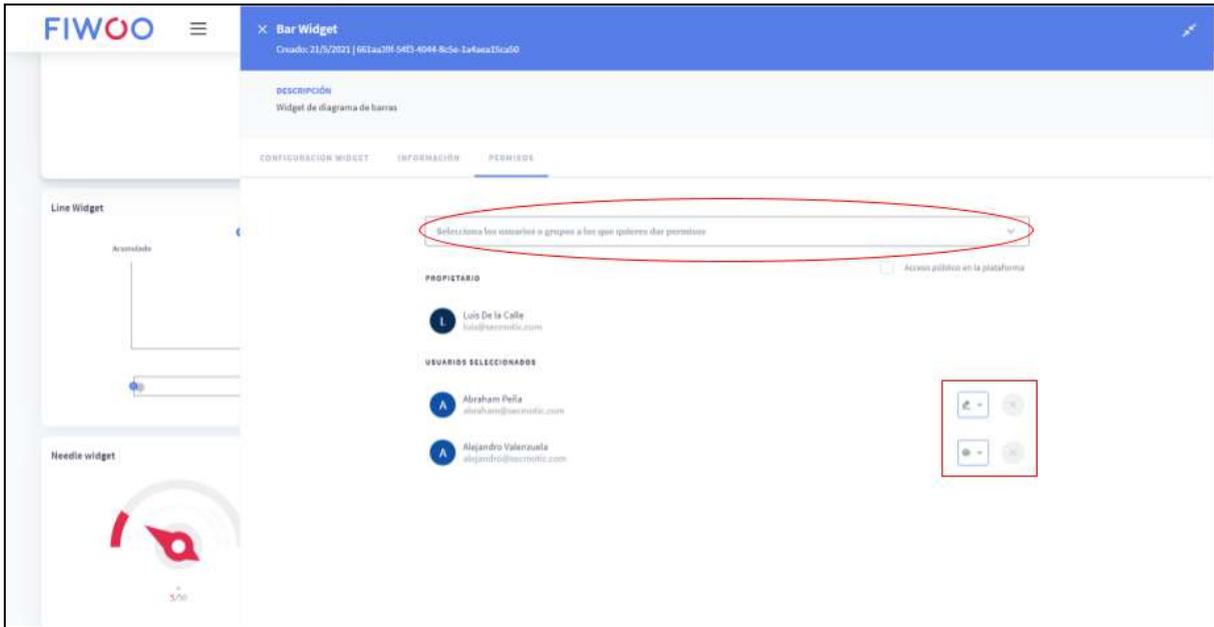
- Graph growth: it is the direction of the bars of the diagram, the possible values are “Vertical” or “Horizontal”.
- Editing of data and colors: we can change the name of the properties that we specify and assign a color to them manually.
- Legend placement: can be placed at the top, bottom, or right of the diagram.
- X-Axis Title: is an explanatory text that will be displayed under the diagram.
- Y-Axis Title: this is an explanatory text that will be displayed on the left of the diagram
- Data configuration: we have two options available, “Real Time” and “Historical”.
 - “Real Time”: We indicate that we want to show the last values that the data source has.
 - Historical: Through this type we tell the system to obtain the values of a specific period of time and group according to their average. We can tell the system to take the latest values in a period of time or specify a date range. Our bar chart will have a column for each time interval.



In the “Information” submenu, the system shows us the attribute configuration that we chose in [Create Bar Widget](#).

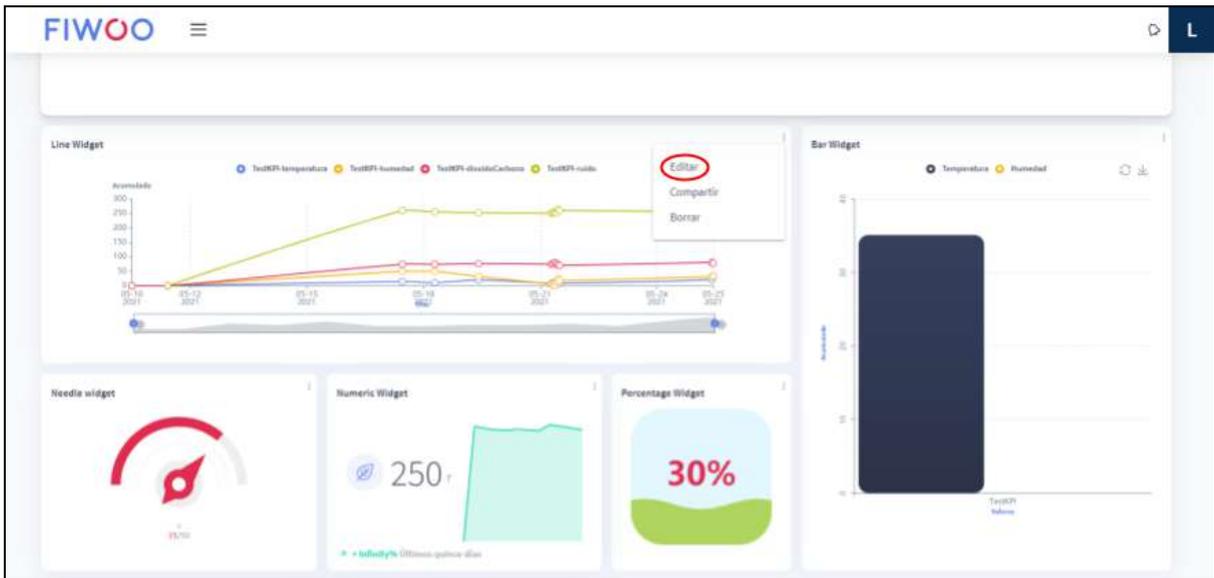


In the last submenu we will be able to modify the permissions that users have on the widget. We have the possibility of using the search bar to give access to new users or groups of users and we also have buttons to specify permissions for users who already have them and even revoke permissions.

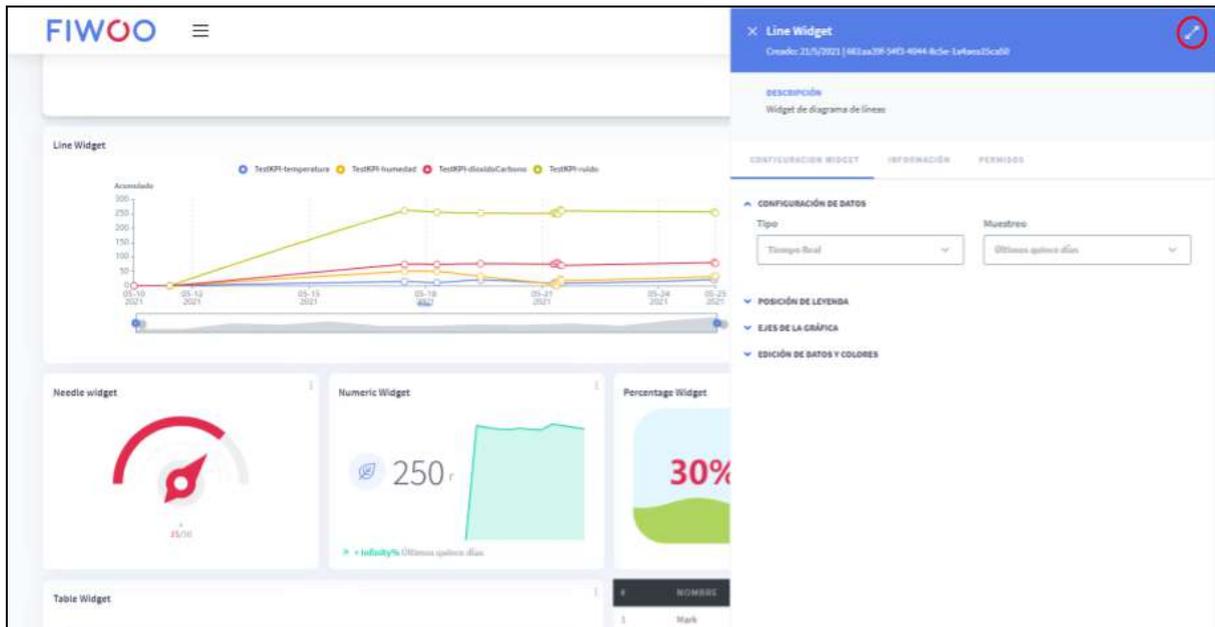


Widget Lines

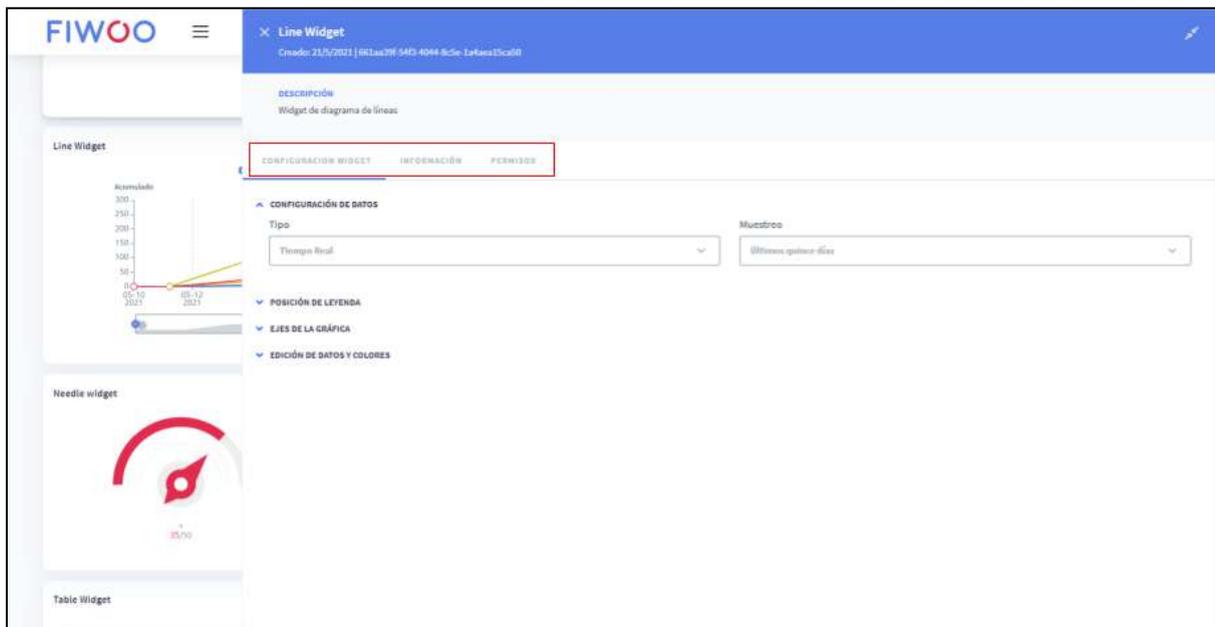
To edit this type of widget we must press the three points located in the upper right corner of said widget. This will show us a menu where we will select the “Edit” option.



A menu will be displayed on the right side of the screen where we can see the current features of the widget.



In the upper right corner we have a button that allows us to resize the menu, enlarging said menu in such a way that it is more comfortable to edit the widget.



At the top of the menu we can modify the name and description that we gave the widget when we created it. We also have three submenus where we can edit different types of settings.

The first submenu is “Widget configuration” and it allows us to adjust the parameters related to the line diagram. The configuration options available are:

- Data configuration: we have two options available, "Real Time" and "Historical". If we want to show a history of the data, we must indicate a date range from which to take the values. Or, if we can show the values in real time, in this option we choose a period of time from a

point in the past to the current moment, for example, the values of the last hour or the last fifteen days, being the updated lines in real time as data arrives.

- Legend placement: can be placed at the top, bottom, or right of the diagram.
- Graph axes: in this section we can re-specify the text associated with the X axis and the Y axis of the graph.
- Editing of data and colors: we can change the name of the properties that we specify and assigning a color to them manually.

CONFIGURACION WIDGET INFORMACION PERMISOS

CONFIGURACION DE DATOS

Tipo: Tiempo Real Muestreo: Últimos quince días

POSICION DE LEYENDA: Arrriba

EJES DE LA GRAFICA

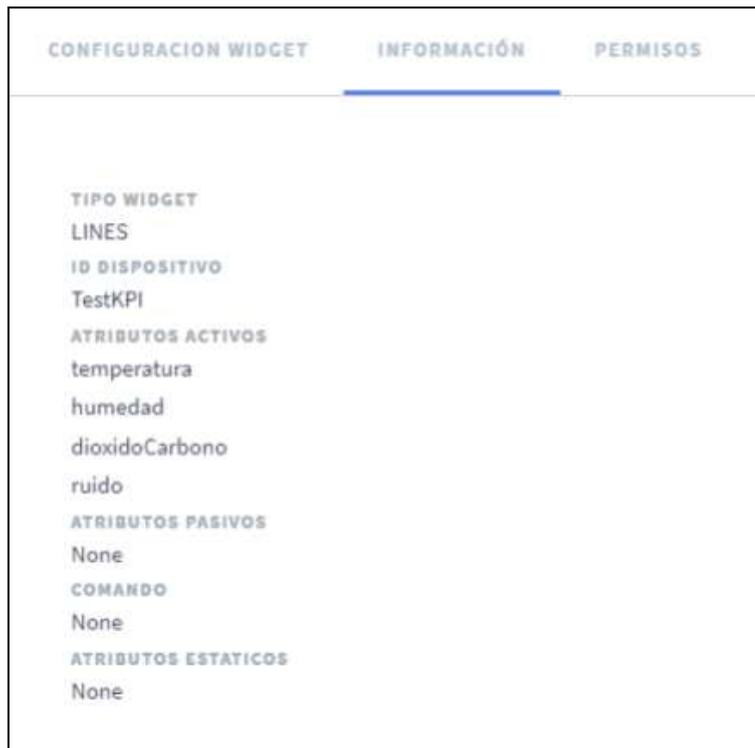
Titulo eje X: Días

Titulo eje Y: Acumulado

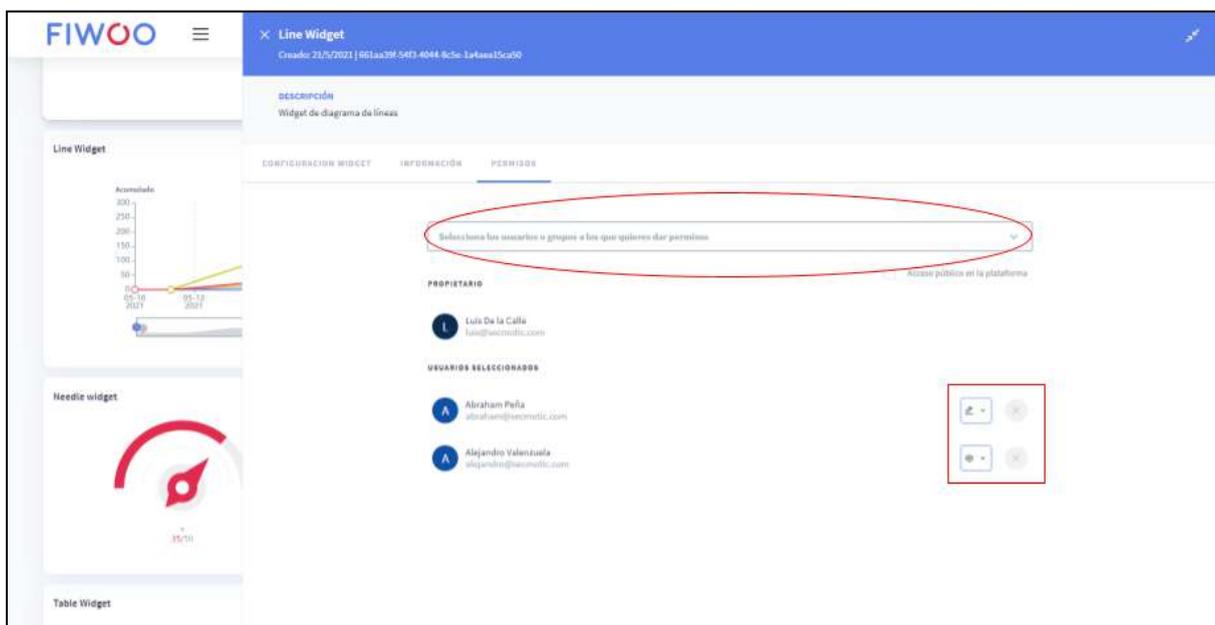
EDICION DE DATOS Y COLORES

TestKPI

In the “Information” submenu, the system shows us the configuration of attributes that we chose in [Create Widget Lines](#).

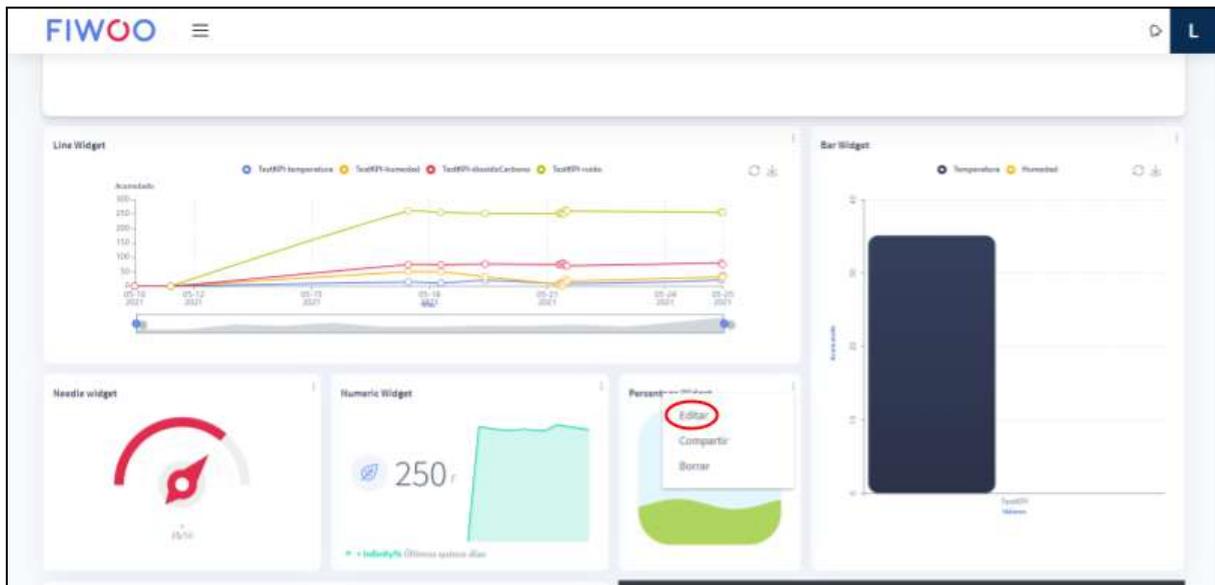


In the last submenu we will be able to modify the permissions that users have on the widget. We have the possibility of using the search bar to give access to new users or groups of users and we also have buttons to specify permissions for users who already have them and even revoke permissions.

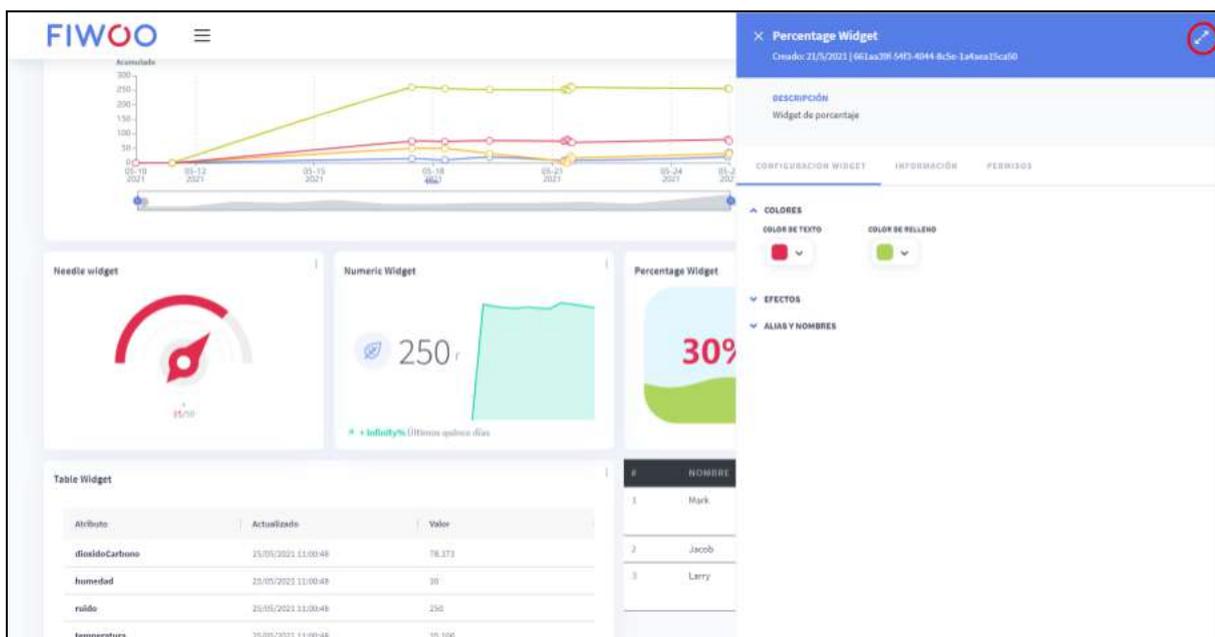


Widget Percentage

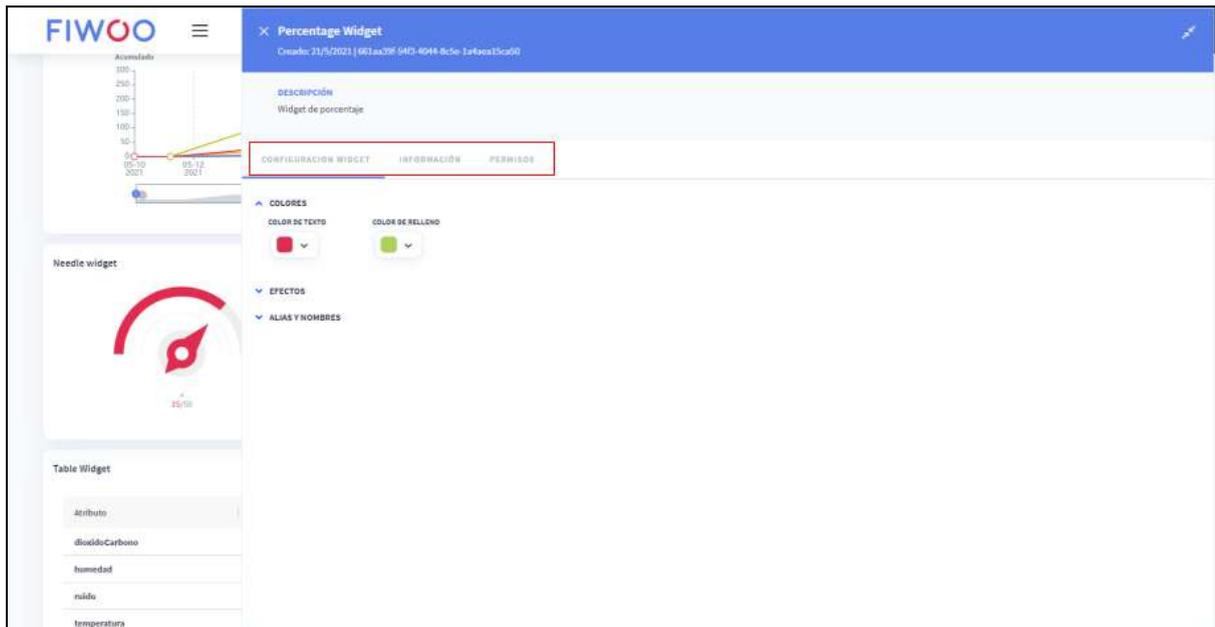
To edit this type of widget we must press the three points located in the upper right corner of said widget. This will show us a menu where we will select the “Edit” option.



A menu will be displayed on the right side of the screen where we can see the current features of the widget.



In the upper right corner we have a button that allows us to resize the menu, enlarging said menu in such a way that it is more comfortable to edit the widget.



At the top of the menu we can modify the name and description that we gave the widget when we created it. We also have three submenus where we can edit different types of settings.

The first submenu is “Widget configuration” and it allows us to adjust the parameters related to the bar chart. The configuration options available are:

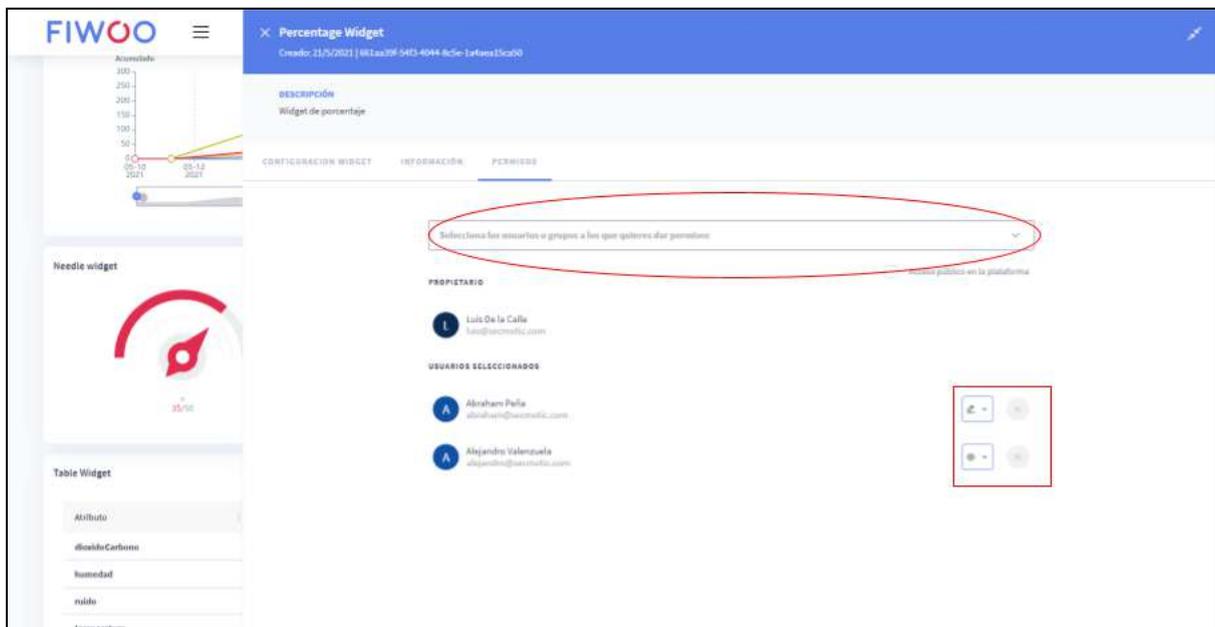
- Text color and widget fill.
- Add wave animation to diagram (this change only affects aesthetics, not values).
- Unit of measure of the represented value.



In the “Information” submenu, the system shows us the attribute configuration that we chose in [Create Percentage Widget](#).



In the last submenu we will be able to modify the permissions that users have on the widget. We have the possibility of using the search bar to give access to new users or groups of users and we also have buttons to specify permissions for users who already have them and even revoke permissions.



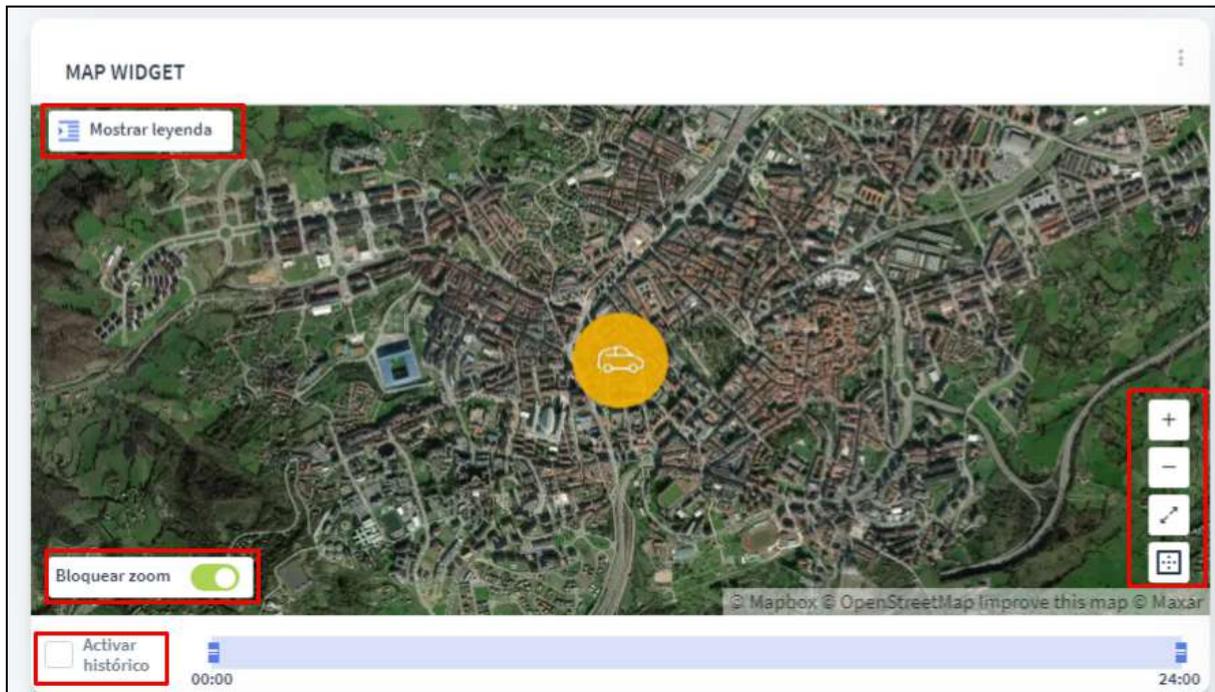
Map

- [Color legend settings](#)
- [Enable/disable zoom](#)
- [Enable/disable history](#)
- [Enable/disable real-time data](#)

The map widget allows us to interact with it from the dashboard in multiple ways. As usual on maps, we can move to other locations by clicking on it with the mouse and moving it to another position. We also have the possibility of using the zoom to zoom out or zoom in on the data

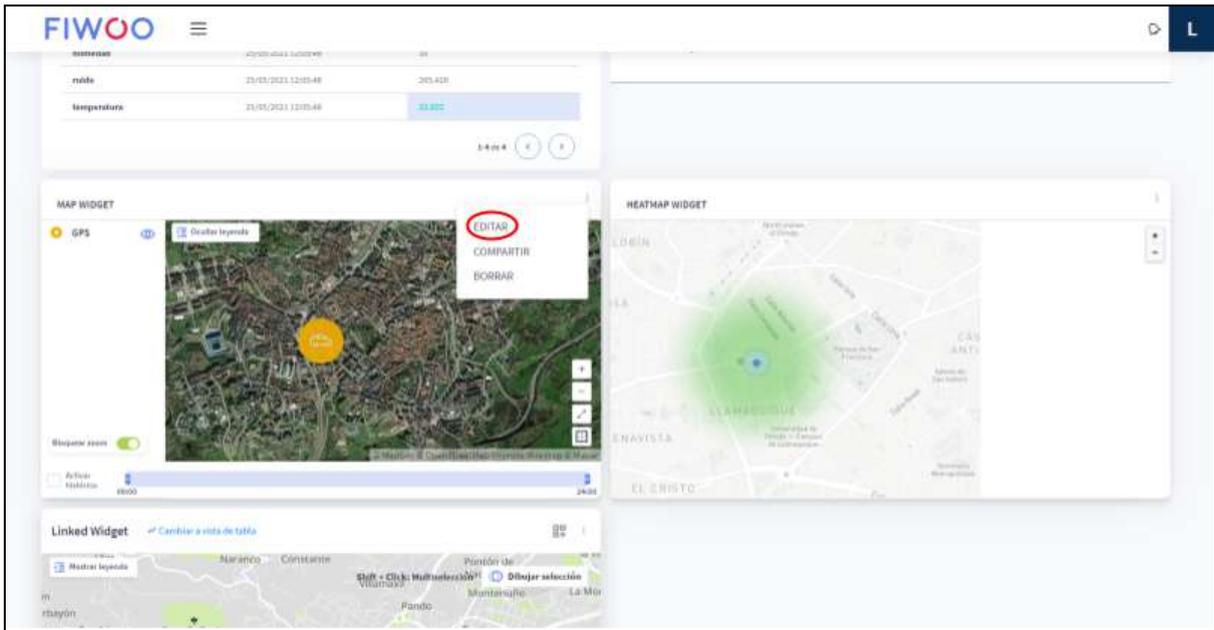
sources, using the “+” and “-” buttons located in the upper right corner, or with the mouse wheel if we unlock the zoom with it. “Lock zoom” button located in the lower left corner.

We can also activate the history of the map, which allows us to see other positions that the data source has taken in the last 24 hours. To do this, press the "Activate history" button and adjust the interval of hours that we want to check using the bar located to the right of the mentioned button.

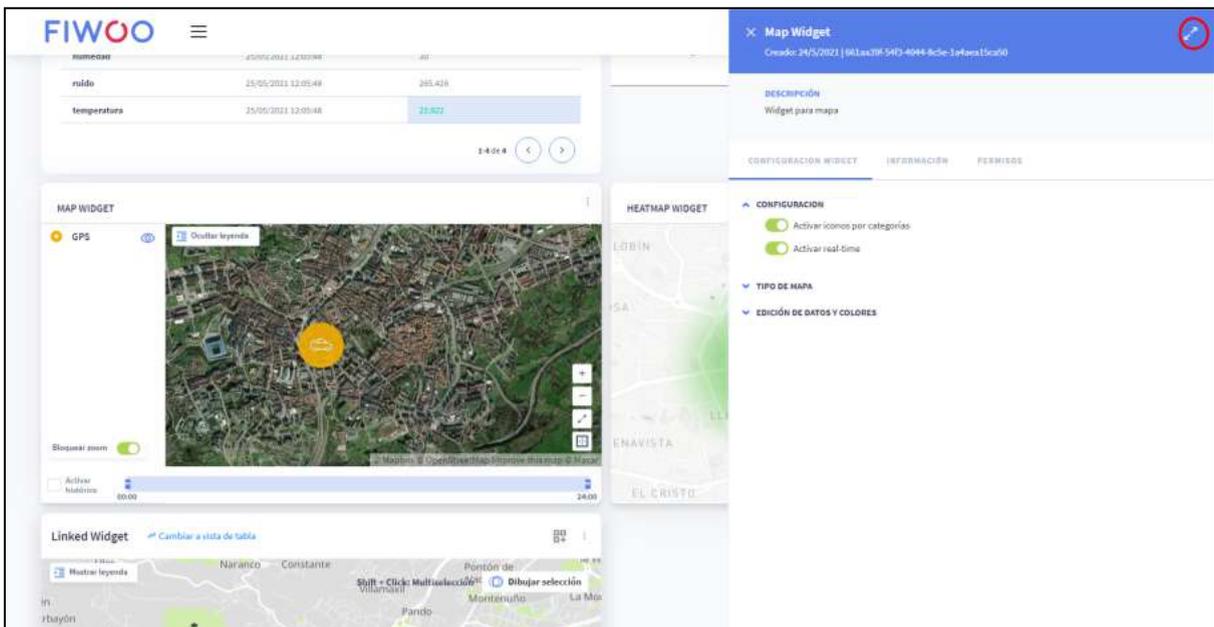


If we click on "Show legend" a side menu will be displayed with which we can list the categories of data sources found on the map. It is also possible to press an "eye" button to hide a certain category and make it not visible on the map.

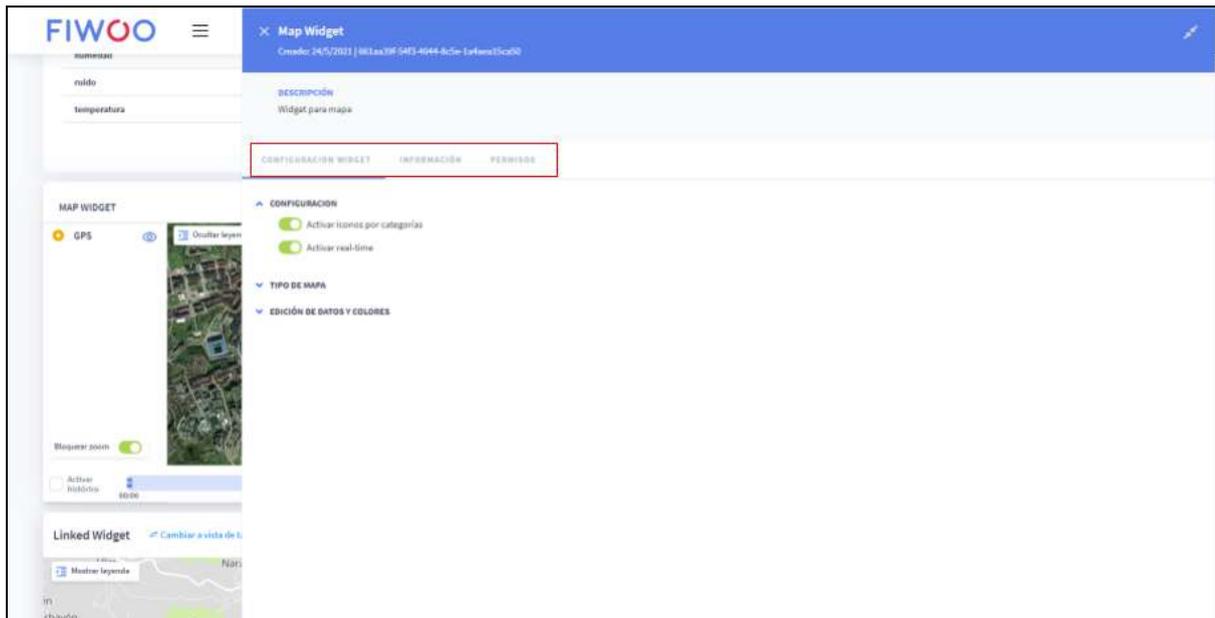
To edit the configuration of this type of widget we must press the three points located in the upper right corner of said widget. This will show us a menu where we will select the “Edit” option.



A menu will be displayed on the right side of the screen where we can see the current features of the widget.



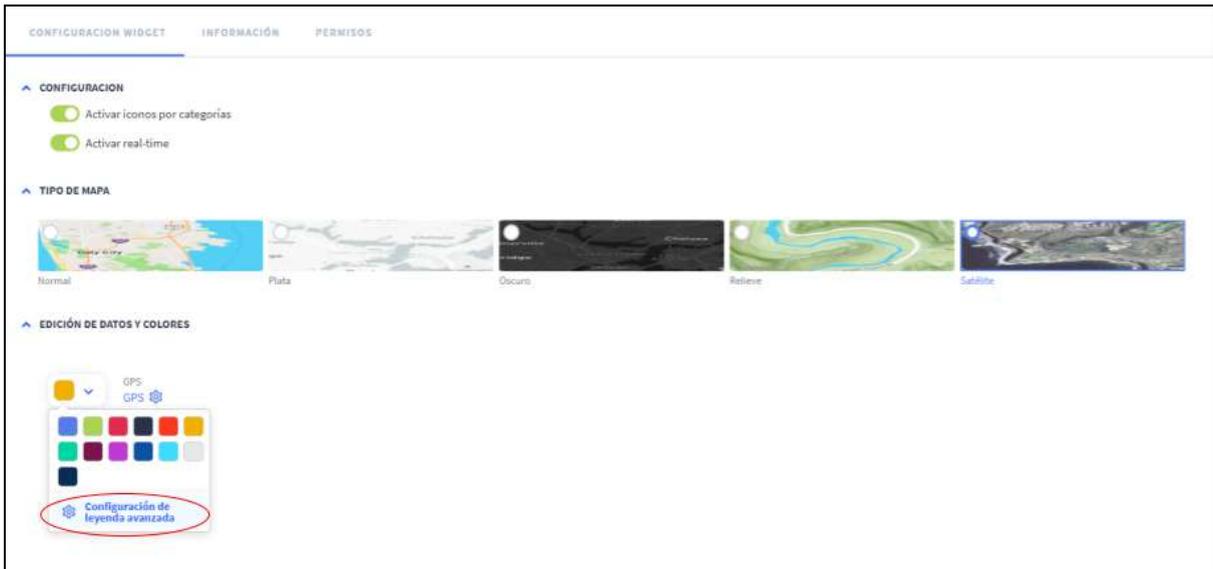
In the upper right corner we have a button that allows us to resize the menu, enlarging said menu in such a way that it is more comfortable to edit the widget.



At the top of the menu we can modify the name and description that we gave the widget when we created it. We also have three submenus where we can edit different types of settings.

The first submenu is “Widget configuration” and it allows us to adjust the parameters related to the bar chart. The configuration options available are:

- Configuration: in this section we can indicate if we want the data sources to be shown on the map with an icon that identifies them and also if we want the map to be updated in real time.
- Map type: we can use maps of different styles that suit our needs.
- Editing of data and colors: In this section we can indicate the color that we want to represent our data sources, as well as change the properties that are shown when clicking on them on the map. To do this, click on the gear. In this section we are also able to specify groups in which to identify the devices.

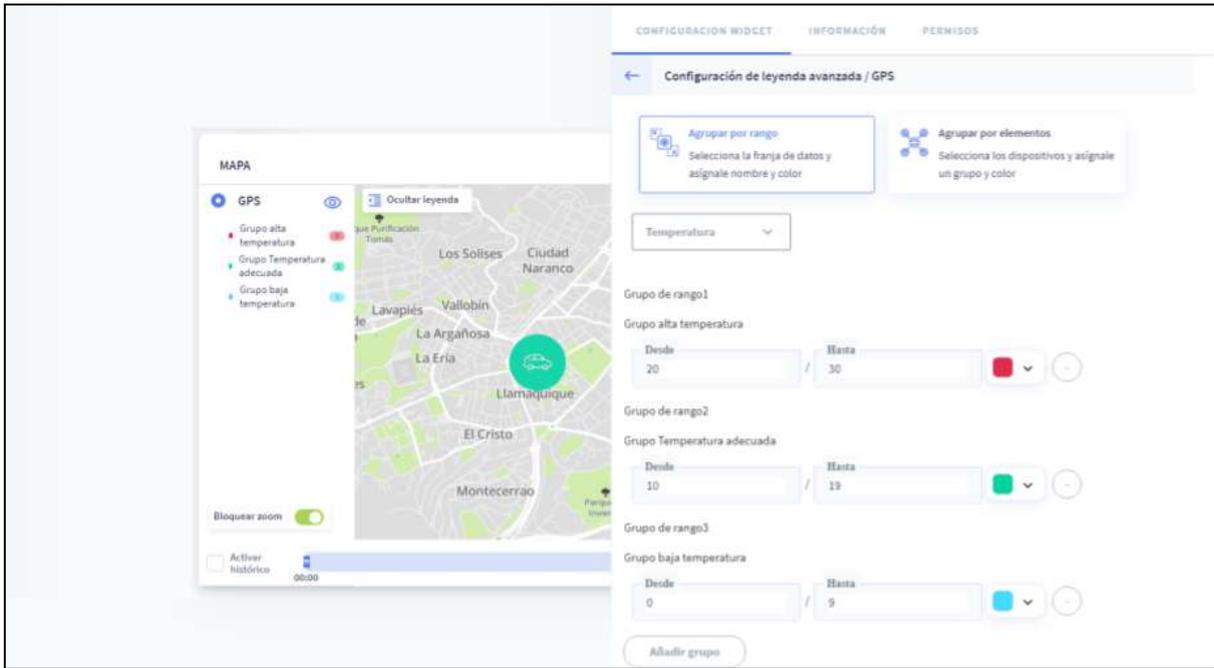


To establish new groups we select the option “Advanced legend configuration”, which is visible within the color selector of a device.

This will make the system show us a new menu in which we can make groups for the devices. We can establish the groups in two different ways: by the range of a variable or by selecting the devices manually.

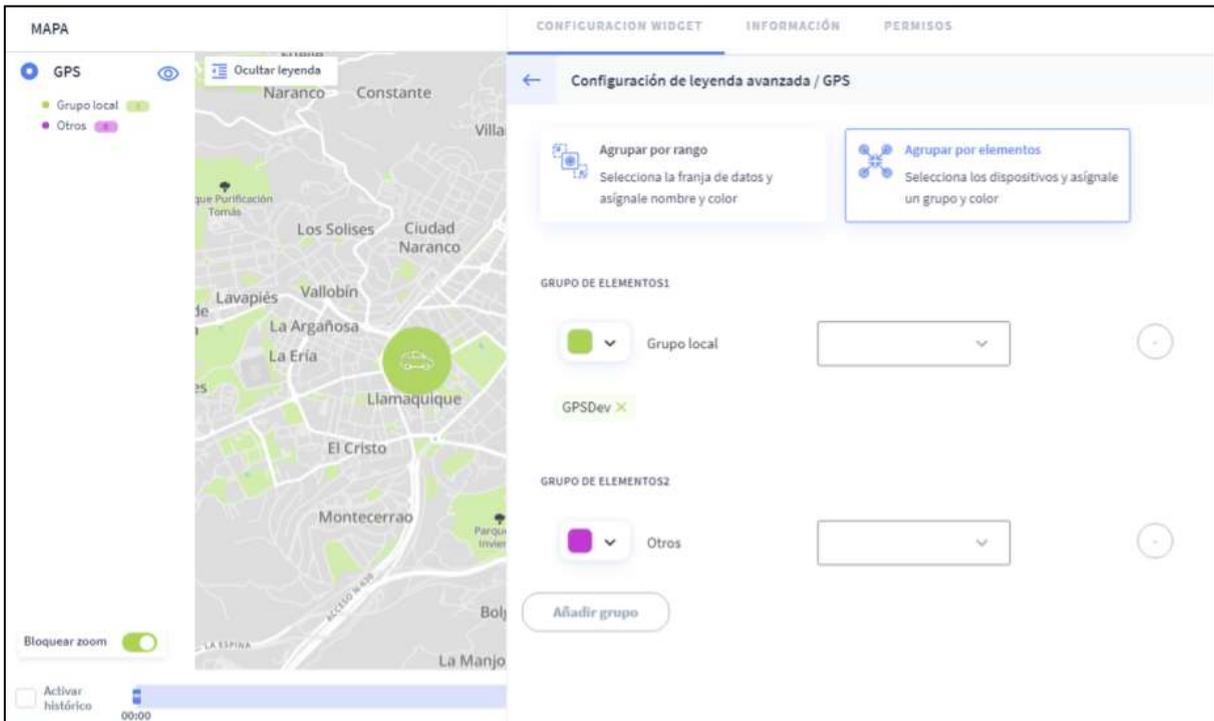


If we decide to group by range, we will see a menu in which we must select the numerical variable with which we are going to work. We have an “Add Group” button with which we can add all the groups we need. For each group, we must specify the range of values in which the device must be found to be considered part of said group and the color that the devices that belong to it will take.



We are also able to enter a name that identifies the group. In this way, we can quickly identify what state our elements are in within the map.

The other option that we have, is to group the elements manually. In this case, the system will also allow us to establish as many groups as we need and what color will identify each group, but we will have to manually indicate the devices that will be part of said group. The drop-down menu located to the right of the color will show us a list with the devices that do not yet belong to any group and will allow us to select them.



In any of the options, we can delete a group by pressing the “-” button located to the right of each of these groups.

If we go to the “Information” submenu, the system shows us the attribute configuration that we chose in [Create Map Widget](#).



In the last submenu we will be able to modify the permissions that users have on the widget. We have the possibility of using the search bar to give access to new users or groups of users and we also have buttons to specify permissions for users who already have them and even revoke permissions.

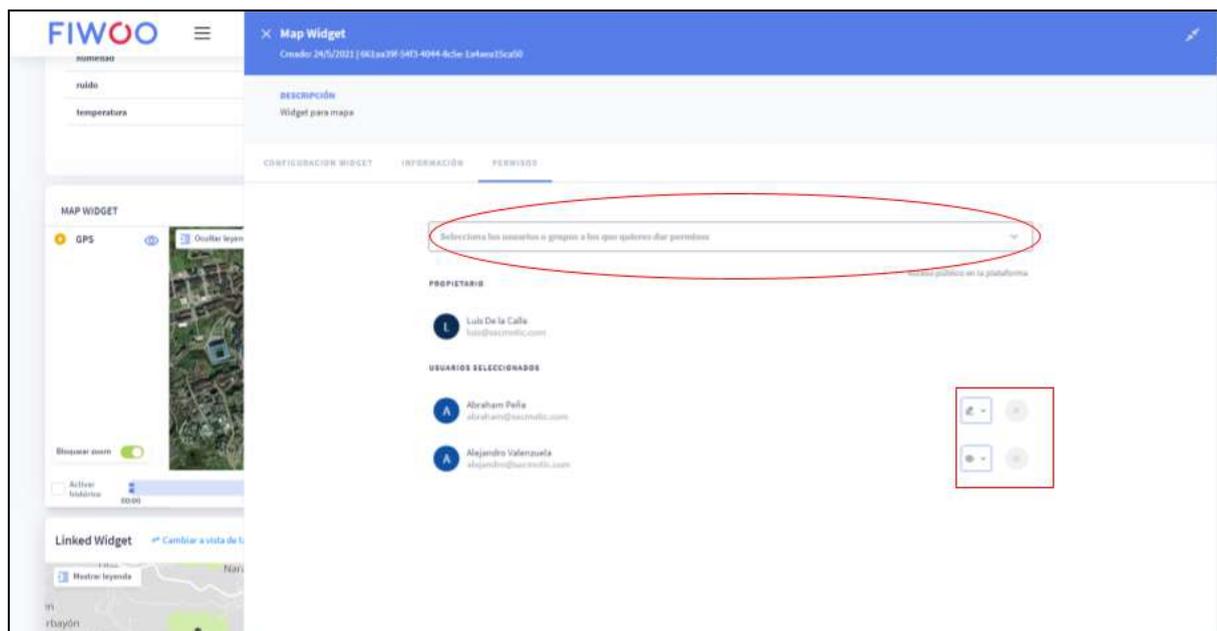
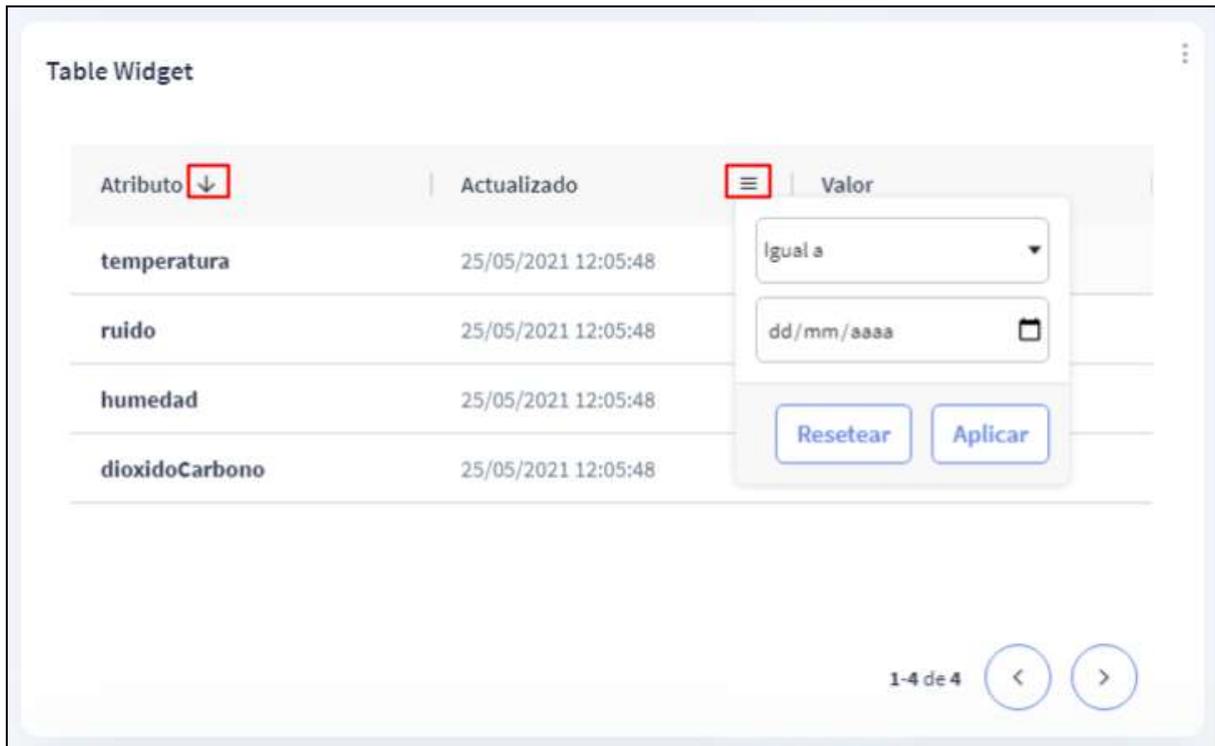


Table Widget

The Table widget allows us to interact with it from the dashboard in multiple ways. If we click on the header of the table we can reorder it ascending or descending based on the column that we have selected, we will know how it is ordered by the arrow that will appear to the right of the column header.

It is also possible to filter the rows of a table, to do this we must pass the mouse over the column that we want to filter, this will make an icon made up of horizontal lines appear. If we click on this icon, the system will show us a window in which we can enter a criterion to filter.

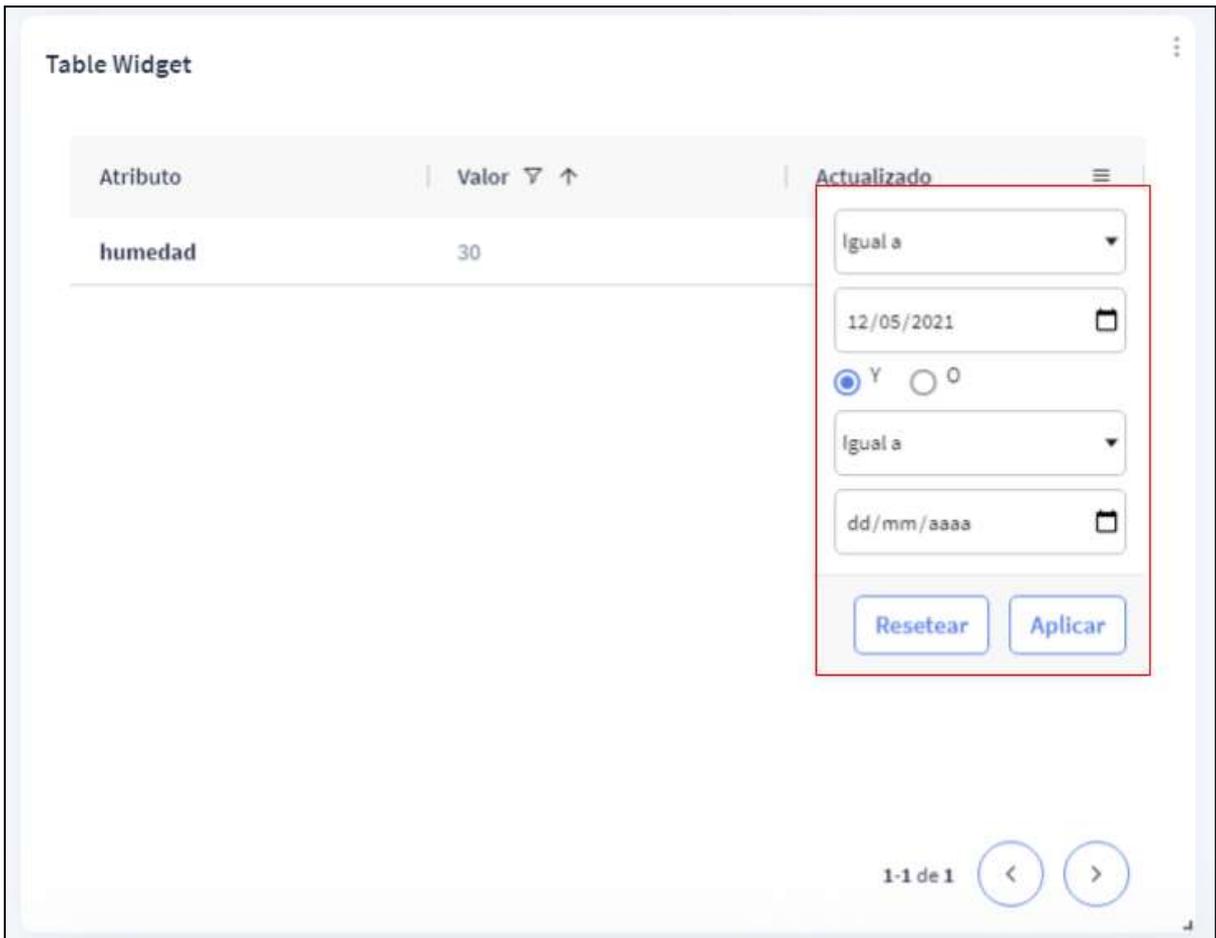


The screenshot displays a 'Table Widget' with the following data:

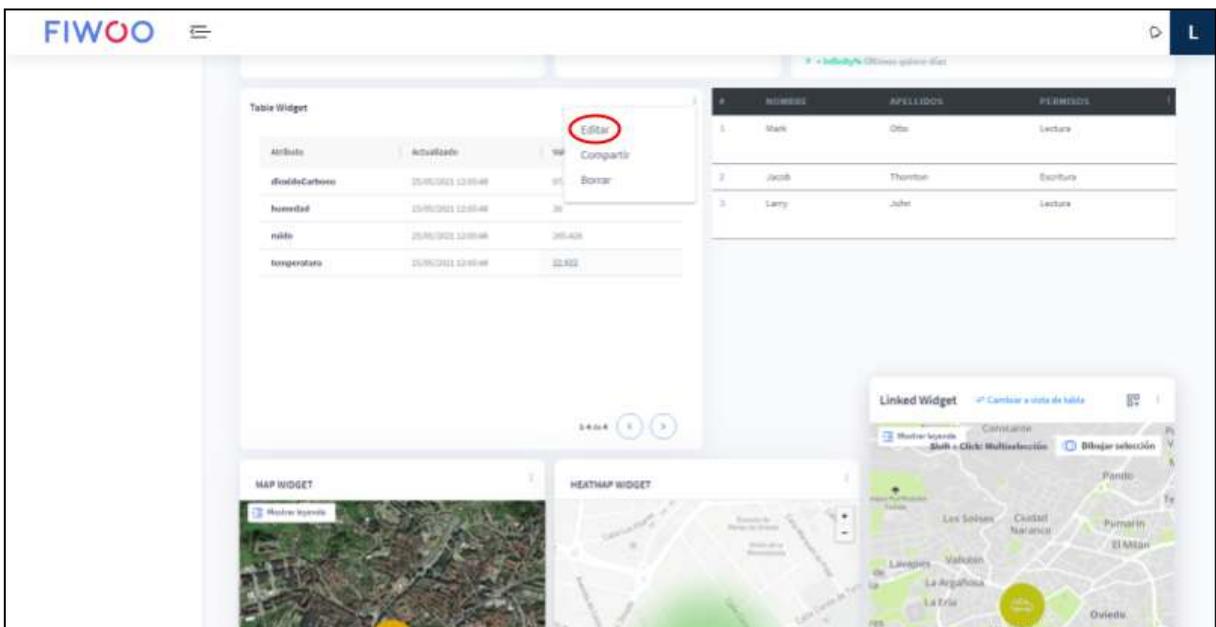
Atributo	Actualizado	Valor
temperatura	25/05/2021 12:05:48	Igual a
ruido	25/05/2021 12:05:48	dd/mm/aaaa
humedad	25/05/2021 12:05:48	
dioxidoCarbono	25/05/2021 12:05:48	

At the bottom right, there is a pagination indicator '1-4 de 4' and navigation arrows.

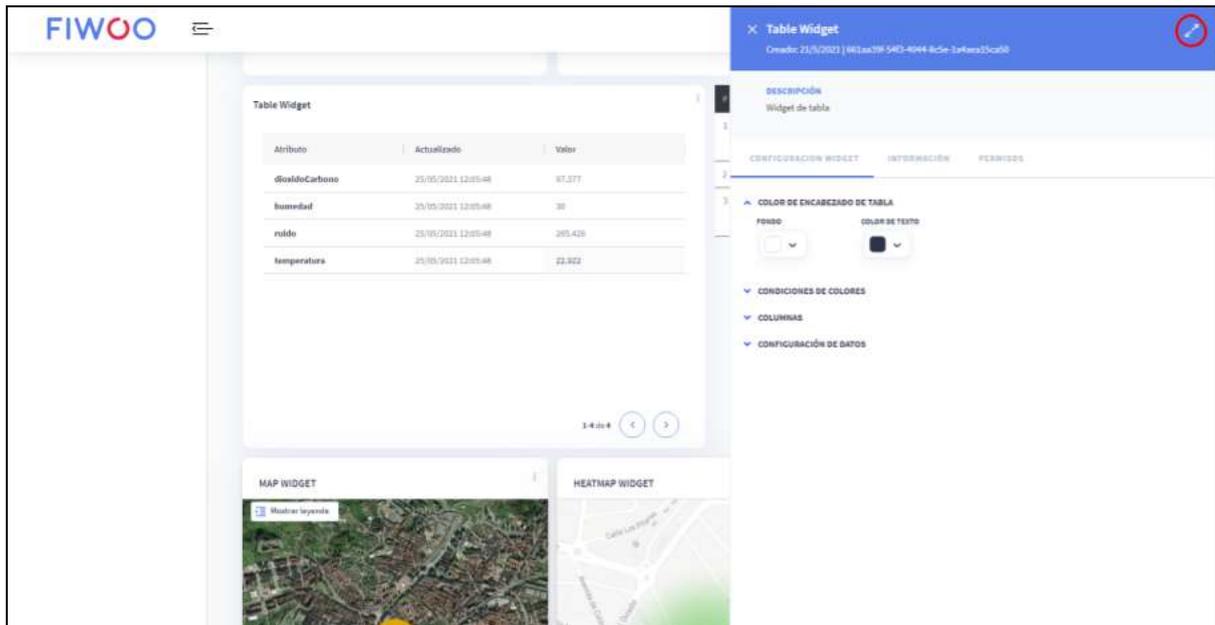
After writing a criterion, the system will allow us to enter a second filter condition to make our search even more precise. Finally, we can also rearrange the columns of the table to display the most important ones first.



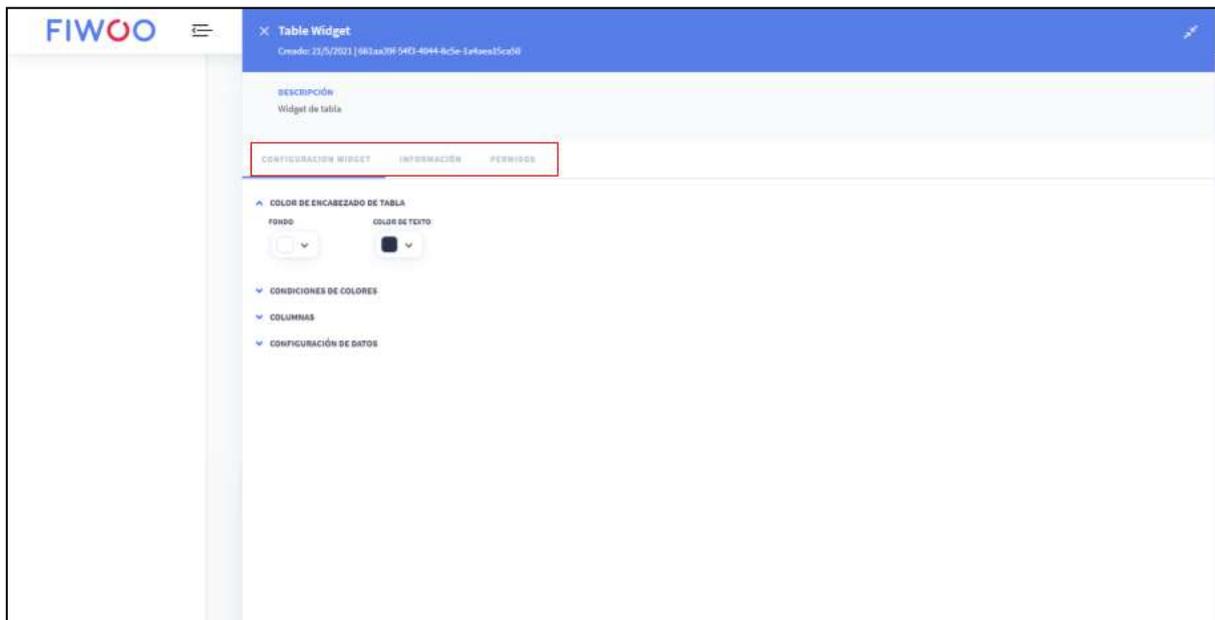
To edit the configuration of a table widget, we must press the three points located in the upper right corner of said widget. This will show us a menu where we will select the “Edit” option.



A menu will be displayed on the right side of the screen where we can see the current features of the widget.



In the upper right corner we have a button that allows us to resize the menu, enlarging said menu in such a way that it is more comfortable to edit the widget.



At the top of the menu we can modify the name and description that we gave the widget when we created it. We also have three submenus where we can edit different types of settings.

The first submenu is “Widget configuration” and it allows us to adjust the parameters related to the bar chart. The configuration options available are:

- Color of the background and of the text of the table header.
- Color conditions: we can configure a series of rules on the properties of the columns of the table, so that, when one of these rules is met, the color of the background of the cell and its

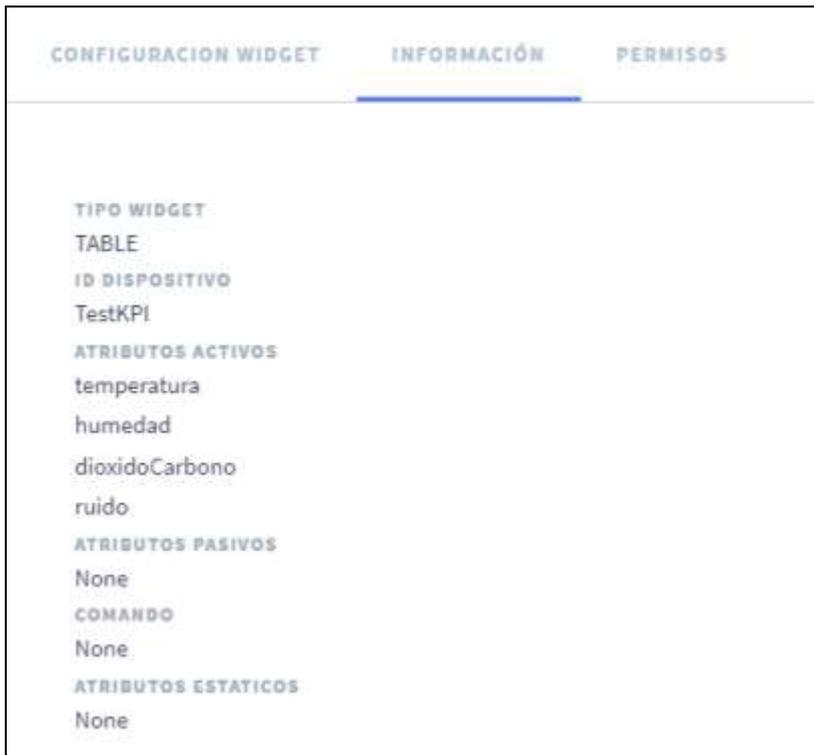
text is modified. We can have several conditions for each property in order to cover several intervals.

- Columns: in this section we select the columns that we want to show in the table.
- Data configuration: in this section we can adjust several parameters.
 - We can change the orientation of the table, that is, if we want the table header to be on the left as rows or on the top as columns.
 - It is possible to configure the table to show the values in real time, (the most current values that we receive from the data source), or, if we want to show the values in a history, in this option we choose a period of time from a point from the past to the present moment.
 - The operation defines how we will collect the data from the data source, in the case of having chosen the "Real time" option we can only collect the latest values, on the other hand, through the "Historical" option we can indicate that it obtains the minimum value, the maximum value or the average value of a certain period of time.

The image shows a configuration interface with three main sections:

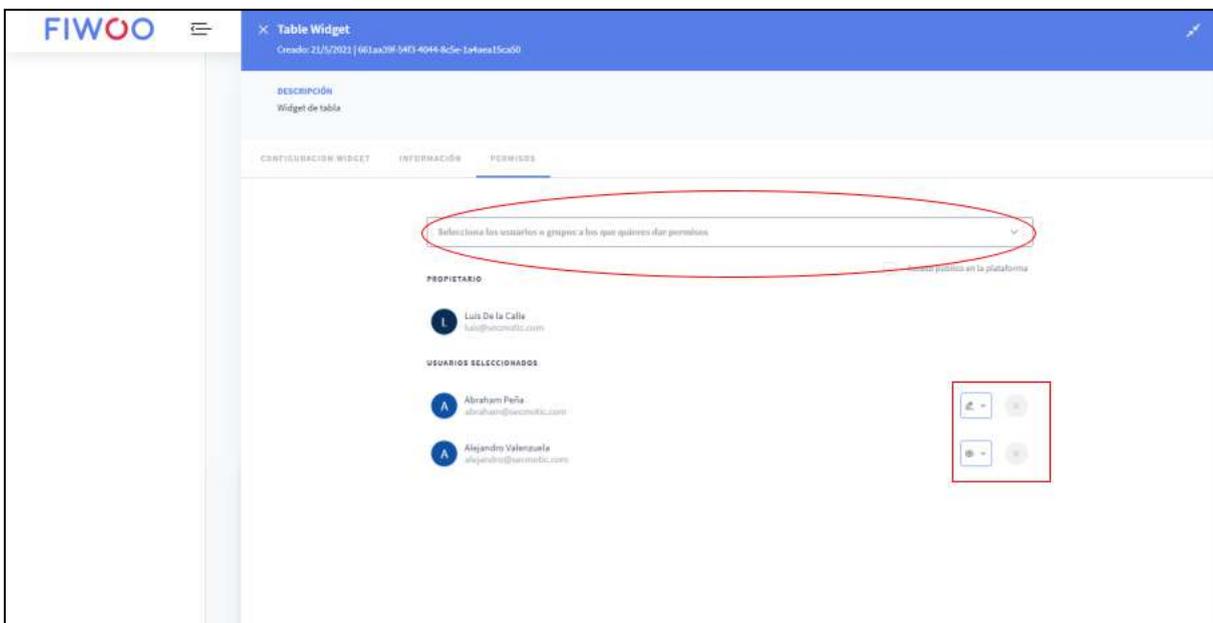
- CONDICIONES DE COLORES:** Includes a dropdown menu labeled 'Elegir', and input fields for 'Desde', 'Hasta', 'Formato', and 'Texto', along with a 'Punto' dropdown and a 'Testeo' button.
- COLUMNAS:** Features a table with a header 'PROPiedades (4/4)' and a list of properties: 'temperatura', 'humedad', 'dióxido de Carbono', and 'ruido'. Each property has a green toggle switch and a corresponding label on the right.
- CONFIGURACIÓN DE DATOS:** Contains three dropdown menus: 'Orientación' (set to 'Filas'), 'Tipo' (set to 'Tiempo Real'), and 'Operación' (set to 'Último valor').

In the "Information" submenu, the system shows us the attribute configuration that we chose in [Create Table Widget](#).



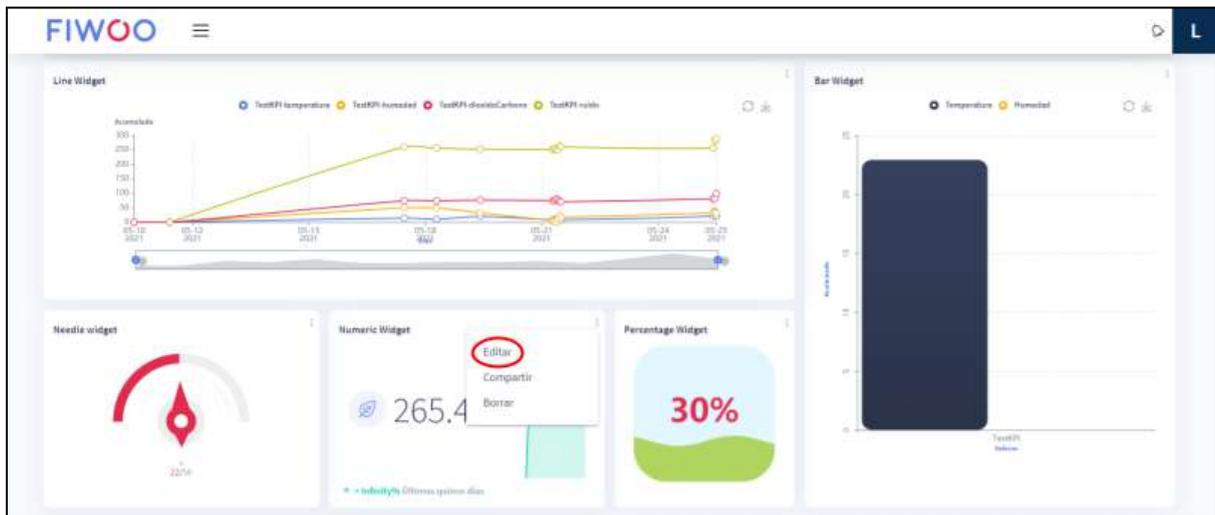
The data displayed by the system is not configurable in any way, this section is informative.

In the last submenu we will be able to modify the permissions that users have on the widget. We have the possibility of using the search bar to give access to new users or groups of users and we also have buttons to specify permissions for users who already have them and even revoke permissions.

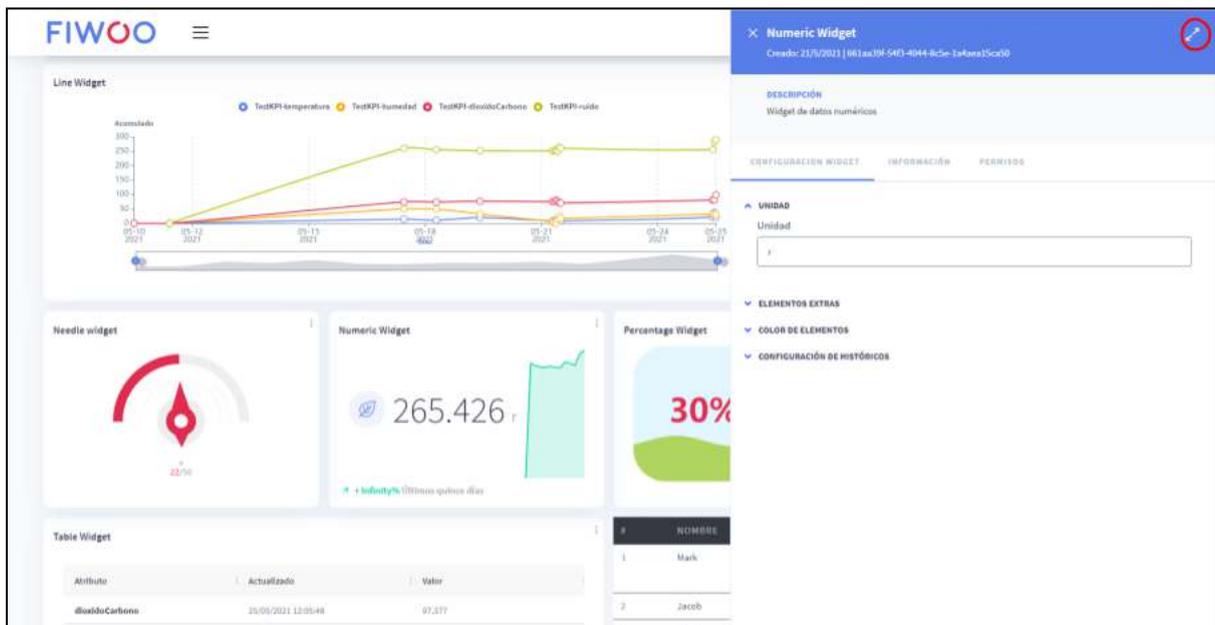


Widget Numerical data

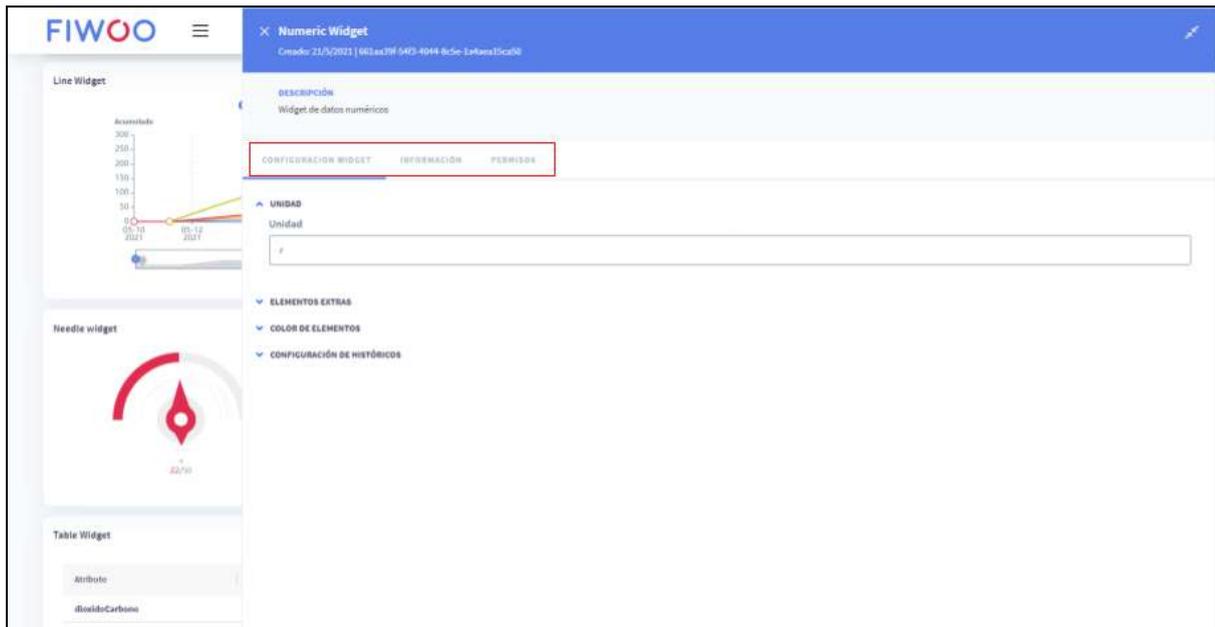
To edit this type of widget we must press the three points located in the upper right corner of said widget. This will show us a menu where we will select the “Edit” option.



A menu will be displayed on the right side of the screen where we can see the current features of the widget.



In the upper right corner we have a button that allows us to resize the menu, enlarging said menu in such a way that it is more comfortable to edit the widget.



At the top of the menu we can modify the name and description that we gave the widget when we created it. We also have three submenus where we can edit different types of settings.

The first submenu is “Widget configuration” and it allows us to adjust the parameters related to the bar chart. The configuration options available are:

- Unit of measure of the represented value.
- Extra elements, we can decide whether or not to display the following elements:
 - Icon by category.
 - Evolution graph.
 - Percent increase.
- Color of the icon and of the value that is represented, we can specify a different value depending on whether it is positive or negative.
- Historical configuration, we can specify the time interval that the widget will use to represent the values.

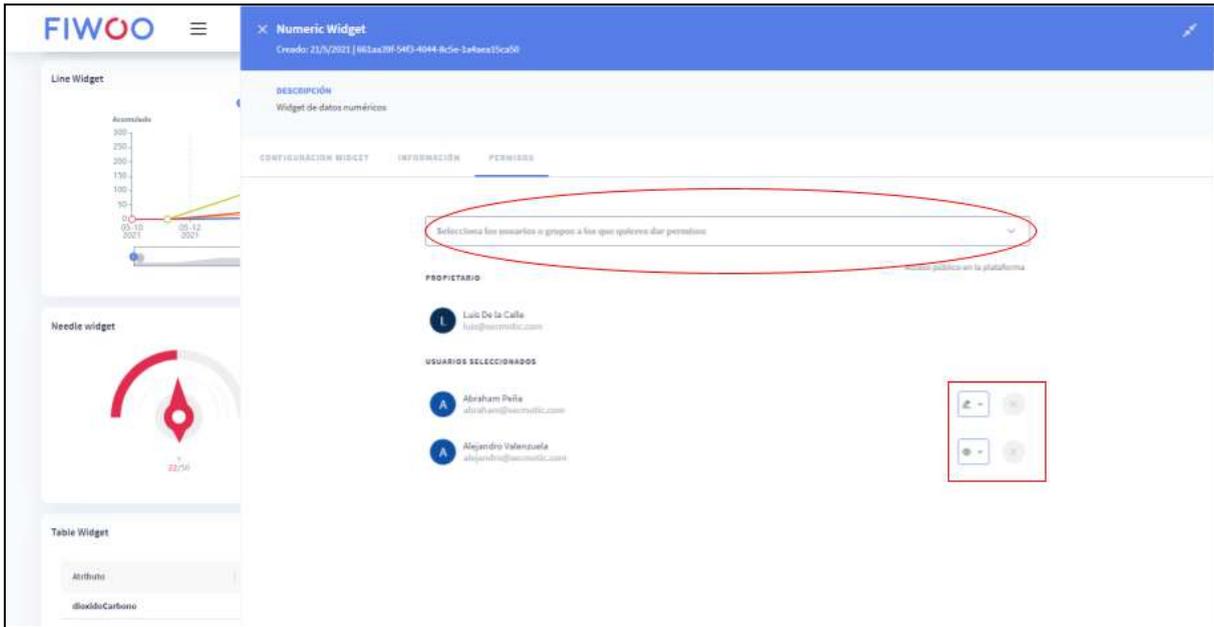


In the “Information” submenu, the system shows us the attribute configuration that we chose in [Create Numerical Data Widget](#).



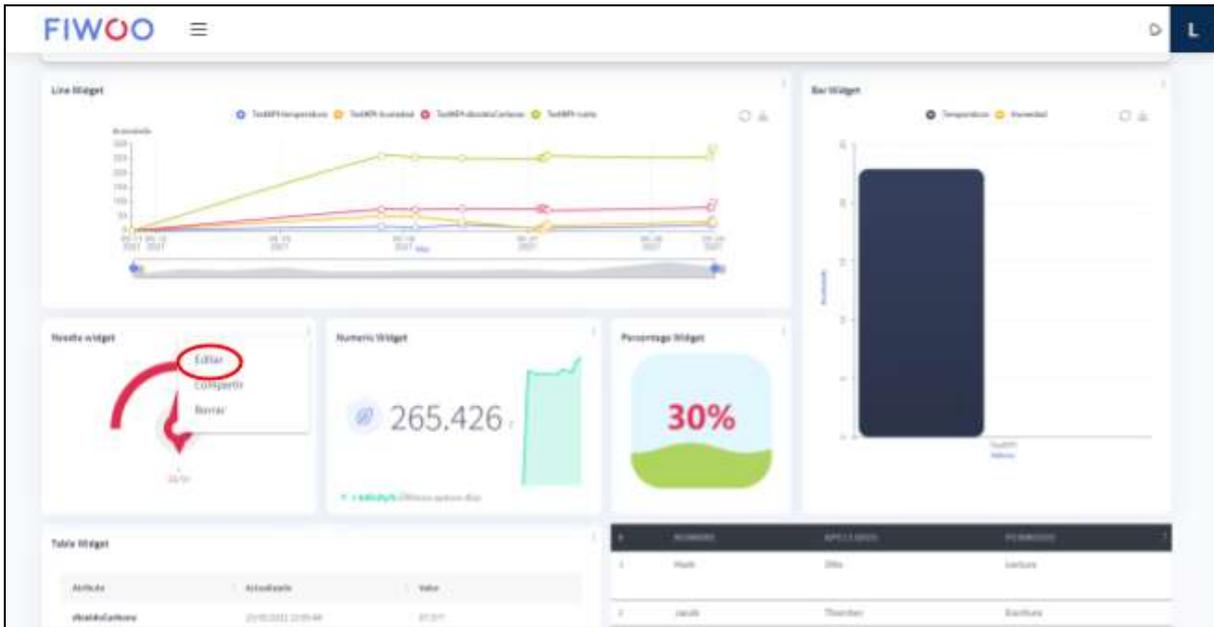
The data displayed by the system is not configurable in any way, this section is informative.

In the last submenu we will be able to modify the permissions that users have on the widget. We have the possibility of using the search bar to give access to new users or groups of users and we also have buttons to specify permissions for users who already have them and even revoke permissions.

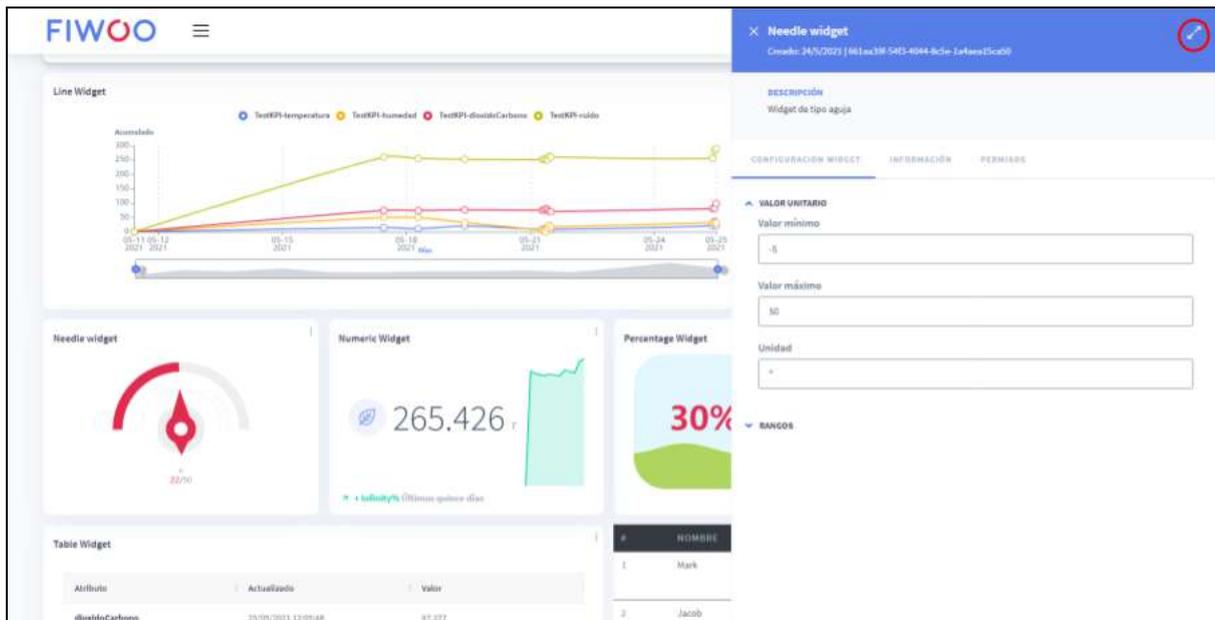


Needle Widget

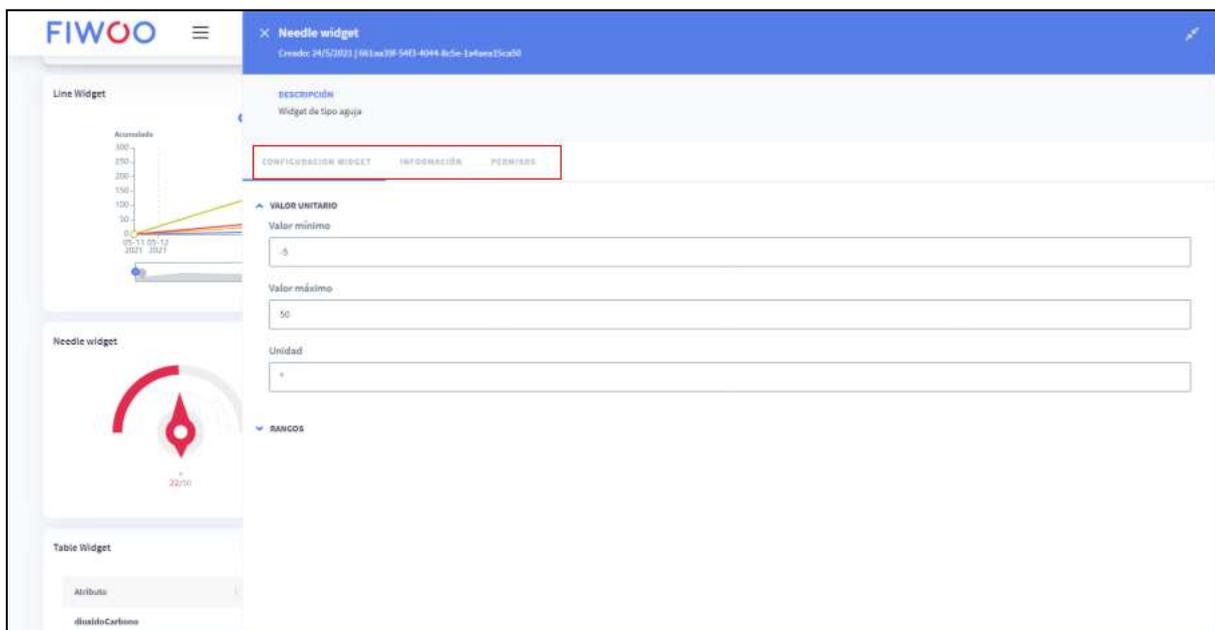
To edit this type of widget we must press the three points located in the upper right corner of said widget. This will show us a menu where we will select the “Edit” option.



A menu will be displayed on the right side of the screen where we can see the current features of the widget.



In the upper right corner we have a button that allows us to resize the menu, enlarging said menu in such a way that it is more comfortable to edit the widget.



At the top of the menu we can modify the name and description that we gave the widget when we created it. We also have three submenus where we can edit different types of settings.

The first submenu is “Widget configuration” and it allows us to adjust the parameters related to the bar chart. The available configuration options are:

- Unit value: formed by the range of values that the property to which it is assigned can take and the unit with which it is represented.
- Ranges: we can specify up to three intervals and associate them with a color, so that when the needle indicates values of another interval, it changes to the corresponding color. These ranges can be indicated by absolute values or by percentage.

The screenshot shows the 'CONFIGURACION WIDGET' submenu with the following configuration:

- VALOR UNITARIO**
 - Valor mínimo: -5
 - Valor máximo: 50
 - Unidad: *
- RANGOS**
 - Valores por porcentaje:
 - Valores absolutos:
 - Menor de: 55 (Red indicator)
 - Desde: 55 / Hasta: 77 (Green indicator)
 - Más de: 77 (Blue indicator)

In the “Information” submenu, the system shows us the attribute configuration that we chose in [Create Needle Widget](#).

The screenshot shows the 'INFORMACIÓN' submenu with the following information:

- TIPO WIDGET: NEEDLE
- ID DISPOSITIVO: TestKPI
- ATRIBUTOS ACTIVOS: temperatura
- ATRIBUTOS PASIVOS: None
- COMANDO: None
- ATRIBUTOS ESTATICOS: None

The data displayed by the system is not configurable in any way, this section is informative.

In the last submenu we will be able to modify the permissions that users have on the widget. We have the possibility of using the search bar to give access to new users or groups of users and we also have buttons to specify permissions for users who already have them and even revoke permissions.

FIWOO ☰ × **Needle widget**
Creado: 14/3/2021 | ID: 1ax79f-54d-4044-8c5e-1ef4ee25c600

Line Widget
Acumulado
300
250
200
150
100
50
0
10/11/2021 10/12/2021

Needle widget
22/30

Table Widget
Atributo
@usuarioCarbono

DESCRIPCIÓN
Widget de tipo aguja

CONFIGURACION WIDGET | INFORMACIÓN | **PERMISOS**

Selecciona los usuarios o grupos a los que quieres dar permisos

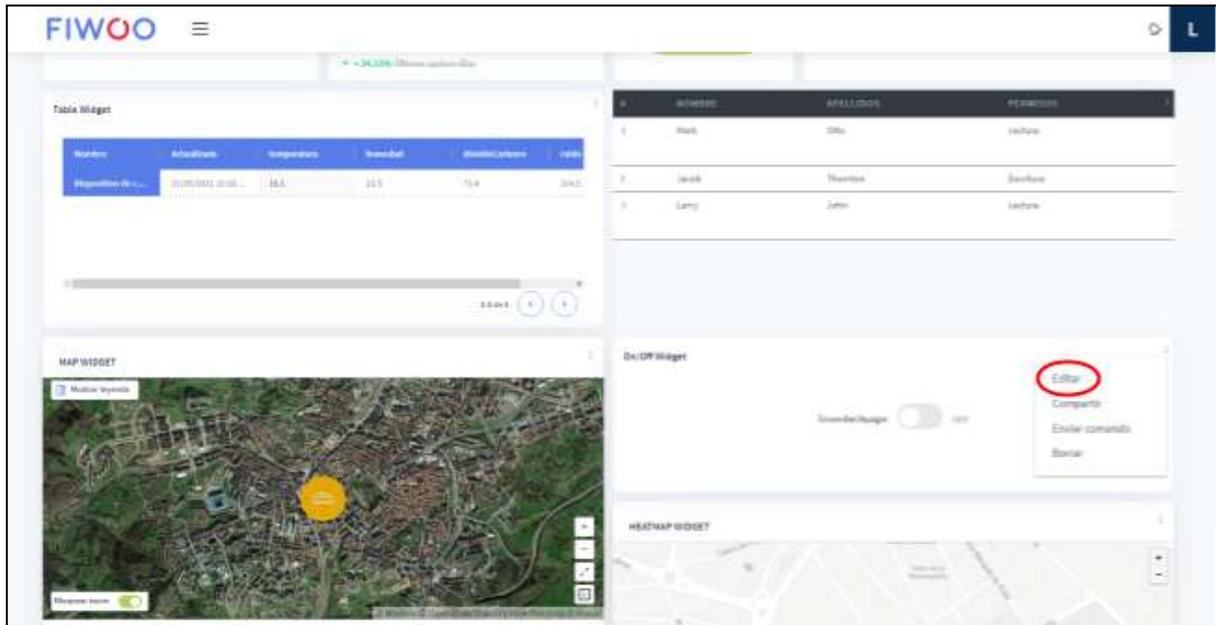
PROPIETARIO
Luis De la Calle
luis@fiwooo.com

USUARIOS SELECCIONADOS
Abraham Peña
abraham@fiwooo.com
Alejandro Valenzuela
alejandra@fiwooo.com

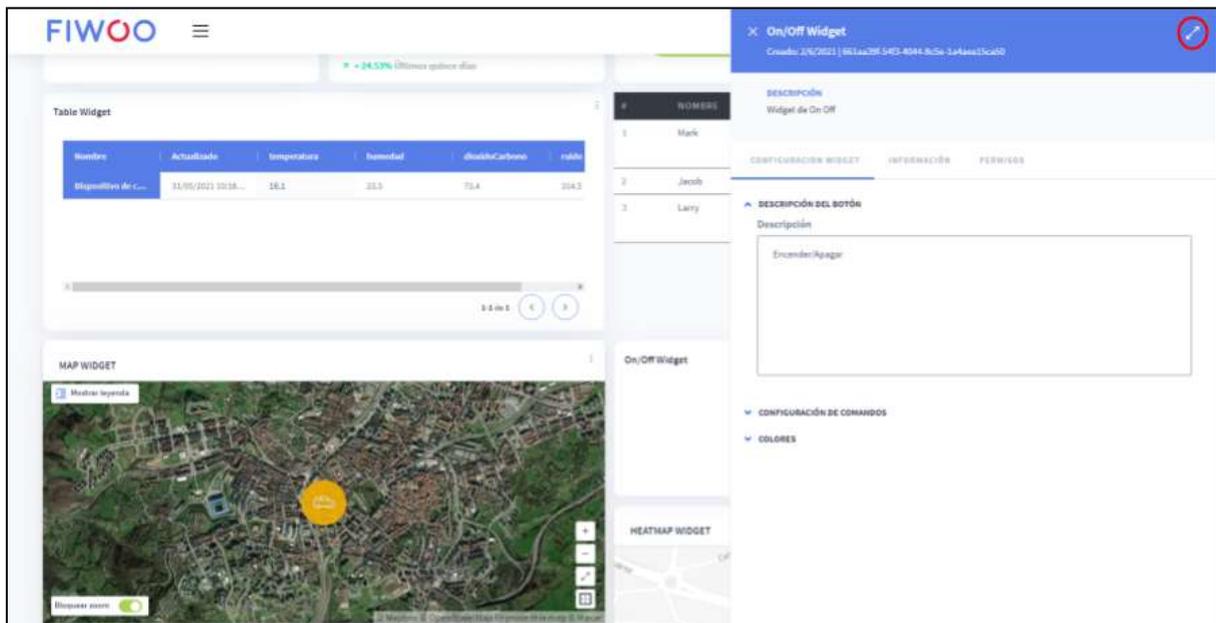
22/30

Widget On/Off

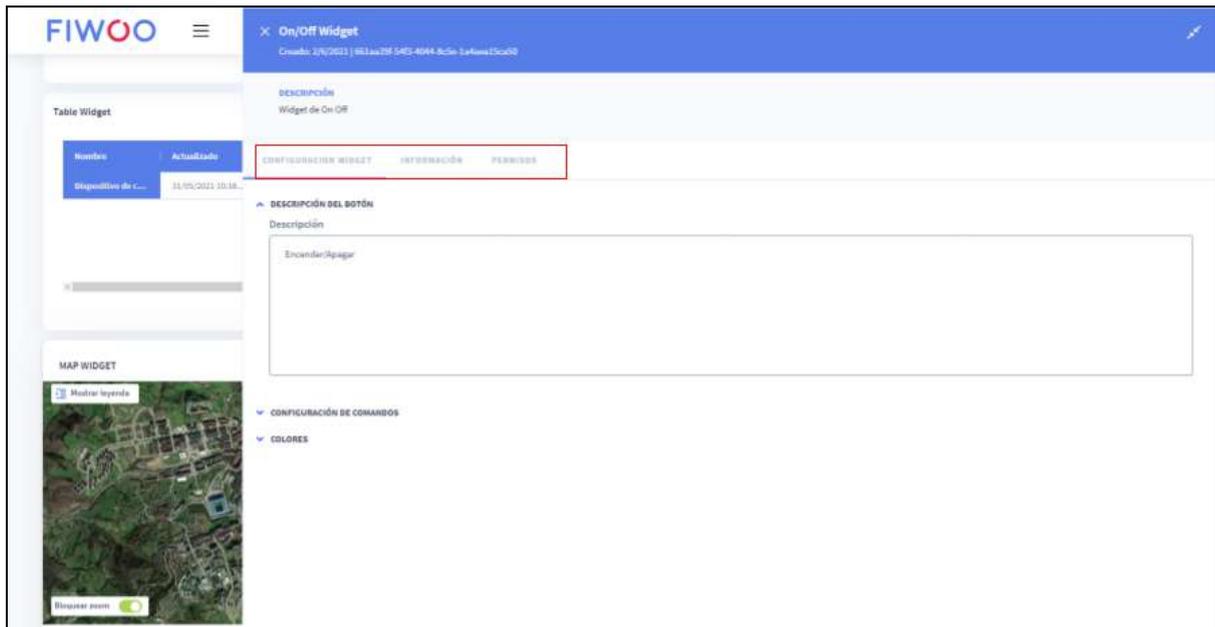
To edit this type of widget we must press the three points located in the upper right corner of said widget. This will show us a menu where we will select the “Edit” option.



A menu will be displayed on the right side of the screen where we can see the current features of the widget.



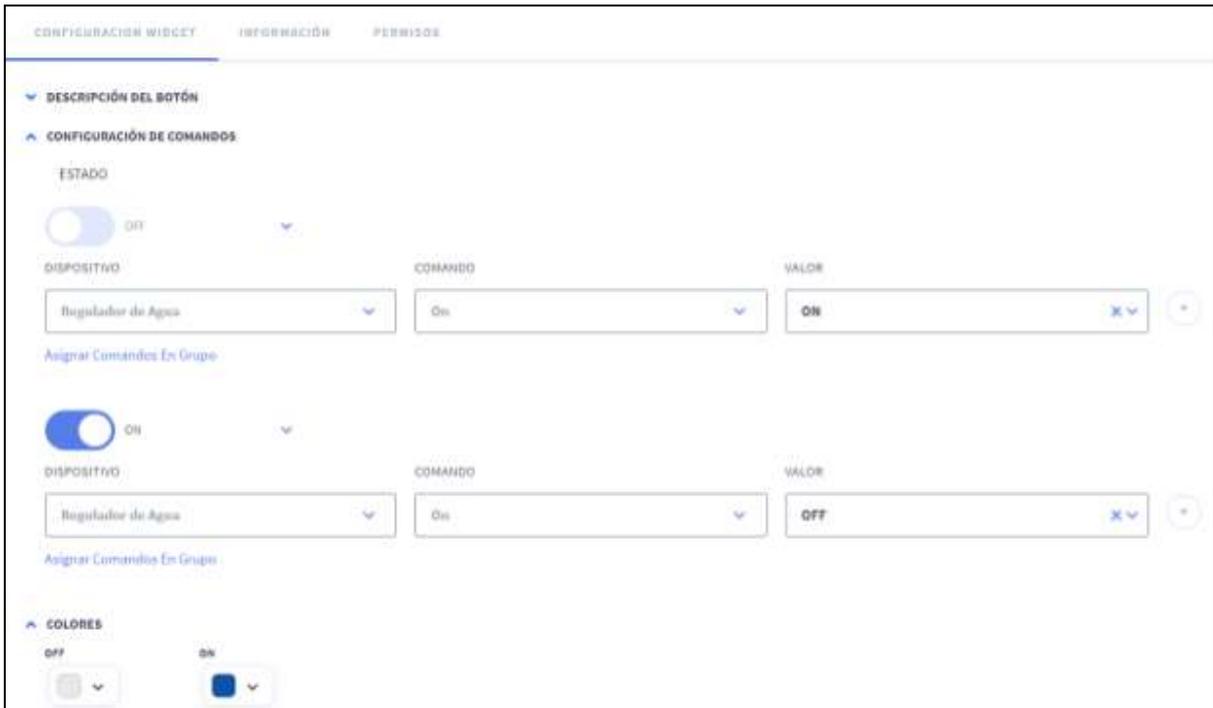
In the upper right corner we have a button that allows us to resize the menu, enlarging said menu in such a way that it is more comfortable to edit the widget.



At the top of the menu we can modify the name and description that we gave the widget when we created it. We also have three submenus where we can edit different types of settings.

The first submenu is “Widget configuration” and it allows us to adjust the parameters related to the button. The available configuration options are:

- The descriptive text of the button.
- The configuration of the commands, that is, the commands that will be sent when the state of the button changes. We can add new commands and group commands, it is also possible to delete them.
- Change the background color of the button for each state

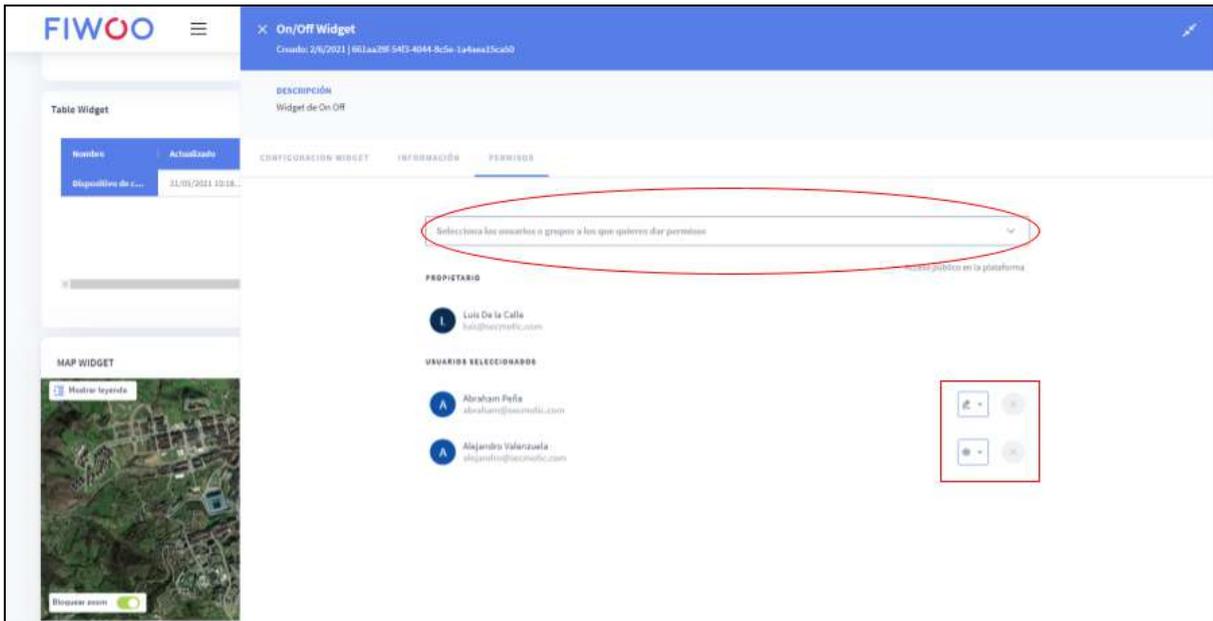


In the “Information” submenu, the system shows us the attribute configuration that we chose in [Create Widget On/Off](#).

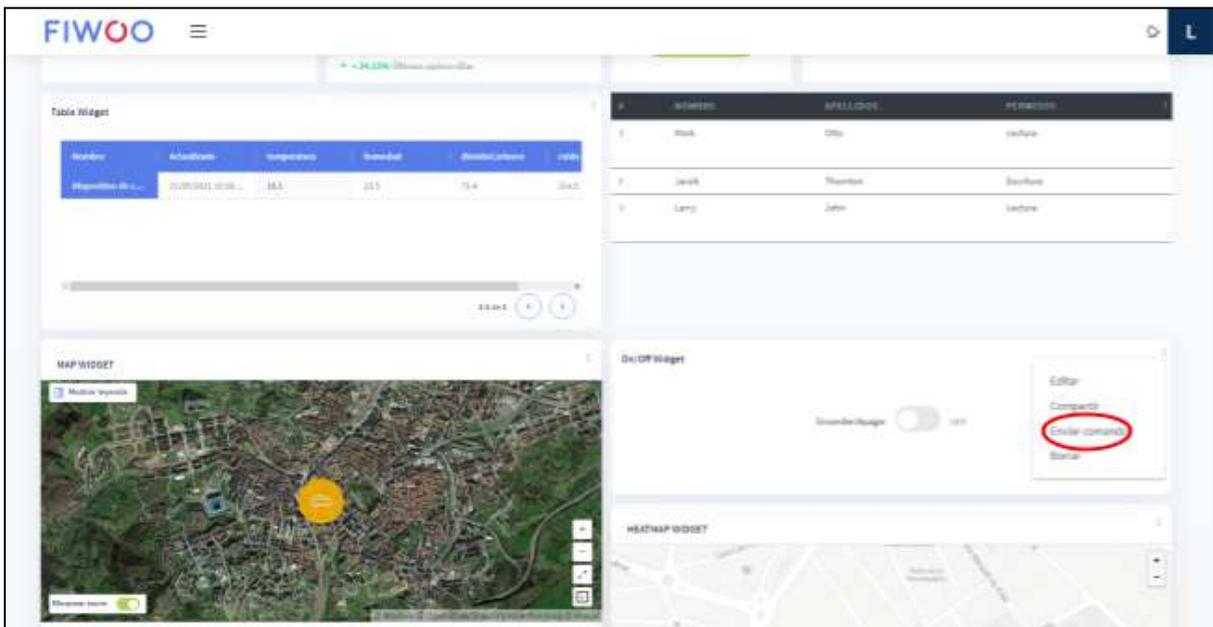


The data displayed by the system is not configurable in any way, this section is informative.

In the last submenu we will be able to modify the permissions that users have on the widget. We have the possibility of using the search bar to give access to new users or groups of users and we also have buttons to specify permissions for users who already have them and even revoke permissions.

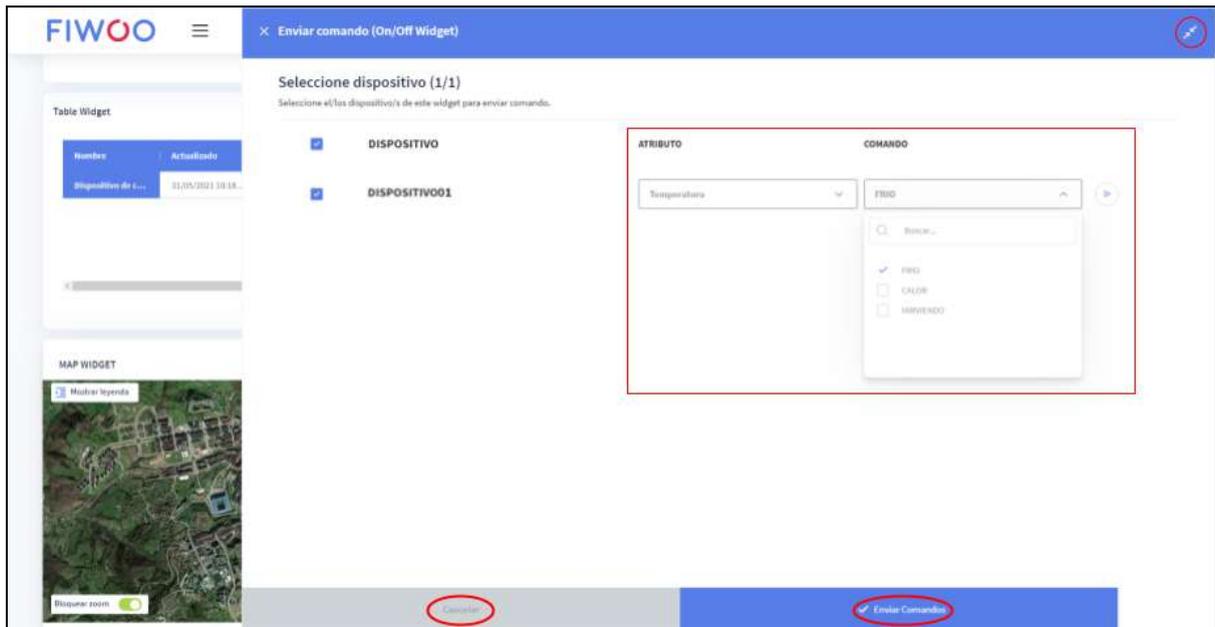


Through this widget, we are also able to send commands manually. To carry out this action, we must click on the three points located in the upper right corner of said widget. This will show us a menu where we will select the “Send command” option.



After clicking on the option, the system will display a menu on the right side of the window, this menu is resizable like the previous editing menu. In this menu we will be able to select the devices with which we want to interact and also what command we see them send. The devices that we can select are the ones that we added when we created the widget in [Create Widget On/Off](#).

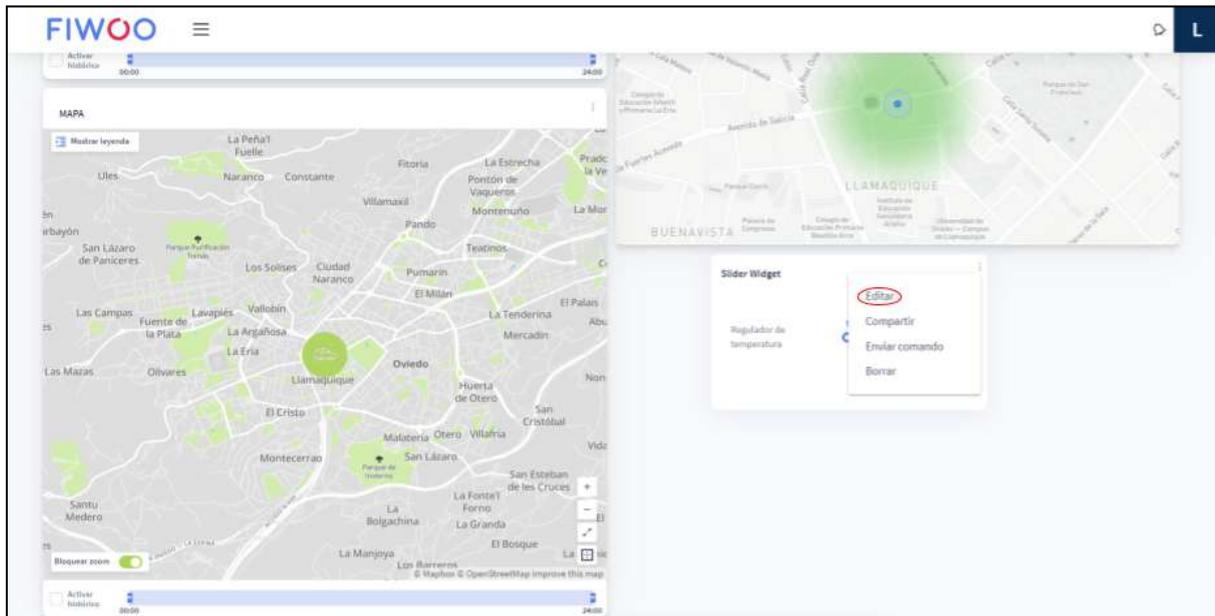
This menu allows us to make a simple configuration to send a preset command from the device and also allows us to set a new value if we click on the “Conf. advanced”.



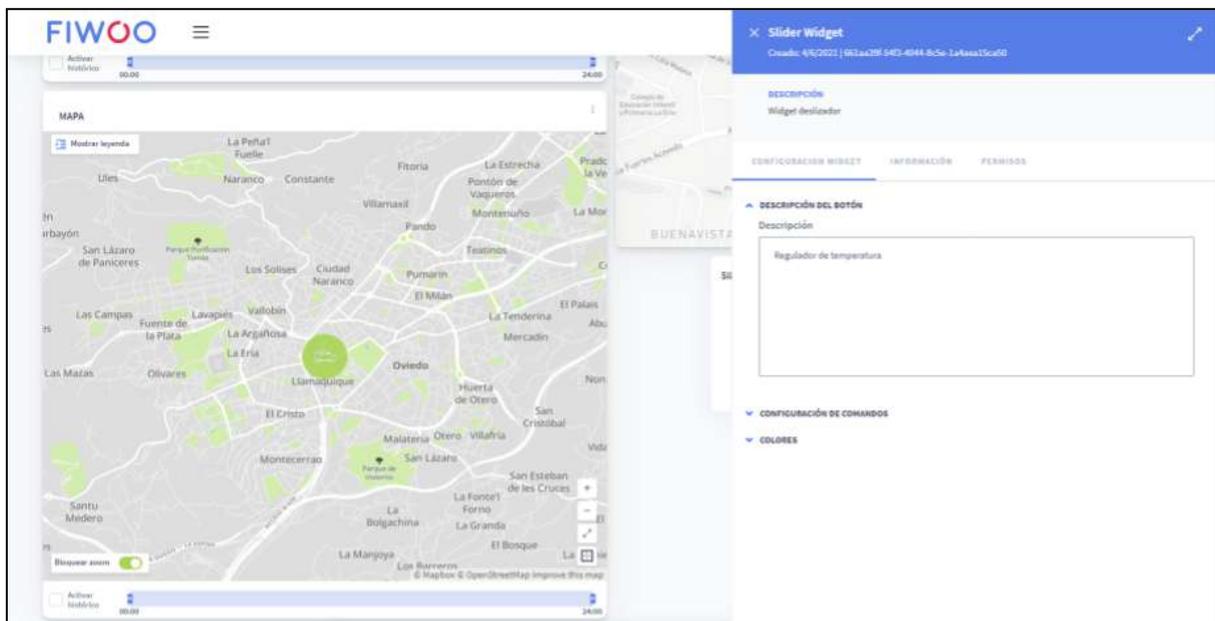
When we have established the commands and devices, we can send the information in two possible ways, either by clicking on the "Send Commands" button and send all the information at once, or individually by clicking on the arrow icon located to the right of each device.

Slider Widget

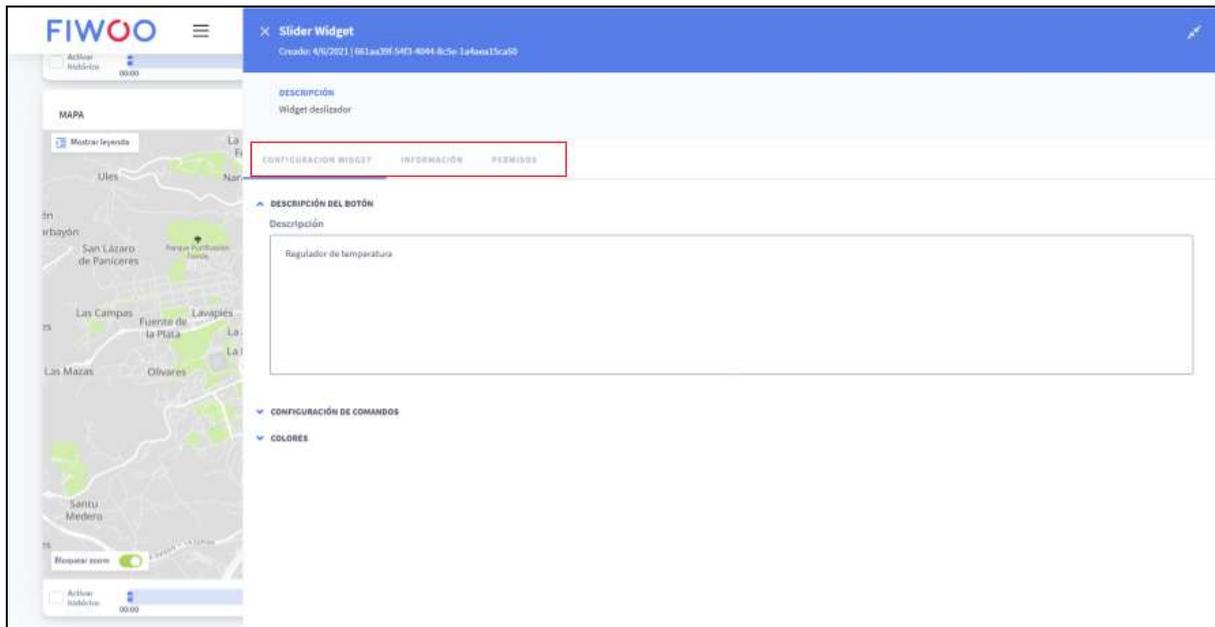
To edit this type of widget we must press the three points located in the upper right corner of said widget. This will show us a menu where we will select the “Edit” option.



A menu will be displayed on the right side of the screen where we can see the current features of the widget.



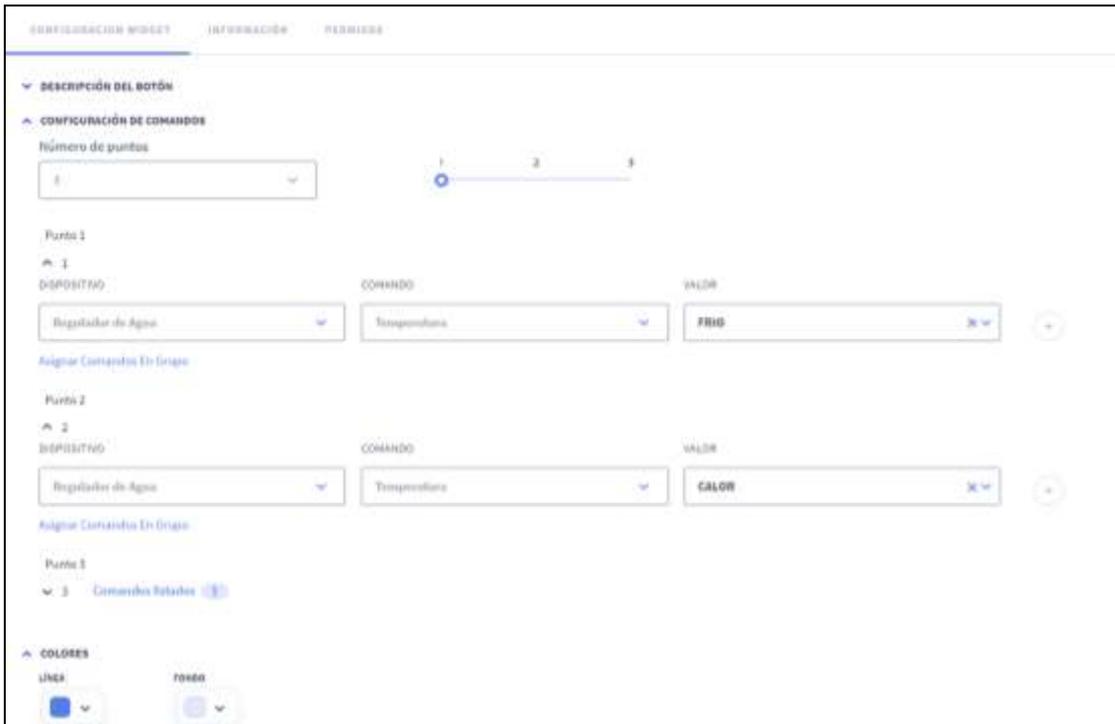
In the upper right corner we have a button that allows us to resize the menu, enlarging said menu in such a way that it is more comfortable to edit the widget.



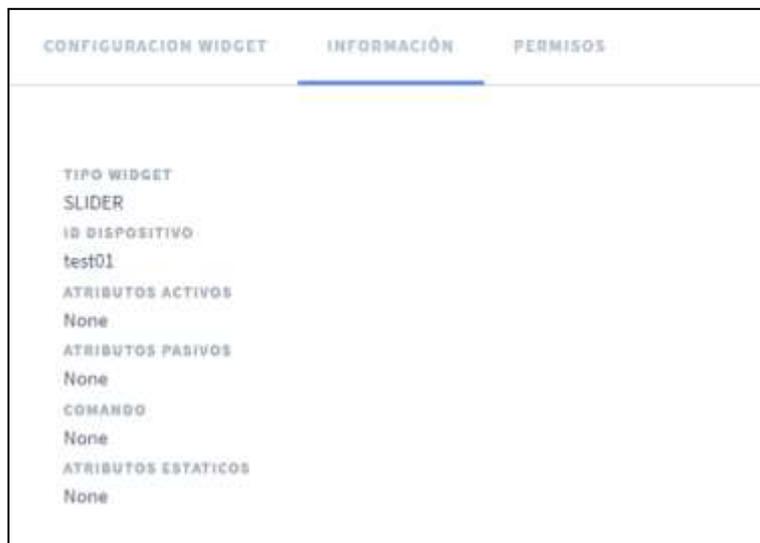
At the top of the menu we can modify the name and description that we gave the widget when we created it. We also have three submenus where we can edit different types of settings.

The first submenu is “Widget Settings” and it allows us to adjust the parameters related to the slider. The available configuration options are:

- The descriptive text of the slider.
- The configuration of the commands, that is, the commands that will be sent when the state of the widget changes. We can add new commands and group commands, it is also possible to delete them. We also have the ability to add and remove states from the slider, we must have configured at least 2 states and at most 10.
- Change the color of the widget for the inactive states and for the active state.



In the “Information” submenu, the system shows us the attribute configuration that we chose in [Create Slider Widget](#).

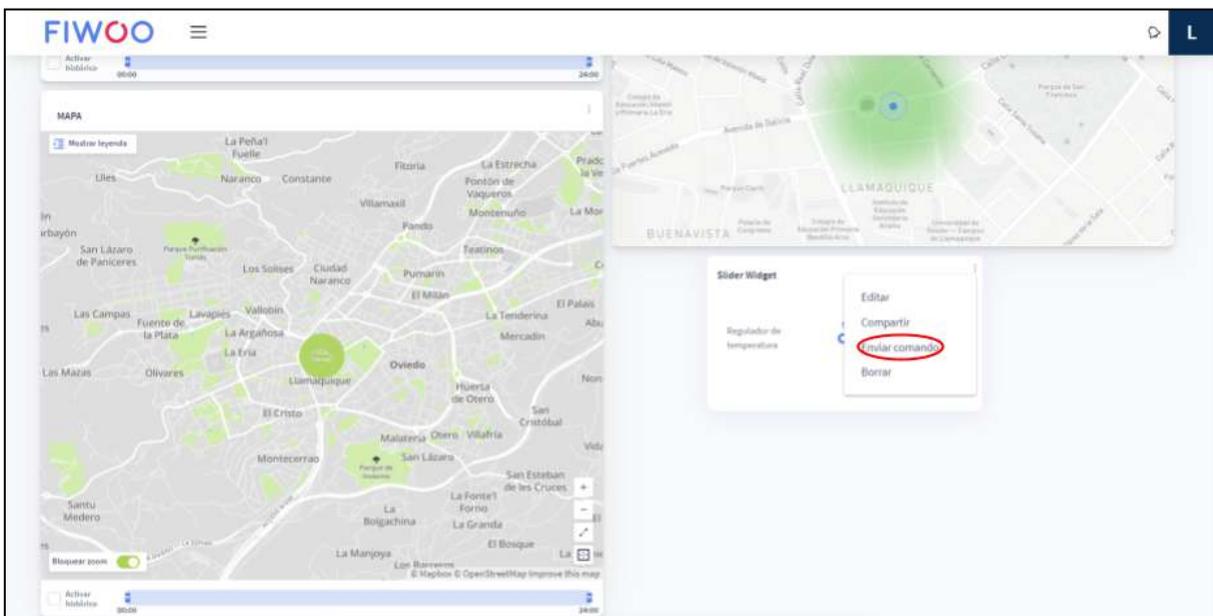


The data displayed by the system is not configurable in any way, this section is informative.

In the last submenu we will be able to modify the permissions that users have on the widget. We have the possibility of using the search bar to give access to new users or groups of users and we also have buttons to specify permissions for users who already have them and even revoke permissions.

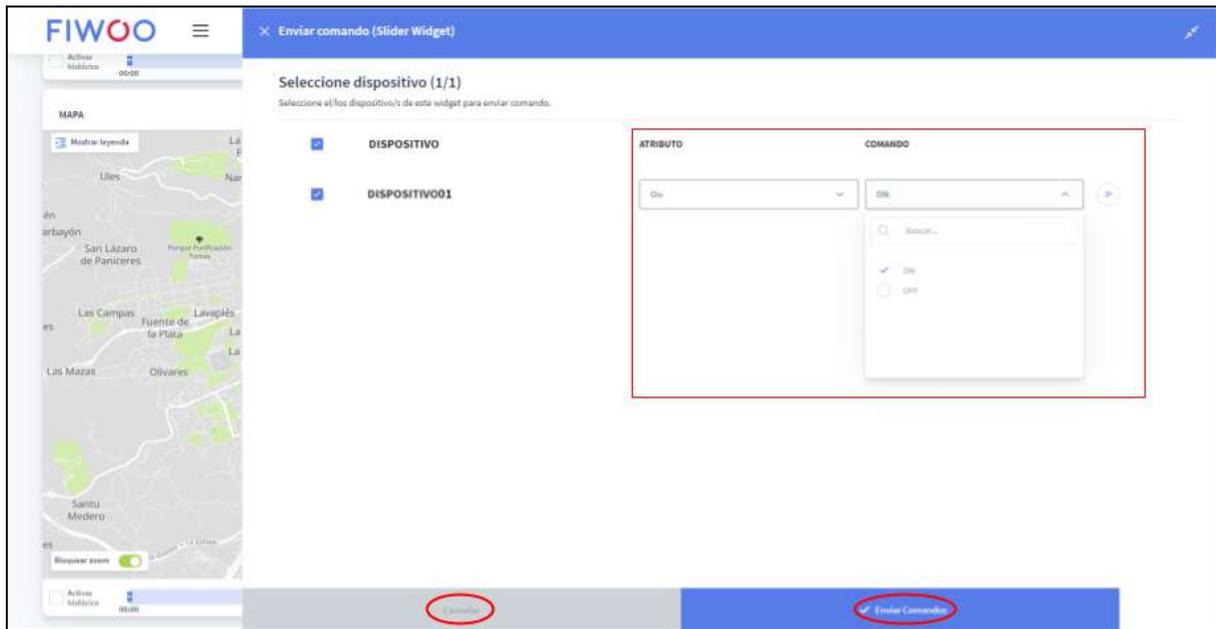


Through this widget, we are also able to send commands manually. To carry out this action, we must click on the three points located in the upper right corner of said widget. This will show us a menu where we will select the “Send command” option.



After clicking on the option, the system will display a menu on the right side of the window, this menu is resizable like the previous editing menu. In this menu we will be able to select the devices with which we want to interact and also what command we see them send. The devices we can select are the ones we added when we created the widget in [Create Slider Widget](#).

This menu allows us to make a simple configuration to send a preset command from the device and also allows us to set a new value if we click on the “Conf. advanced”.



When we have established the commands and devices, we can send the information in two possible ways, either by clicking on the "Send Commands" button and send all the information at once, or individually by clicking on the arrow icon located to the right of each device.

Image Widget

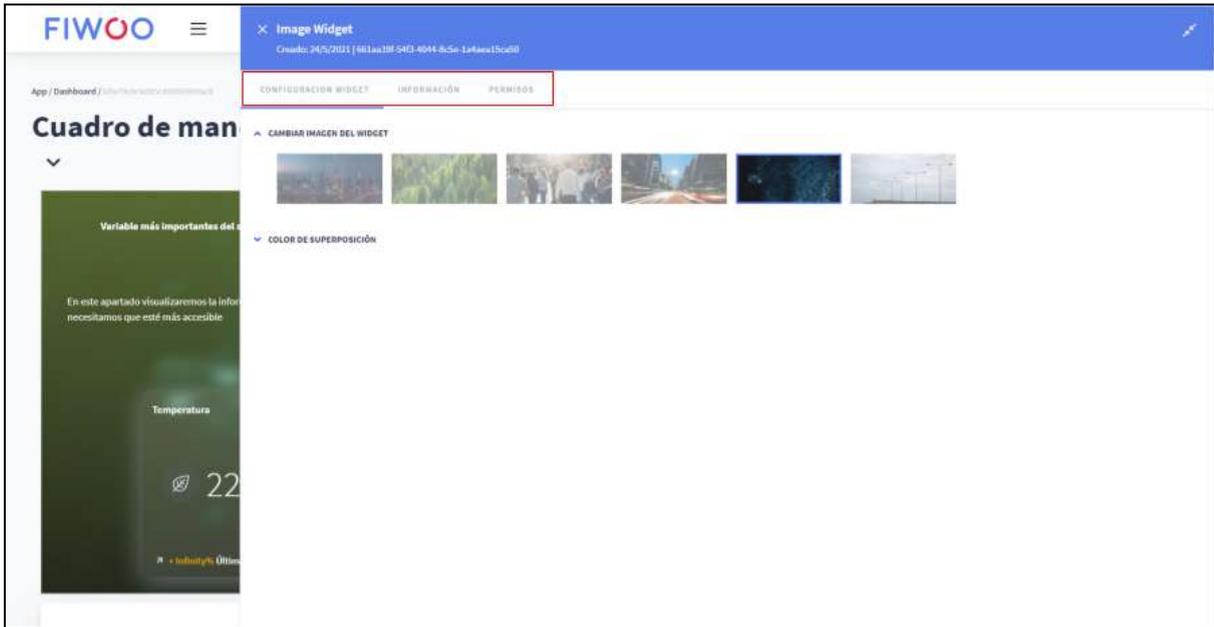
To edit this type of widget we must press the three points located in the upper right corner of said widget. This will show us a menu where we will select the “Edit” option.



A menu will be displayed on the right side of the screen where we can see the current features of the widget.

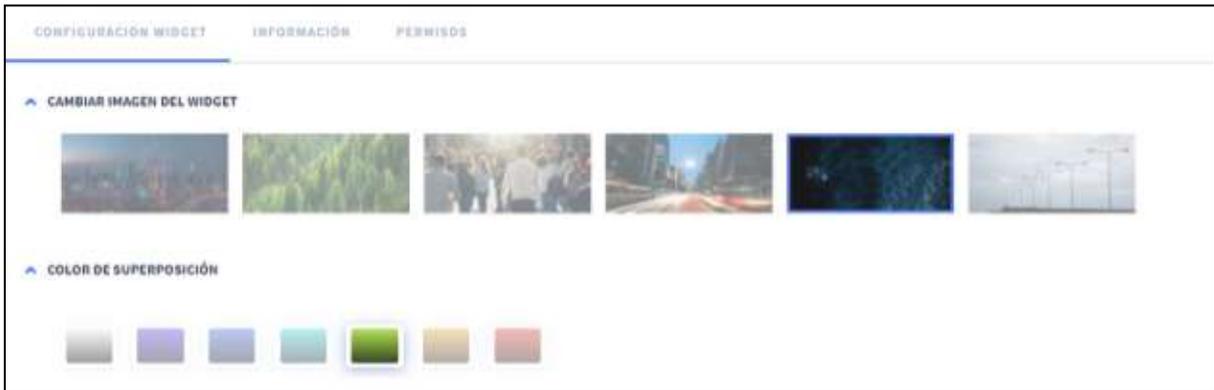


In the upper right corner we have a button that allows us to resize the menu, enlarging said menu in such a way that it is more comfortable to edit the widget.



At the top of the menu we can modify the name and description that we gave the widget when we created it. We also have three submenus where we can edit different types of settings.

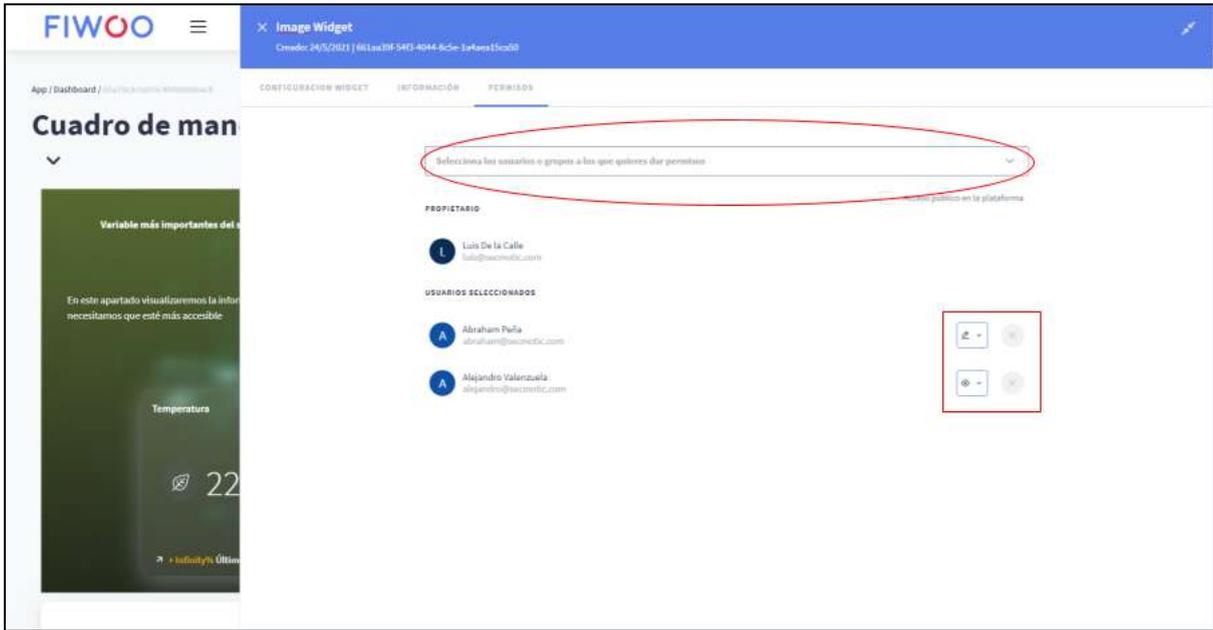
The first submenu is “Widget configuration” and it allows us to adjust the parameters related to the bar chart. The available configuration options are the background image and the transposition color.



In the “Information” submenu, the system shows us information about the current widget type.



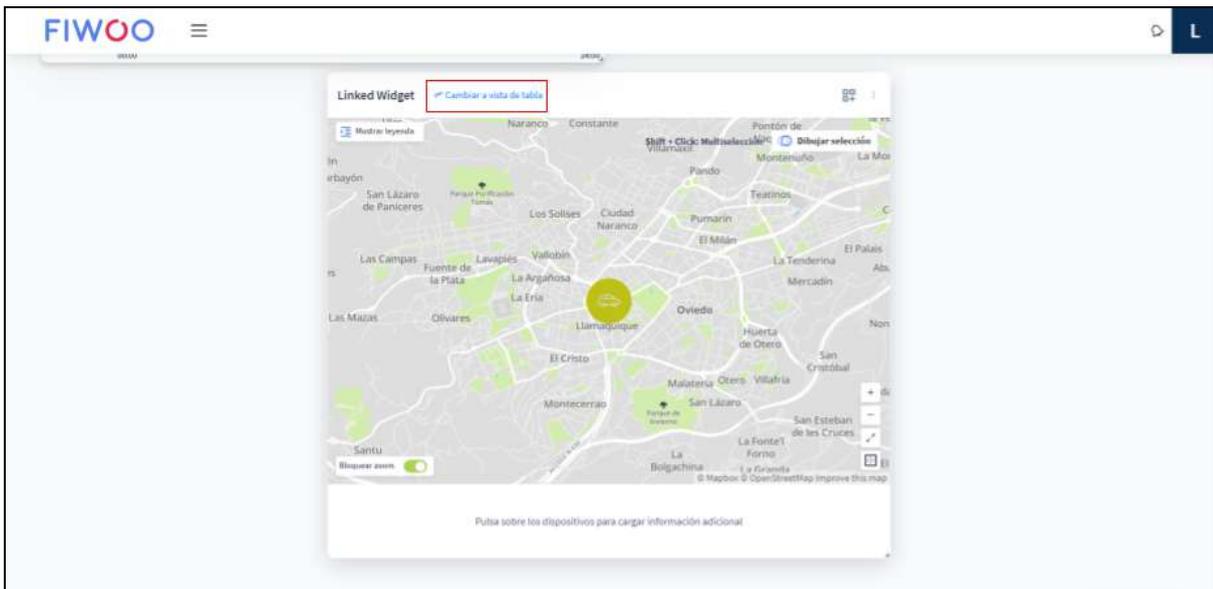
In the last submenu we will be able to modify the permissions that users have on the widget. We have the possibility of using the search bar to give access to new users or groups of users and we also have buttons to specify permissions for users who already have them and even revoke permissions.



Widget Linked data

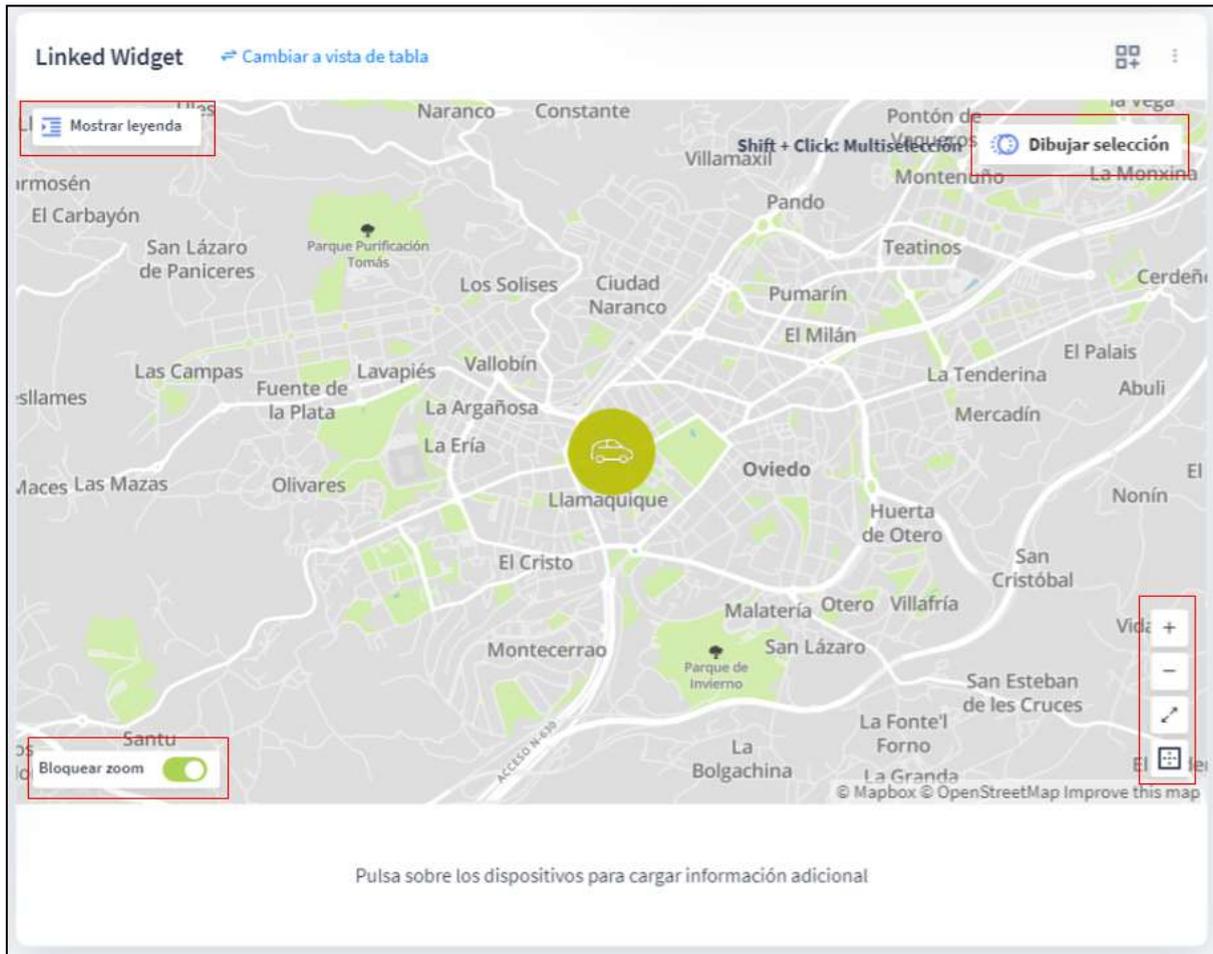
- Change between map and table
- Selection of devices one by one
- Selection of devices by polygon
- Management of linked widgets from the side menu

The linked data widget allows us to interact with it from the dashboard in multiple ways. We have two views of this widget, a Map view and a Table view. We can rotate between these views by pressing the "Switch to table view" and "Switch to map view" buttons that are located at the top of the widget, to the right of its name.



As usual on maps, we can move to other locations by clicking on it with the mouse and moving it to another position. We also have the possibility of using the zoom to zoom out or zoom in on the data sources, using the “+” and “-” buttons located in the upper right corner, or with the mouse wheel if we unlock the zoom with it. “Lock zoom” button located in the lower left corner.

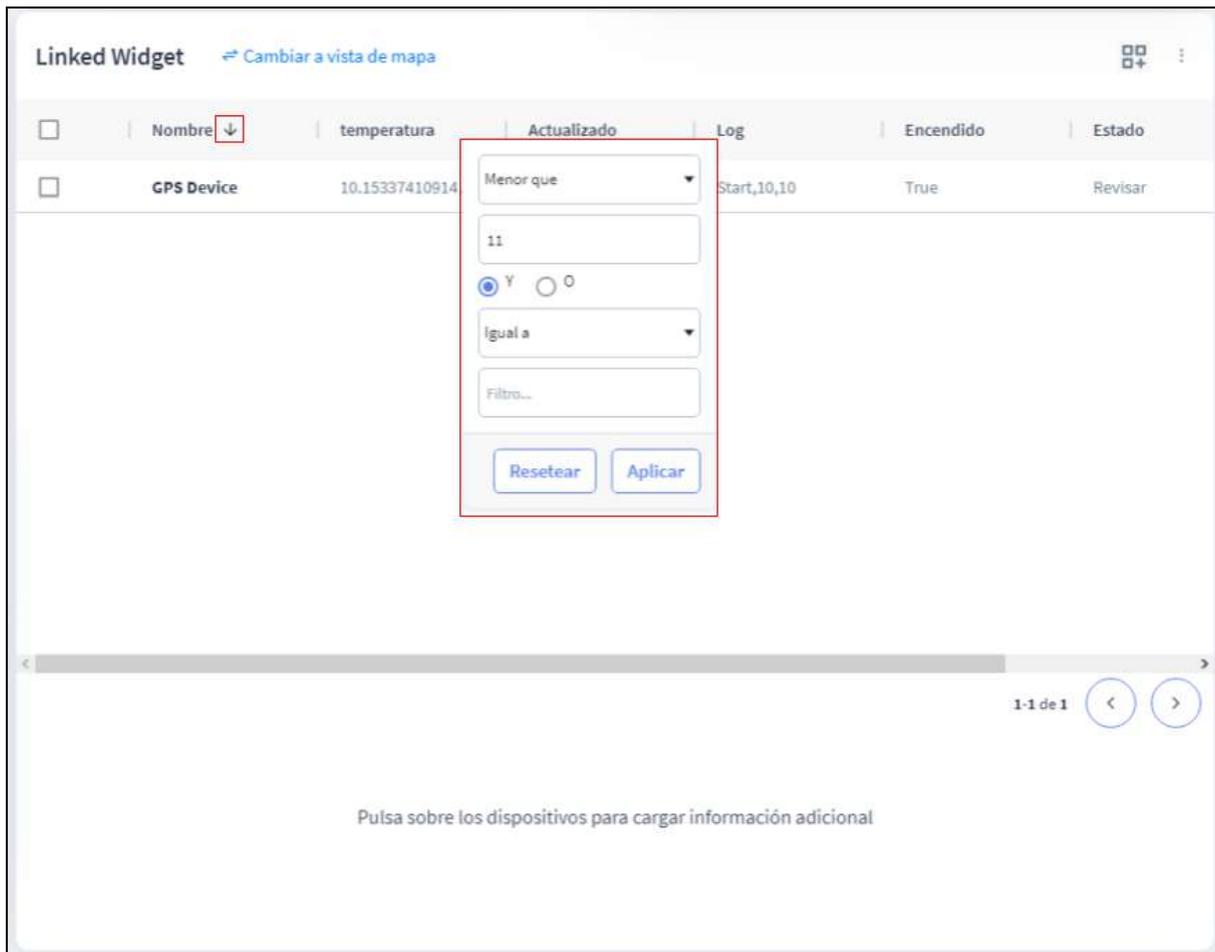
Additionally, we are able to display information about the devices if we click on them, and if we press the "Draw selection" button we can highlight an area on the map, at the bottom of the widget the information related to the devices that are found will be displayed. within the drawn area.



If we click on "Show legend" a side menu will be displayed with which we can list the categories of data sources found on the map. It is also possible to press an "eye" button to hide a certain category and make it not visible on the map.

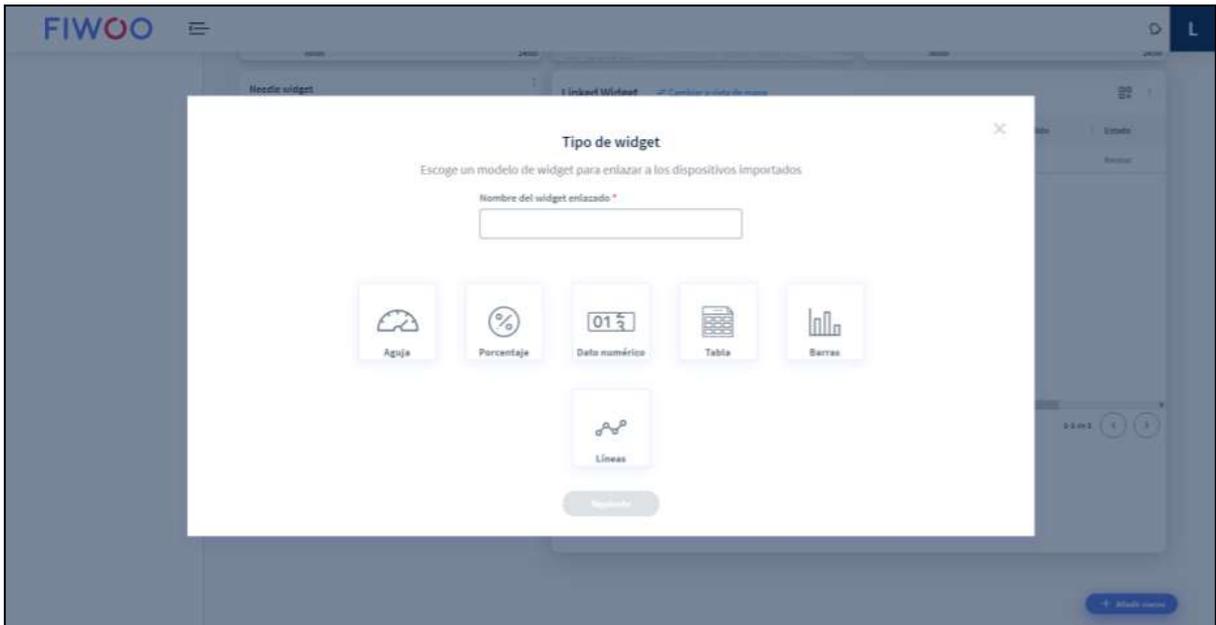
If we switch to the table view, we can interact with it in multiple ways. If we click on the header of the table we can reorder it ascending or descending based on the column that we have selected, we will know how it is ordered by the arrow that will appear to the right of the column header.

It is also possible to filter the rows of a table, to do this we must pass the mouse over the column that we want to filter, this will make an icon made up of horizontal lines appear. If we click on this icon, the system will show us a window in which we can enter a criterion to filter.



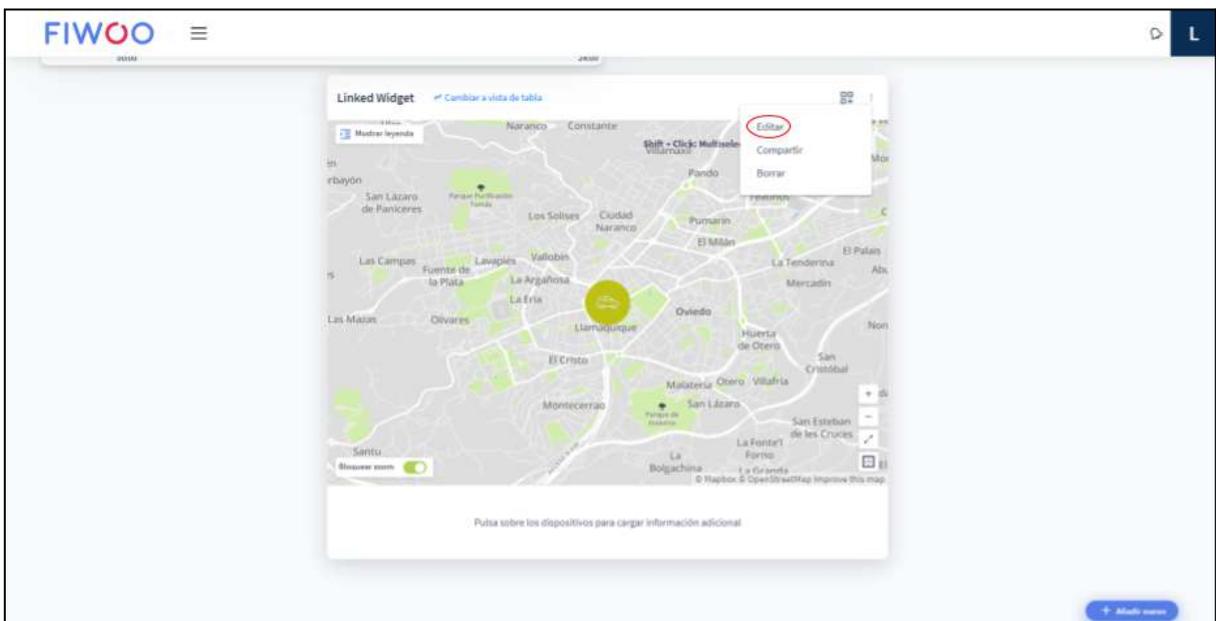
After writing a criterion, the system will allow us to enter a second filter condition to make our search even more precise. Finally, we can also rearrange the columns of the table to display the most important ones first.

If we press the button with three squares located in the upper right corner of the widget, the system will show us a form with which we can create new widgets related to our linked widget. This action can be carried out from either of the two views.

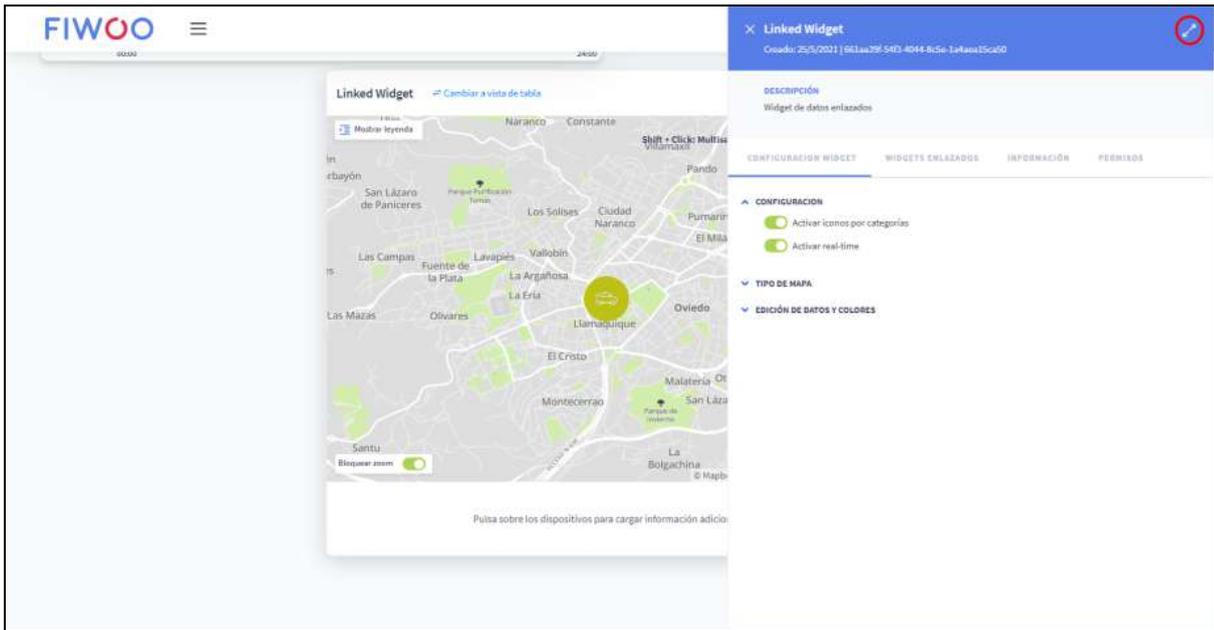


The creation of these widgets was done in the [Widget Creation](#).

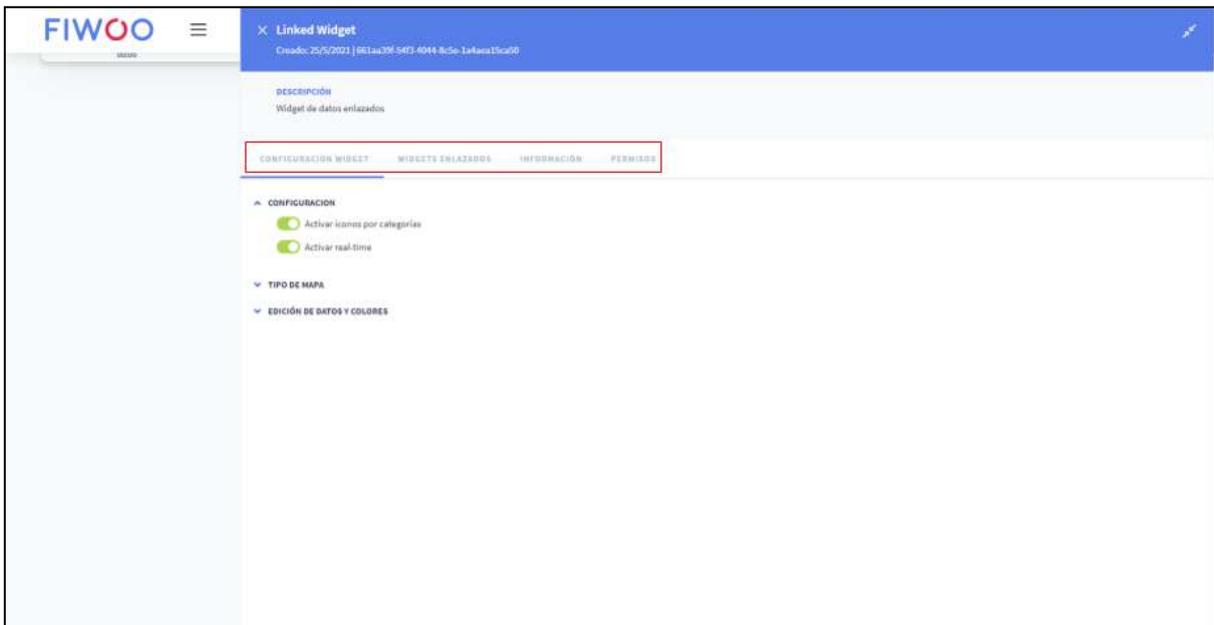
If we want to edit the widget configuration, we must click on the three points located in the upper right corner and then on edit. We must know that the configuration options differ depending on the view in which we are located. Let's start by showing the settings for the map view.



After clicking on "Edit" a menu will be displayed on the right side of the screen where we can see the current characteristics of the widget.



In the upper right corner we have a button that allows us to resize the menu, enlarging said menu in such a way that it is more comfortable to edit the widget.

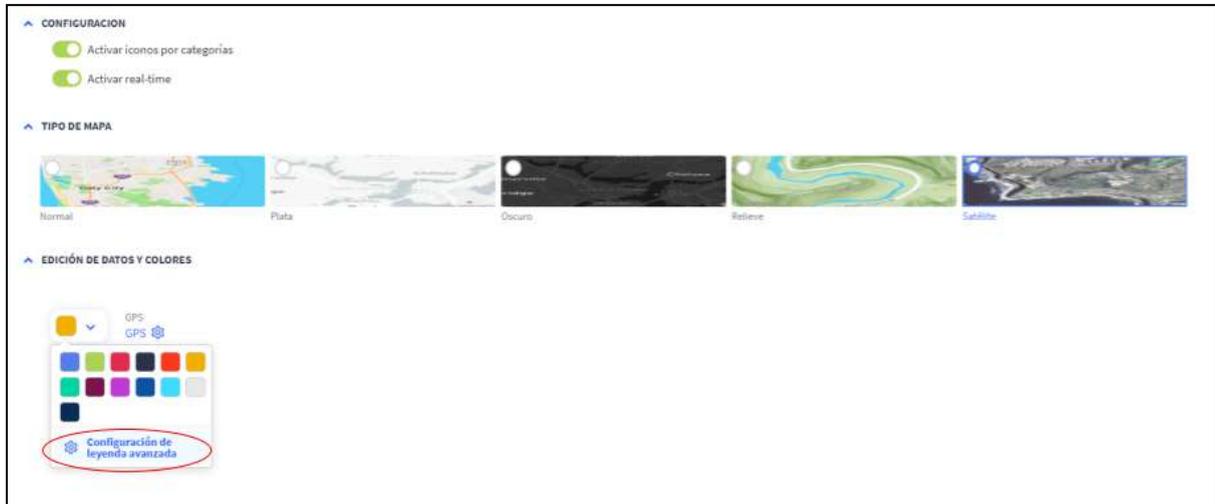


At the top of the menu we can modify the name and description that we gave the widget when we created it. We also have four submenus where we can edit different types of settings.

The first submenu is “Widget configuration” and it allows us to adjust the parameters related to the bar chart. The configuration options available are:

- Configuration: in this section we can indicate if we want the data sources to be shown on the map with an icon that identifies them and also if we want the map to be updated in real time.
- Map type: we can use maps of different styles that suit our needs.

- Editing of data and colors: In this section we can indicate the color that we want to represent our data sources, as well as change the properties that are shown when clicking on them on the map. To do this, click on the gear. In this section we are also able to specify groups in which to identify the devices.

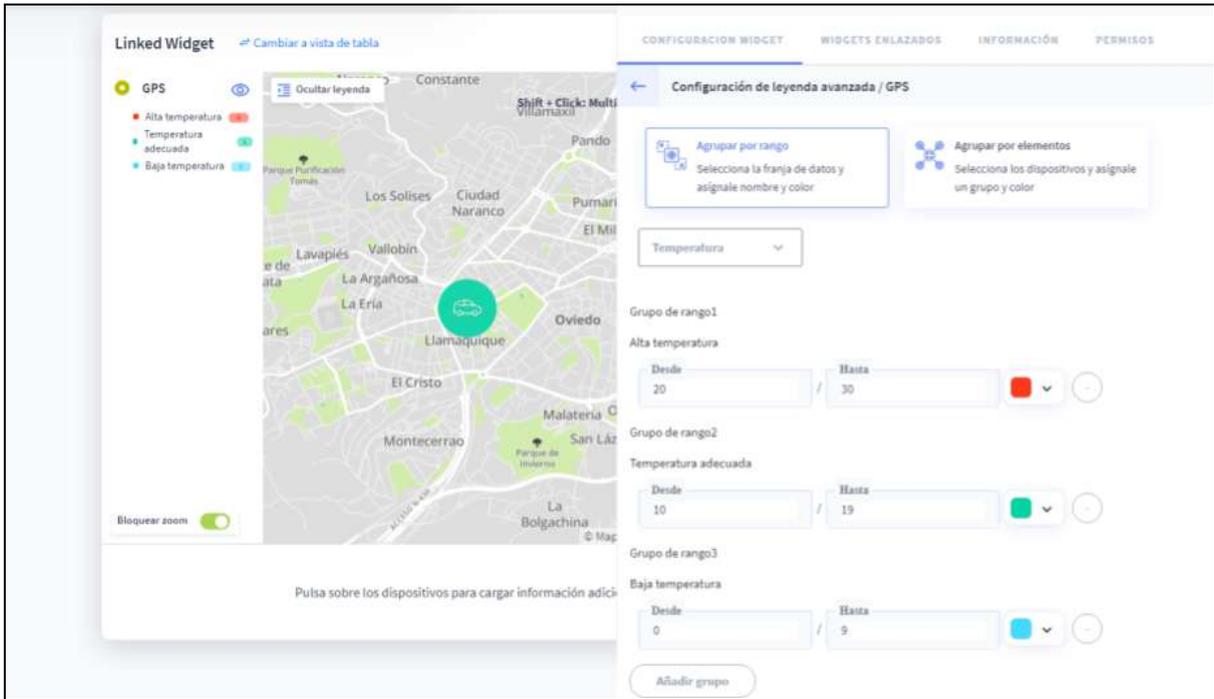


To establish new groups we select the option "Advanced legend configuration", this option is visible within the color selector of a device.

This will make the system show us a new menu in which we can make groups for the devices. We can establish the groups in two different ways, by the range of a variable or by selecting the devices manually.

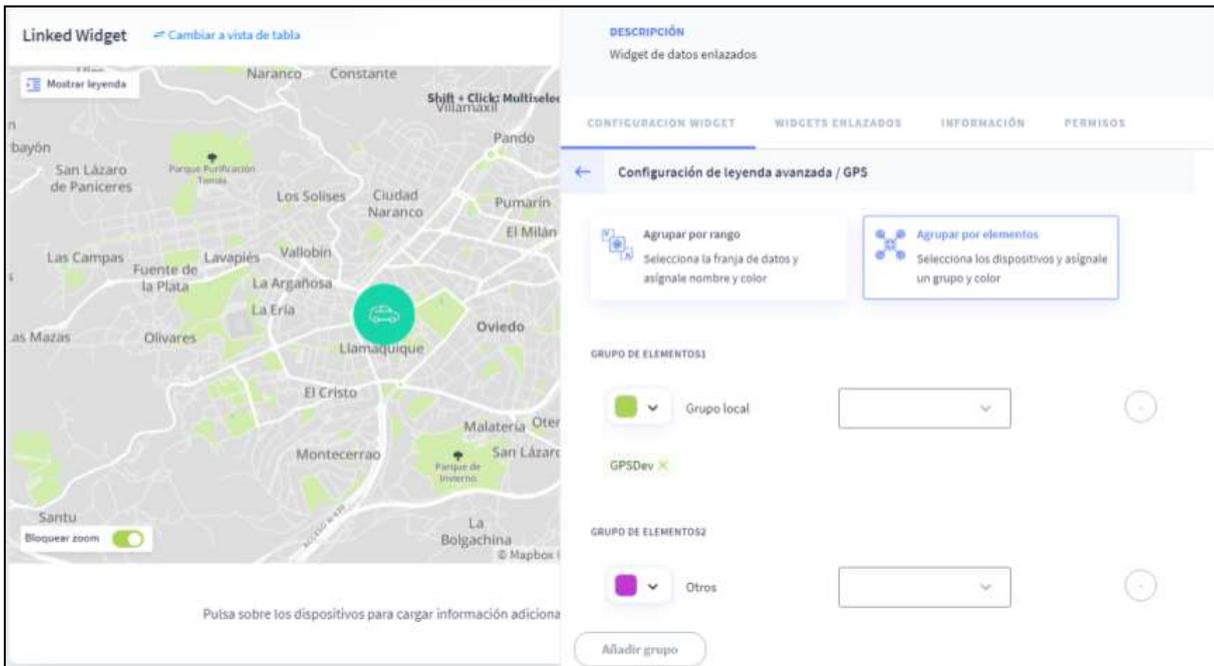


If we decide to group by range, we will see a menu in which we must select the numerical variable with which we are going to work. We have an "Add Group" button with which we can add all the groups we need. For each group, we must specify the range of values in which the device must be found to be considered part of said group and the color that the devices that belong to it will take.



We are also able to enter a name that identifies the group. In this way, we can quickly identify what state our elements are in within the map.

The other option that we have, is to group the elements manually. In this case, the system will also allow us to establish as many groups as we need and what color will identify each group, but we will have to manually indicate the devices that will be part of said group. The drop-down menu located to the right of the color will show us a list with the devices that do not yet belong to any group and will allow us to select them.

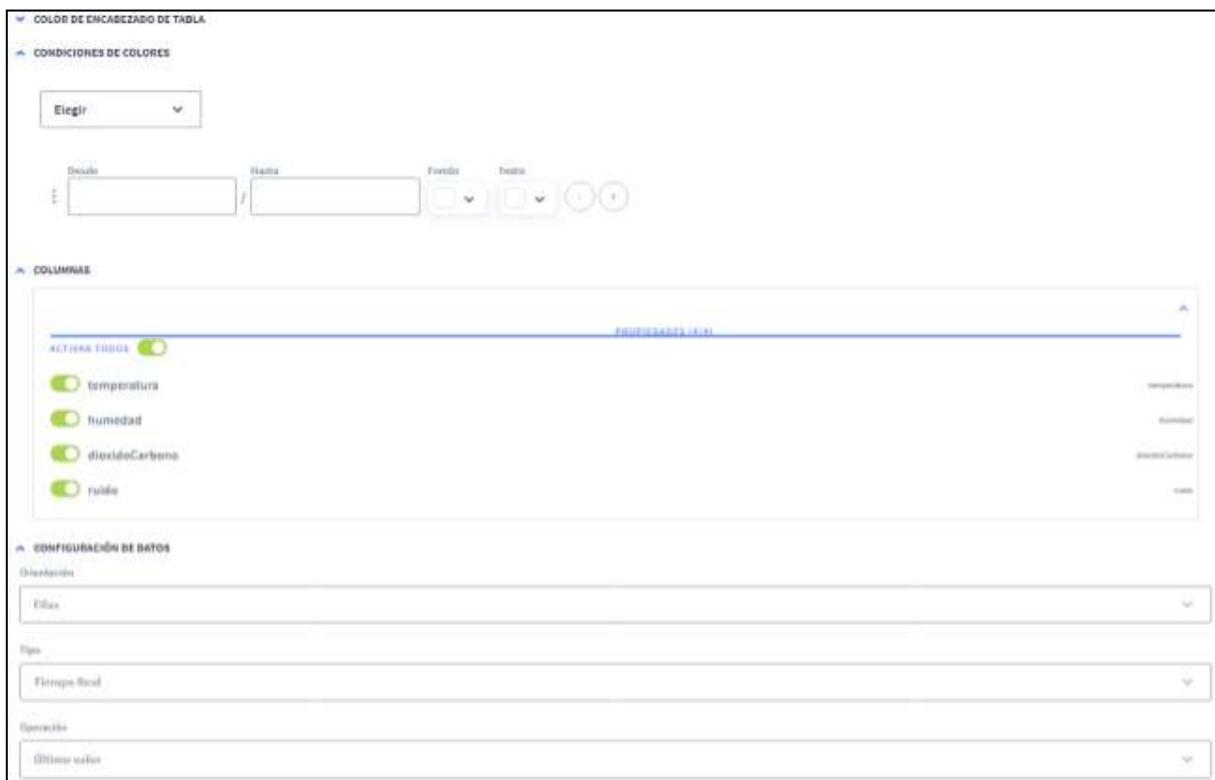


In any of the options, we can delete a group by pressing the “-” button located to the right of each of these groups.

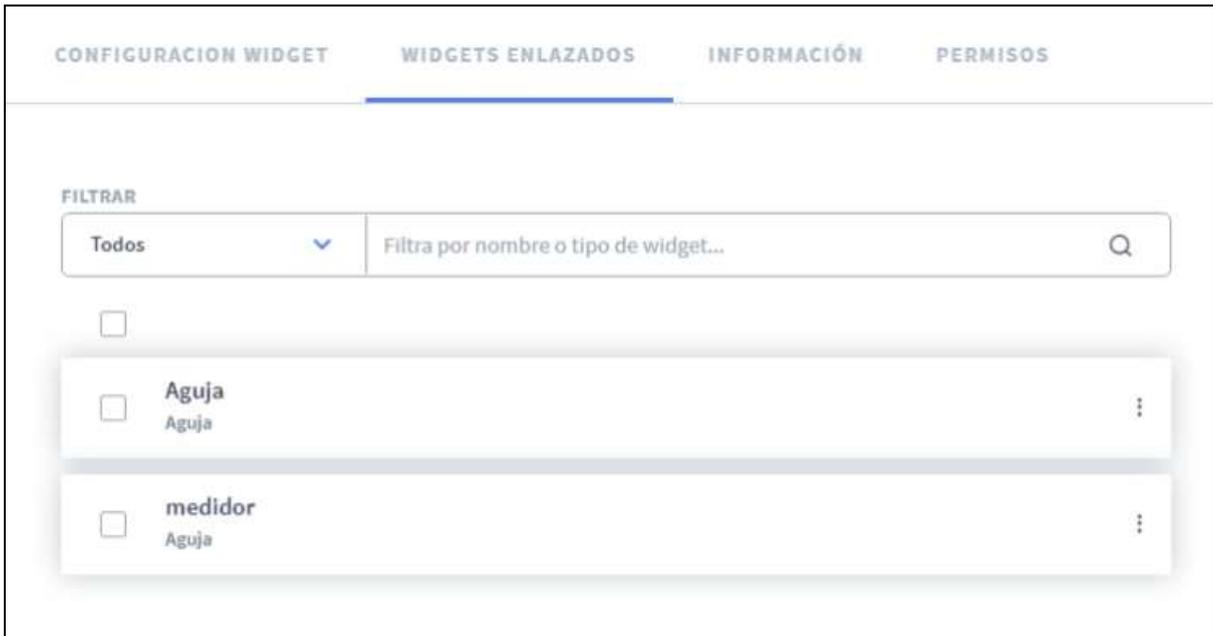
Next, we are going to deal with the “Widget Configuration” section of the table view. Once we go to the menu again, we will see that at the top we can modify the name and description that we gave the widget when we created it. We also have four submenus where we can edit different types of settings.

The first submenu is “Widget configuration” and it allows us to adjust the parameters related to the bar chart. The configuration options available are:

- Color of the background and of the text of the table header.
- Color conditions: we can configure a series of rules on the properties of the columns of the table, so that, when one of these rules is met, the color of the background of the cell and its text is modified. We can have several conditions for each property in order to cover several intervals.
- Columns: in this section we select the columns that we want to show in the table.



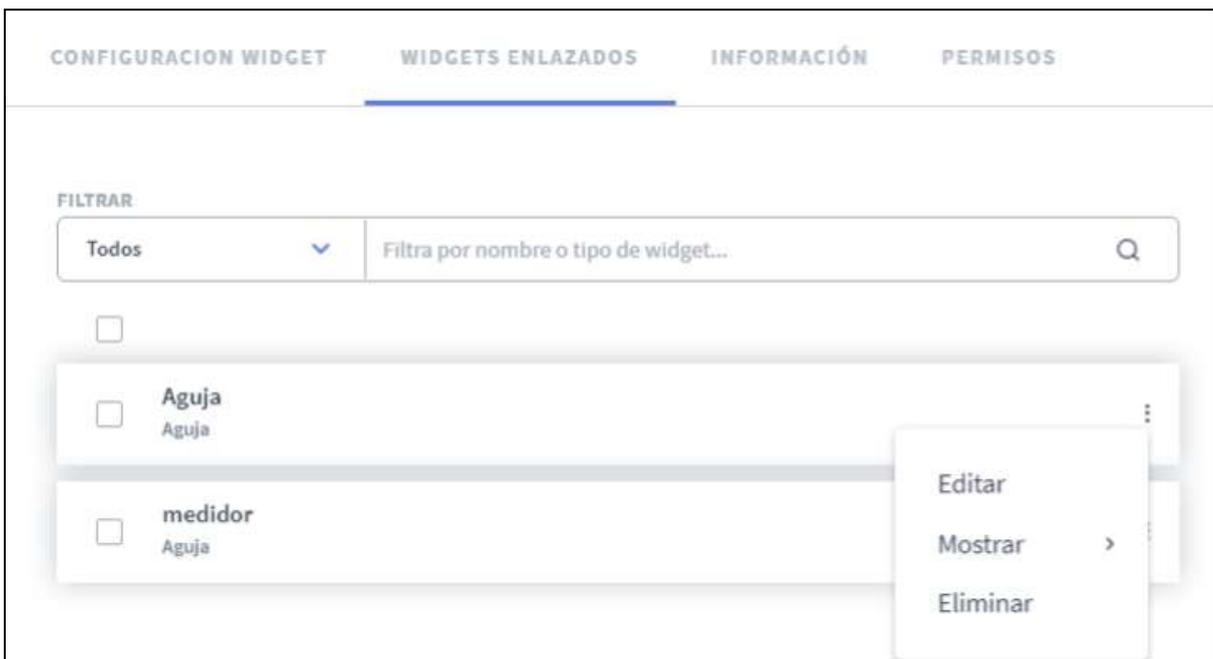
The next submenu that we will detail is the “Linked Widgets” submenu, in it we can view the information related to the widgets that we create from our linked data widget. Both this submenu and the others are accessible from any view.



This submenu has a search bar with which we can filter the widgets by entering their name in the bar. It is also possible to filter according to the type of widget.

We have the option to modify the linked widgets, to do this, we must click on the three points located to the right of each widget. This action will display a menu with which we can choose one of these options:

- Edit: The system will open a new editing menu in which we can configure the widgets.
- Show: Allows us to decide how the data is displayed.
- Delete: We remove the widget from the list.



If we click on edit, the system will take us to an editing window that will vary depending on the type of widget we chose. Available settings are detailed in [Edit Widget Settings](#).

CONFIGURACION WIDGET WIDGETS ENLAZADOS INFORMACIÓN PERMISOS

^ VALOR UNITARIO

Valor mínimo

Valor máximo

Unidad

▼ RANGOS

▼ TIPO DE OPERACIÓN

In the information submenu, we can see which devices our widget works with and add new devices. Also, we can decide with which properties of these devices to work.

CONFIGURACION WIDGET WIDGETS ENLAZADOS INFORMACIÓN PERMISOS

TIPO WIDGET

LINKED

FUENTES DE DATOS

Este widget solo permite fuentes de datos de categoría GPS

Seleccionar todo

GPSDev
3 Atributos

In the last submenu we will be able to modify the permissions that users have on the widget. We have the possibility of using the search bar to give access to new users or groups of users and we also have buttons to specify permissions for users who already have them and even revoke permissions.

Selecciona los usuarios o grupos a los que quieres dar permisos



PROPIETARIO

Acceso público en la plataforma

L Luis De la Calle
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USUARIOS SELECCIONADOS

A Abraham Peña
abraham@secmotic.com

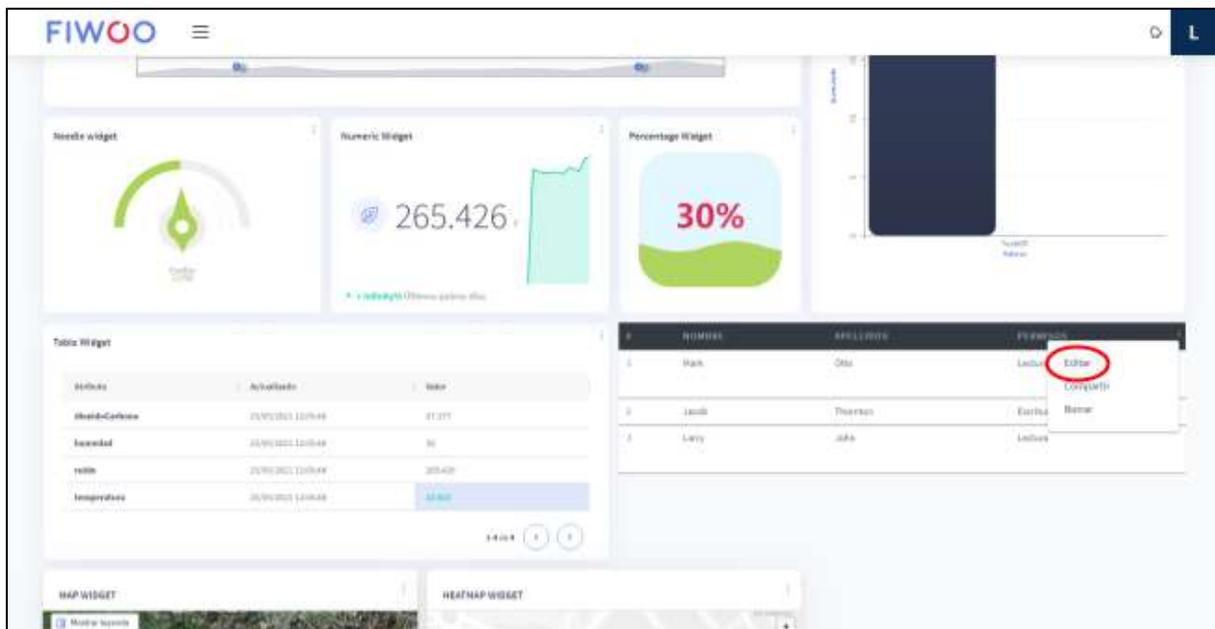


A Alejandro Valenzuela
alejandro@secmotic.com

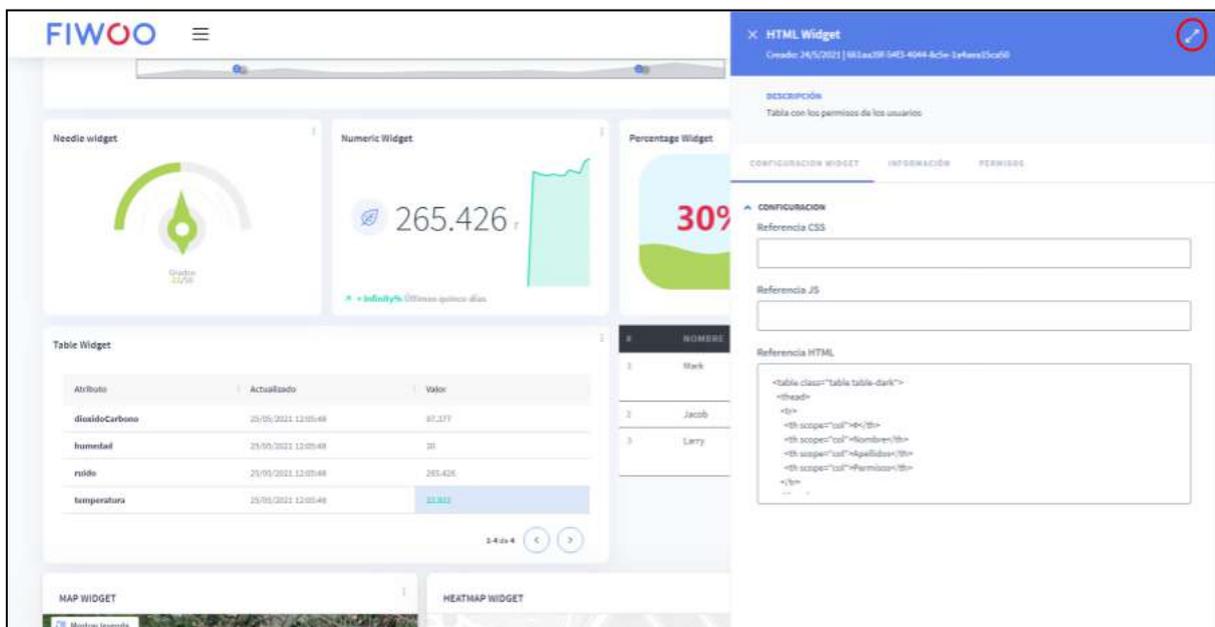


HTML Widget

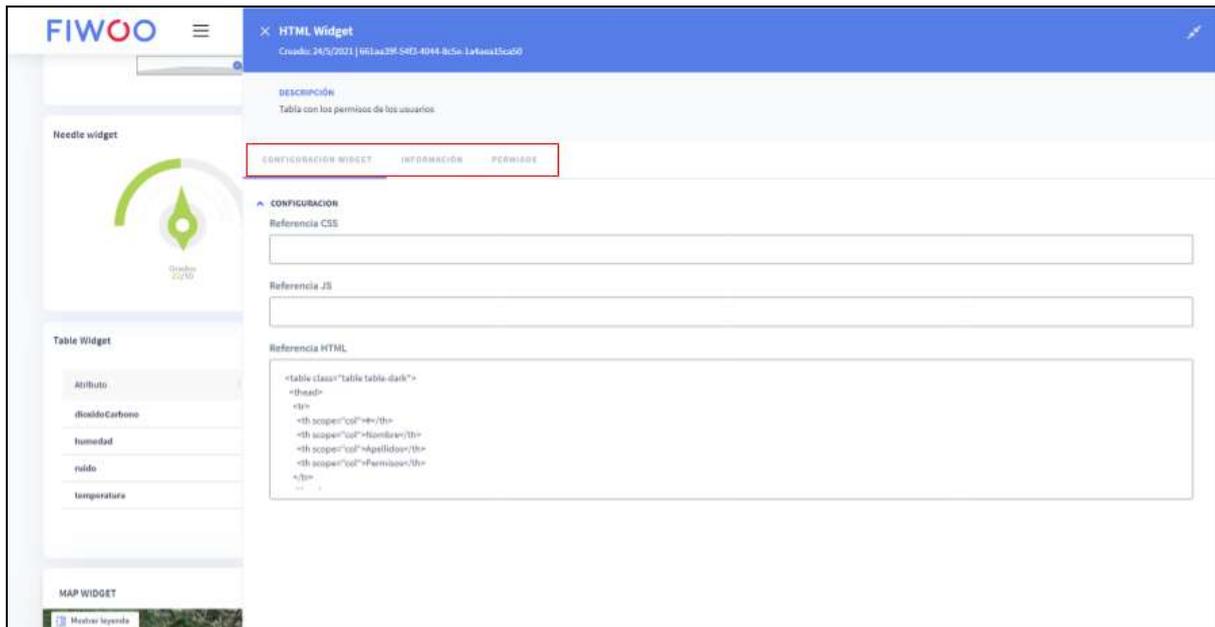
To edit this type of widget we must press the three points located in the upper right corner of said widget. This will show us a menu where we will select the “Edit” option.



A menu will be displayed on the right side of the screen where we can see the current features of the widget.



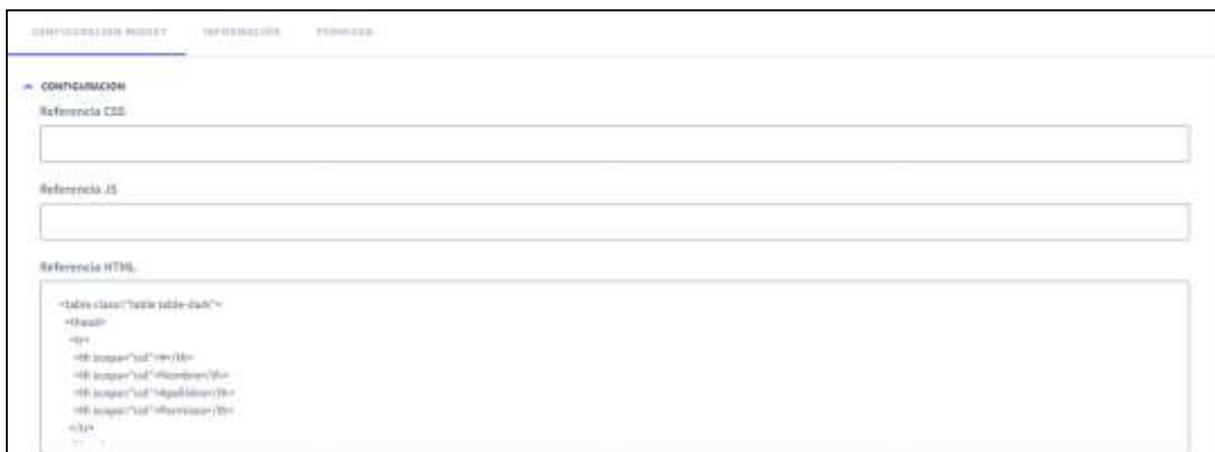
In the upper right corner we have a button that allows us to resize the menu, enlarging said menu in such a way that it is more comfortable to edit the widget.



At the top of the menu we can modify the name and description that we gave the widget when we created it. We also have three submenus where we can edit different types of settings.

The first submenu is “Widget configuration” and it allows us to adjust the parameters related to the bar chart. The available configuration options are:

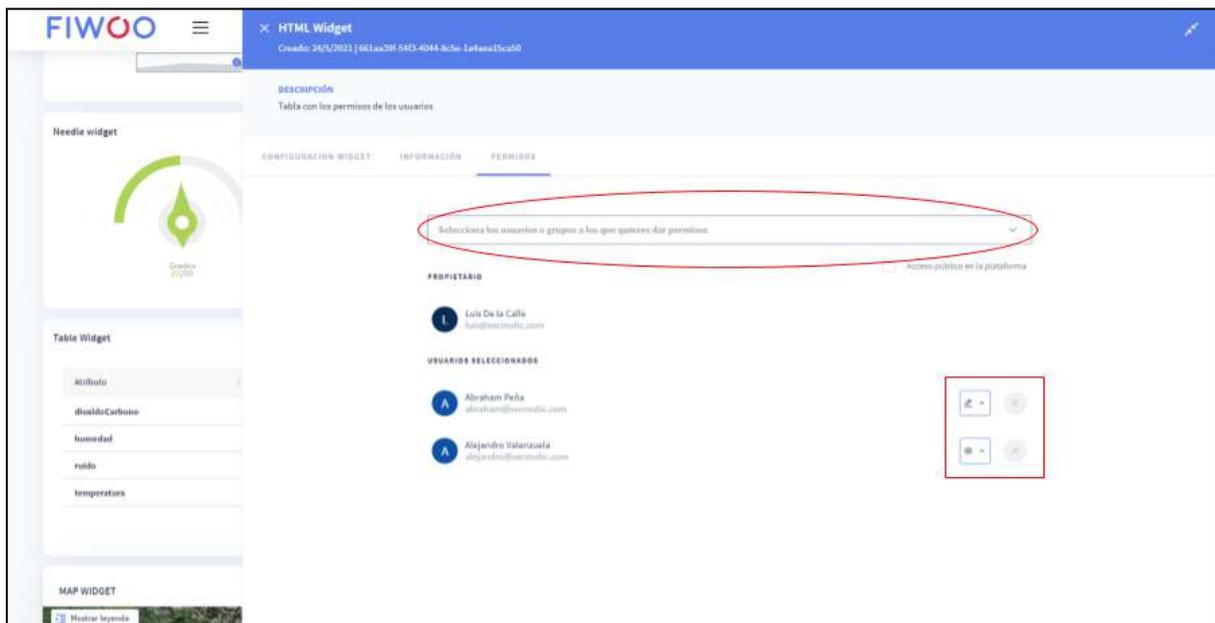
- The HTML code to be used.
- Link to the CSS you want to use.
- Link to the JS that you want to use.



In the “Information” submenu, the system shows us information about the current widget type.



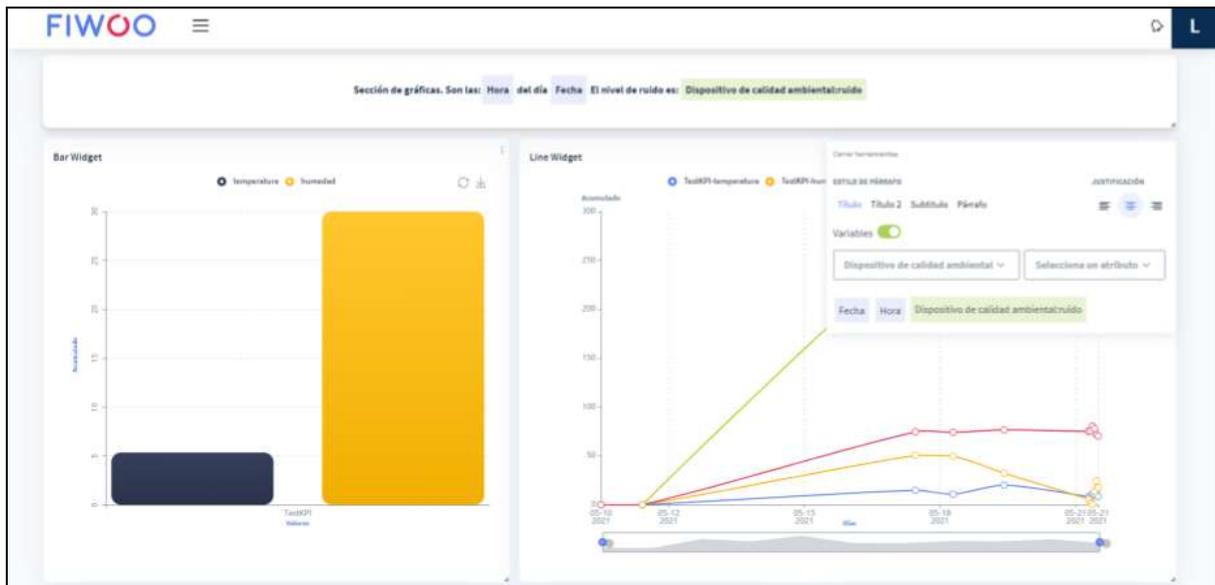
In the last submenu we will be able to modify the permissions that users have on the widget. We have the possibility of using the search bar to give access to new users or groups of users and we also have buttons to specify permissions for users who already have them and even revoke permissions.



Widget Parameterized text

- *Various text styles*
- *Adding variables to text*

To write in this widget we must click on the three points located in the upper right corner of the widget, this will display a menu in which we will choose the “Edit” option. The system will show us a small window in which we can adjust the type of text that the widget contains, the alignment of the text and it will also allow us to enter the last value of a device property as a parameter.



The styles that we have are:

- Title 1.
- Title 2.
- Subtitle.
- Paragraph.

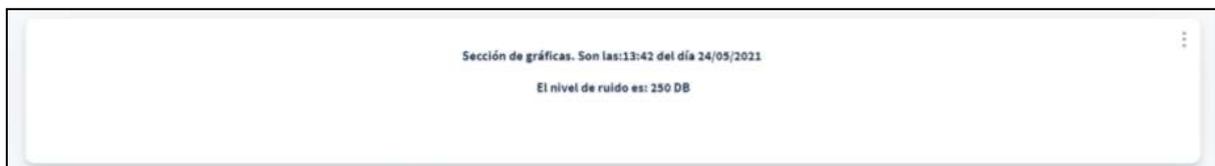
It is possible to use several styles in the same text, for this it is necessary to go to the paragraph whose style we want to modify and then click on the corresponding style with the mouse.

We can also change the text alignment to the right, left or center of the widget.

It is necessary to know that we can introduce all the variables that we want to work with them in the widget. For this we only have to select a data source to which we have access, after this the system will show a second drop-down menu in which we can search for the attribute we need. When clicking on the properties, the system will automatically add them to the text.



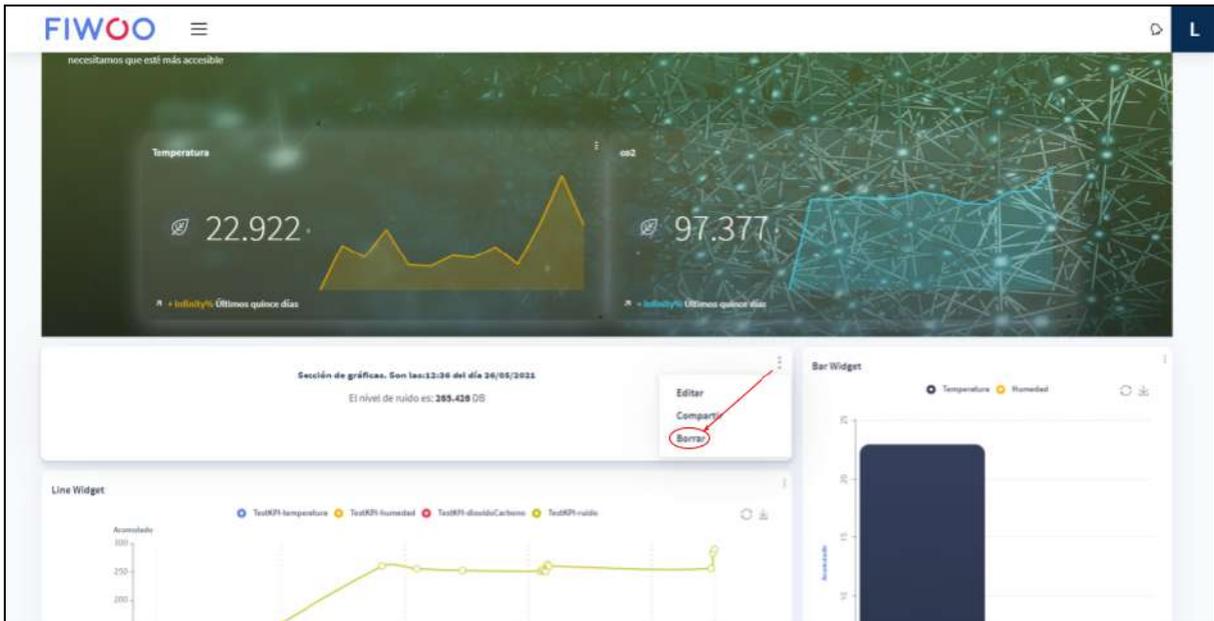
When we have configured our message, click on "Close tools" to make these changes persistent.



Delete widget

When removing a widget from the dashboard, we have only one option, do it individually.

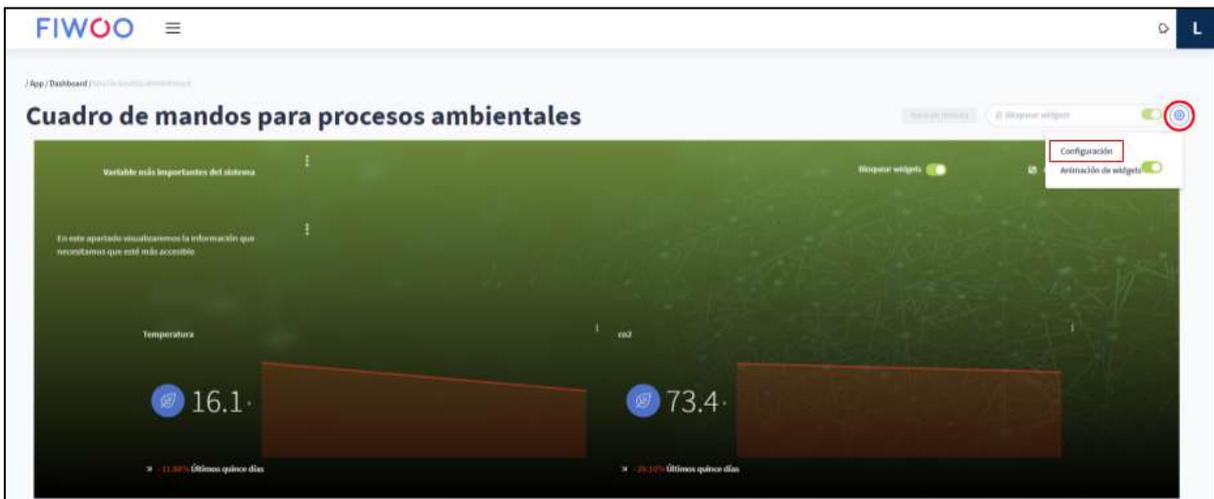
To delete a widget, we simply have to press the three points to the right of the widget and select the "Delete" option and it will be removed from the system.



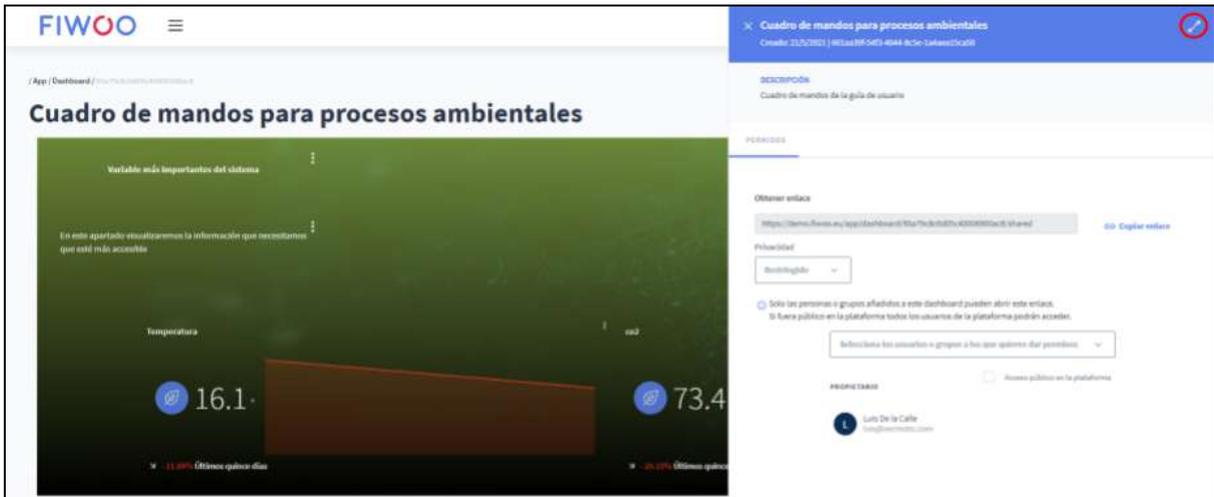
Dashboard permissions configuration

We have seen that dashboards are a great way of capturing the data we receive from our information sources, so sometimes it can be interesting to want to show this information to third parties that are not part of our business. Through FIWOO, we can configure a dashboard as public, and generate a link that will allow other people to access its content through the browser.

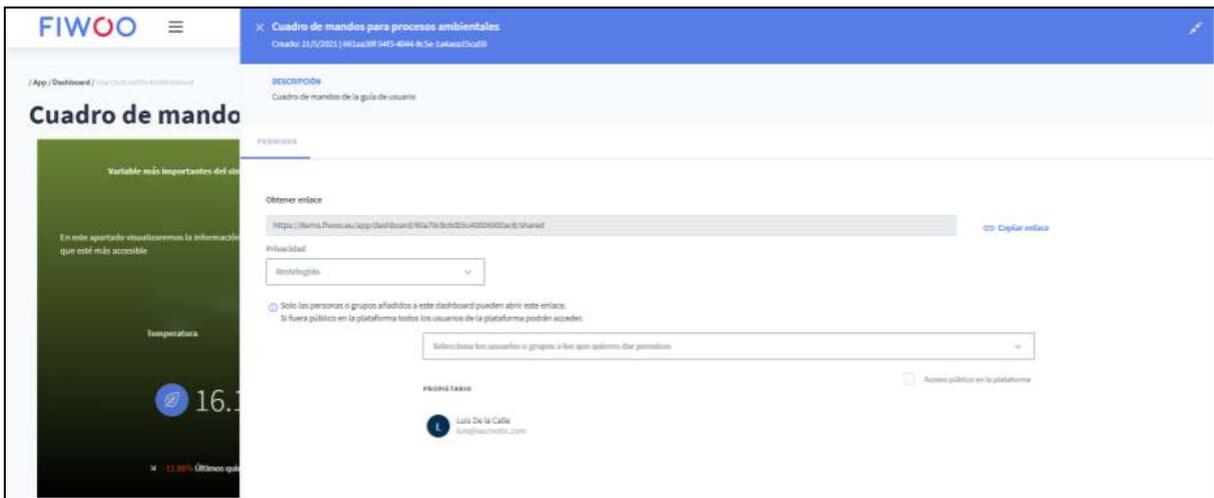
To carry out this action, we must go to our dashboard, at the top we see a button in the shape of a gear, press it and then select the "Configuration" option from a drop-down that the system will show.



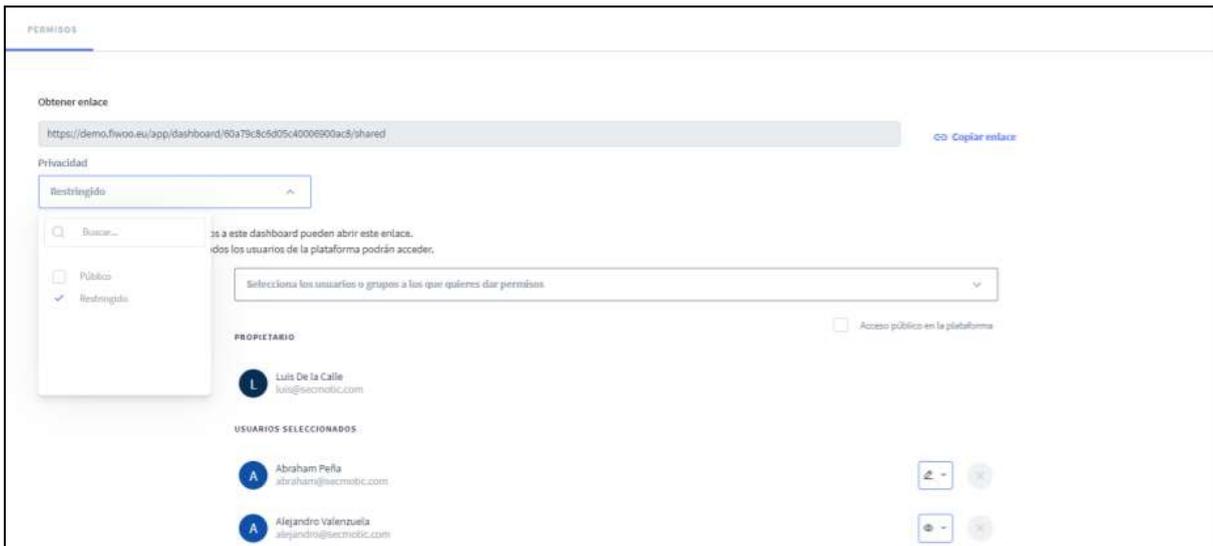
The system will display a menu on the right side of the screen where we can see the current characteristics of the dashboard.



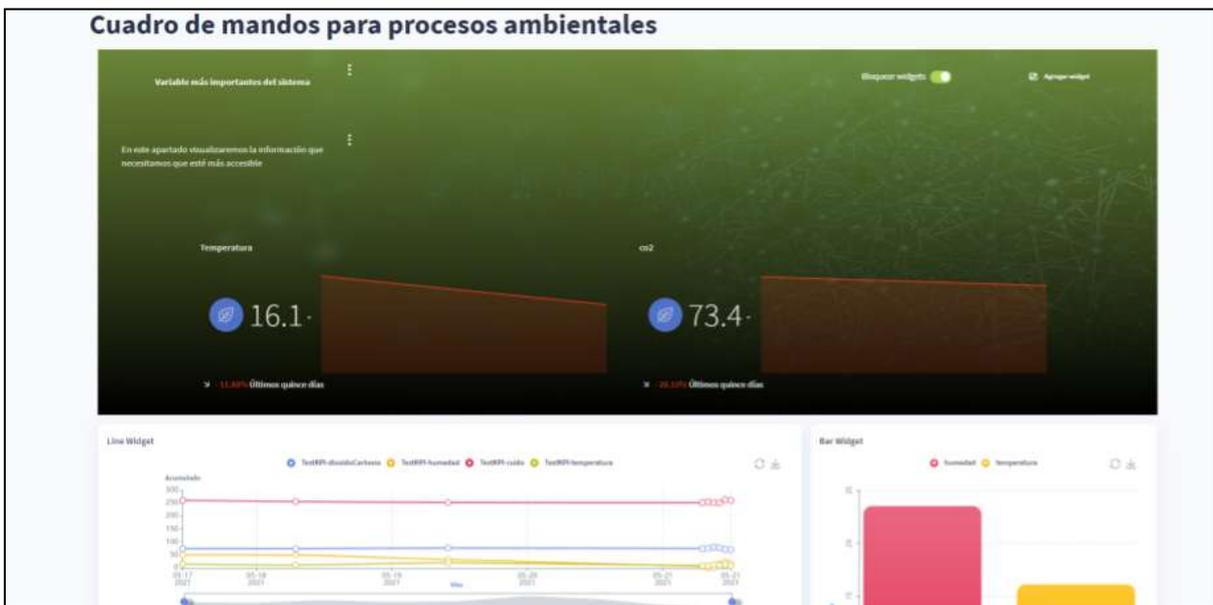
In the upper right corner we have a button that allows us to resize the menu, enlarging said menu in such a way that it is more comfortable to edit the configuration.



In this menu we can see three main elements: A link to share the dashboard, a selector with which to specify the privacy of the dashboard and a section where to grant permissions to specific users.



The dashboard has two levels of privacy, if it is 'Restricted', it means that only the users and user groups that we specify in the current menu can use the link to access the dashboard. If we specify a 'Public' level, anyone with a link will be able to view the data.



If we copy the link and enter it in the browser's search bar, we can view the widgets that the dashboard has. However, we will not be able to add or modify the information on the dashboard.

Create a report

To create a report from the dashboard, it is done from within the dashboard itself.



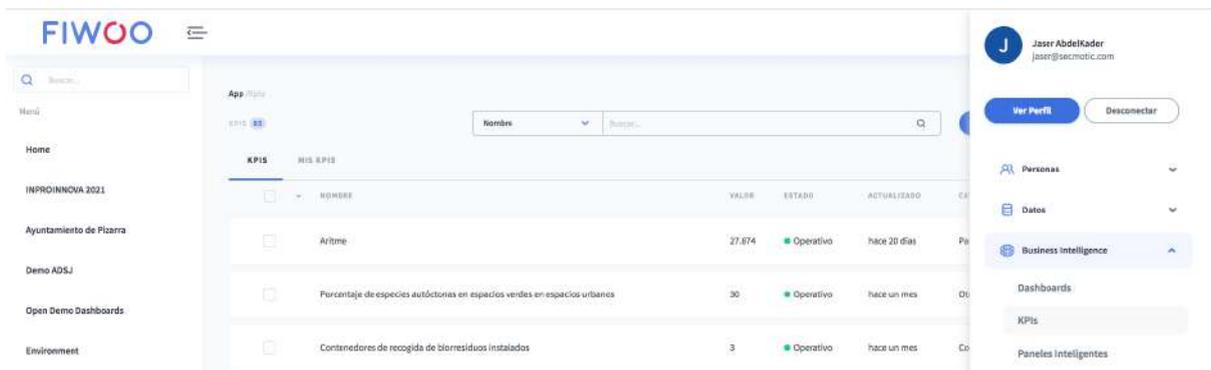
In the wheel that exists at the top of the dashboard, we click and the options menu will appear, among which is the option to Download report.

By pressing, the system will start an automatic process in which it will convert the dashboard data into a report and it will be downloaded.

Management of KPIs

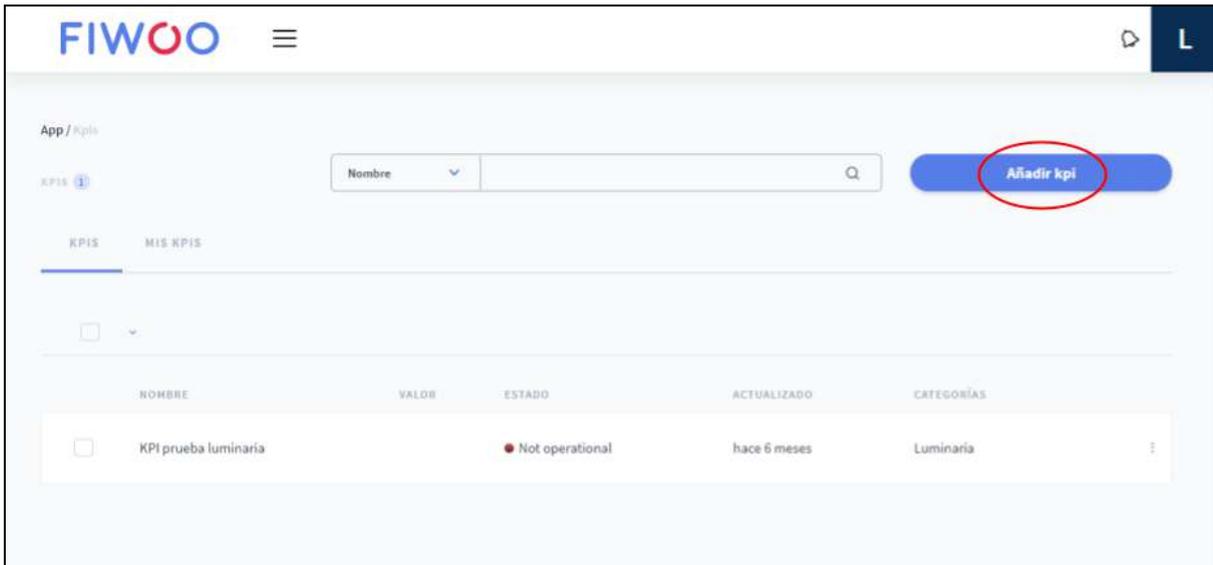
The KPIs (or indicators) are metrics that we will obtain from our devices, other indicators or other data sources, generally automatically, although it is possible to determine that said metrics are collected manually. The purpose of obtaining these measurements is to facilitate decision-making about a process or project.

We can access the KPIs manager by selecting the “KPIs” option from the menu that appears when clicking on the button in the upper right corner.

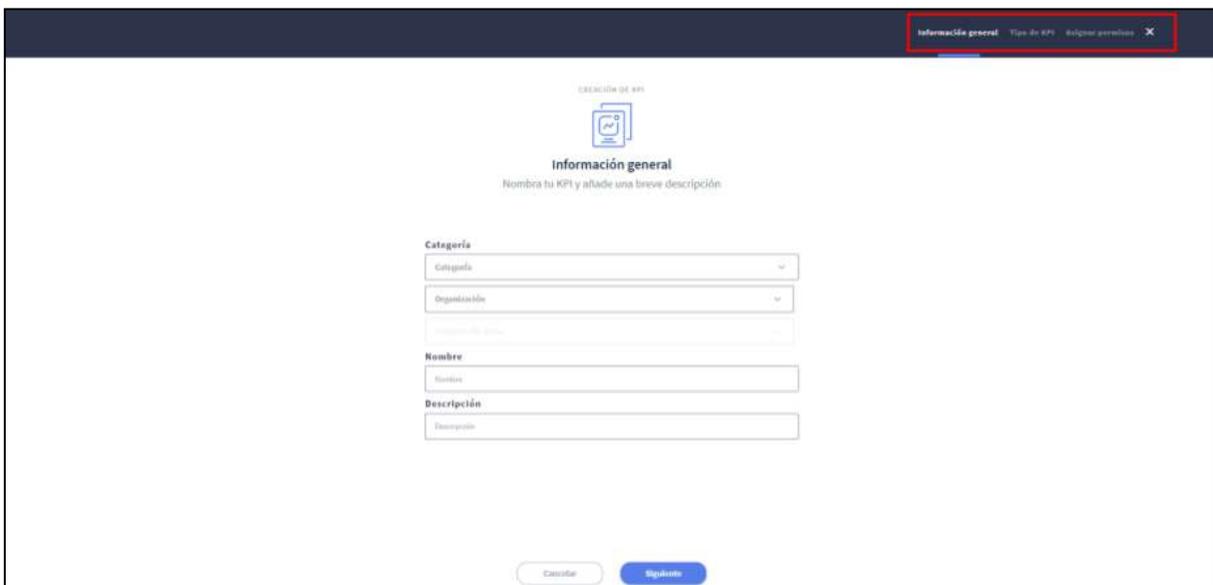


Create KPI

Once we are in the KPI manager, we can create a new one by pressing the “Add KPI” button.



This action will start a guided creation process in which we will have to fill in various forms that we will discuss below. This creation process begins with a window in which the system requests information related to the functions of the KPI.



The top bar shows the various steps that need to be completed before the creation. The data to be entered is all mandatory, and is mainly responsible for collecting the following data:

- Category: This section contains information related to the application that is going to be given to a KPI, it has three sections.
 - Category: Identifies the sector to which the work performed by a KPI is related. Each category is assigned an icon with which the device will later be represented in the widgets.
 - Organization: Represents the type of institution or department in which the KPI is established. Its main function is to group KPIs for publication as open data.

- Data set: It is used to indicate what data will be obtained from the KPI. It is a second level of grouping, within each organization there will be several data sets, to be able to order them within the open data system.
- Name of the KPI, so that it can be searched later.
- Description of the KPI.

Once we fill in the pertinent information, click on the next button to advance to the second step. This time we will have to choose what type of KPI to generate, we have two possibilities:

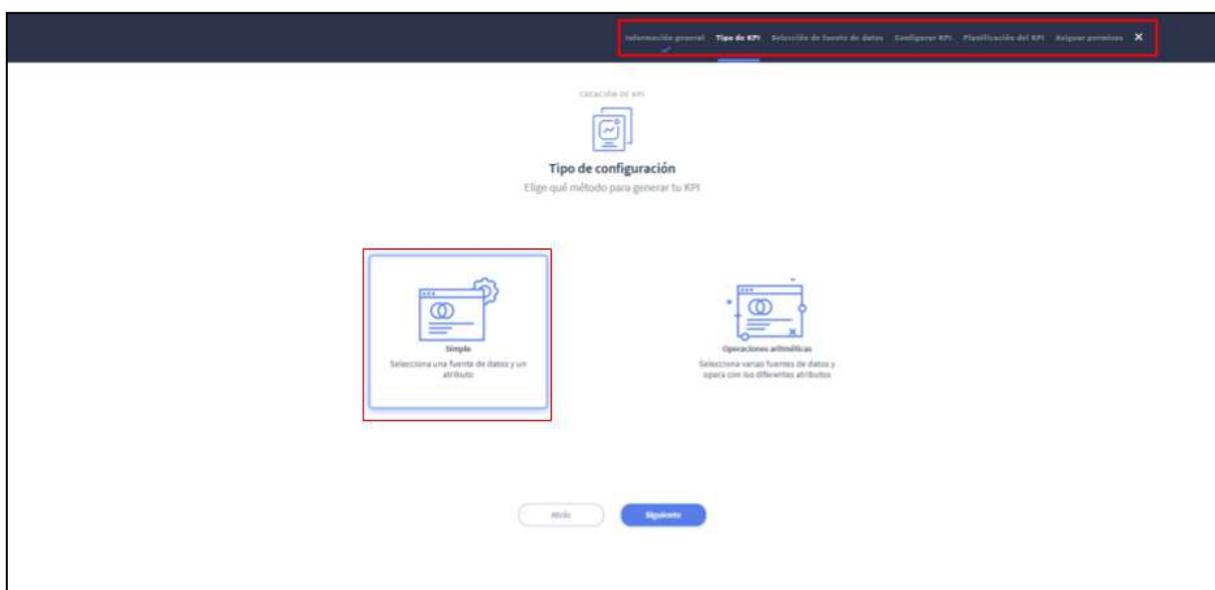
- Simple KPI.
- KPI of Arithmetic Operations.

Simple KPIs allow us to work with a value that we enter manually or with a property of a device or other data source. In the case of inserting the value manually, whenever the KPI is consulted, it will show us said value; On the other hand, if we work with the data that we obtain from the property of a device, we can decide that the KPI shows us the last value of the property or apply some operation to the values of a certain period of time, for example, we could configure a KPI showing the average temperature for the month.

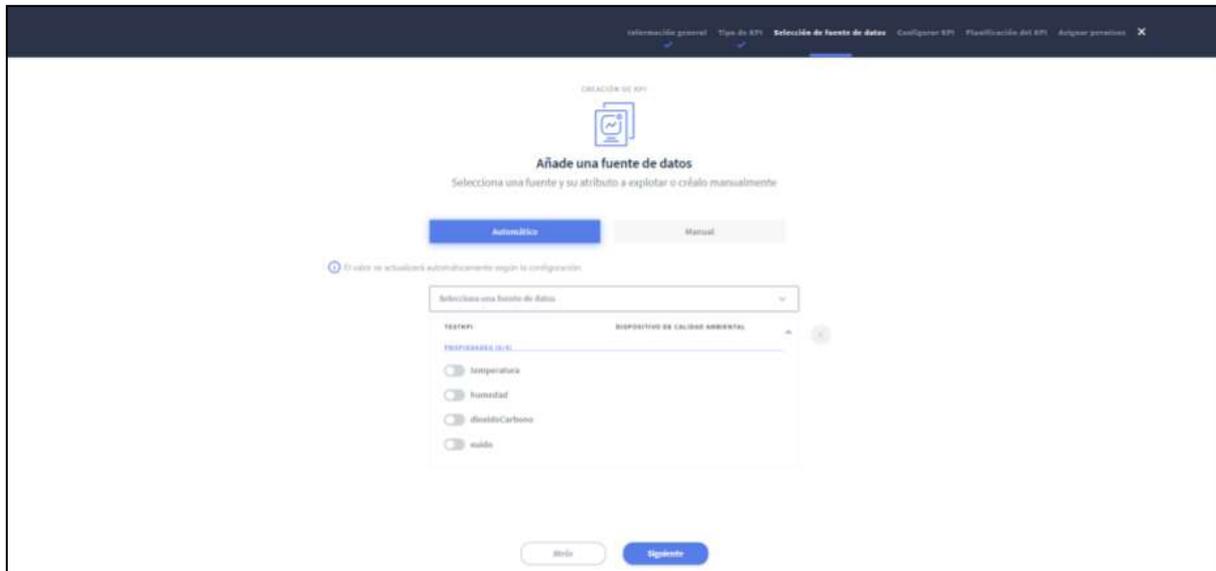
Arithmetic operations KPIs allow a higher level configuration than simple ones, this is because they can work with multiple properties from different devices or other data sources at the same time, and even with data obtained from other KPIs. Once all the values to be used have been decided, the operations we saw earlier can be applied to them and then combined in a final arithmetic operation.

Create Simple KPI

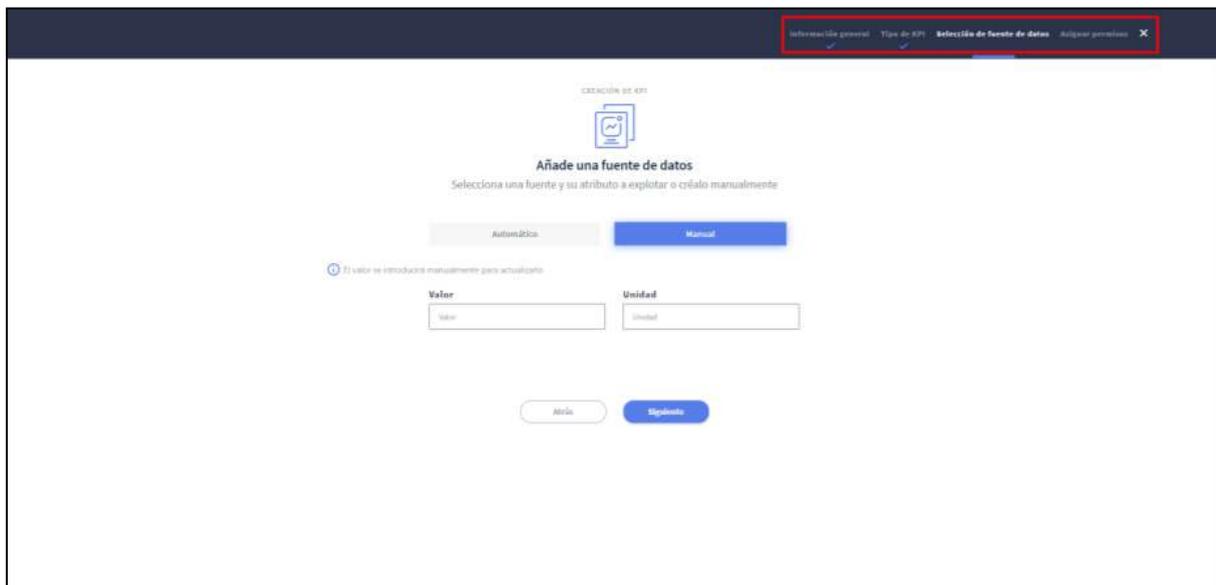
Let's see the steps to generate a simple KPI, first we select the "Simple" option in the current window. After clicking on the option, the bar that shows us the actions to be carried out changes indicating the steps to generate a KPI of this type. Click on "Next" to advance to the next step.



In the current window we have two buttons that allow us to decide whether to enter an automatic value from a device or another data source or a manual value. In case of choosing the first option, we have a search box where we can filter the data source by its name to choose the one we want. Clicking on one will display a second menu where we must select the property with which we want to work.



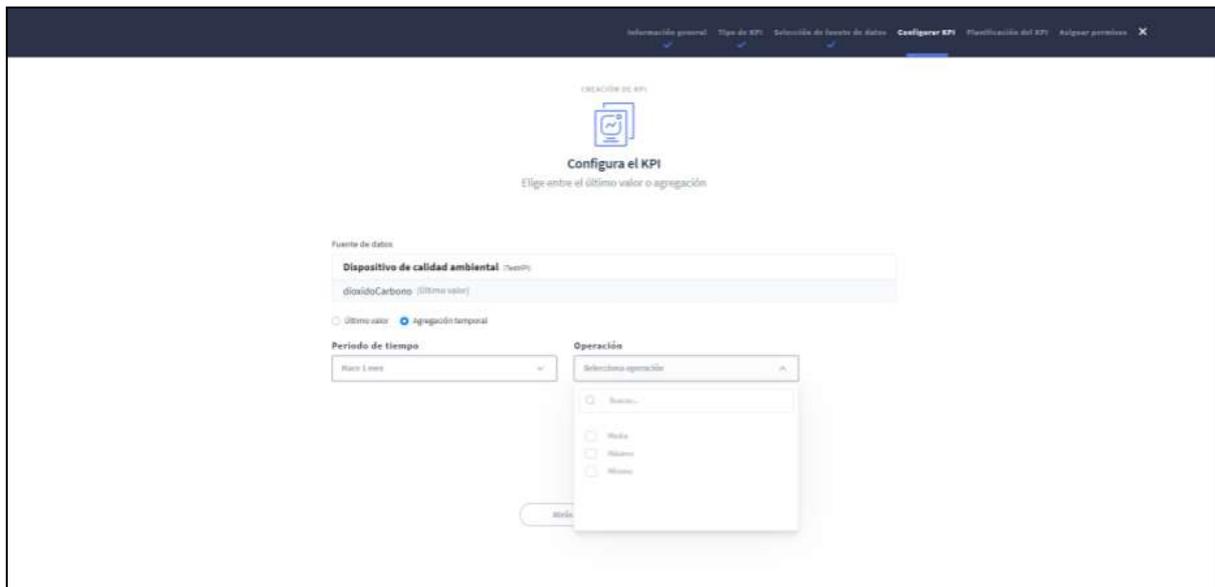
In the case of wanting to insert a value manually, the system will ask us through a form to insert said value and the unit that corresponds to it, if necessary. We must know that if we choose this option, the only additional step that we would have to carry out to configure the KPI is permission management.



We are going to continue assuming that we have decided to work with automatic data, after pressing the next button we will advance to the form of the fourth step. In the current screen we must decide how to treat the chosen property, the available options are:

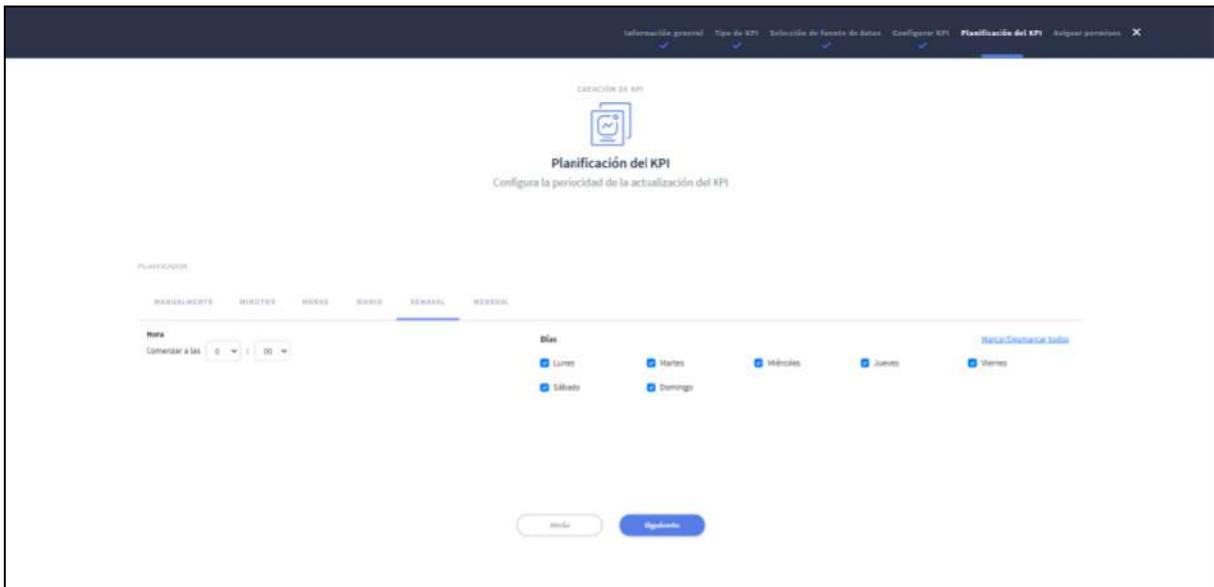
- Obtain the last value of the property.
- Apply an aggregation function over a period of time.

With the first option the KPI will simply obtain the last value that the device sends us for that property, with the second option we can indicate that the average, maximum or minimum for that parameter be calculated in a time interval of one minute, one hour , a day or a month.

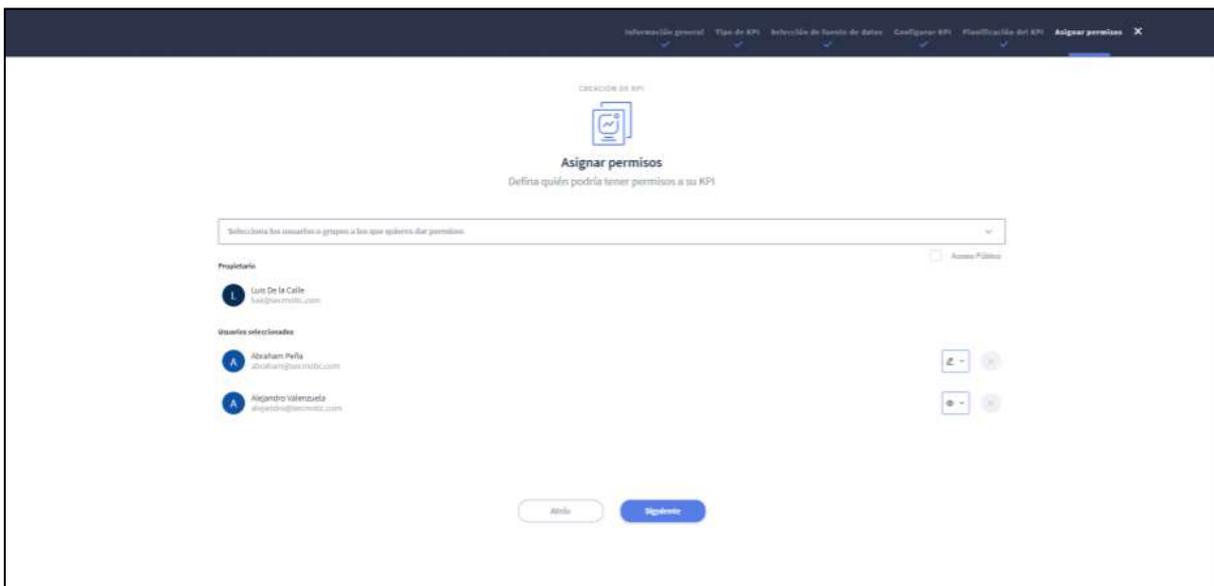


When we enter the configuration that we need, we can press the “Next” button to advance to the planning. In this section, the system asks us to insert when the KPI value will be updated. We have the following options:

- **Manually:** When the user deems it appropriate, he can tell the system to update the value of the variable.
- **Minutes:** Every how many minutes the value will be updated.
- **Hours:** Every how many hours the value will be updated.
- **Daily:** We indicate at what time of day the value will be updated. We can decide if it will only take place on working days or every day.
- **Weekly:** In this section we will choose which day or days of the week the value should be updated and at what time said process would be carried out.
- **Monthly:** In this option we choose which day of the month and at what time the update takes place.



Once we have decided how often the KPI will update its value, we can click on the “Next” button to advance to the “Assign Permissions” step. In this step it is possible to indicate which users will have permissions to interact with the KPI. Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.

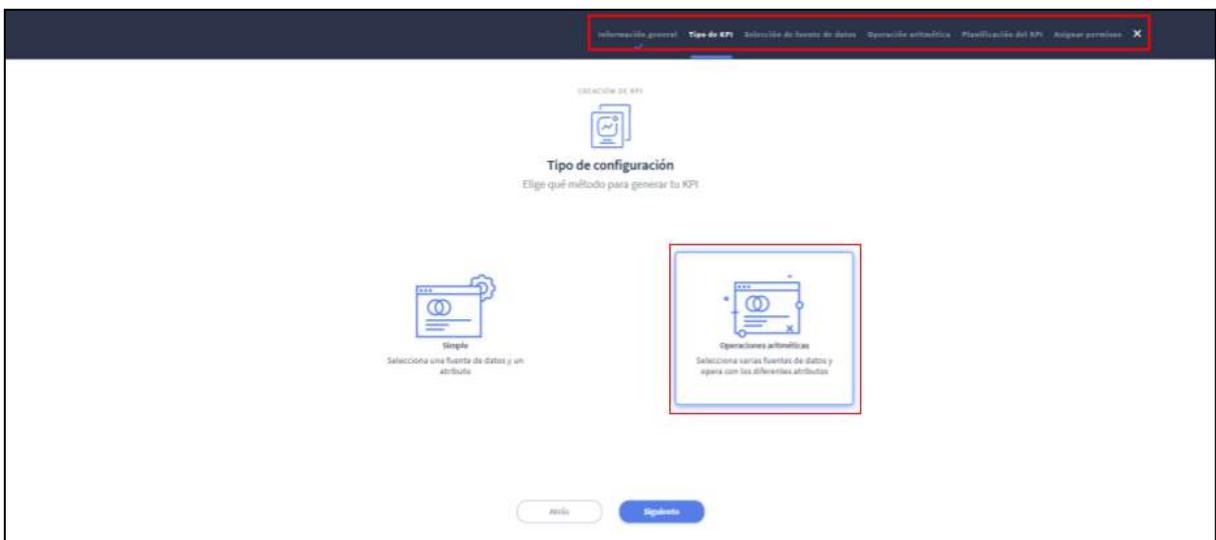


After clicking on the “Next” button, the process will end and the system will display the following message to inform you that everything has been saved correctly.

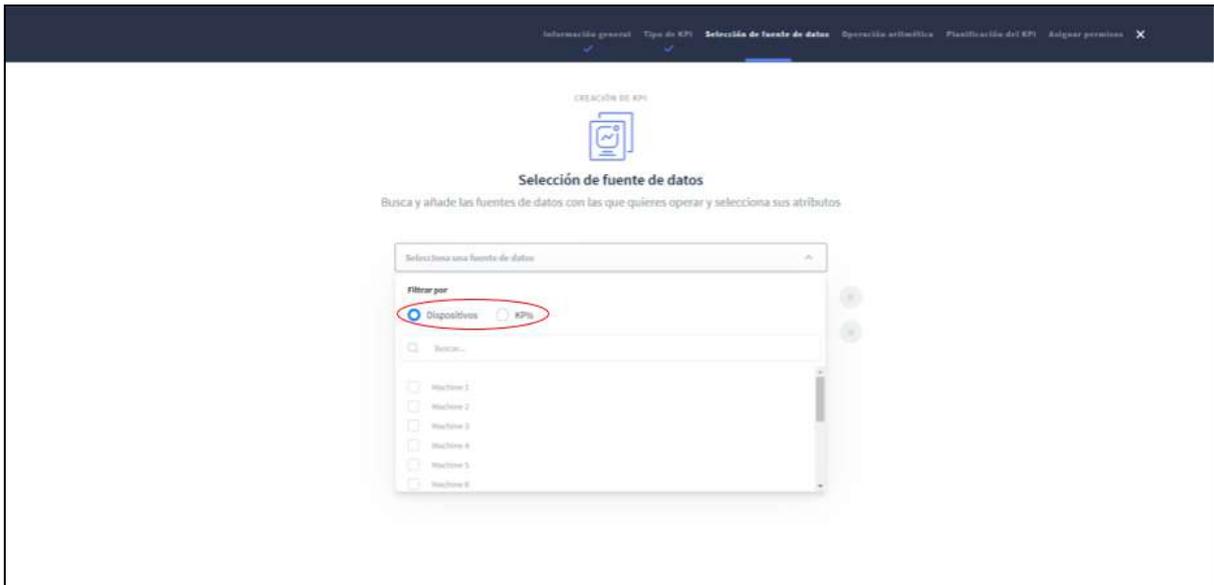


Create Arithmetic KPI

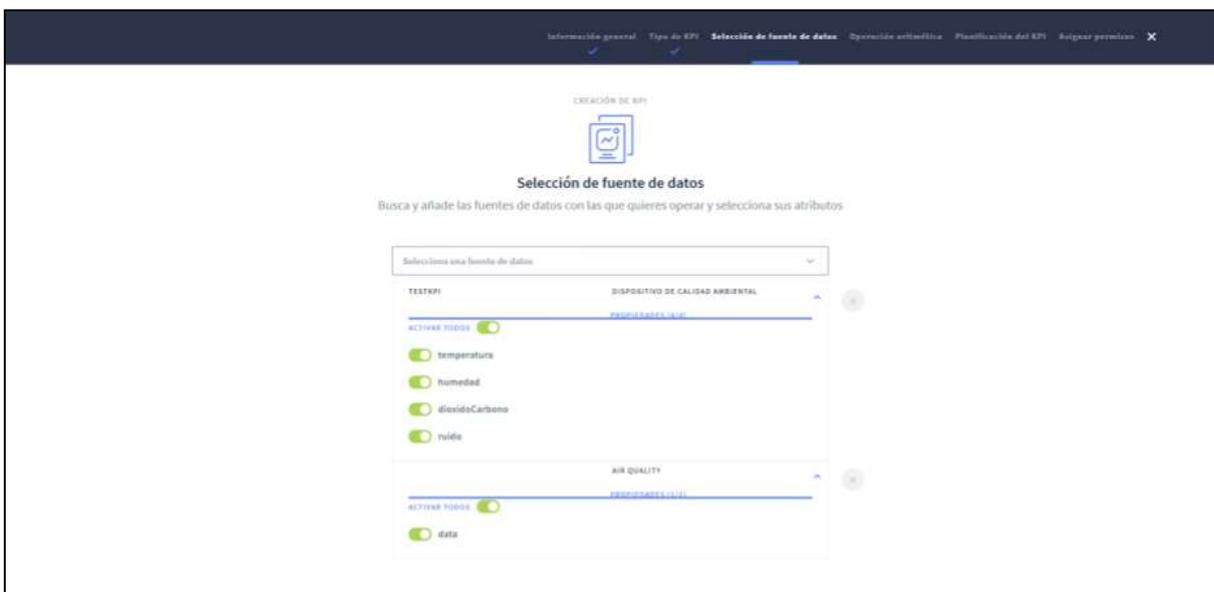
We are going to see the steps to generate a KPI of arithmetic operations, in the first place we select the "Arithmetic operations" option in the current window. After clicking on the option, the bar that shows us the actions to be carried out changes indicating the steps to generate a KPI of this type. Click on "Next" to advance to the next step.



In the current window we have a search box where we can filter the devices, other data sources and/or the KPIs from which we want to obtain information.

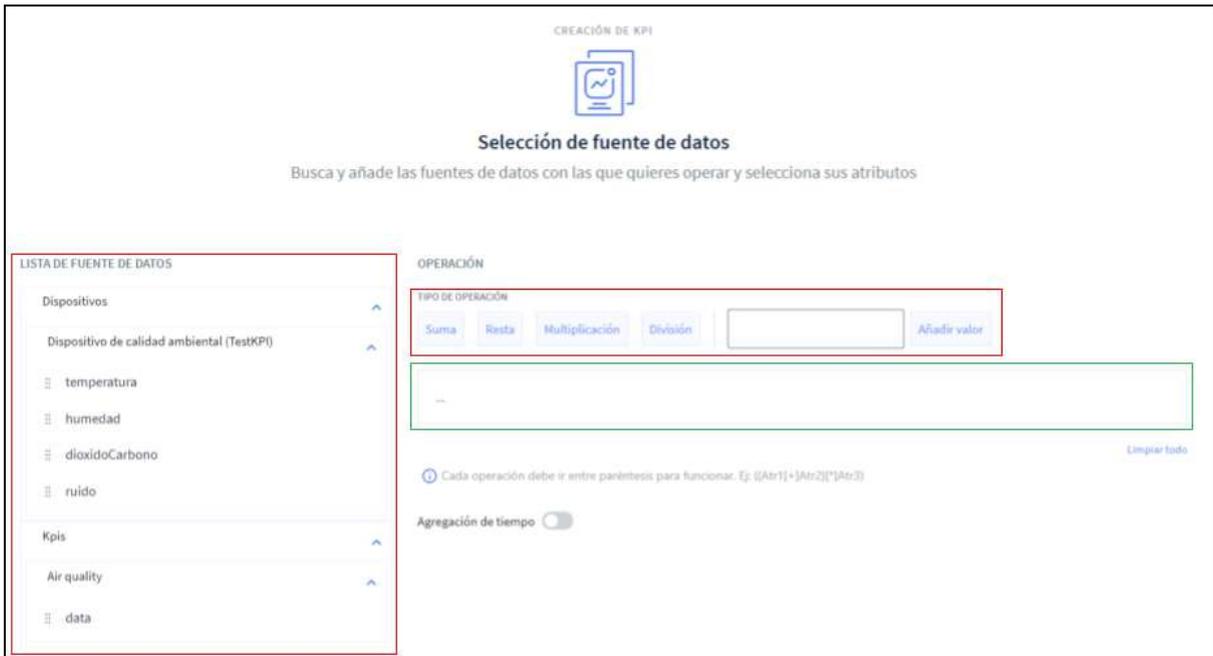


When clicking on an element, a second menu will be displayed where we must select the properties with which we want to work. In this case we can choose as many properties as we want.



As the process progresses, the system will show us a screen where we can choose how to treat the information we have just selected.

This window is arranged as follows, on the left we have a menu that lists the properties of the devices, data sources and the chosen KPIs; in the central part we can interact with an options bar that allows us to indicate the arithmetic operations that will be carried out and also allows us to add a new value. Just below there is a field that allows us to visualize the operation that we are describing.



To add a new property to the formula we simply have to click on it and select how we will obtain its value.



This action will be automatically represented in the central bar of the screen where the current status of the formula is displayed. On this screen we also have a button that allows us to indicate the time interval that we want to use for the properties.



Finally, it is necessary to know that the different operations must be included in parentheses to be valid, to write a parenthesis we can do it ourselves by placing ourselves in the field with the formula and using our keyboard.

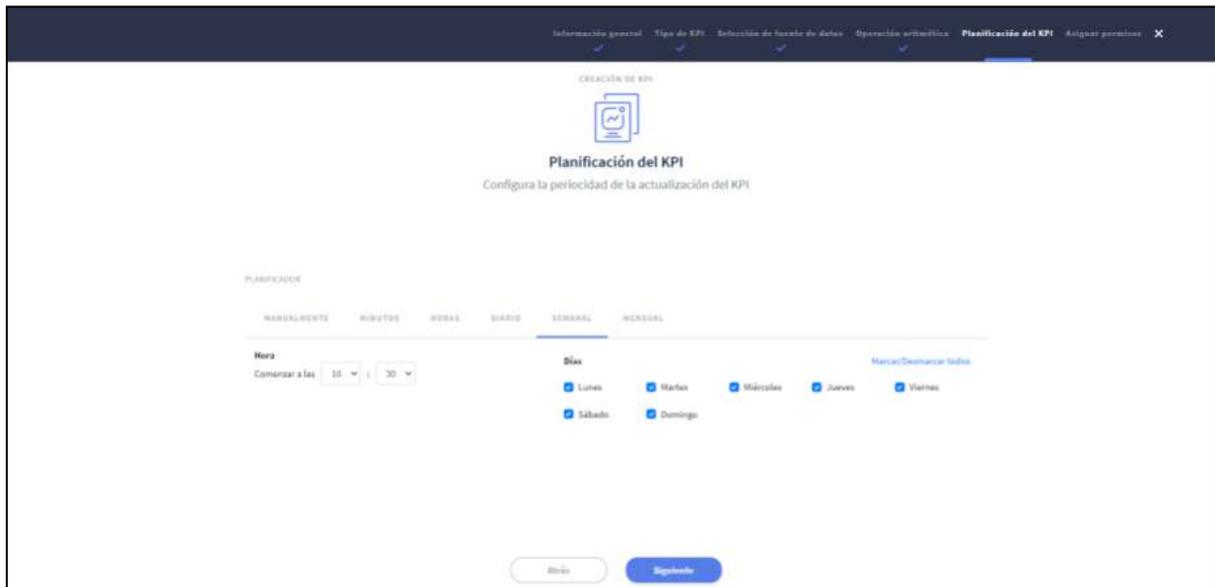


If we make a mistake writing the formula, we can correct the errors using the "Clear all" button, deleting everything we have written, or selecting the wrong part with the mouse and pressing the "Backspace" button on our keyboard to eliminate said part.

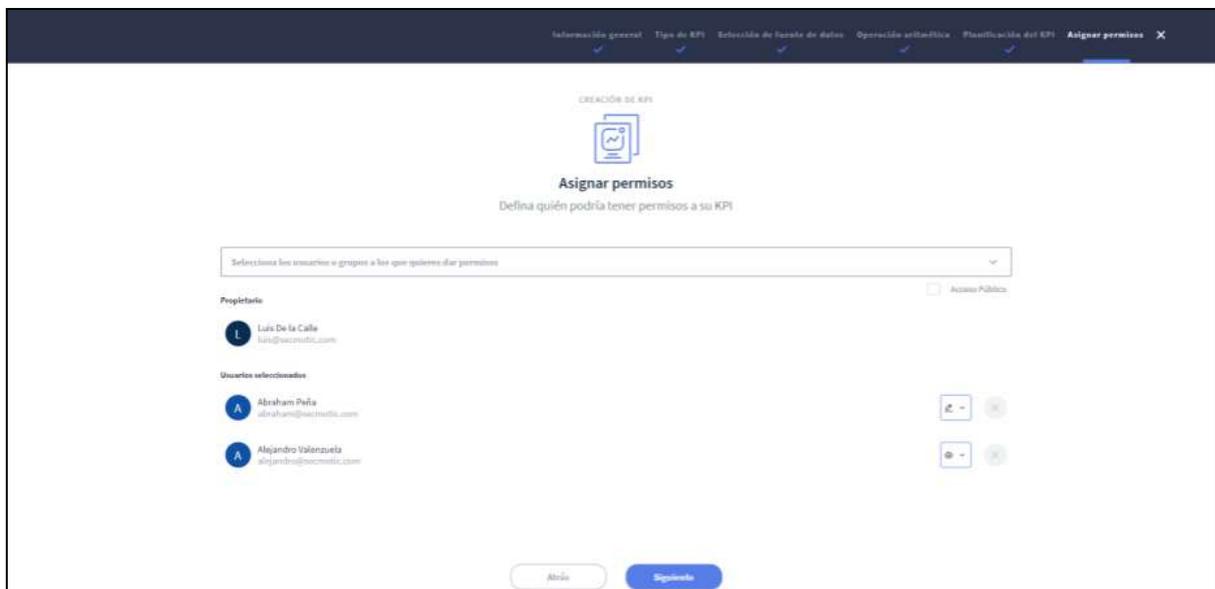
When we have entered the configuration that we need, we can press the "Next" button to advance to the planning. In the current section, the system asks us to insert when the KPI value will be updated. We have the following options:

- **Manually:** When the user deems it appropriate, he can tell the system to update the value of the variable.
- **Minutes:** Every how many minutes the value will be updated.
- **Hours:** Every how many hours the value will be updated.
- **Daily:** We indicate at what time of day the value will be updated. We can decide if it will only take place on working days or every day.
- **Weekly:** In this section we will choose which day or days of the week the value should be updated and at what time said process would be carried out.

- **Monthly:** In this option we choose which day of the month and at what time the update takes place.



Once we have decided how often the KPI will update its value, we can click on the “Next” button to advance to the “Assign Permissions” step. In this step it is possible to indicate which users will have permissions to interact with the KPI. Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.

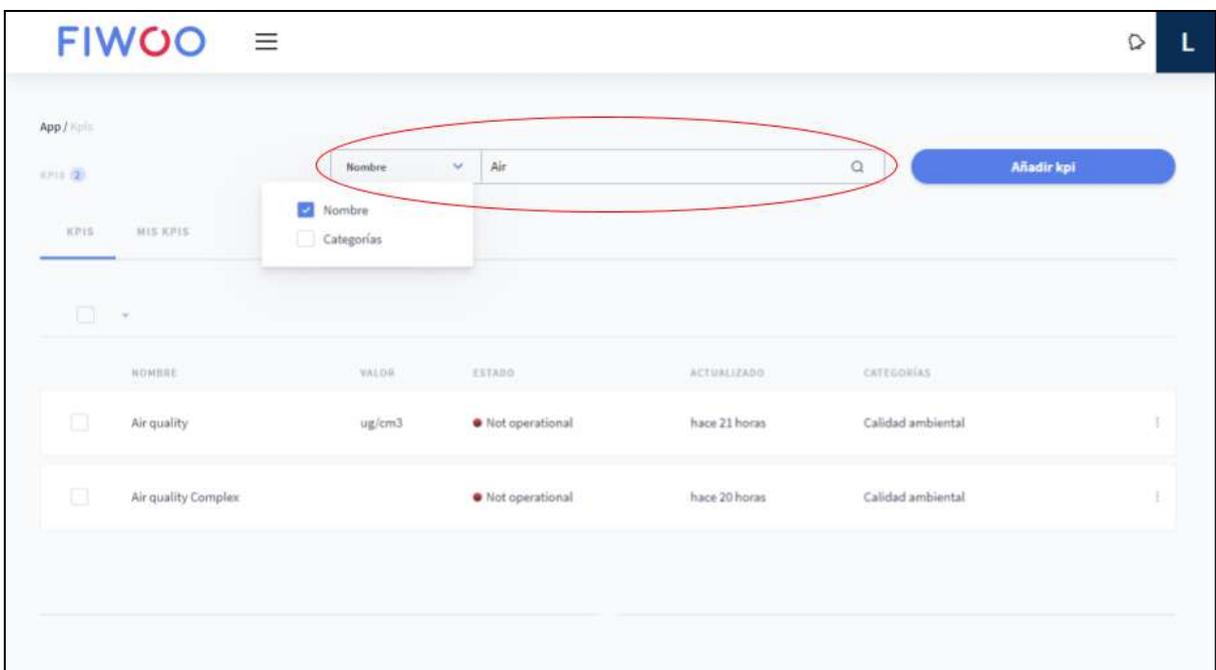


After clicking on the “Next” button, the process will end and the system will display the following message to inform you that everything has been saved correctly.



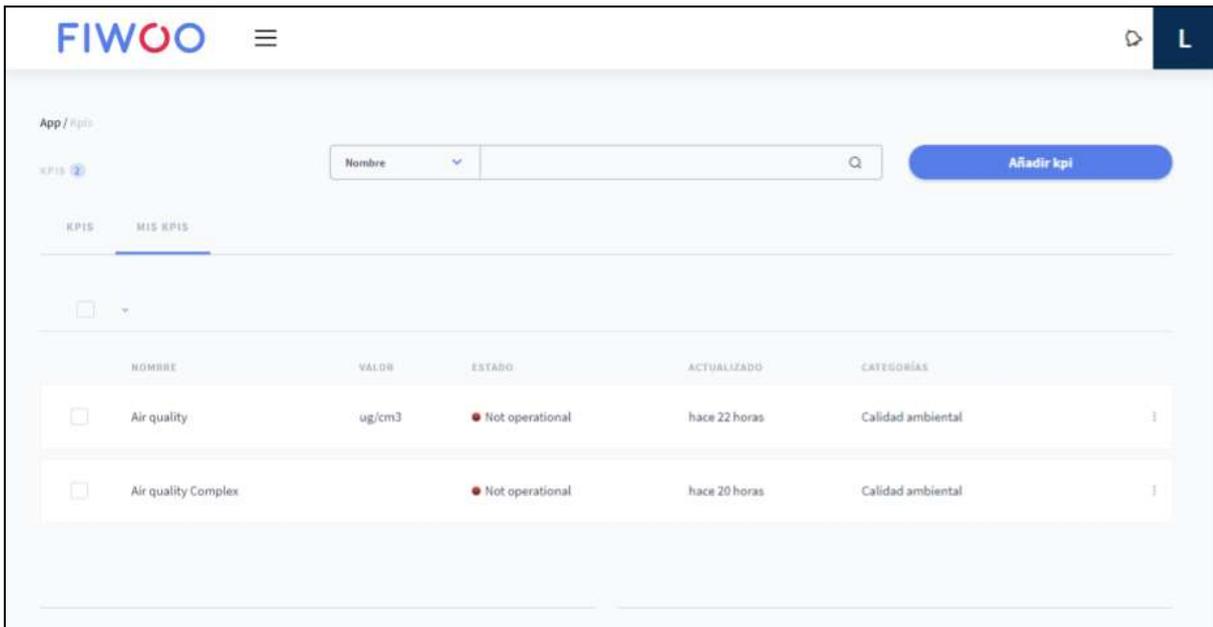
KPIs search engine

If we want to filter our list of KPIs we can use the search engine at the top and carry out a personalized search. We have two options to filter: Name and Category. Once selected, we will write the text to search for in the search box on the right.



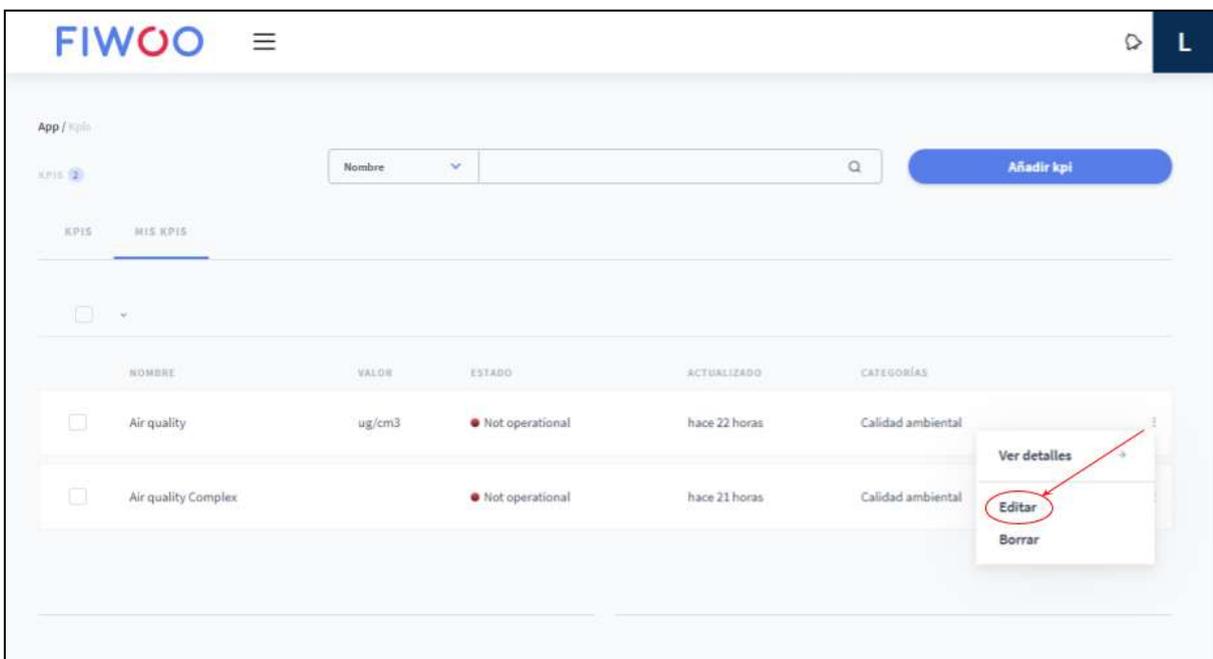
My KPIs

We have a convenient view that facilitates access to the KPIs created by the user who has the active session. To enter this view we only have to click on "MY KPIs" from the KPI management view.

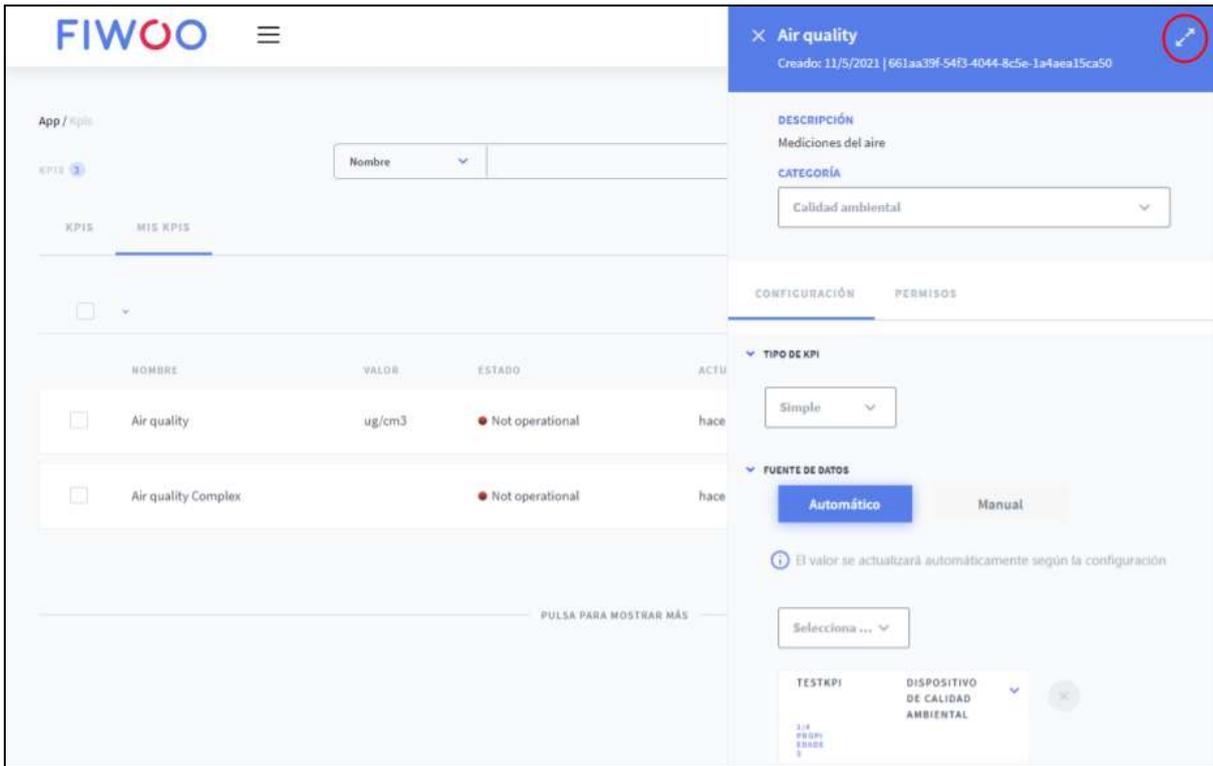


Modify a KPI

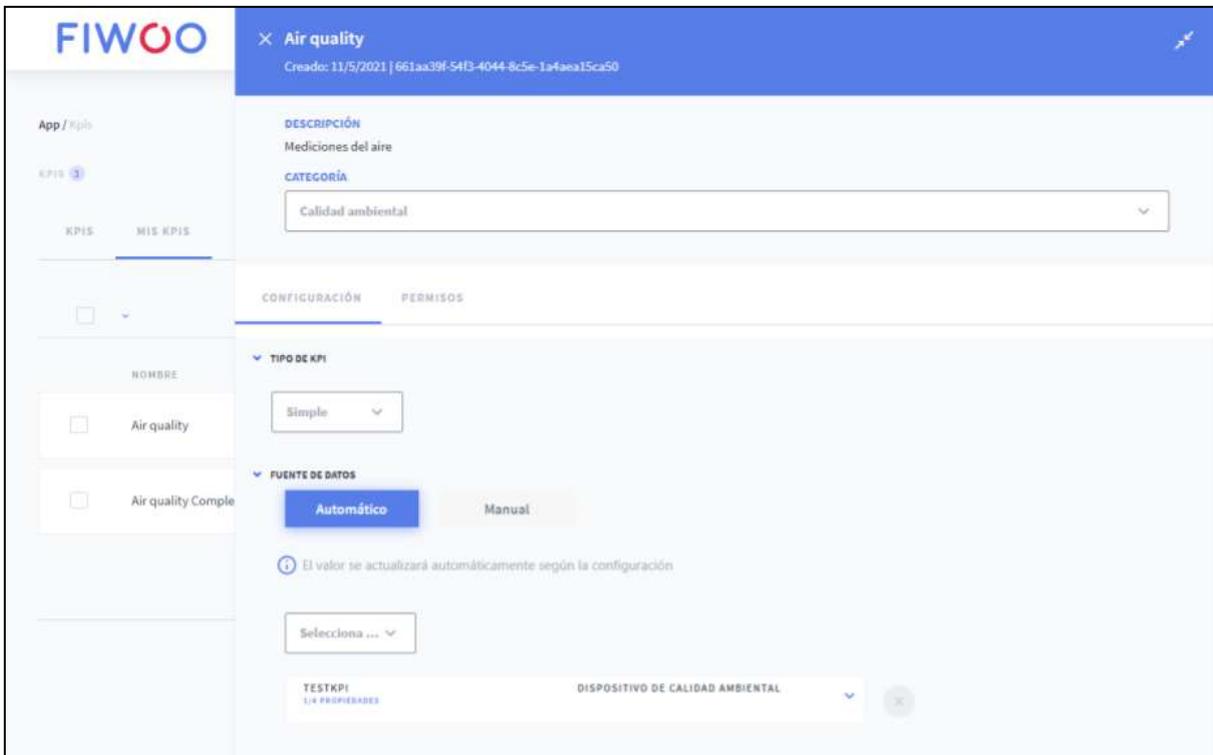
There is the option to change the configuration of the KPIs created, but to be able to edit them it is necessary that they are owned by us or have permission to do so. To modify a KPI, just click on the three points to the right of the row of the device you want to modify and select the “Edit” option. This action can be carried out from the KPIs view and from the My KPIs view.



This will display a menu on the right side of the screen where we can see the current characteristics of the KPI.



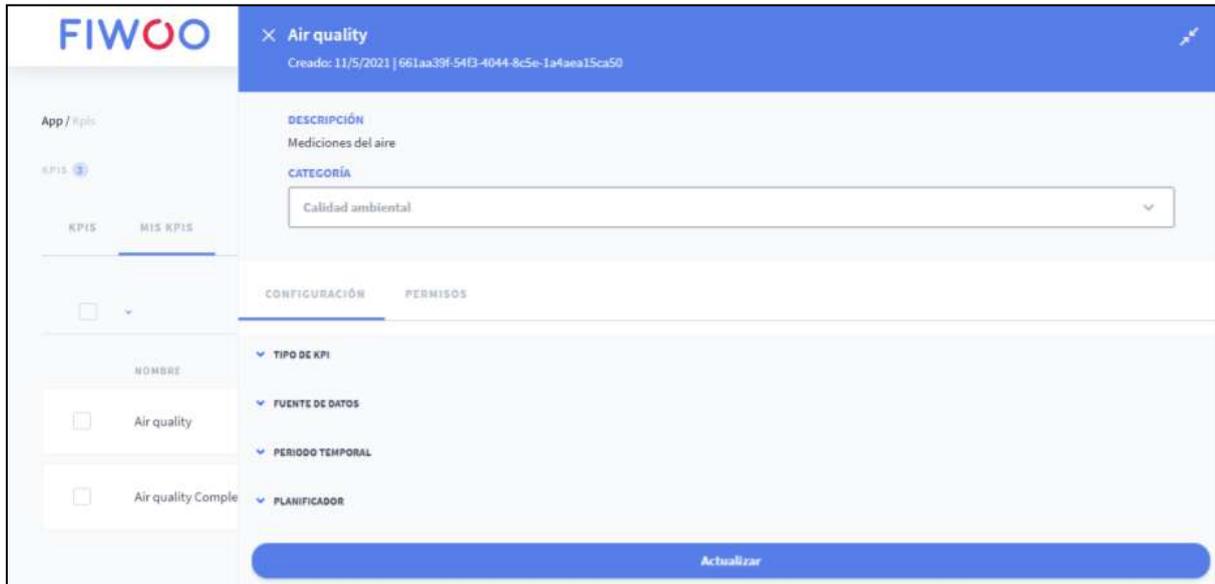
In the upper right corner we have a button that allows us to resize the menu, enlarging said menu in such a way that it is more comfortable to edit the KPI.



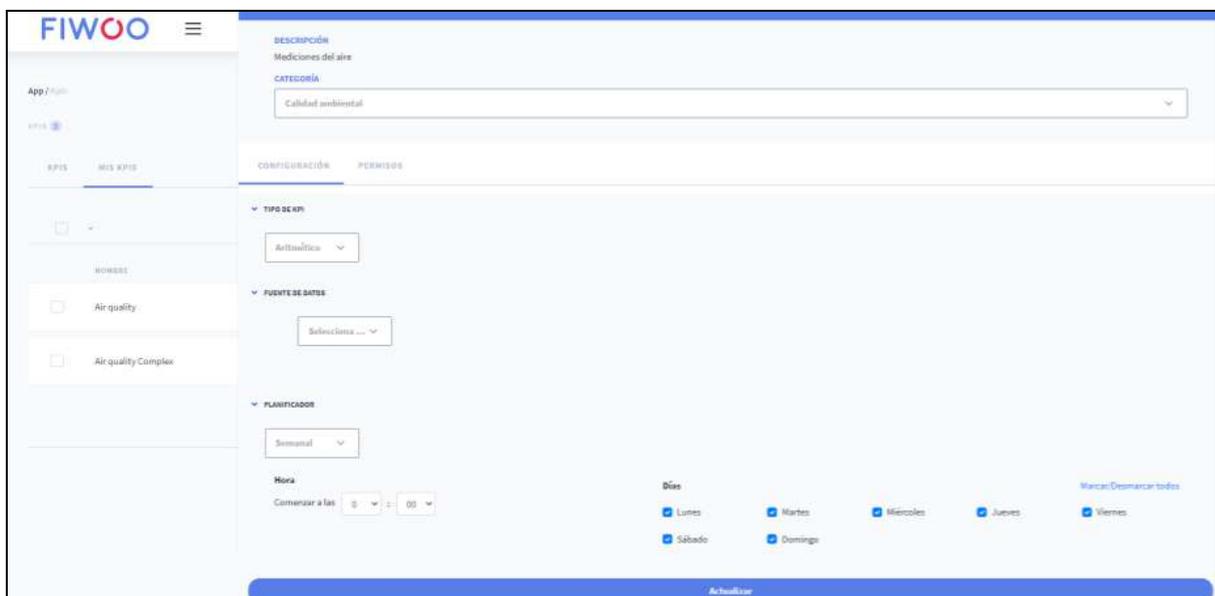
We can see that we have the ability to modify the KPI name, description and category. We also have access to two submenus, these are: Settings and Permissions. In the Configuration submenu

we have access to most of the modifiable elements, in permissions we can select who or who has access to our KPI.

In the case of editing a "Simple" type KPI, in the configuration section we could adjust the type of KPI, the data source, the time period and the scheduler.



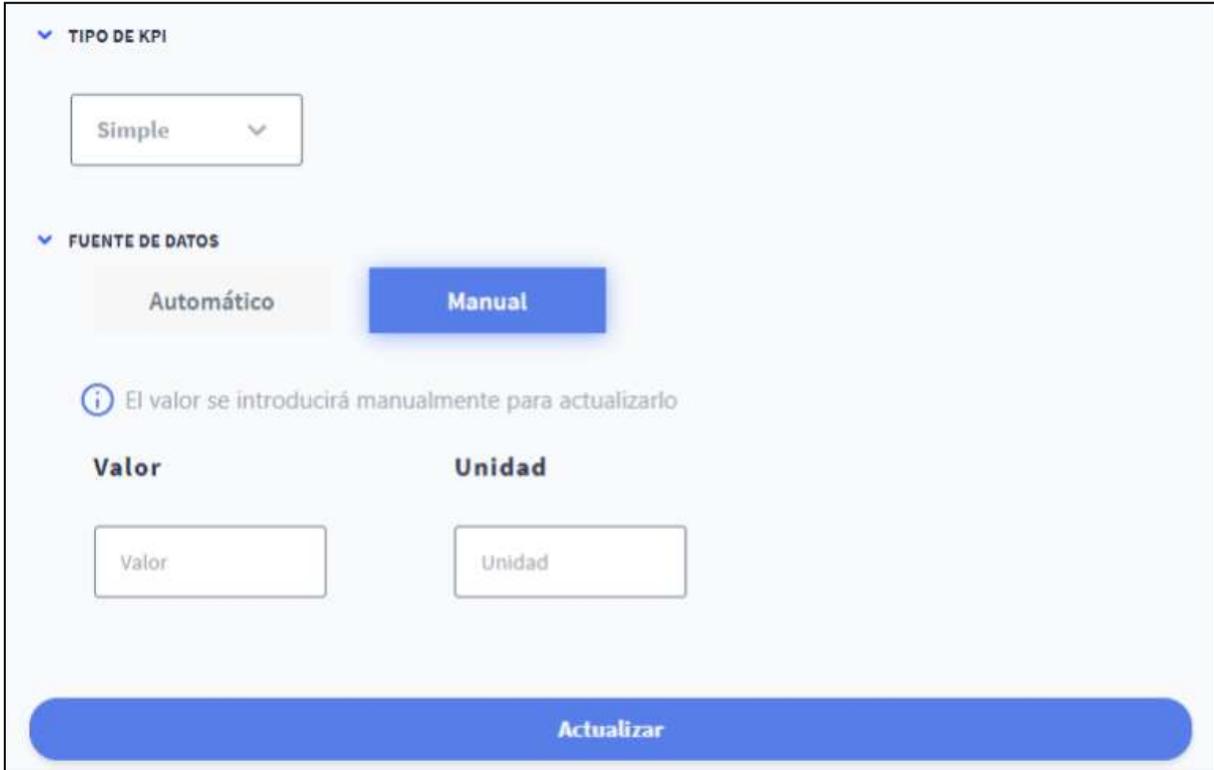
If we change the data type and go to "Arithmetic", we can see that the editing menu changes, giving us access to other configuration options. But we must bear in mind that we will lose the previous configuration and we must adjust all the KPI parameters related to the Data Source.



Assuming that what we want to edit is the data source of our simple type KPI, we have the options of changing the source from which we collect the data and selecting a new property.



If we go from an automatic to a manual data source, the configuration options will adjust to said change, allowing a value and a unit of measurement to be inserted. Also, since planning is not necessary, it will be omitted.



Regarding the time period, we can define again the function that will calculate the value of the KPI and what period of time it will take into account; We will do this using two drop-down menus. We also have a button that allows us to disable this aggregation.



We can also reconfigure how often the KPI value will be calculated, through a drop-down menu we will choose the type and depending on the one we choose, a specific configuration of that type will be shown.

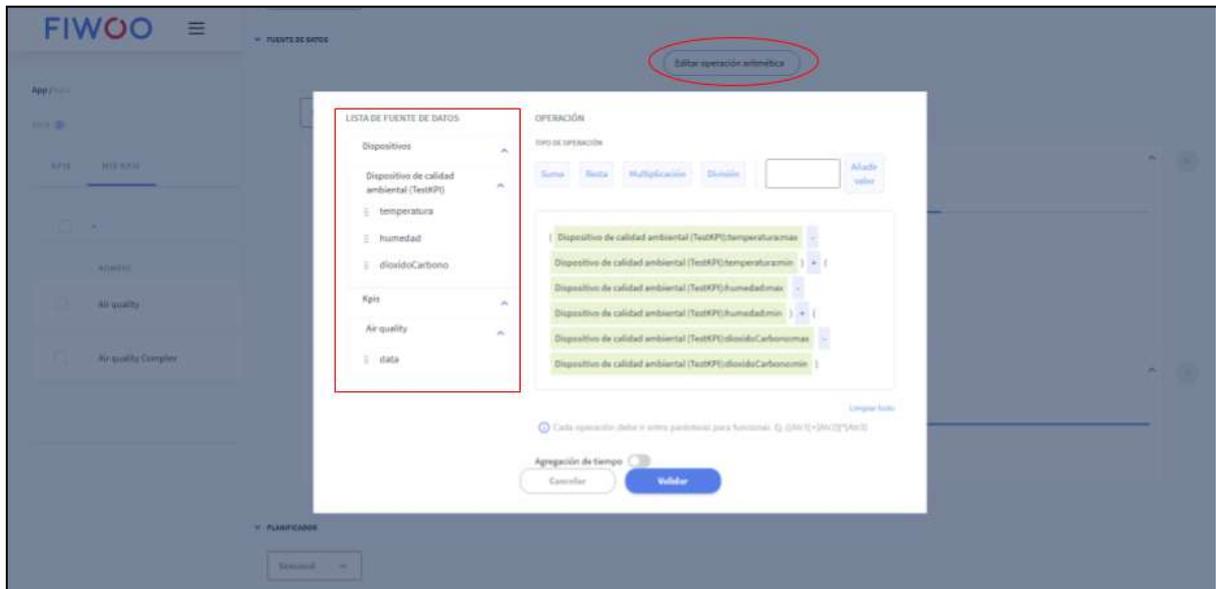


In the event that we are editing an arithmetic type KPI, we have a configuration very similar to the simple type in many aspects. We can change the type of our KPI losing most of the configuration and we also have the same options to define the planner.

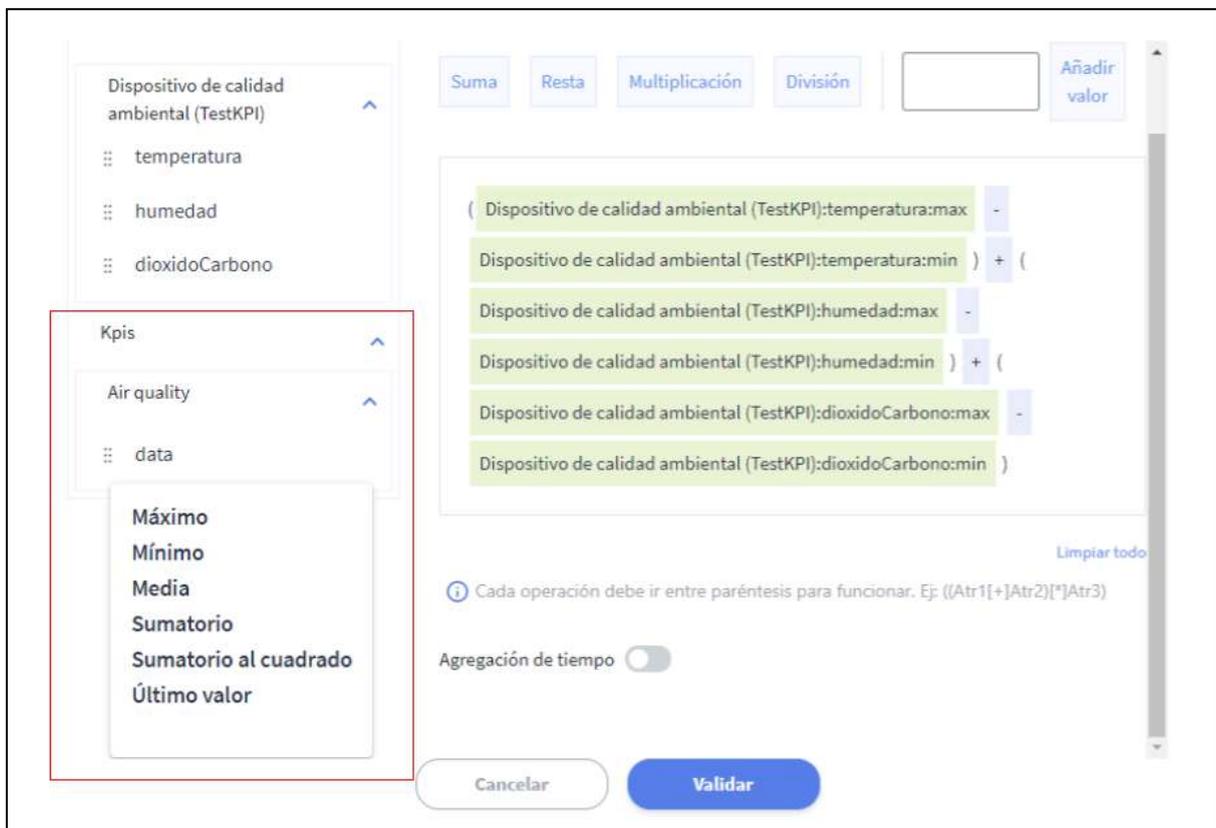
Although in this case we can also modify the source from which we will obtain the data and the properties that interest us, we have a greater range of action since we can select multiple devices and even other KPIs as data sources and also several properties of these sources.



This same section has a button that allows us to modify the arithmetic operation that we defined when creating the KPI in [Create Arithmetic KPI](#). When pressing this button the system will show a screen where we can view the current formula and add or remove values as we are interested.



In the left part of the window we have a drop-down menu that shows the selected data sources and their properties. When selecting one of these properties, a menu will appear in which we must mark the way to work with the property.



With the buttons located on the field with our operation we will be able to insert new mathematical operators and even generate constant values to work with.

The screenshot shows a user interface for configuring data operations. It is divided into two main sections: 'LISTA DE FUENTE DE DATOS' (Data Source List) and 'OPERACIÓN' (Operation).

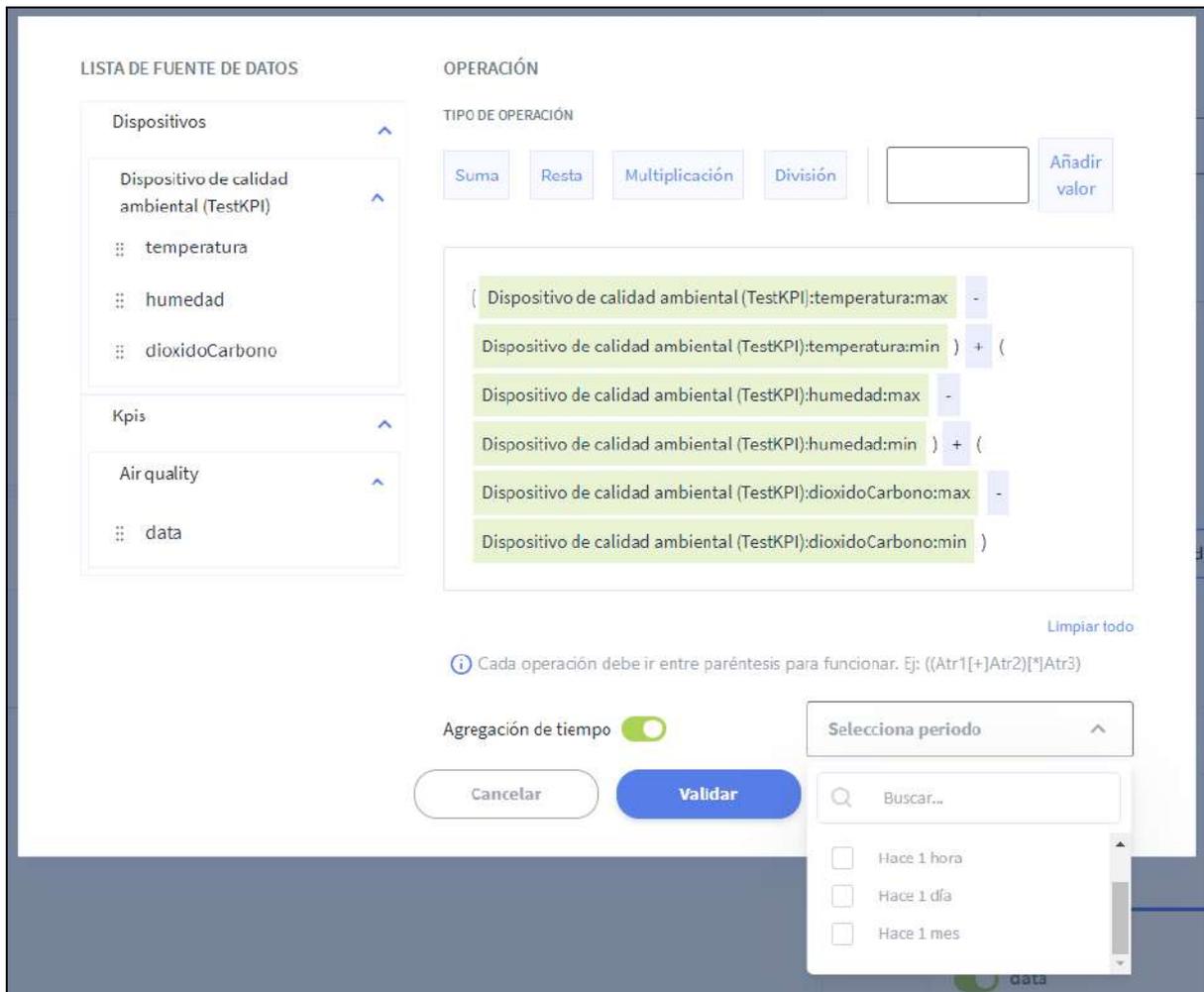
LISTA DE FUENTE DE DATOS: This section contains two expandable categories. The first is 'Dispositivos' (Devices), which includes 'Dispositivo de calidad ambiental (TestKPI)' (Environmental Quality Device (TestKPI)). Under this, there are three items: 'temperatura' (temperature), 'humedad' (humidity), and 'dioxidoCarbono' (carbon dioxide). The second category is 'Kpis' (KPIs), which includes 'Air quality' and a sub-item 'data'.

OPERACIÓN: This section is titled 'TIPO DE OPERACIÓN' (Type of Operation). It features a row of buttons for mathematical operations: 'Suma' (Addition), 'Resta' (Subtraction), 'Multiplicación' (Multiplication), and 'División' (Division). To the right of these buttons is an empty text input field and a button labeled 'Añadir valor' (Add value). Below this row is a large text area where a complex mathematical expression is being built. The expression is: $((\text{Dispositivo de calidad ambiental (TestKPI):temperatura:max} - \text{Dispositivo de calidad ambiental (TestKPI):temperatura:min}) + (\text{Dispositivo de calidad ambiental (TestKPI):humedad:max} - \text{Dispositivo de calidad ambiental (TestKPI):humedad:min}) + (\text{Dispositivo de calidad ambiental (TestKPI):dioxidoCarbono:max} - \text{Dispositivo de calidad ambiental (TestKPI):dioxidoCarbono:min}) / 100)$. The expression is composed of several segments, each highlighted in a light green color, with mathematical operators and parentheses inserted between them. At the bottom right of this area is a link that says 'Limpiar todo' (Clear all).

Below the operation area, there is a note: 'Cada operación debe ir entre paréntesis para funcionar. Ej: ((Atr1[+]Atr2)[*]Atr3)' (Each operation must be between parentheses to work. Example: ((Atr1[+]Atr2)[*]Atr3)).

At the bottom of the interface, there is a toggle switch labeled 'Agregación de tiempo' (Time aggregation), which is currently turned off. Below the toggle are two buttons: 'Cancelar' (Cancel) and 'Validar' (Validate).

If we want to work with the values collected during a specific period of time, we have at our disposal a button that allows us to indicate such an action. After pressing the button located to the right of the text “Aggregation of time” we will be able to select a temporary period in a new field that will enable the system.

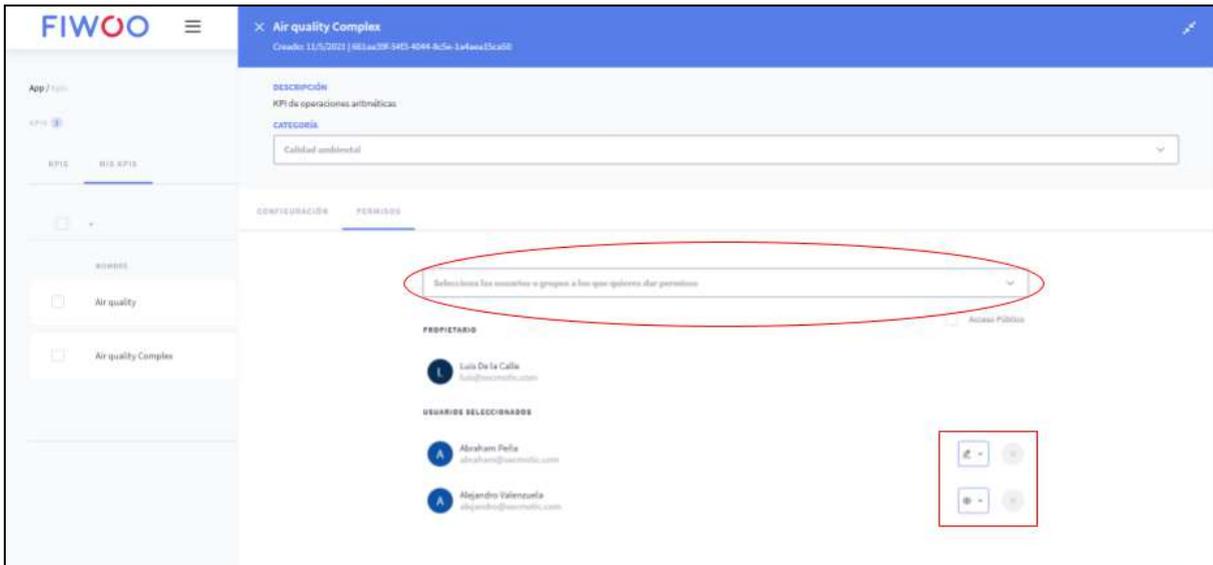


Once our operation is configured, we click on the validate button to verify that the syntax of our formula is correct. Once it is validated we can see that the button changes and instead of putting "Validate" it shows the text "Confirm", if we click on said button the system will request that the action of saving these changes be confirmed through a new window.



Confirming the changes in said window implies the immediate updating of the KPI, it is not necessary to click again on the "Update" button in the editing menu.

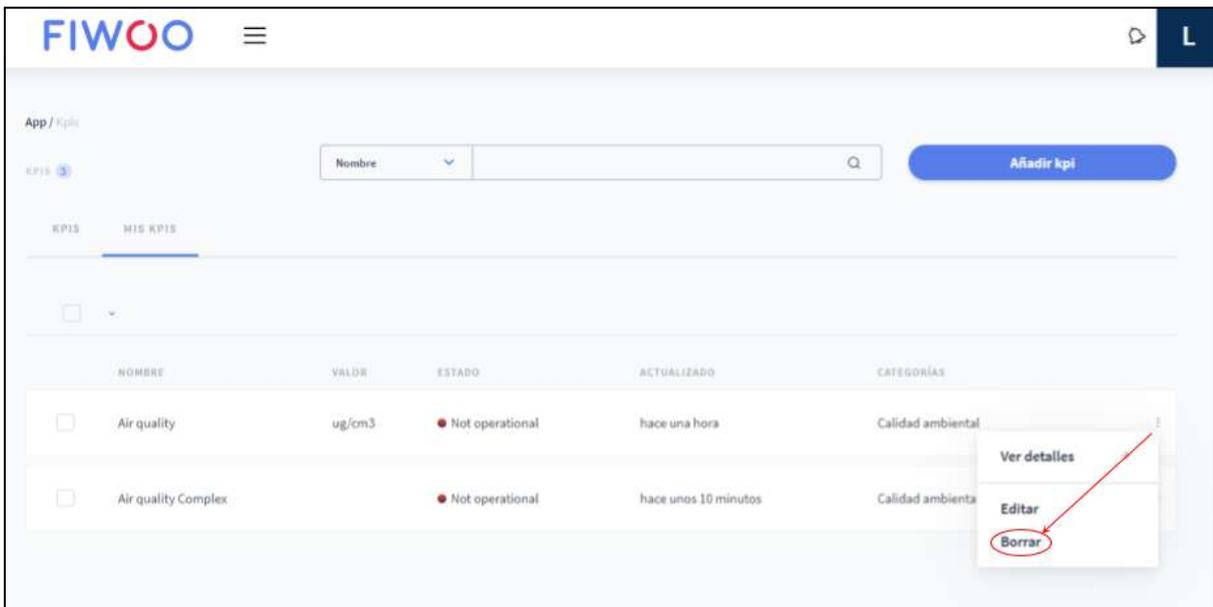
In the last submenu we will be able to modify the permissions that users have on the KPI. We have the possibility of using the search bar to give access to new users or groups of users and we also have buttons to specify permissions for users who already have them and even revoke permissions.



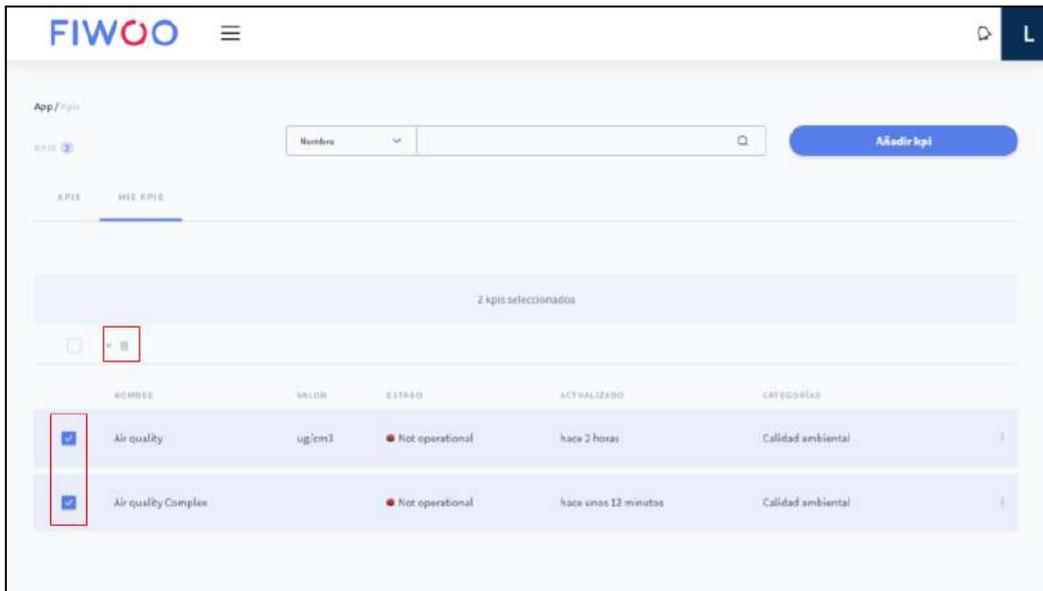
Eliminate KPIs

When it comes to eliminating a KPI from the platform, there are two alternatives: one by one or en bloc.

To delete KPIs one by one, we simply have to press the three points to the right of the KPI and select the “Delete” option. A new window will open to confirm that we want to delete it. If we press the "Delete" button again in that window, it will be removed from the system.



There is also the option to delete multiple KPIs at once. To do this, we select the ones we want to remove using the selection box to the left of each row. Once done, the trash can icon will appear at the top of the menu, with which you can delete all at once. After clicking on this icon, a new window will open to confirm that we want to delete the KPIs. If we press the “Delete” button in that window, they will be removed from the system.

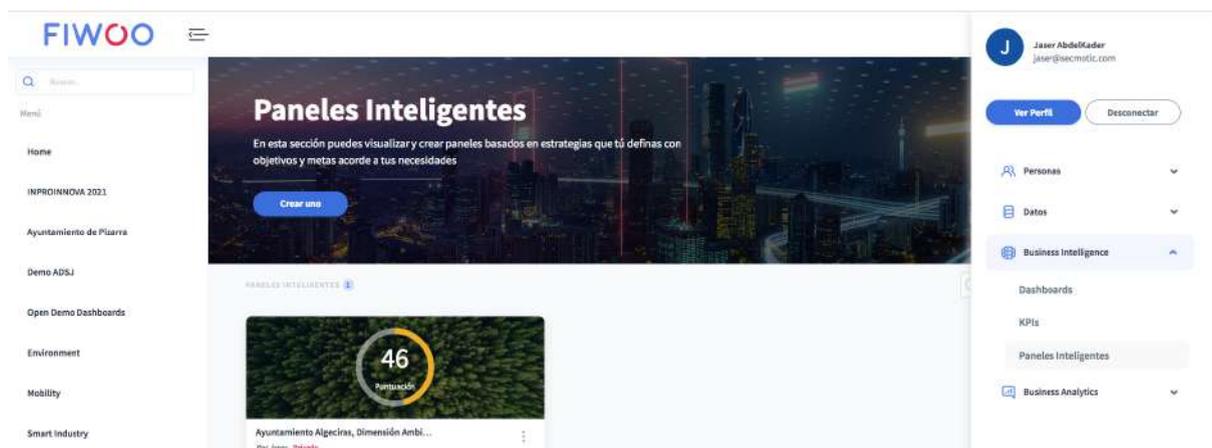


Smart Panels Smart

panels are a new concept that you propose with our FIWOO tool capable of summaries of strategies and objectives that we set ourselves to see in real time the evolution of certain previously selected indicators.

We can access the Smart Panels manager by selecting the “Smart Panels” option from the menu that pops up when you click on the button in the upper right corner.

In this section you can view and create panels based on strategies that you define with objectives and goals according to your needs



Create a new smart panel

To create a new panel, click on the create one button as it appears in the image.

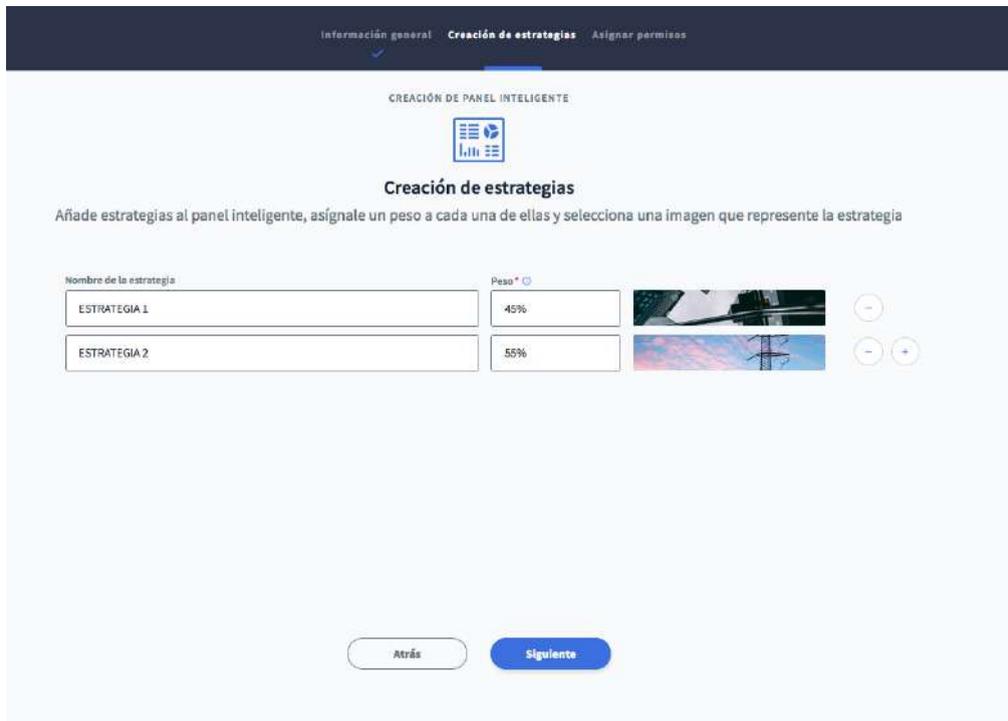


Once pressed, the first thing we find is the panel that will contain the general information that we want to give to the panel, which we will have to fill in to be able to access the next step of creation, in this case the creation of strategies.

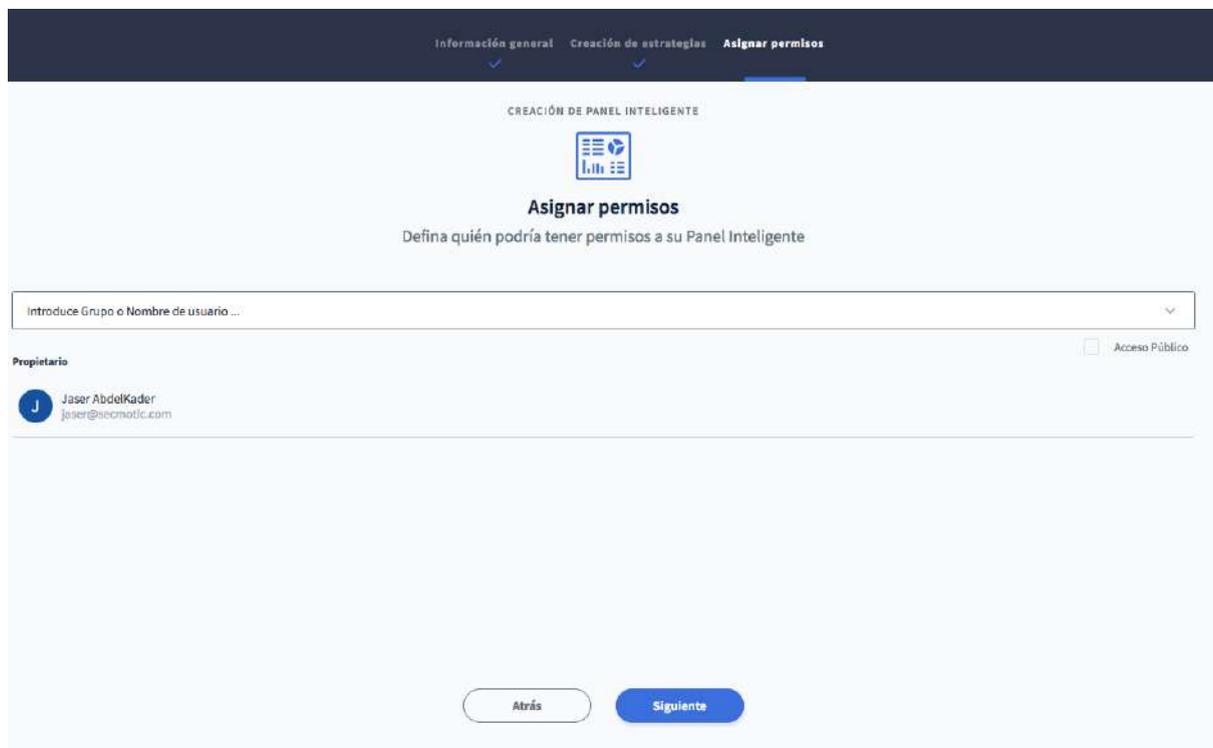
A screenshot of a web application interface for creating a smart panel. At the top, there is a dark navigation bar with three tabs: 'Información general' (selected), 'Creación de estrategias', and 'Asignar permisos'. Below the navigation bar, the page title is 'CREACIÓN DE PANEL INTELIGENTE'. A central icon represents a dashboard with charts. The main heading is 'Información general'. Below it, the instruction reads: 'Elige una imagen representativa de nuestra galería para asignarla al panel inteligente, nombralo y añade una breve descripción'. There is a large white box containing a smaller dashboard icon and a blue button labeled 'Seleccionar imagen de panel'. Below this box are two text input fields: 'Nombre*' with a placeholder 'Escriba un nombre' and 'Descripción' with a placeholder 'Escriba una descripción'. At the bottom, there are two buttons: 'Cancelar' and 'Siguiente'.

In the strategy creation screen, we must name our strategy and give it a weight. This weight should never be greater than 100% among all the strategies or less, since it would not let you go to the

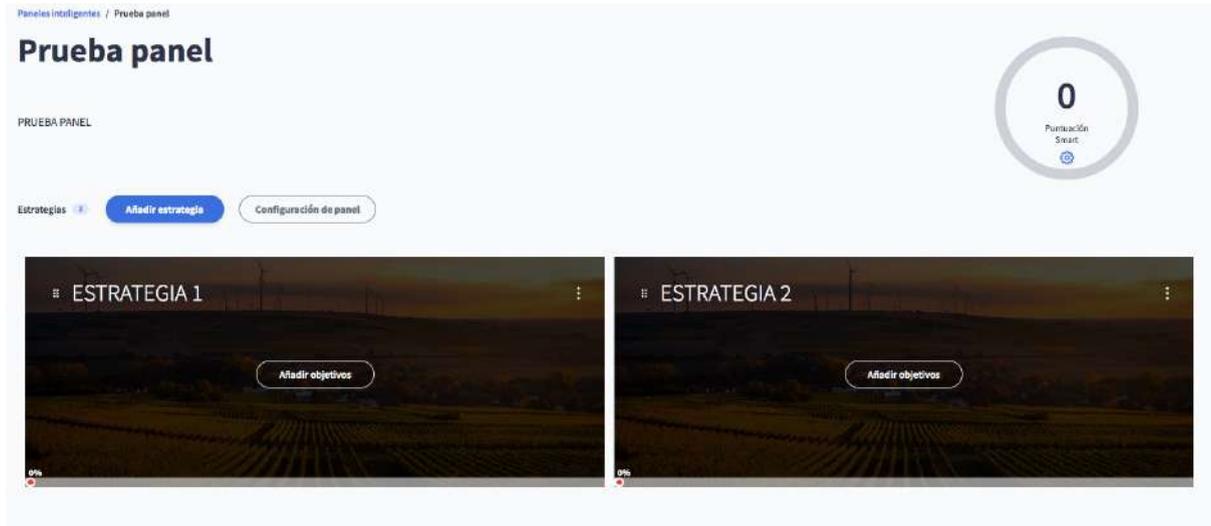
next screen. To add more strategies, you can click on the plus button that appears next to the image associated with the strategy.



Next we will give permissions to the users and groups that we want them to have access to.

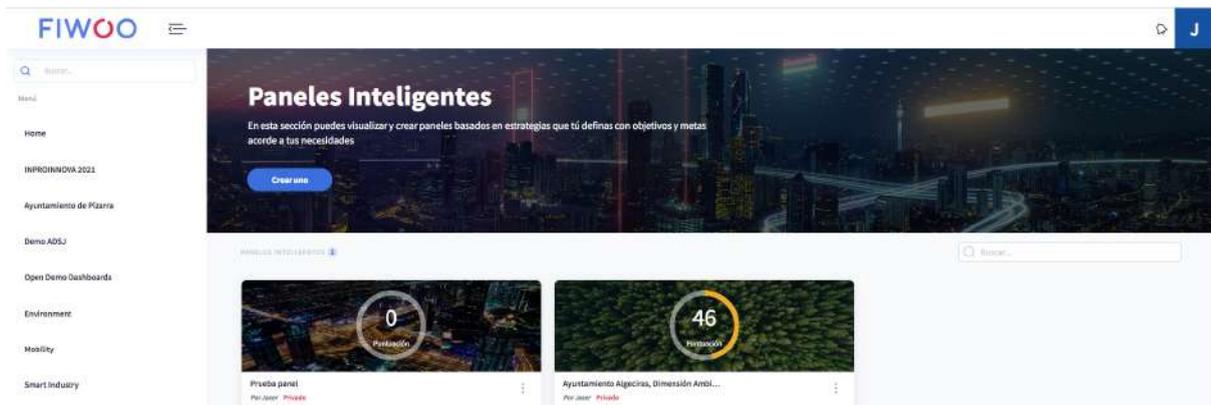


and Finally we will save the panel, obtaining as a result the new panel

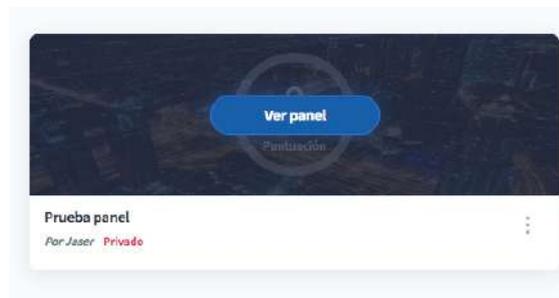


Modify Smart Panel

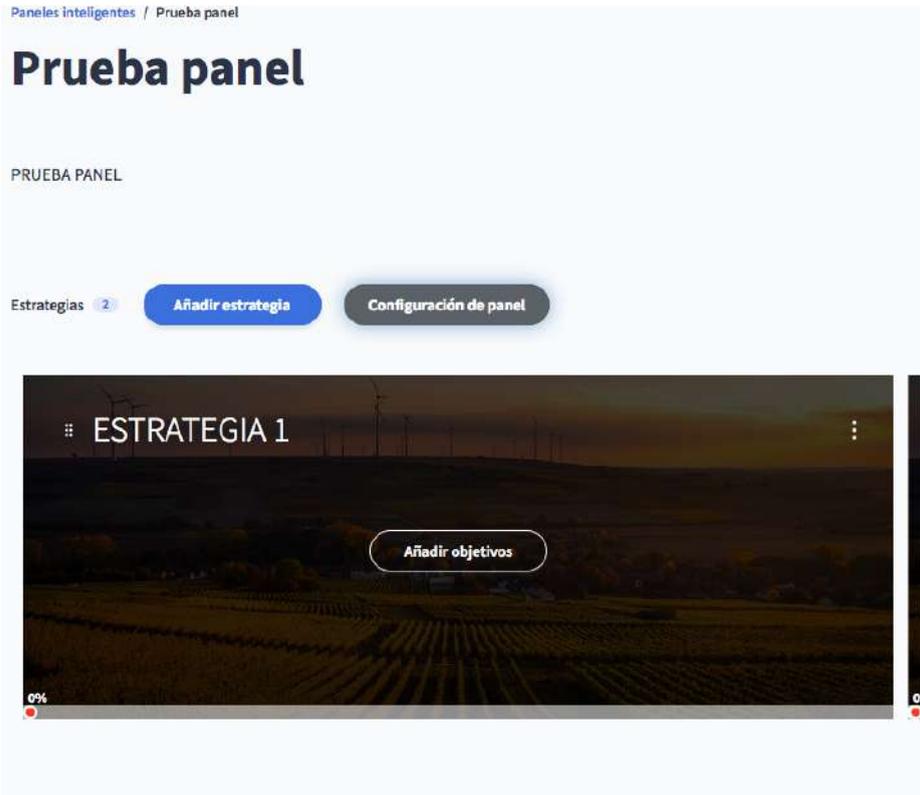
To carry out the modification of a previously generated smart panel, we will have to go to the initial smart panel manager screen that includes all the existing panels on the platform.



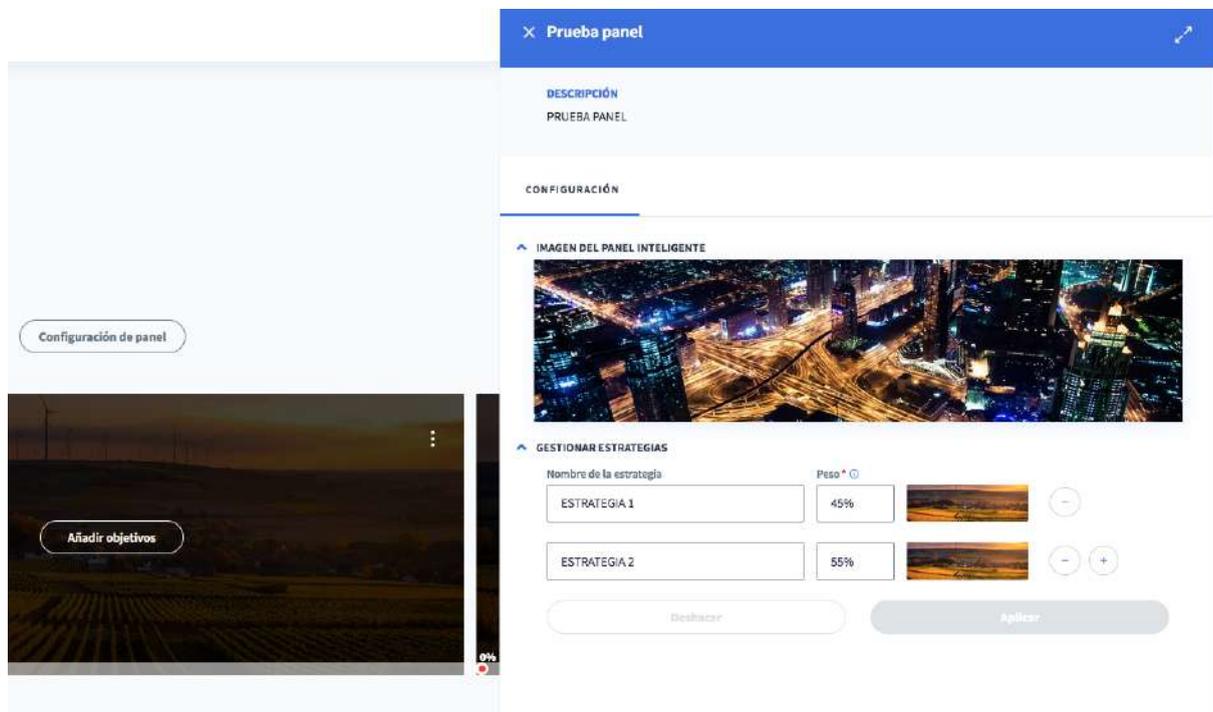
Then we go to the top of the panel that we want to edit and the “view Panel” button will appear, we will click on the “View Panel” button



Once inside the panel a new section will appear called configure panel on which we will click .

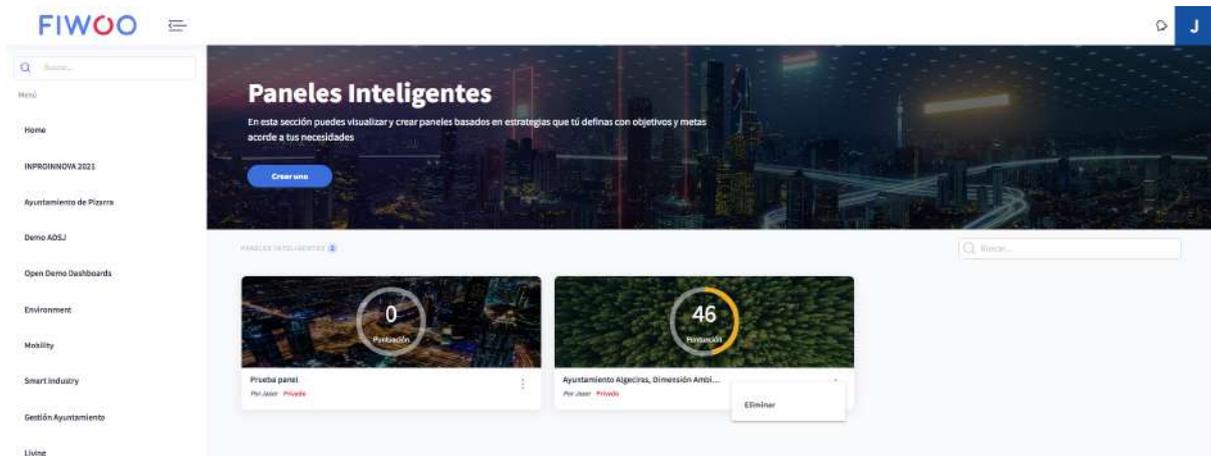


After clicking on panel configuration, a screen will appear where we can modify the data of the previously selected panel.

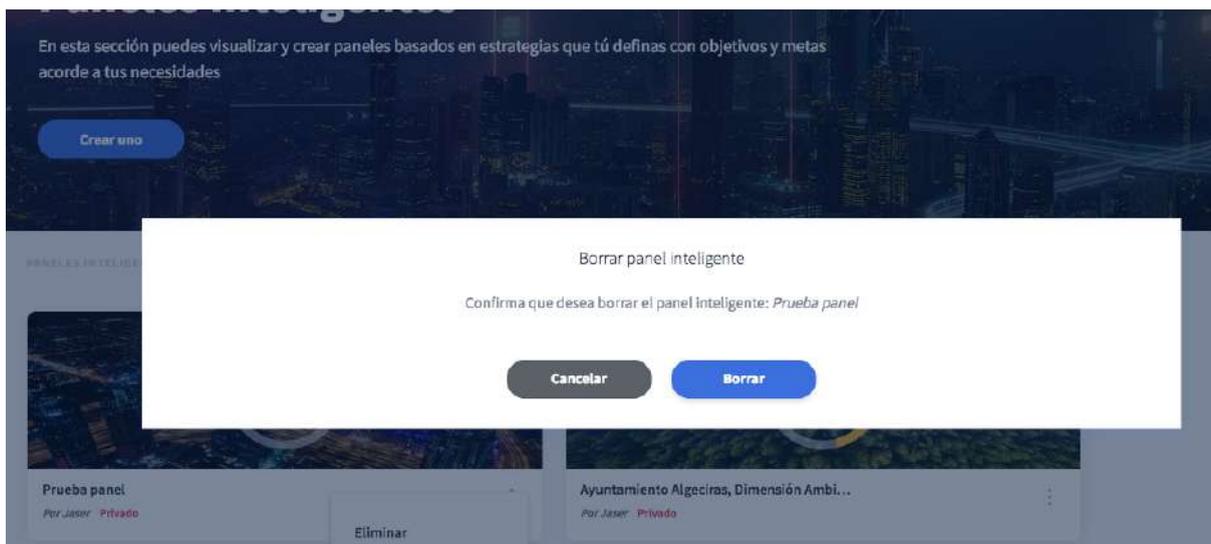


Delete Smart Panel

To delete the smart panel, we will go to the main smart panel screen and click on the dots that appear on the panel that we want to delete. Then the delete button will appear.



When clicking on it, the corresponding confirmation screen will appear.



And finally we will delete it by clicking on delete.

Business Analytics

This section brings together all the necessary tasks to carry out Business Analytics processes that our FIWOO platform contemplates.

In the image we can see how this content is accessed.

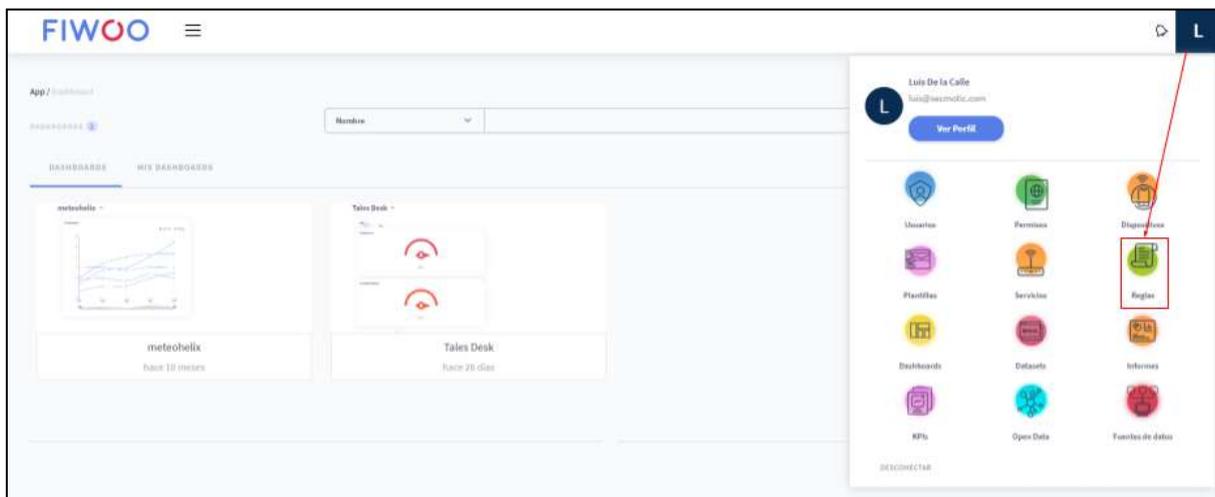


Next, we will present these functionalities in detail.

Rules Management

When we talk about rules in FIWOO we refer to configuring the execution of actions when a specific event occurs. With these rules we can automate the execution of certain actions based on the values that we collect from our data sources.

We can access the rules manager by selecting the “Rules” option from the menu that appears when clicking on the button in the upper right corner.



Create rule

Important points initial screen:

- One or more devices

Important points conditions

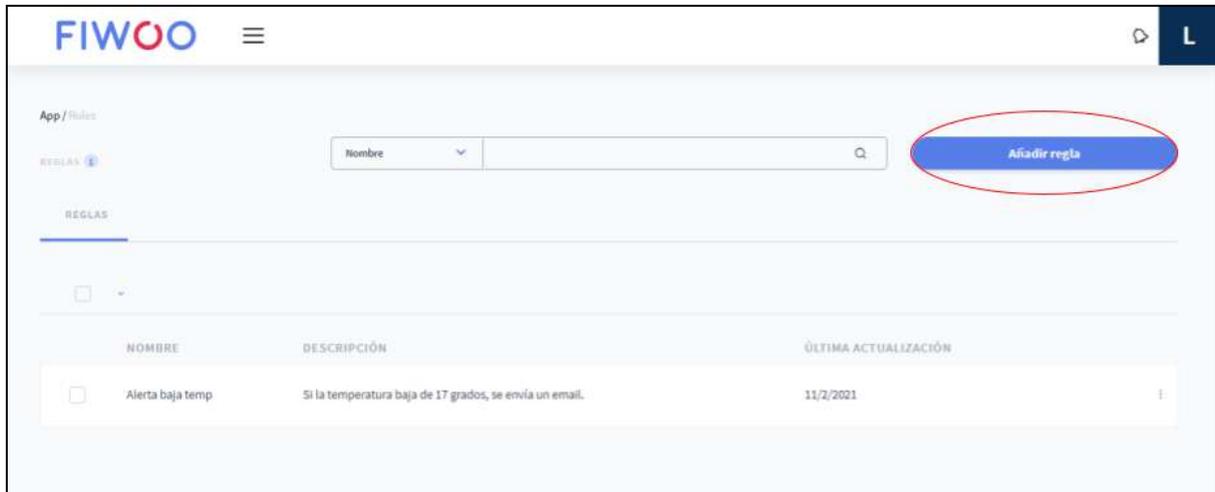
- Nested conditions of type and/or and various nesting levels
- Available operators
- Rules with repetitions in time window

- Rule execution modes: always or in time range
- Rules with geolocation (geoin, geoout)

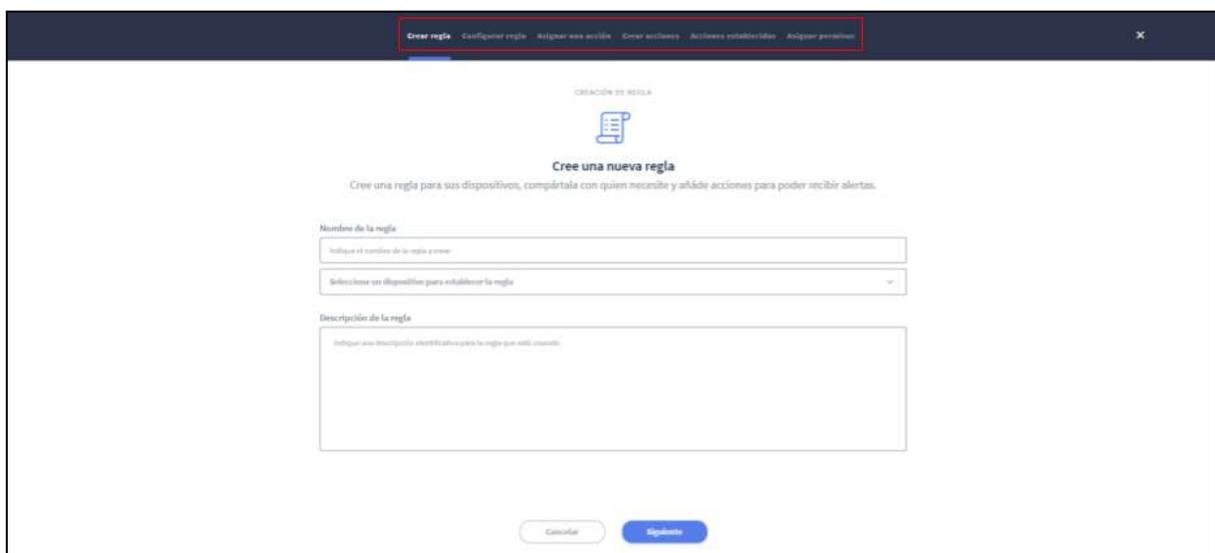
Important points actions

- Expose the different types of action available and their configurations
- Show that you can have more than one action in the same rule

Once located in the rules manager, we can create a new one by clicking on the “Add rule” button”.



This action will start a guided creation process in which we will have to fill in various forms that we will discuss below. This creation process begins with a window in which the system asks us for basic information about the rule that we are going to register in the system.



The top bar shows the various steps that need to be completed before the creation. The data that must be entered are all mandatory, and they are mainly responsible for collecting the following data:

- Name of the rule, so that it can be searched for later.
- Device or devices with which the rule will work.

- Description of the operation of the rule.

To enter the name and description of the rule, the form has two fields in which we can write. To enter the devices, the form has a field in which we can search and mark as many devices as we need.

CREACIÓN DE REGLA

Cree una nueva regla

Cree una regla para sus dispositivos, compártala con quien necesite y añáde acciones para poder recibir alertas.

Nombre de la regla

Regla Test Funcionalidades

Seleccione un dispositivo para establecer la regla

Dispositivo de test

Dispositivo de calidad ambiental

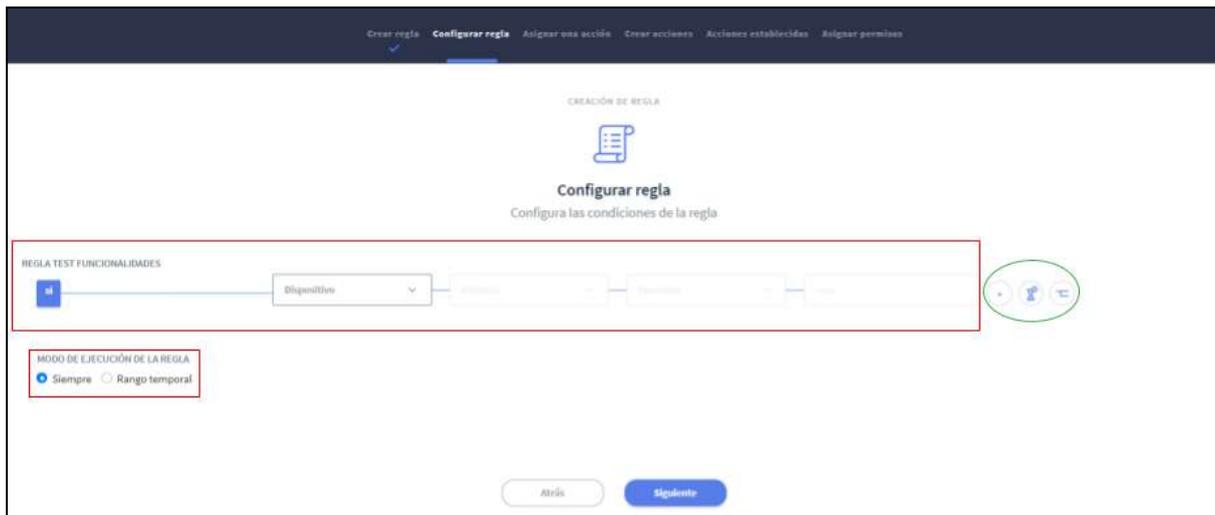
Descripción de la regla

Esta regla se configura teniendo en cuenta todas las funcionalidades.

Cancelar Siguiente

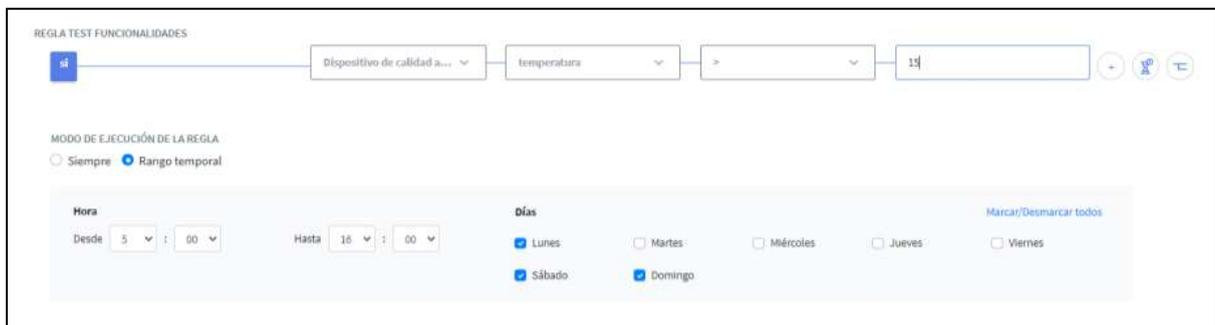
We can remove devices by pressing the “X” button located to the right of that device.

When we fill in the form data we can click on the next button and advance to step 2. In this step the system displays a panel where you must indicate under what conditions the rule will be activated.



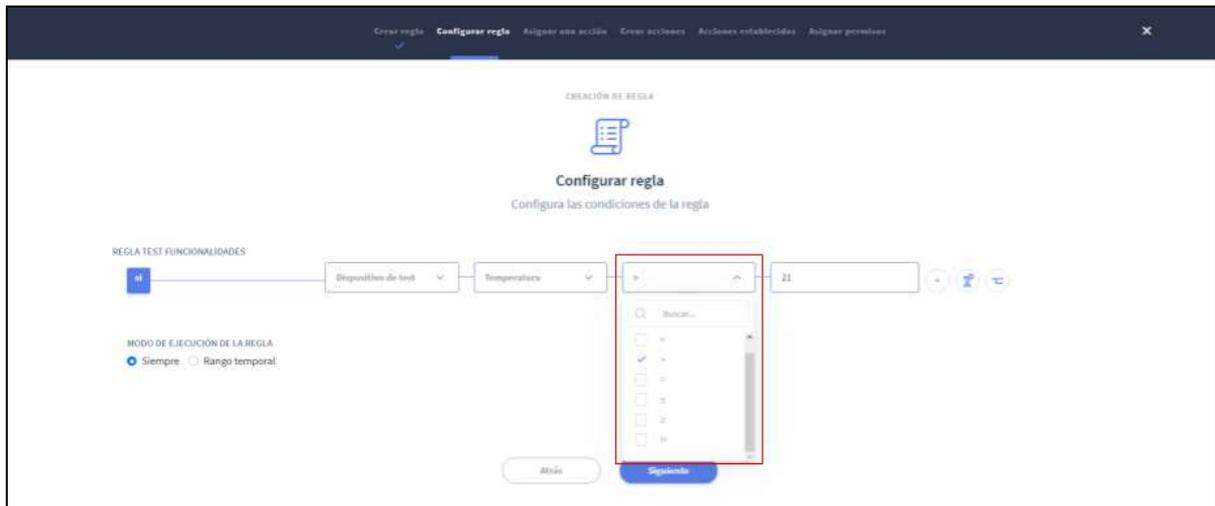
In this panel there are several attributes that we can use to configure rules very precisely. In the lower part there are two fields that allow us to decide if the rule is going to be evaluated all the time or only in a temporary interval, in the case of specifying that we do not want it to be evaluated constantly, a form will appear where we must indicate the following elements:

- Start time, indicating at what time the rule will be activated.
- End time, indicating at what time the rule will be deactivated.
- Days of the week, indicating which days the rule will be active.



In the center of the screen the conditions are configured, each of which has a series of fields with which we will form the rule. The fields in question request the following elements:

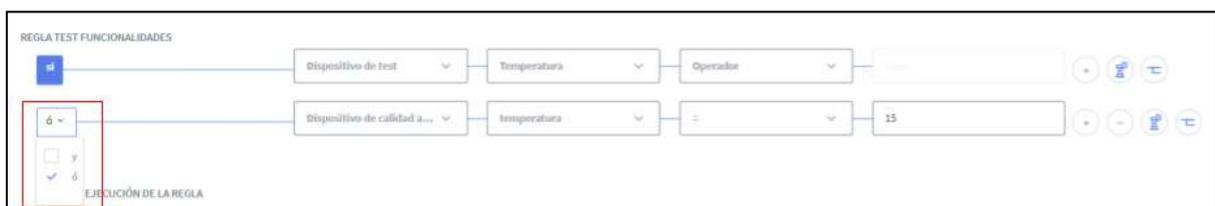
- Device with which we will work.
- Attribute of the device to evaluate.
- Operation to which to subject this property.
- Value with which to perform operations.



The operations that we have available to configure a rule are the following:

- **Equal (=):** The system will understand that the condition is fulfilled if the value received by a device is equal to the one that we specify.
- **Different (!=):** The system will understand that the condition is met if the value received by a device is different from the one we specify.
- **Greater than (>):** The system will understand that the condition is fulfilled if the value received by a device is greater than the one we specify.
- **Greater than or equal to (>=):** The system will understand that the condition is met if the value received by a device is greater than or equal to the one we specify.
- **Less than (<):** The system will understand that the condition is fulfilled if the value received by a device is less than the one we specify.
- **Less than or equal to (<=):** The system will understand that the condition is met if the value received by a device is less than or equal to the one we specify.
- **GeoIn:** The system will validate if the coordinates received from a device are within a specific geographic area.
- **GeoOut:** The system will validate if the coordinates received from a device are outside a specific geographic area.

Once we configure our first condition, we have the option to add others on other devices with the “+” button.



Using the drop-down menu to the left of the new rule, we can specify whether we want the system to understand that the rule is valid if one of the two conditions is met (option "or") or that it be

considered valid only if both conditions are met (option "and"). This new condition has a "-" button that is used to revoke said condition in case we do not need it.

We can also create a condition on the same device if we press the button that illustrates a branch. By pressing this button the system allows us to specify a new norm as we saw before, it is also possible to indicate if we want to use the options "and" or "or".



We have the possibility of configuring the number of times the condition must be met in a time interval to be considered valid. To access these options, we simply have to press the hourglass-shaped icon that is located to the right of the condition.



After pressing the button, some fields are displayed in which we must indicate the number of times a condition must be met in a given period of time to consider it valid. The time interval can range from seconds to weeks. A condition can only have a time interval, but the sub-conditions can also work with said activation interval

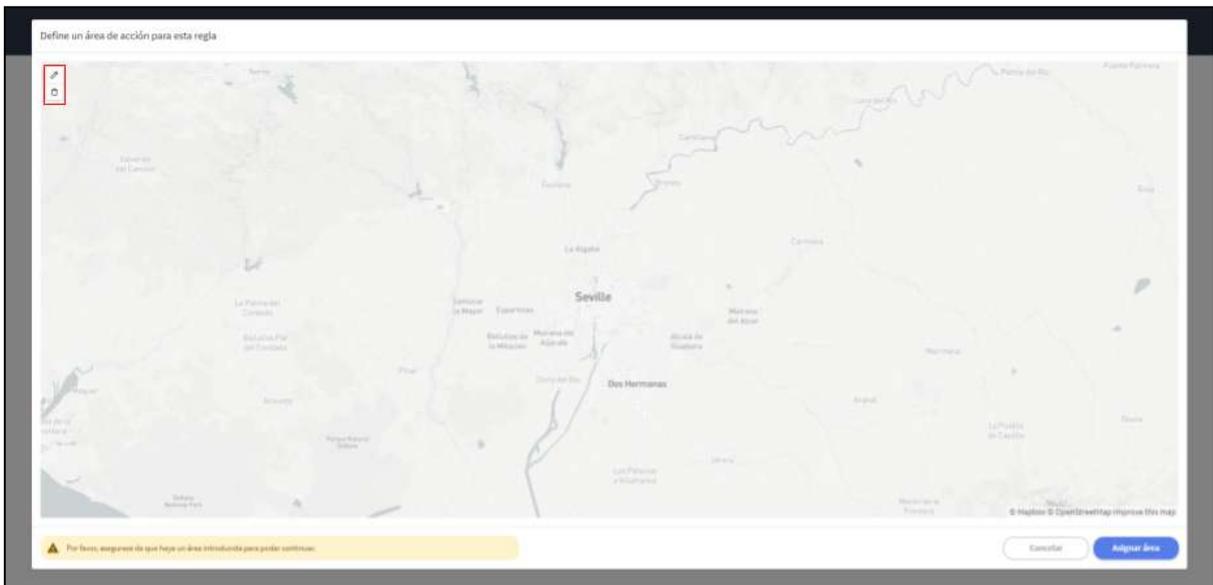


If we work with a device that updates its GPS position, we have the GeoIn and GeoOut operations to specify actions based on the coordinates Of the device.

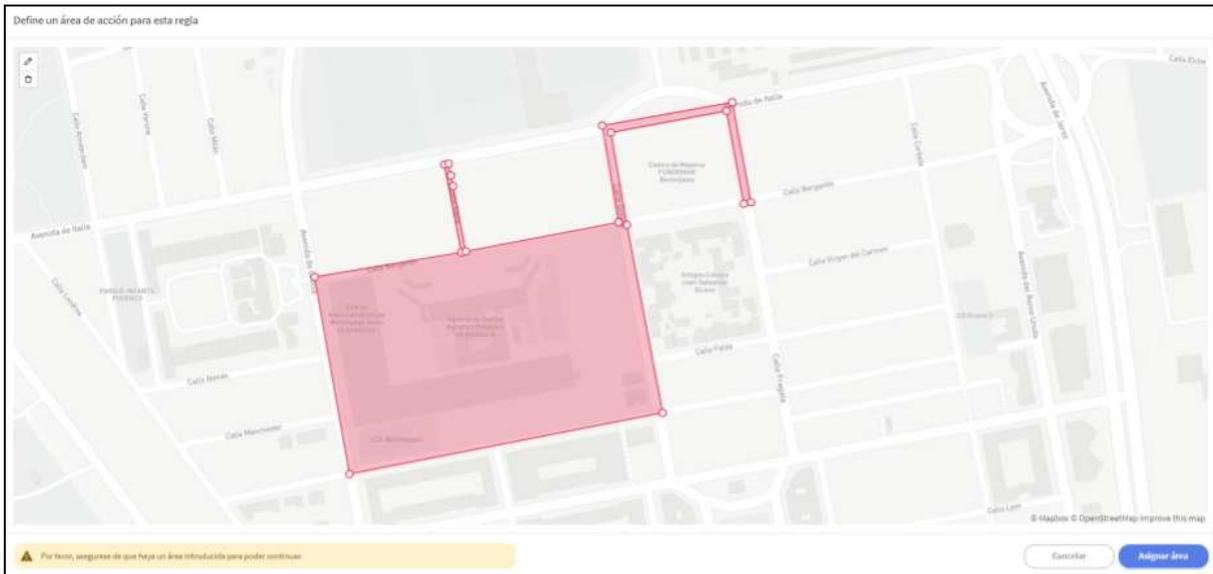


The specification of this type of conditions is different, since we have some “Open map” buttons with which we can select a geographical area within a map.

When you press the button, the system will automatically display a map; we can "zoom" inside the map using the mouse wheel, this will allow us to find a place easily and delimit the area correctly.



In the upper left part of the map there is an icon in the form of a pencil, pressing this icon we can delimit an area on the map by clicking with the mouse. Each time we click on the map a new point will be generated within it, we can insert as many as we want to specify an area precisely. If we click on the starting point again, we will finish editing the area.

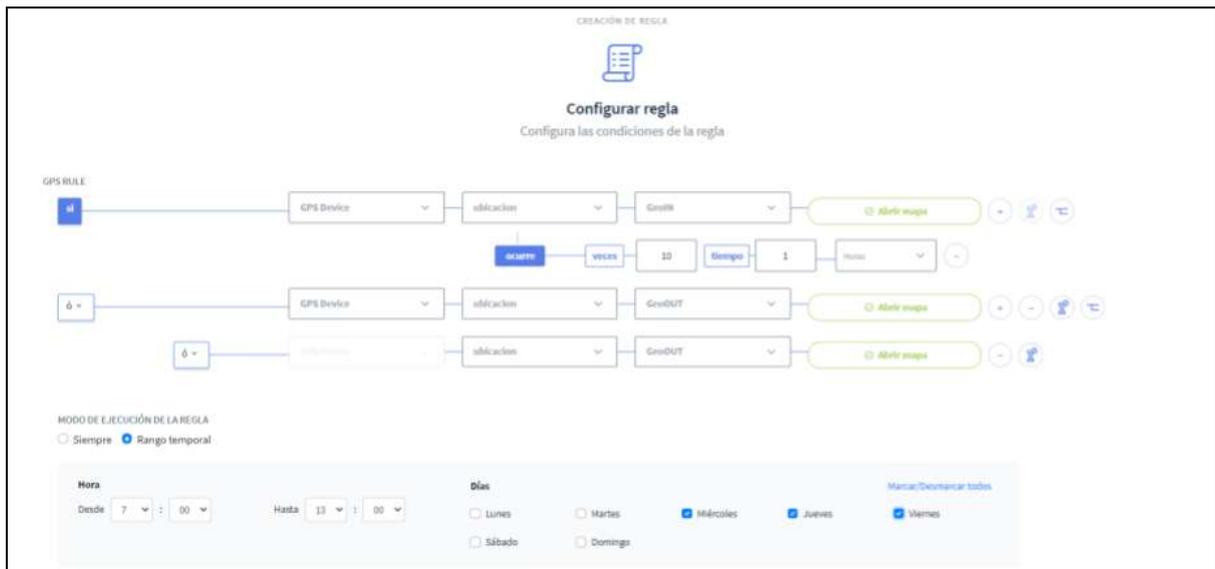


We can take advantage of the precision of this tool to define small areas, such as streets, routes and buildings. Or on the contrary, we have the ability to delimit regions as large as we want, such as cities, countries or continents.

When we have a region delimited by points, if we click on that region we can move it to another place on the map while keeping it pressed. It is possible to add more points to the region and continue editing it by clicking on the edges of the region.



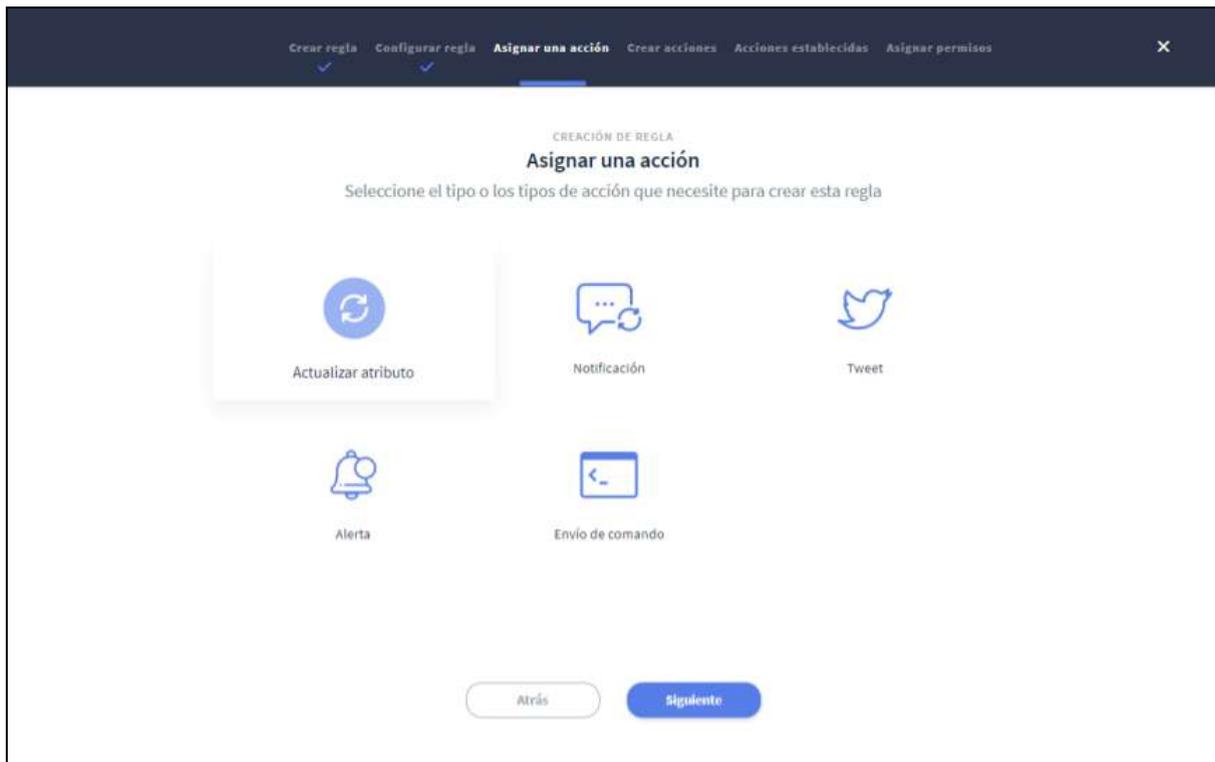
Once we have finished defining the region, click on “Assign area” to save the changes. The “Open Map” button will have turned green, indicating that the condition is set correctly.



Of course, this type of conditions can be combined with the elements that we have discussed previously, allowing you to create conditions as complex as you want.

Once we have configured all the conditions we need, we can advance to step 3 by pressing the "Next" button. Here we configure the action that will be carried out in case our rule is fulfilled. In this step we are shown a screen where we can choose 5 different options.

- Update attribute: with this option we can modify the value of an attribute of a device or entity.
- Notification: this option allows the sending of an email that notifies the recipients through a personalized message.
- Tweet: This option posts a tweet with a personalized message.
- Alert: if we choose this method, an alert will be generated within the platform, which we can access from the bell icon located in the upper right.
- Command sending: the last option is to send a command to one of the devices that we have on the platform.



The first action we will see is “Update attribute”. After selecting it and clicking on the “Next” button, the system will show us a form where we will specify the device with which we are going to work, the attribute that we want to update and the new value that said attribute will have.

Crear regla ✓ Configurar regla ✓ Asignar una acción ✓ **Crear acciones** Acciones establecidas Asignar permisos ✕

CREACIÓN DE REGLA
Actualizar atributo
Actualice un atributo en un dispositivo

Dispositivo
Dispositivo

Atributo
Atributo

Valor
Valor

Pulse siguiente para continuar con la configuración de la regla o pulse **nueva acción** si necesita añadir nuevas acciones a esta

Atrás Siguiente

Once configured, we can click on “Next” to advance in the process, or on the contrary, we have the possibility of adding additional actions by clicking on “new action”.

After clicking on "new action" the system returns to show us the available actions. This time we will choose the “Notification” option and configure it. After clicking on "Next", the system will show us a form where we must enter the email of the sender of the message, the email of the sender, the subject of the message and finally, the message itself.

CREACIÓN DE REGLA
Asignar una acción
Seleccione el tipo o los tipos de acción que necesite para crear esta regla

Actualizar atributo Notificación Tweet

Alerta Envío de comando

In the message, we can add variables that reference the current value of properties of the data sources that we selected at the beginning of the process. These variables are defined using the '#'

symbol, followed by the device name, which in turn is separated by ':' from the property we want to use. For example, the *weight* of the device *disp* would be written *#disp:weight*.

Below the field where we write the message, we have a help to write the variables.

Once configured, click on "new action" to return to the options form and add an additional action. Once in the menu, we choose the "Tweet" option, the system will automatically show us a form where we simply have to write the message that is going to be sent through the social network.

In this message, as with the previous action, we have the possibility of entering the value of the properties of our devices through variables. These variables are defined using the '#' symbol, followed by the device name, which in turn is separated by ':' from the property we want to use. For example, the *weight* of the device *disp* would be written *#disp:weight*.

Below the message field, instructions for writing a variable are listed. We are also warned that each attribute will count as 10 characters. We can see the number of characters we have written at the bottom left of the message.

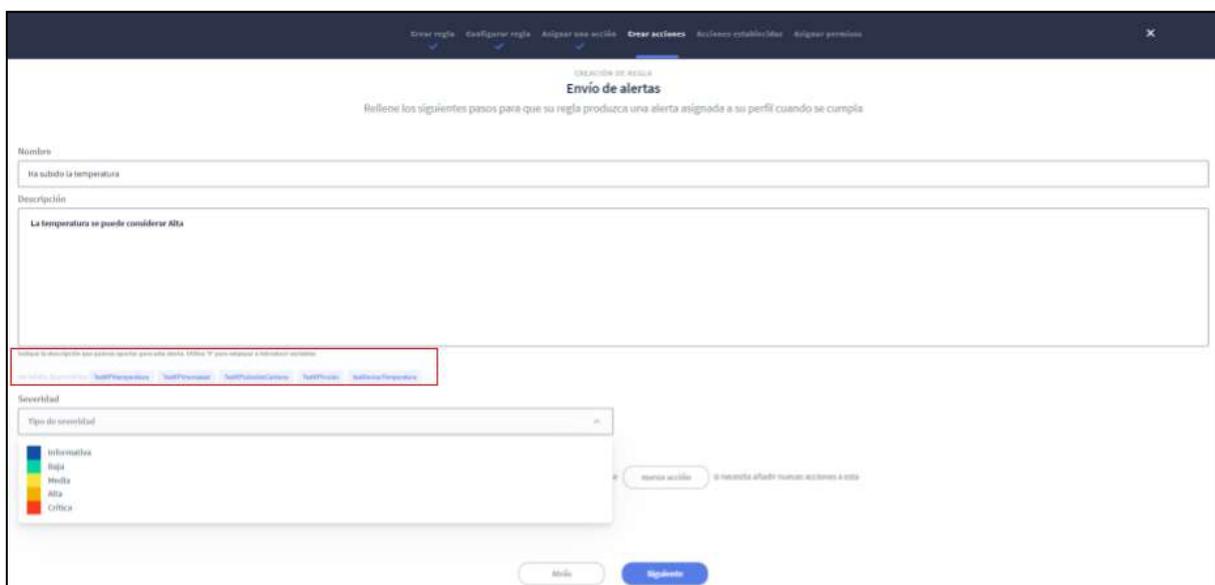
Once the Tweet is configured, click on "new action" to return to the options form and add an additional action. Once in the menu, we choose the "Alert" option, the system will automatically show us a form where we must enter the data of the new alert.

The form consists of the following fields:

- **Name** of the alert, so that it can be searched for later.
- **Descriptive message:** we have the possibility of introducing the value of the properties of our devices through variables. These variables are defined using the '#' symbol, followed

by the device name, which in turn is separated by ':' from the property we want to use. For example, the *weight* of the device *disp* would be written *#disp:weight*.

- **Severity:** this is a selection field in which we can choose one of the following severity levels for the alert.
 - Informative
 - Low
 - Medium
 - High
 - Critical



Below the message field are the instructions for introducing variables in the message. These variables are defined using the '#' symbol, followed by the device name, which in turn is separated by ':' from the property we want to use. For example, the *weight* of the device *disp* would be written *#disp:weight*.

Once the alert is configured, click on "new action" to return to the options form and add an additional action. Once in the menu, we choose the option "Send command".



The system will automatically show us a form where we must enter the device with which we want to interact, the command property that we will use and the value that we want to send.

Crear regla Configurar regla Asignar una acción **Crear acciones** Acciones establecidas Asignar permisos X

CREACIÓN DE REGLA
Envío de comando
Envía un comando a un dispositivo

Dispositivo
Regulador de Agua

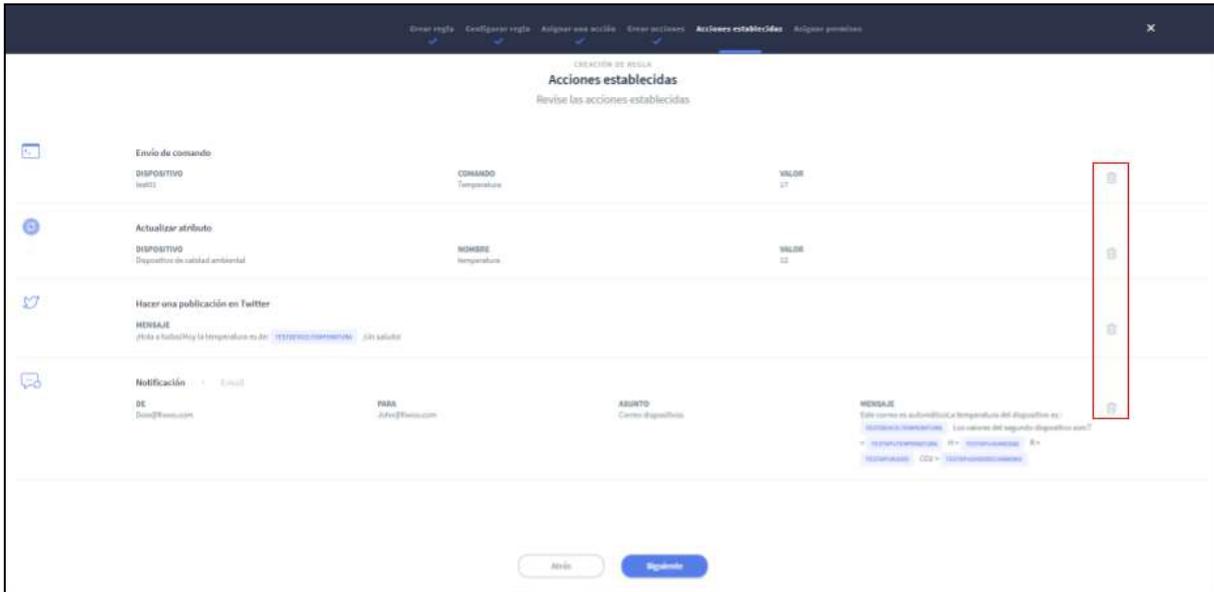
Comando
Temperatura

Valor
17

Pulse siguiente para continuar con la configuración de la regla o pulse **nueva acción** si necesita añadir nuevas acciones a esta

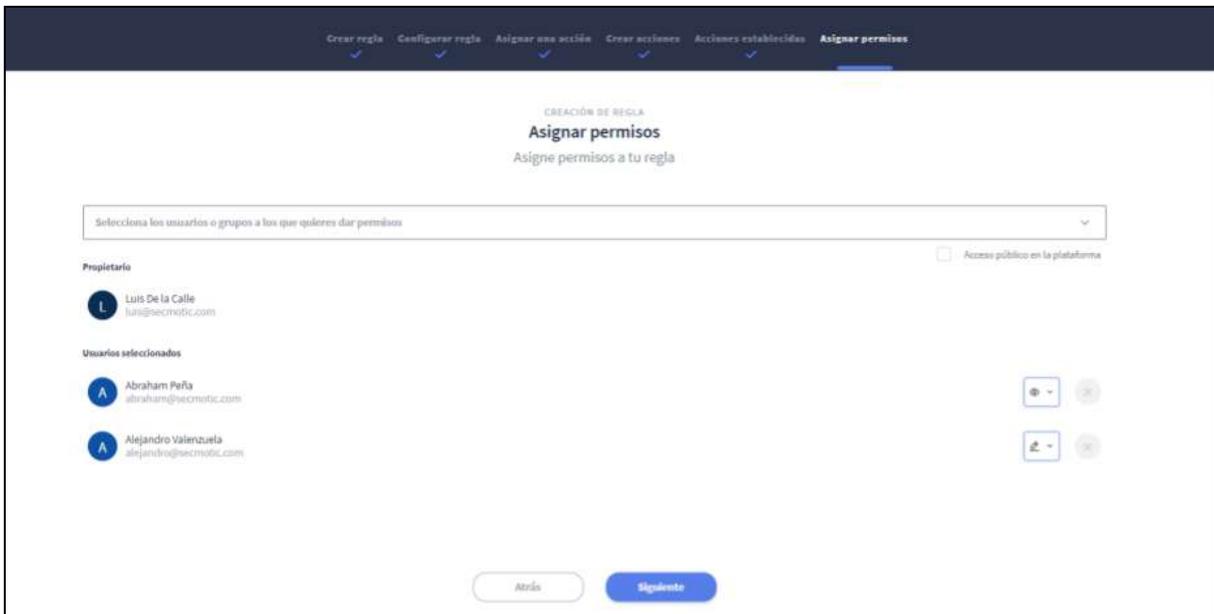
Atrás Siguiente

This form gives us the ability to choose one of the predefined values of a command to be sent to the device, and also allows us to specify a new value. When all the fields are completed, we can click on "new action" to continue adding more actions that are executed when the rule is fulfilled. In this case we are going to click on "Next" to advance to the fifth step of the process.



In the current step, we can review the rules we have generated and delete them by clicking the trash can icon to the right of each rule. In the case of wanting to add more rules, we must click on the "Back" button, this will take us to the previous actions menu and we can continue adding new actions.

Once the rules have been reviewed, we can click on the "Next" button to advance to the last step of the form. In this step it is possible to indicate which users or groups of users will have permissions to interact with this rule.

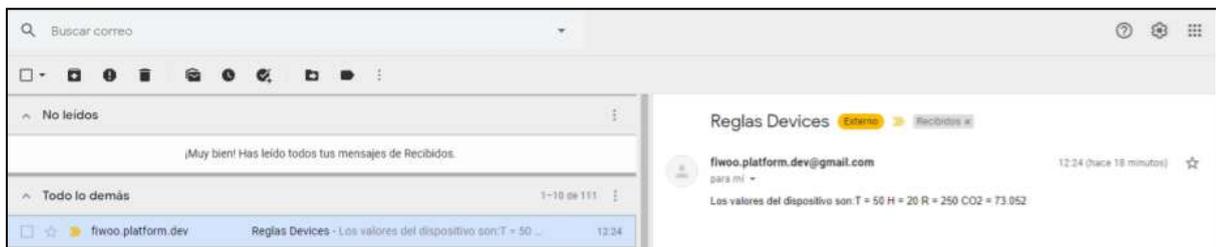


Through the search bar that appears on the owner, it is possible to assign editing or viewing permissions to user groups and/or specific users.

Clicking on the “Next” button will finish the process and the system will display a message to inform you that everything has been saved correctly.



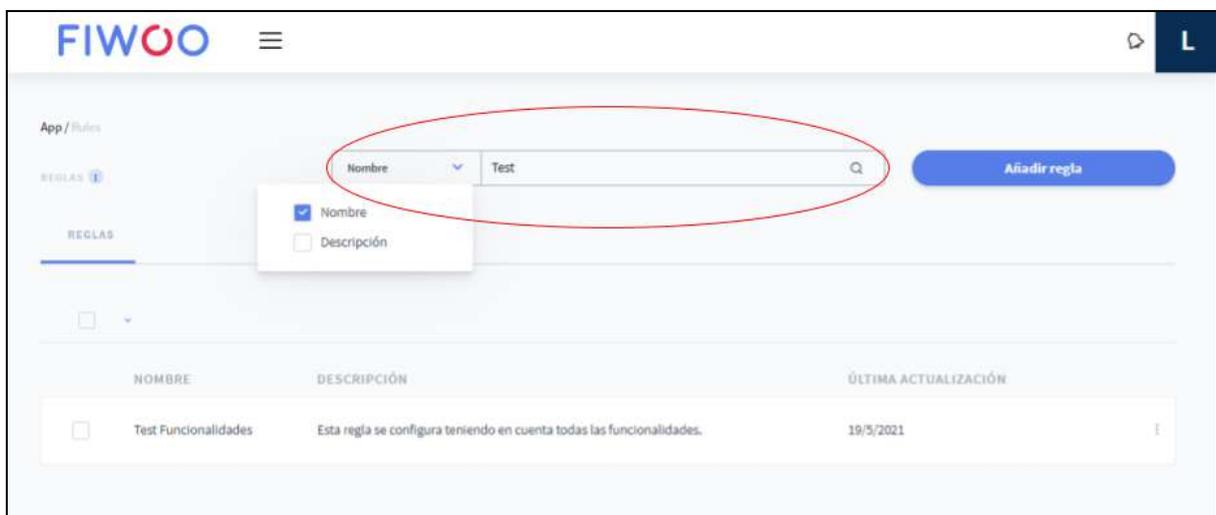
From this moment the rule becomes operational, so when the conditions we specify are met, the configured actions will be executed immediately.



In the section [Modify a rule](#) see how to deactivate a previously created rule.

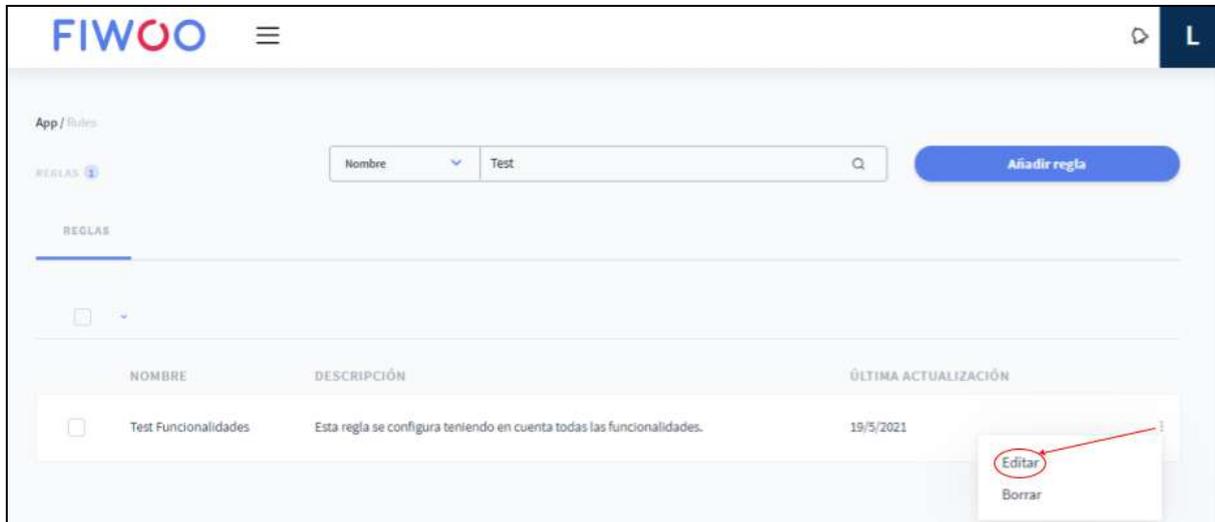
Rules search engine

If we want to filter our list of rules, we can use the search engine at the top and carry out a personalized search. We have two filter options, Name and Description. We will write the text to search in the search box on the right.

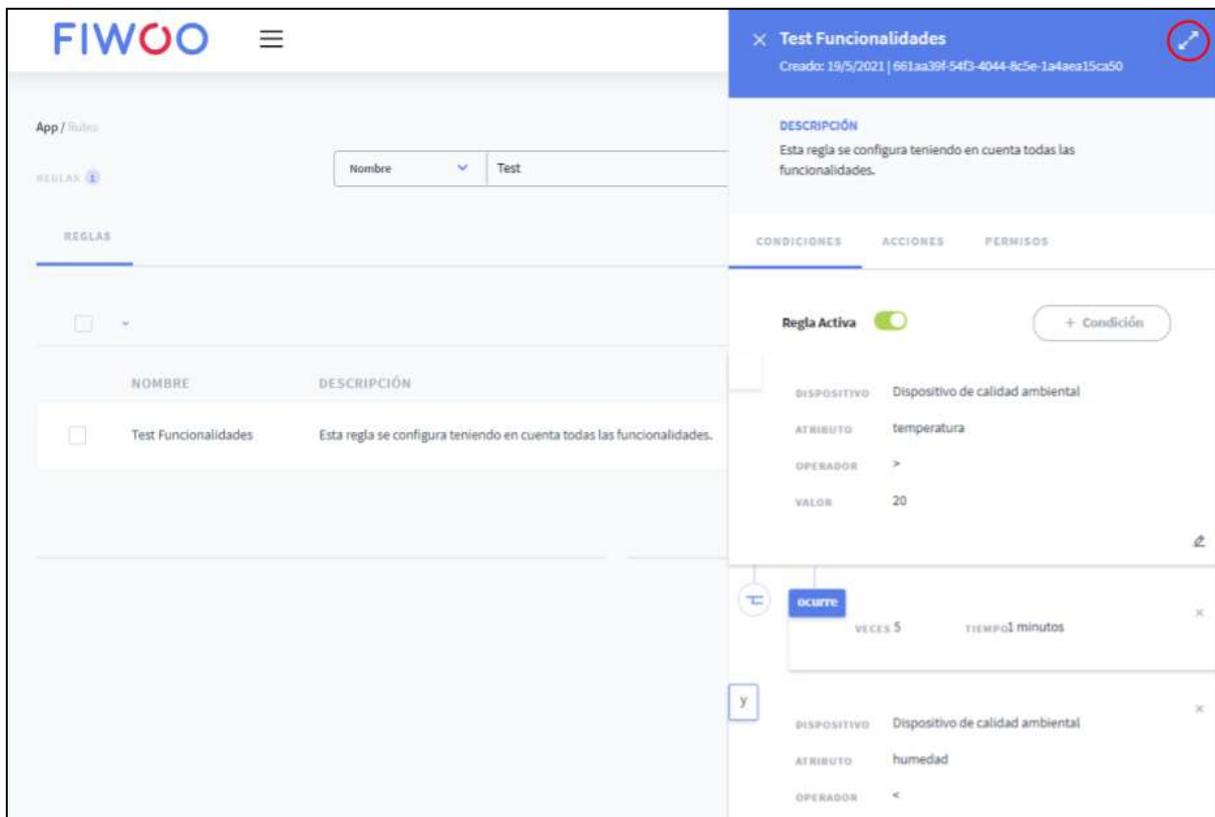


Modify a rule

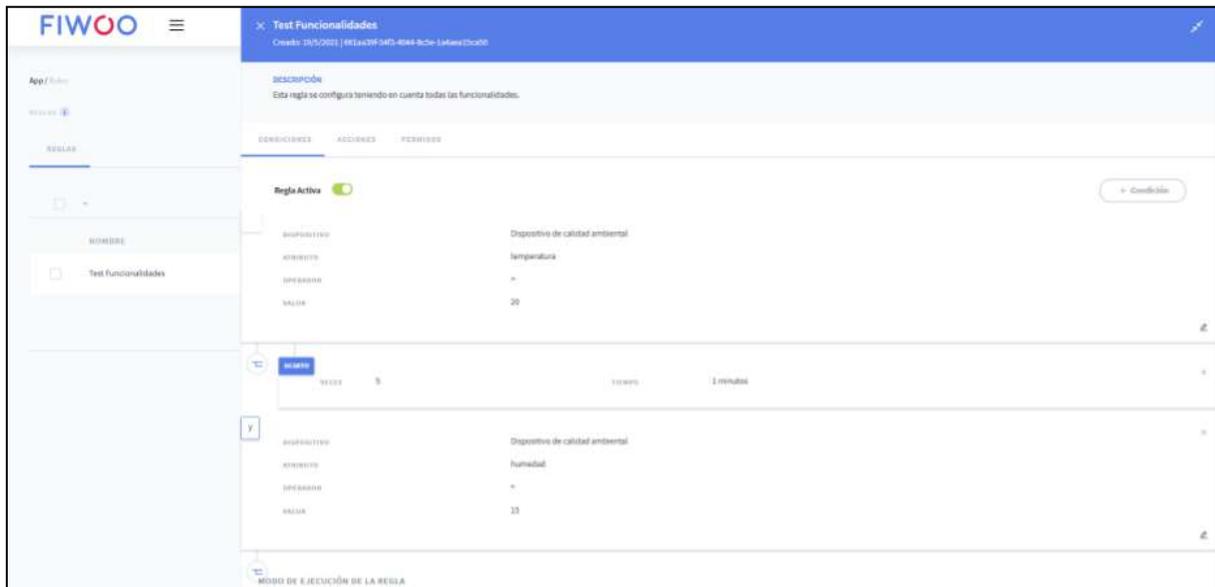
There is the option to change the configuration of the created rules. It is important to highlight that in order to edit them it is necessary that they are owned by us or have permission to do so. To modify a rule, just click on the three dots to the right of the row of the rule you want to modify and select the “Edit” option. This action can be carried out from the Rules view.



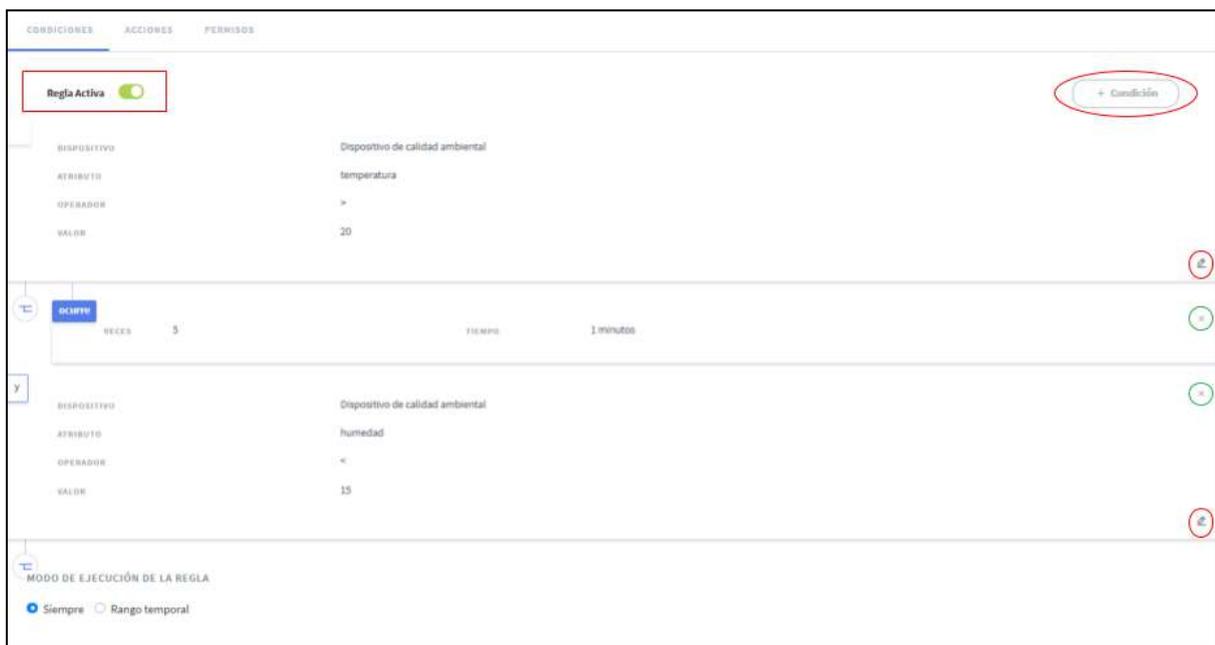
This will display a menu on the right side of the screen where we can see the current characteristics of the rule.



In the upper right corner we have a button that allows us to resize the menu, enlarging said menu in such a way that it is more comfortable to edit the rule.



We can see that we have the ability to modify the name of the rule and the description. We also have access to three submenus: Conditions, Actions and Permissions. In the Conditions submenu we have the ability to add, view and edit the conditions that the rule will validate.



The first element to highlight is located in the upper left part of the submenu, this element is the "Active rule" button, if it is green it means that the rule is being evaluated. If we press it, the color will change to gray, indicating the inactivity of the rule.

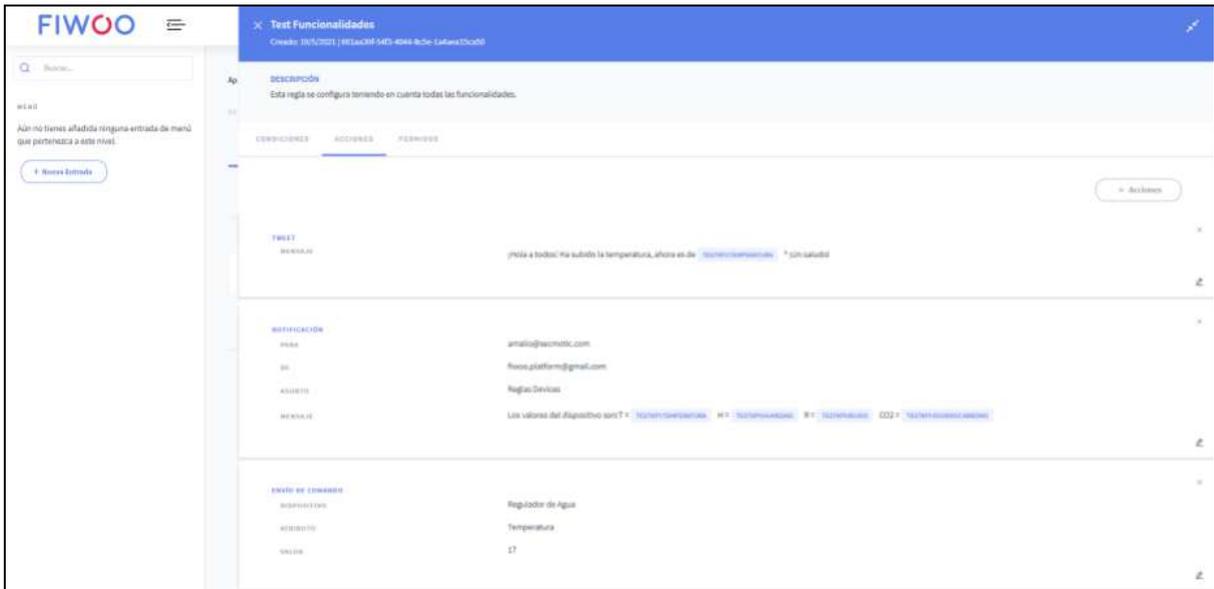
If we click on the “pencil” icon we can edit the conditions and the time intervals that we have assigned. And if we press the “+ Condition” button, the system will show a new form with which to add a new condition.

After clicking on “ + Condition”, a new condition is added at the end that we must configure. We can configure the number of times the rule must be met to be considered true and also add subconditions to the list.

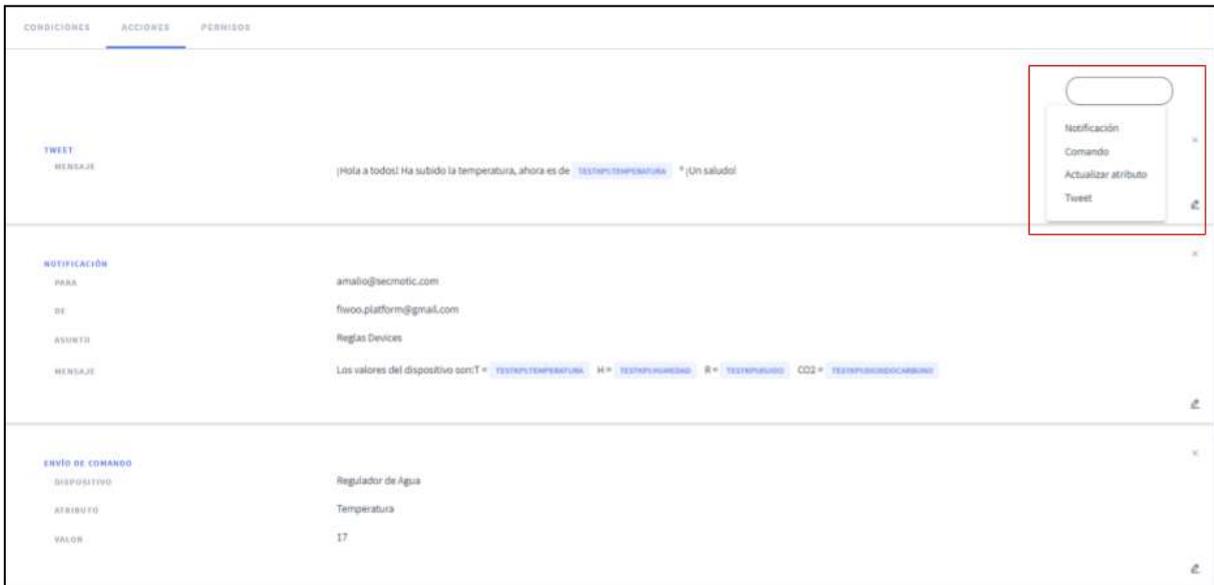
If we want to eliminate a condition or an interval, we can do so by clicking on the “x” button located to the right of the element. By pressing this button the system will ask us to confirm the deletion.

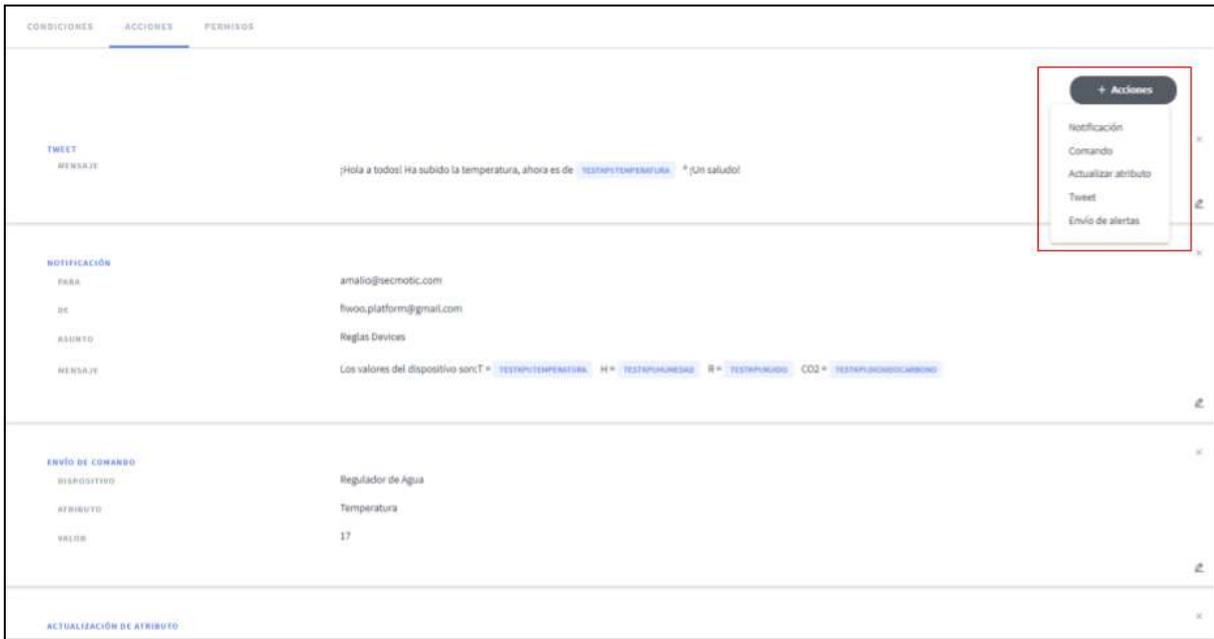
Finally, in this submenu we can specify at what times the rule will be active. To do this we must activate the "Time Range" option and configure at what time the rule begins to be evaluated and at what time it ends. We must also indicate which days of the week we want the rule to be active.

In the Actions submenu we have the ability to add, view and edit the events that will occur if the rule is fulfilled.

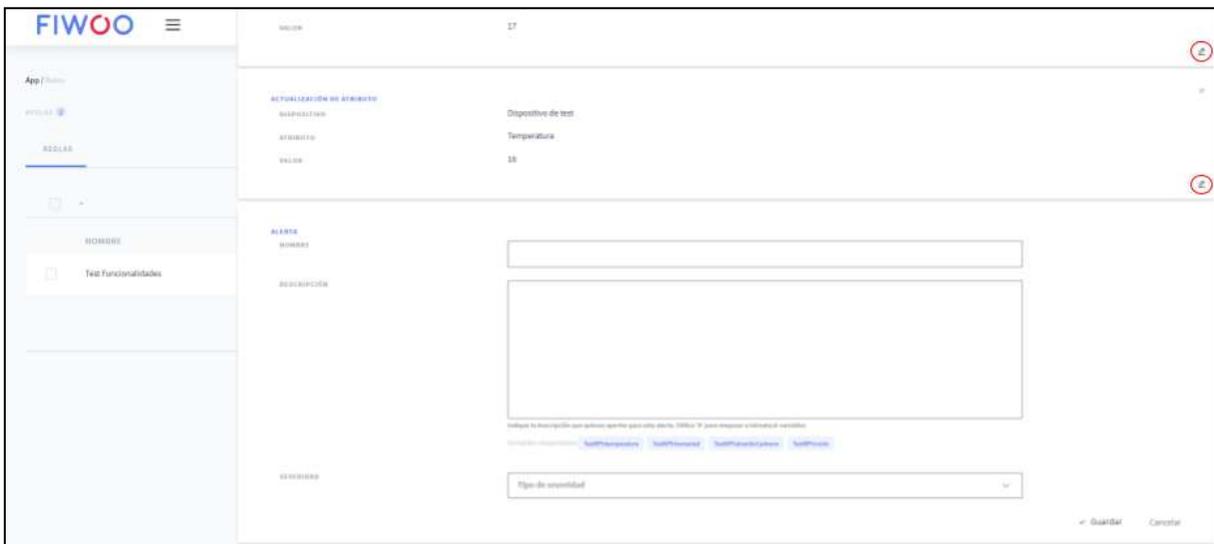


We can add a new event by clicking on “+ Actions”, when we press the system it will show a menu showing the types of available actions, when we find the one we want to add we click on it and it will automatically be added to the list of actions.



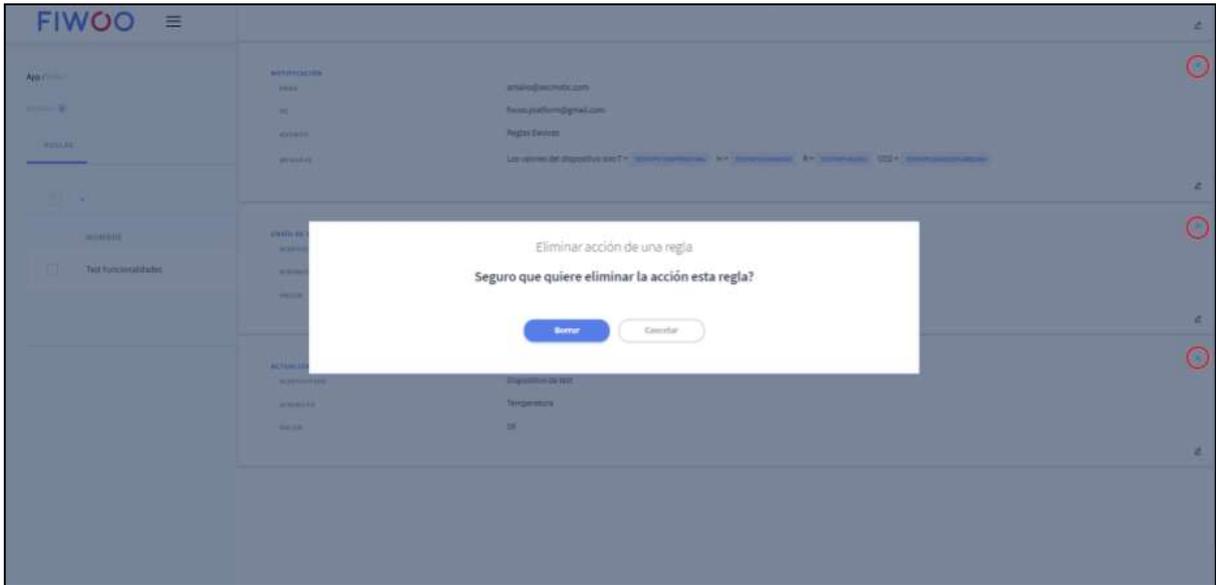


After choosing an action type from the menu, a new item is added at the end of the actions list to configure the new action. By clicking on the pencil icon, we can edit the actions available in the rule.

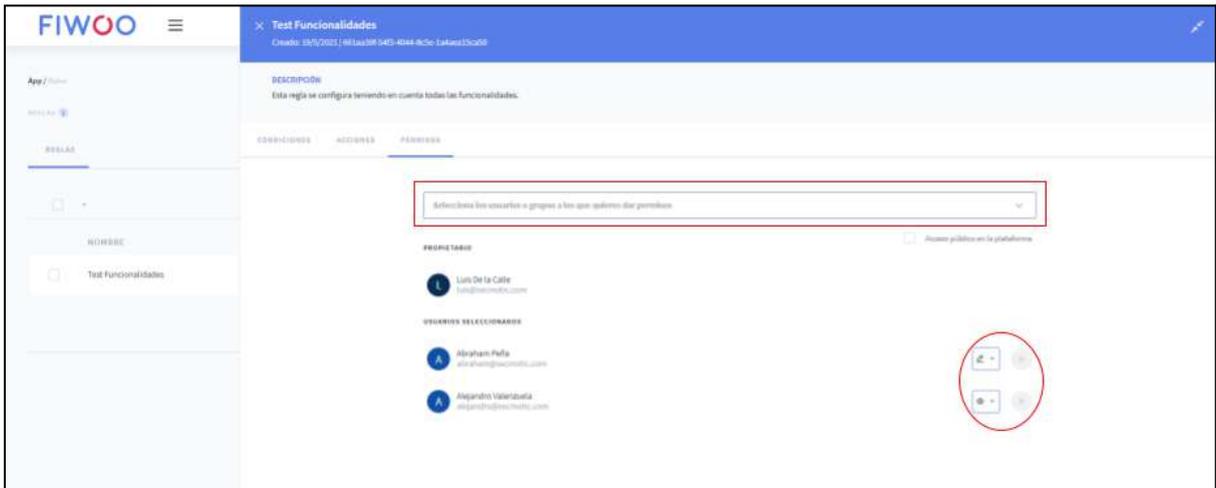


We can add as many actions as we want. Each action requires a different configuration, which is why the forms presented by the system are different, as detailed in the [Create rule](#).

We can delete an action by clicking on the "x" button located to the right of it. After clicking, the system will display a window asking you to confirm the deletion.



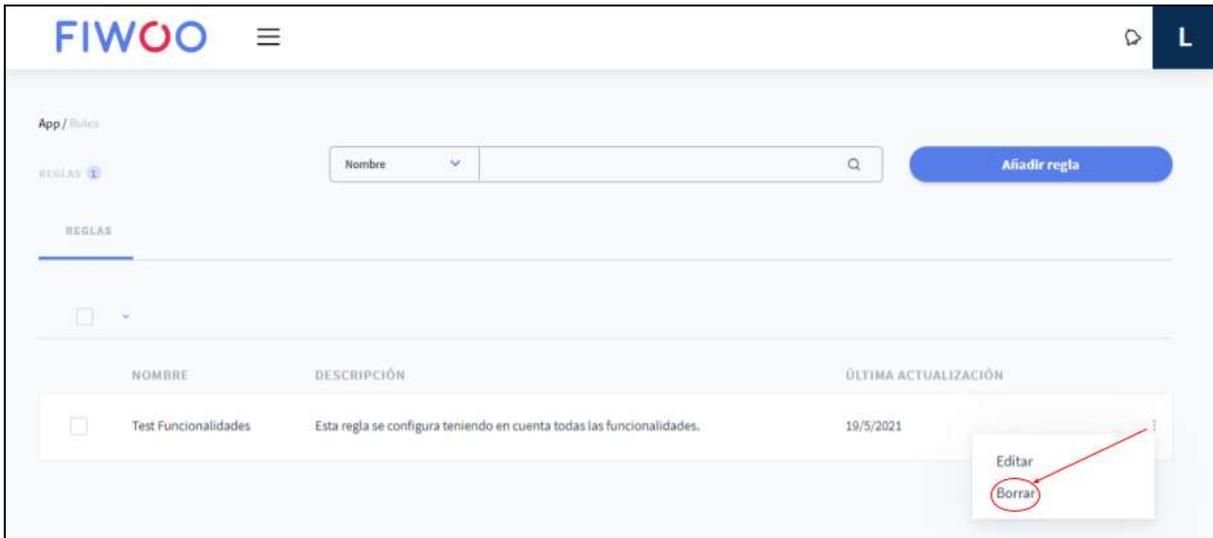
In the last submenu we will be able to modify the permissions that users have on the rule. We have the possibility of using the search bar to give access to new users or groups of users and we also have buttons to specify permissions for users who already have them and even revoke permissions.



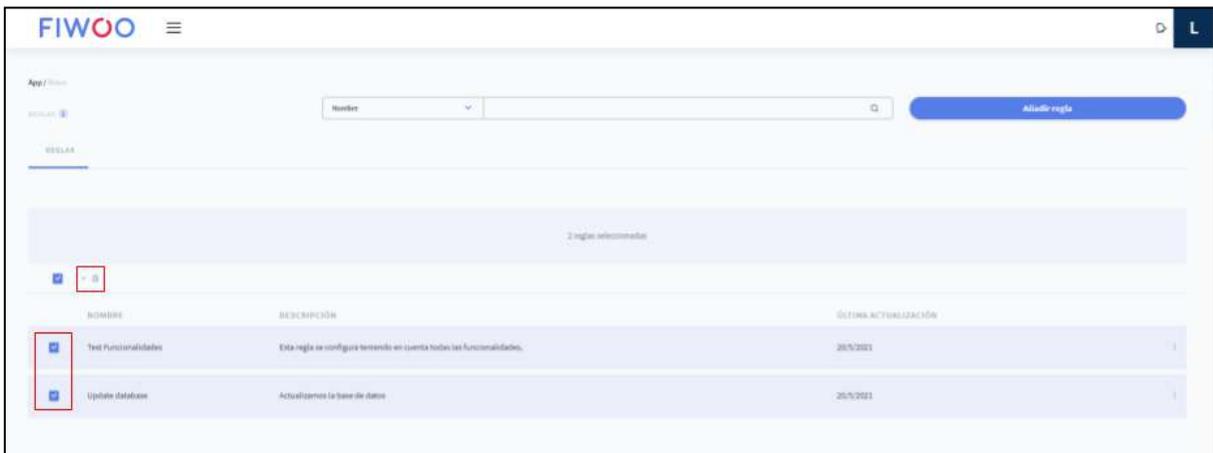
Delete rule

When it comes to deleting rules from the platform, there are two alternatives: one by one or in block.

To delete rules one by one, we simply have to press the three points to the right of the rule and select the “Delete” option. A new window will open to confirm that we want to delete it. If we press the "Delete" button again in that window, it will be removed from the system.



There is also the option to delete multiple rules at once. To do this, we select the ones we want to remove using the selection box to the left of each row. Once done, the trash can icon will appear at the top of the menu, with which you can delete all at once. After clicking on this icon, a new window will open to confirm that we want to delete the rules. If we press the “Delete” button in that window, they will be removed from the system.



Data Analysis

Once we have seen the management of rules, we are ready to try to analyze the previously processed data.

To do this, we will enter the Business Analytics-Data Analysis section as can be seen in the figure.

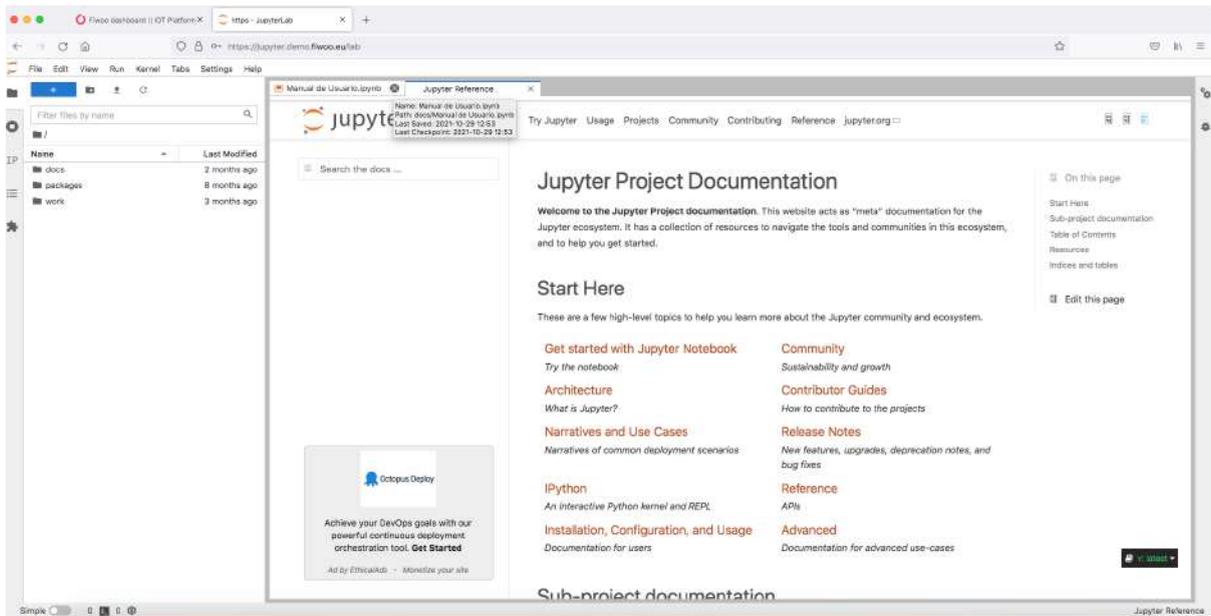


By clicking on Data Analysis, it will take us to an external component to be able to create our data analysis models or use some already predefined ones.



Any knowledgeable data scientist will be able to easily write their models, import, and export them once created.

We can use the help and examples provided by FIWOO to build the models using the libraries already available in the environment and we also have the official jupyter documentation.



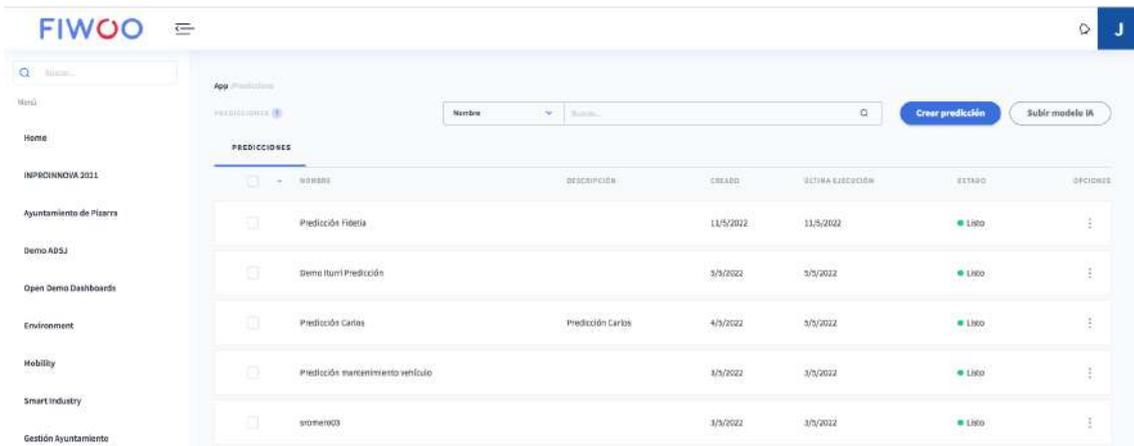
Once the model has been created and exported in standard format, we will be ready to begin the descriptive analysis process defined below.

Predictions

To access the predictions screen, we must click on the menu that hangs from Business Analytics.



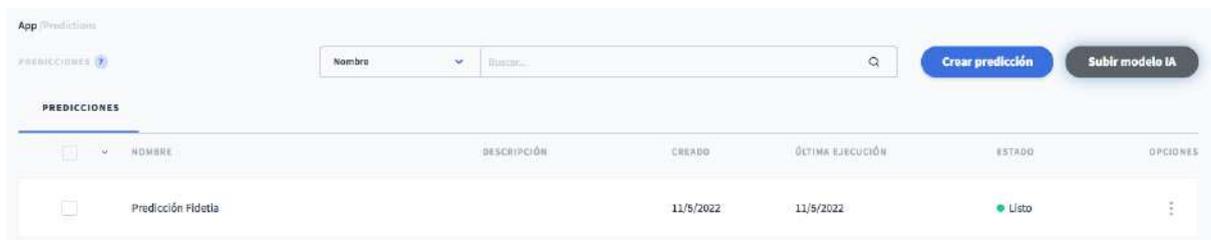
When clicking on the predictions menu, a management screen like the following will appear.



In this section, we have two possibilities. Create prediction or Upload AI models. Uploading AI models will help us to add new models to the existing ones and to be able to enjoy a broader catalog to be able to correctly create the prediction.

Upload IA Models

To upload the IA Models we will first start by clicking on the Upload IA Model button.



Once the button is clicked, the following screen will appear to start uploading the model.

We would fill in the name and description and attach the file.

The next screen allows us to define the input and output parameters of the model which are important when it comes to obtaining the result we are looking for and that the model has its inputs perfectly defined.

Información general **Edición del modelo** Configuración de datos Asignar permisos

SUBIR MODELO IA

Edición del modelo

Configura las entradas, salidas y orden que tendrá el modelo predictivo

Categoría: Nuevo modelo
nuevo modelo

Parámetros de entrada: 1 [Añadir parámetro de entrada](#) [Eliminar todos](#)

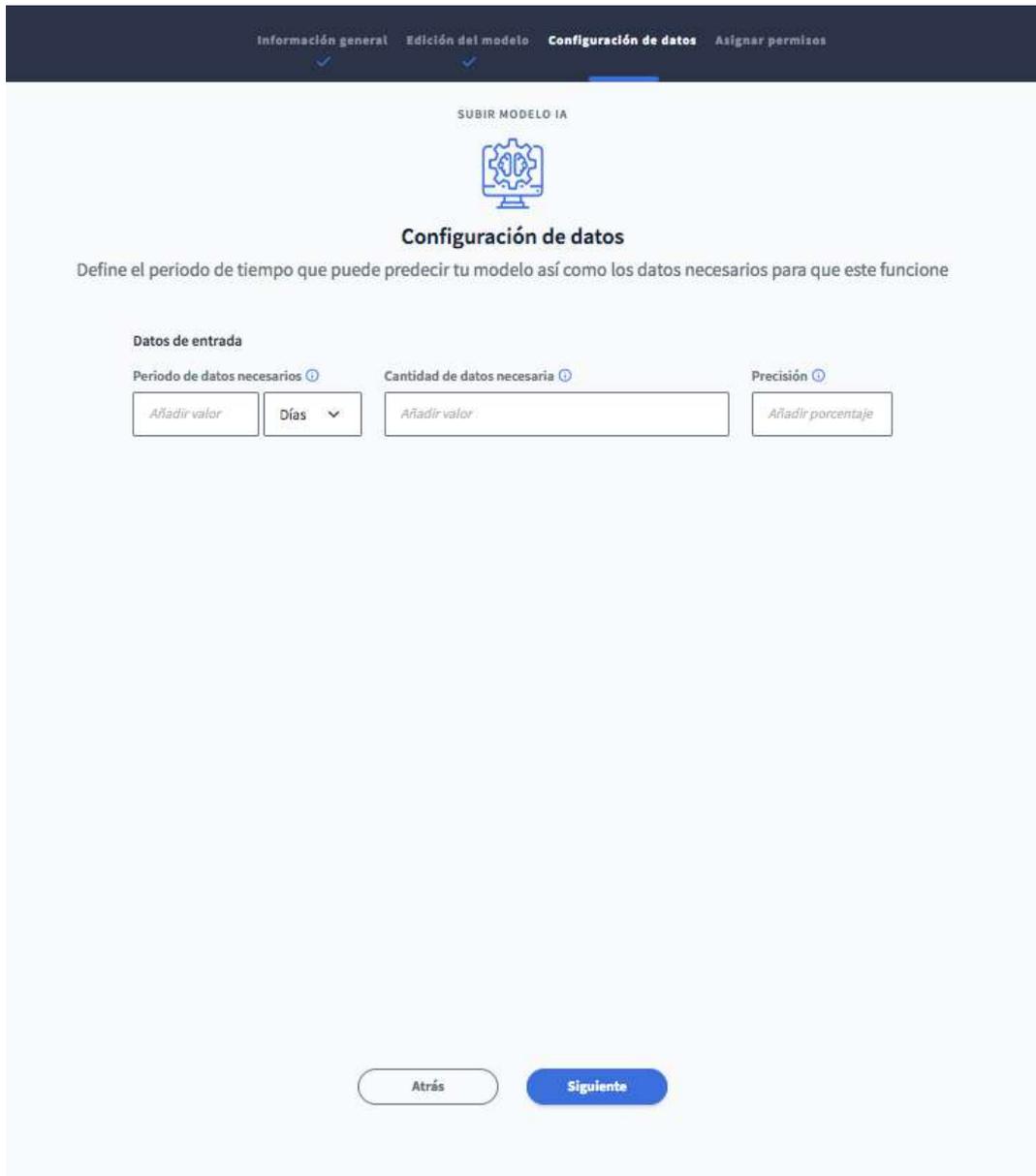
#1 PARÁMETRO
Cambiar nombre parámetro 1 x
Nulo

Parámetros de salida: 1 [Añadir parámetro de salida](#) [Eliminar todos](#)

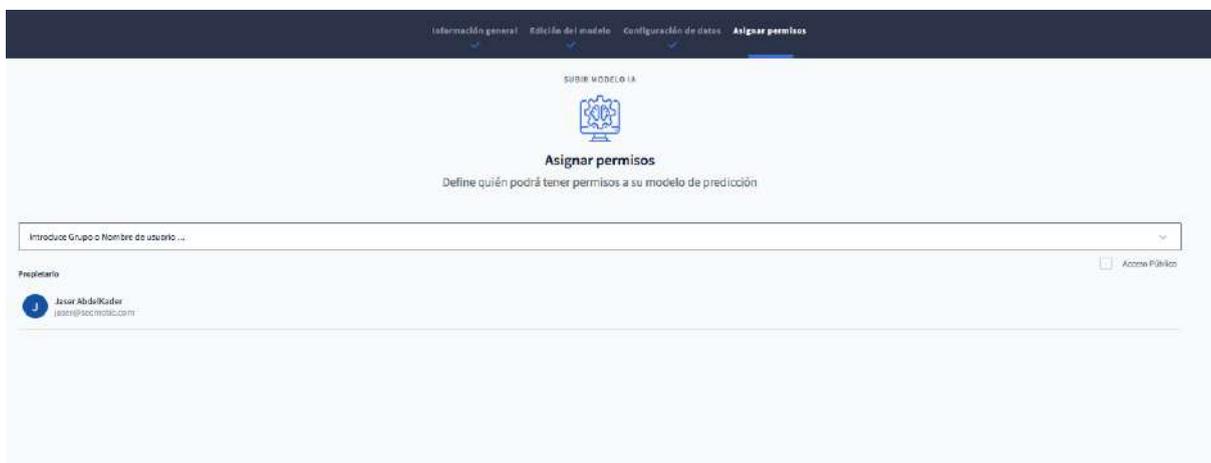
#1 PARÁMETRO
Cambiar nombre parámetro 1 x
Nulo

[Atrás](#) [Siguiente](#)

Next we can define the amount of data that we want to take from the data set, the period of time and the precision that we want to obtain approximated in our model.



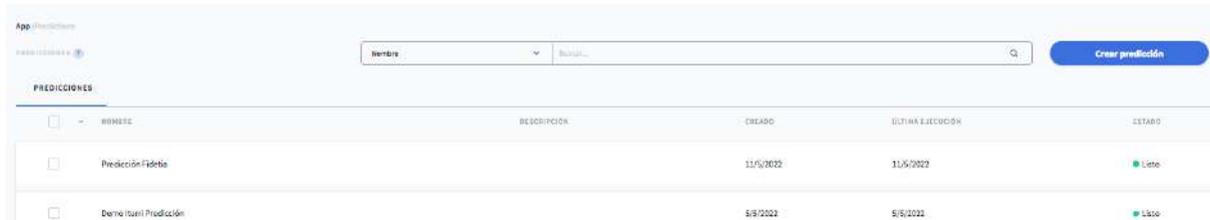
Finally, as always, we will assign permissions and roles to be able to see and execute said process



and we would already have our IA model uploaded at the user's disposal to be able to create predictions.

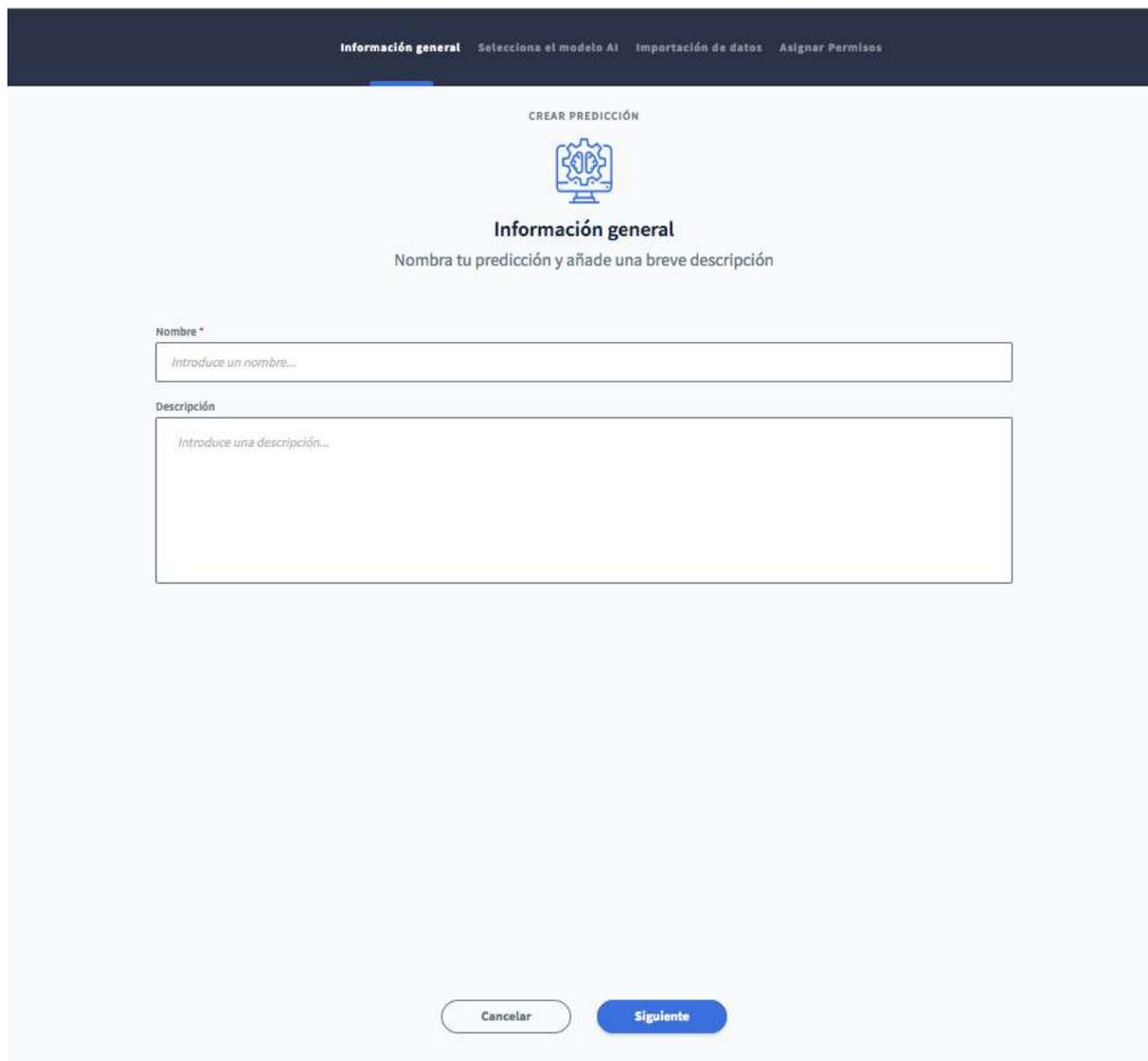
Create Prediction

To create a new prediction we will press the create prediction button as indicated in the image.



	NOMBRE	DESCRIPCIÓN	CREADO	ÚLTIMA EJECUCIÓN	ESTADO
<input type="checkbox"/>	Predicción Ficticia		11/5/2022	11/5/2022	● Listo
<input type="checkbox"/>	Demo isuari Predicción		5/5/2022	5/5/2022	● Listo

Once pressed, the following screen will appear where we will have to fill in the following fields.



Información general Selección del modelo AI Importación de datos Asignar Permisos

CREAR PREDICIÓN



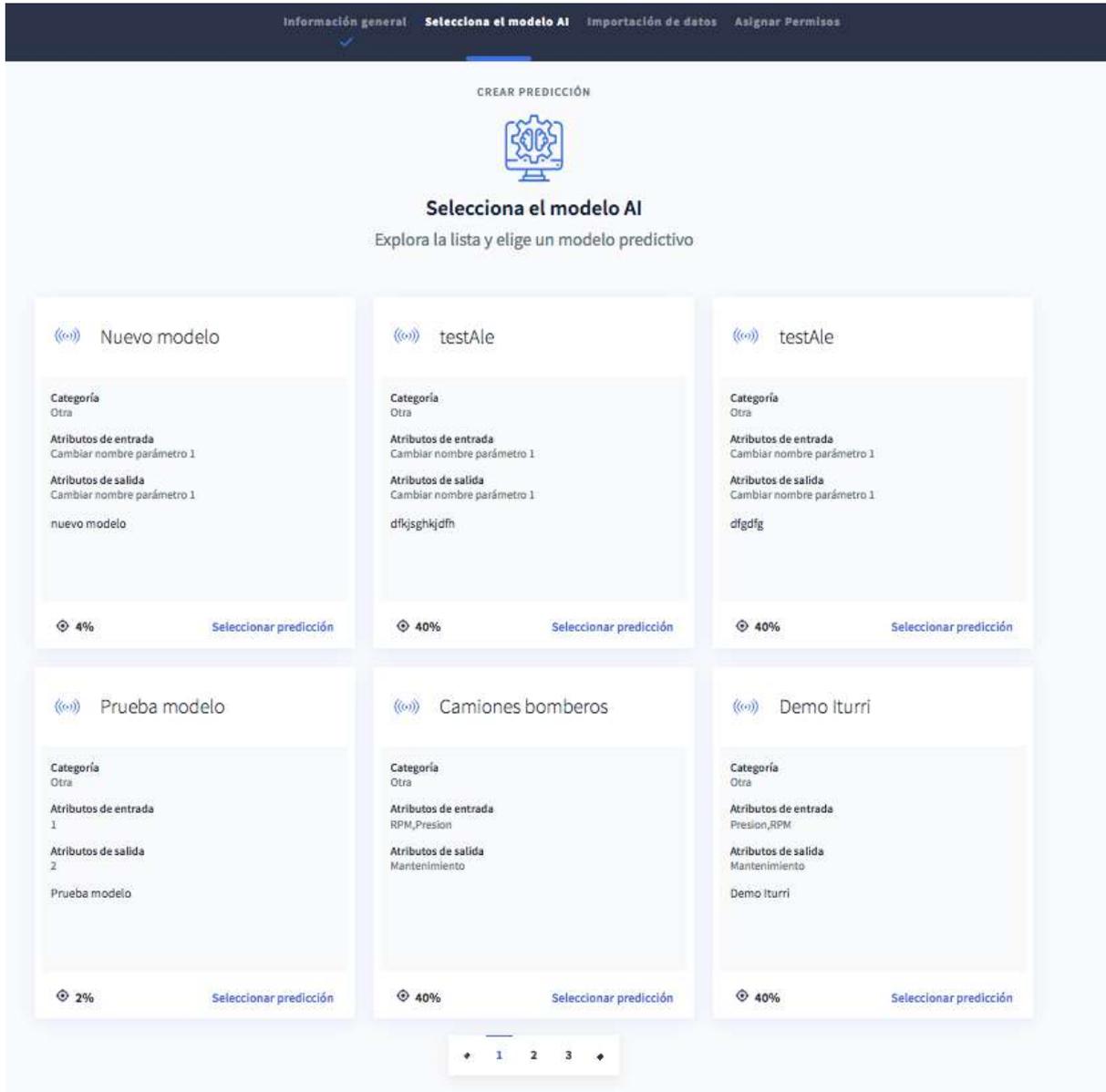
Información general

Nombra tu predicción y añade una breve descripción

Nombre *

Descripción

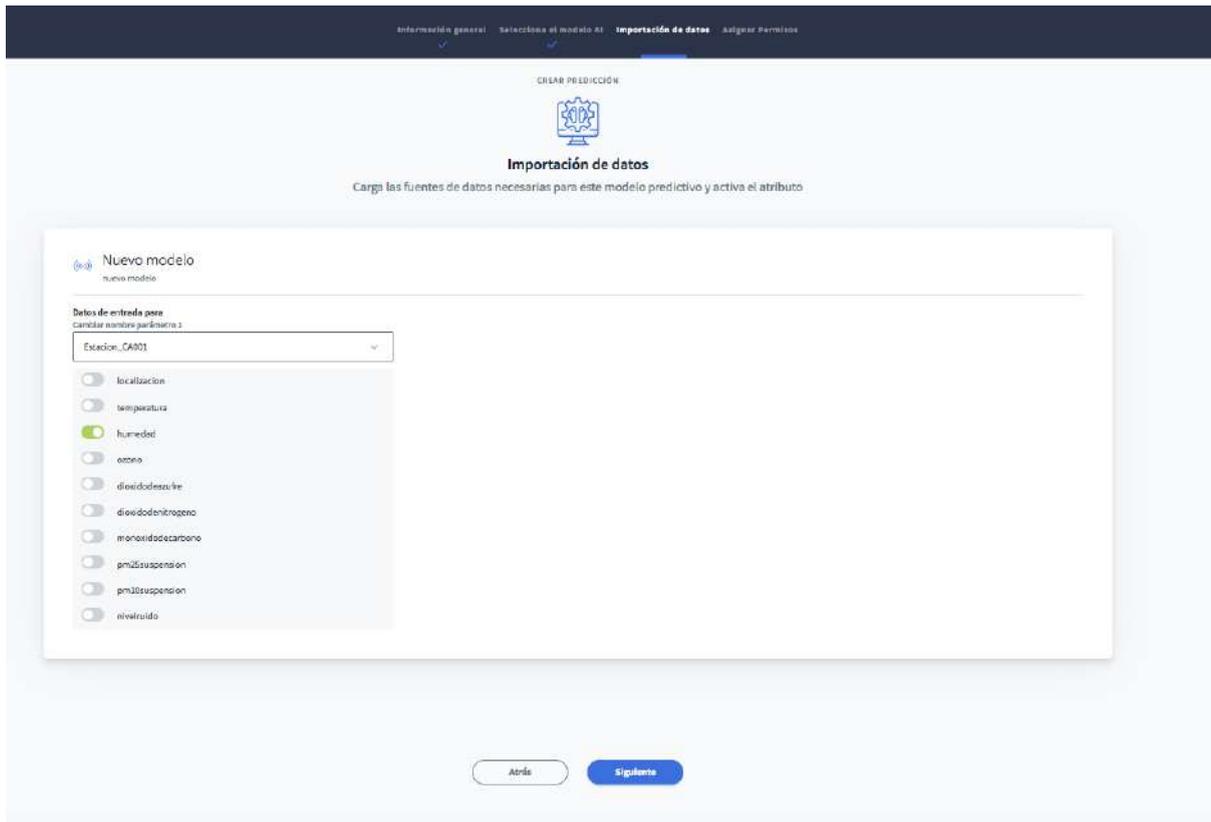
Once the data is filled in, we will click on next and we will access the next screen in which we must choose the previously created IA model.



Once the model has been selected, we are ready to select the input data for the parameters that we have previously defined in the model.

We can select the data set for the parameter and the specific data that we want to use for the input parameter.

In the image below we can see this process.



Finally, as always, we will add permissions and roles to the prediction and finish.

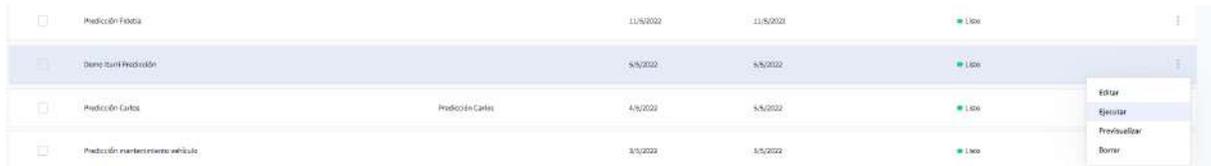


Once the prediction process has been created, it will be sent to the prediction engine so that it can build it and it will appear in the creating state, as can be seen in the image.

CREADO	ÚLTIMA EJECUCIÓN	ESTADO
14/7/2022	-	● Creando

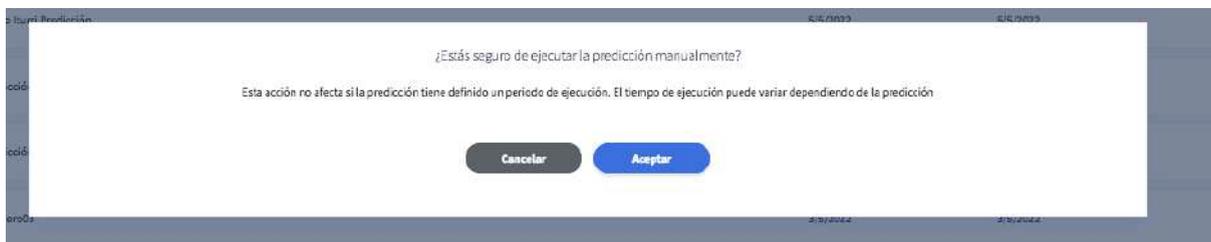
Execute Prediction

To execute a previously created prediction, we will click on the prediction in the points part. In this way, the small menu will open where it will give us the actions to choose and we will select Execute.



<input type="checkbox"/>	Predicción Fobia		11/5/2022	11/5/2022	Low	
<input type="checkbox"/>	Derechos Predicción		5/5/2022	5/5/2022	Low	
<input type="checkbox"/>	Predicción Carlos	Predicción Carlos	4/5/2022	5/5/2022	Low	<ul style="list-style-type: none">EditarEjecutarPrevisualizarBorrar
<input type="checkbox"/>	Predicción mantenimiento vehículo		3/5/2022	3/5/2022	Low	

Once we click on execute the following screen will appear.

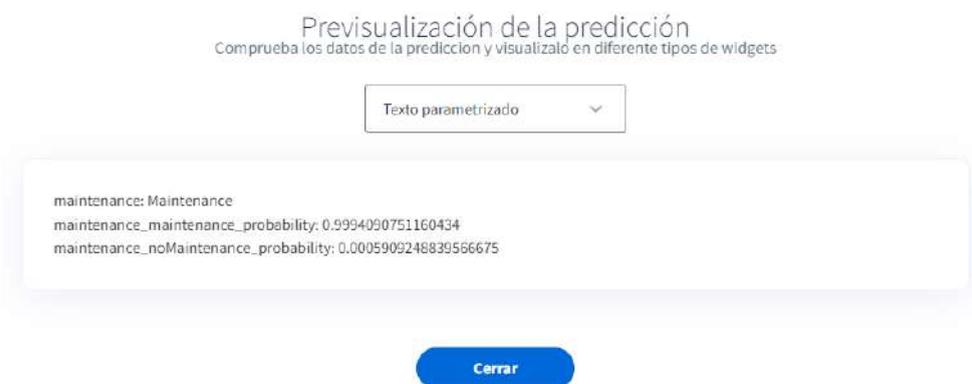


The execution will take longer depending on the complexity of the model and the data to be analyzed.

Preview prediction result

Once we have run the model, we can preview the results obtained.

To preview a previously created prediction result, we will click on the prediction in the points part. In this way, the small menu will open where it will give us the actions to choose and we will select Preview.



Delete Prediction

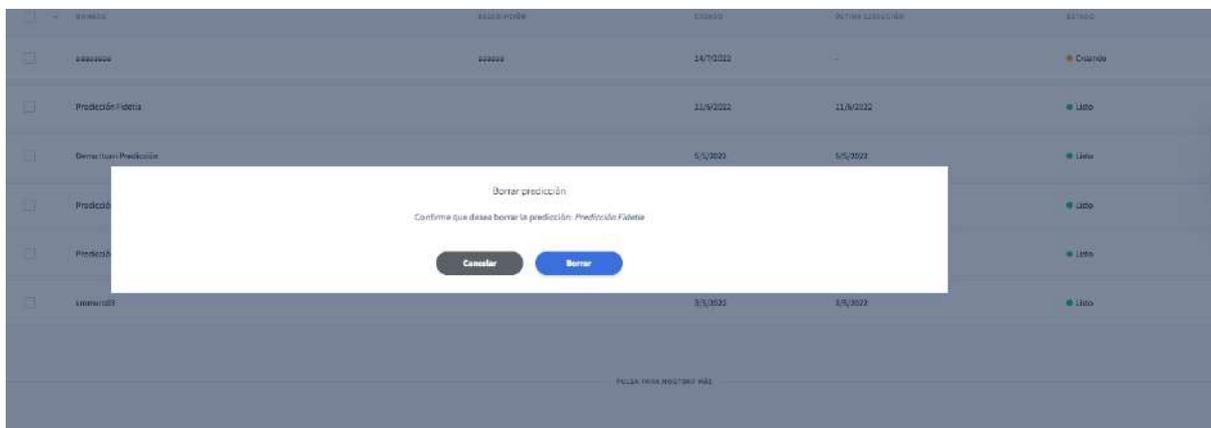
To delete the prediction, follow the same procedure as for the previous functions.

To delete a previously created prediction, we will click on the prediction in the part of the points. In this way, the small menu will open where it will give us the actions to choose and we will select Preview.



ID	Nombre	Fecha de inicio	Fecha de fin	Estado	Acciones
1	Predicción Carlos	09/2022	5/7/2023	Lista	Editar, Ejecutar, Previsualizar, Borrar
2	Predicción mantenimiento vehículo	3/5/2022	3/5/2022	Lista	
3	eliminar03	3/5/2022	3/5/2022	Lista	

When clicking on delete, a pop-up will open where it will give us the option to cancel or delete.



We will delete and our prediction will be removed from the system.