Getting started

⚓ Hefring Engineering, headquartered in Boston, MA, is a U.S.-owned and operated business focused on developing technologies for ocean observation. We offer a glider platform named Oceanscout, designed for easy deployment and cloud-native mission control to collect and access ocean information. This technology is used for various purposes including storm forecasting, climate modeling, ecological sustainability, and naval operations. Our approach integrates modern electronics, machine learning algorithms, artificial intelligence, and edge processing to enhance oceanic data availability and operational oceanography.

Welcome

Welcome to the Hefring community! This user guide serves as your comprehensive guide to navigating the Hefring Oceanscout platform, a pioneering tool in ocean observation technology. Ideal for researchers, corporations and enthusiasts, the Oceanscout platform, developed by Hefring Engineering, integrates advanced cloud-native control systems with AI and machine learning.

Guide contents

This guide has been crafted to assist you in utilizing the Hefring website for managing your fleet, plotting courses, deploying your gliders, issuing commands, and interpreting data outputs. Whether you are a seasoned researcher or a newcomer to Hefring, this guide is your resource for getting started and getting the most out of your experience.

👉 ***How to use this guide:***
Navigate through the sections chronologically or jump to specific topics using the table of contents. Each section provides step-by-step instructions accompanied by clear visuals, ensuring that you can follow along effortlessly.

Registration	Learn how to log in to the Hefring website and gain access to the Oceanscout Platform.
Account setup	Understand the process of setting up your account, customizing preferences, and ensuring your profile aligns with your research needs.
Fleet and Vehicle Configuration	Set up your fleets and vehicles, and organize your gliders efficiently. From naming vehicles and fleets to associating nose cones, this section guides you through the whole process.
Plotting a course	Plot precise courses for your gliders. Utilize templates, define waypoints, and create routes that align with your research objectives.
Vehicle deployment	Plot precise courses for your gliders. Utilize templates, define waypoints, and create routes that align with your research objectives.
Billing	Understand how to read your invoice.
Additional resources	Find additional information, guides and links.

Registration

1. After finishing up with your Hefring sales representative, you'll receive an email from "no-reply@verificationemail.com" containing your account ID and your temporary password. Your company or institution will be given a unique domain, e.g. "company.hefring.cloud".

   We recommend that you use your registered email address as your username to log in.
2. When logged in, you'll be prompted to accept browser notifications and location sharing. These are for glider events and for easy map navigation.
3. That's it! Continue to learn how to set up your account.

Account setup

Initial account setup:

1. Navigate to "**Account**" > "**Profile**" from the sidebar menu
2. Click "**Edit**" to customize or upload an avatar
3. Navigate to "**Account**" > "**Units**" from the sidebar menu
4. Toggle display units as desired (metric/imperial/maritime)
5. Navigate to "**Management**" > "**Meta**" from the sidebar menu
6. Upload your logo (optional)

☝ If information is missing or incorrect, please contact support@hefring.com

Add users to your organization:

1. Navigate to "**Management**" > "**Users**" from the sidebar menu
2. Click "**New user**"
3. Enter name, email and phone number. The user can set up their avatar later
4. Check "**Organization administrator**" if applicable
5. Click "**Create**" to save
6. User will receive an email invitation

⚠️ Email invite **must be accepted within 48 hours by receiver**.
Otherwise, archive the expired user and create a new one.

👥 There are two access levels; organization administrator and organization user.
See table below for details.

Access level	Actions available

Organization administrator	• Set up projects to contain your fleets and vehicles • Manage users, access levels and send new passwords • Assign users to fleets • Manage projects and billing • Create routes, manage templates and deploy vehicles • Upload your logo • Customize avatar • Select display units
Organization user	• Create routes, manage templates and deploy vehicles within your assigned projects • Customize avatar, view contact information • Select display units

Edit user profiles and/or send new passwords to existing users:

1. Navigate to "**Management**" > "**Users**" from the sidebar menu
2. Click the user you want to edit and/or send a new password to
3. Click "**New pass**" to send new password, and/or edit the desired fields
4. It saves your changes automatically, so you can simply close the dialogue when finished

☝ Non admin users must be assigned to one or more fleets to be able to see their gliders.

Initial project setup:

1. Navigate to "**Management**" > "**Projects**" from the sidebar menu
2. Create a project
3. Assign your fleet(s) to the project
4. Navigate to "**Management**" > "Fleets" from the sidebar menu
5. Click "**New fleet**" and add an image (optional), a name and a description. Click "**Create**"
6. Assign user(s), vehicle(s) and a project to your fleet

☝️ "**Projects**" are for billing and mission filter. This way, you can easily see which fleets are more expensive on your invoice.

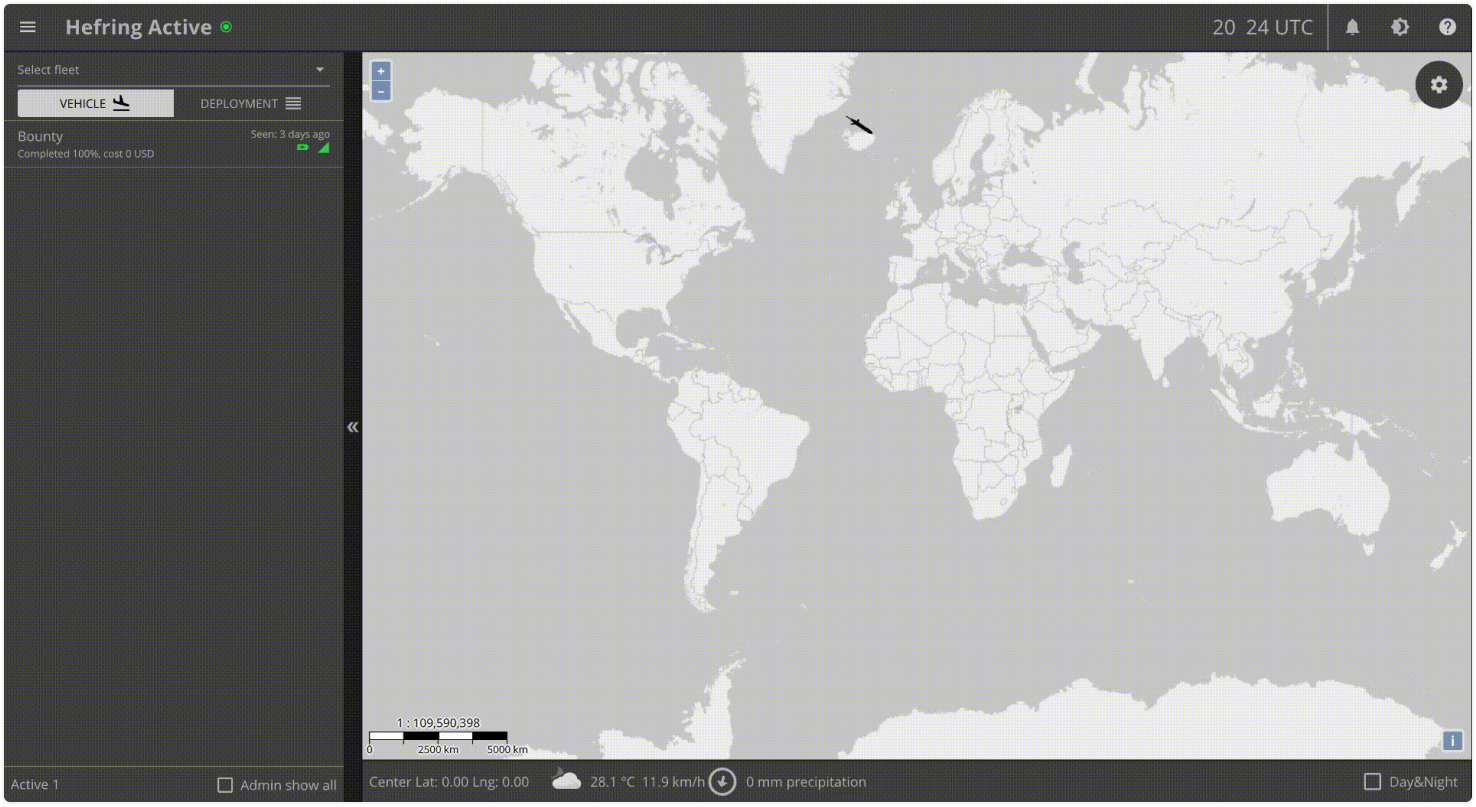
Fleet and vehicle configuration

Setting up your fleets:

1. Navigate to "**Management**" > "**Fleets**"
2. If the list is empty, click "**New fleet**"
   a. Add a fleet name
   b. Add a description
   c. Add an image or logo (optional)
   d. Click "**Create**"
3. Select your fleet
4. Assign users by clicking the  button
   a. Select users from the list
   b. Click "**Close**"
5. Assign vehicles by clicking the  button
   a. Select vehicles from the list
   b. Click "**Close**"
6. Assign a project by clicking the  button
   a. Select a project from the list
   b. Click "**Close**"

⚙️ You should see two (or more) gliders - one real and one virtual. You can use your virtual glider(s) to simulate deployments and test things without deploying in real life.

Contact support@hefring.com to acquire more.



Setting up your vehicle(s):

1. Navigate to "**Management**" > "**Vehicles**"
2. Select your vehicle from the list
3. Change the vehicle name
4. View or reassign the vehicle's fleet
5. View or reassign the vehicle's nose cone

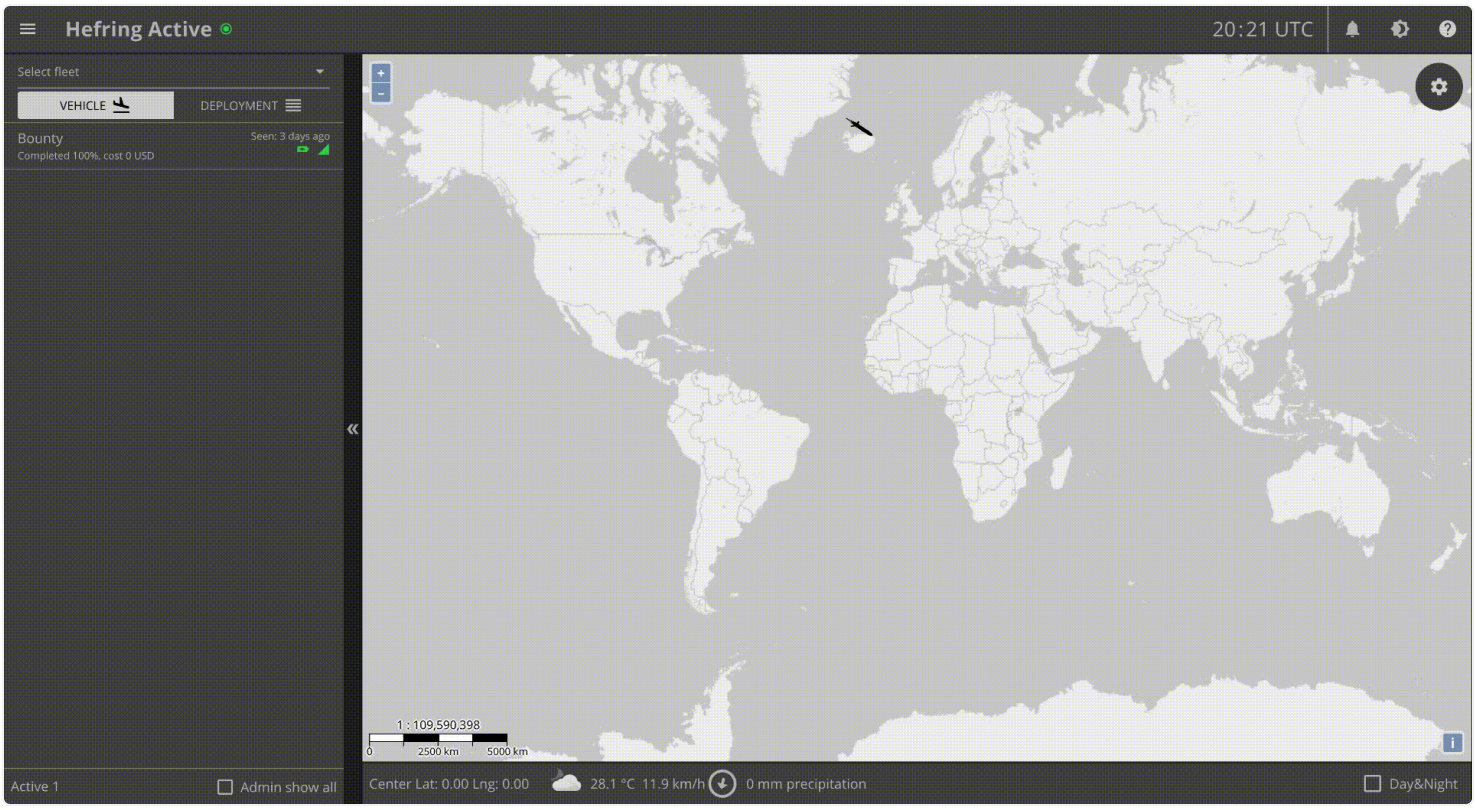
☝ To edit vehicle properties, the vehicle must be in "**Maintenance mode**". **Click on the vehicle and change mode button.**

⚠️ **IMPORTANT:** Do not change the nose cone unless you know what you are doing. To learn how to remove a nose cone, click here.

Setting up your nose cone(s):

1. Navigate to "**Management**" > "**Nose cones**"
2. Select your nose cone from the list

3. If there is an IMEI visible, your selection is a real nose cone
4. If IMEI says N/A, it's a virtual nose cone
5. Rename if desired. Consider renaming for consistency. It's advisable to name the nose cone in alignment with its corresponding glider, appending the suffix "cone" for clear identification.



Plotting a course

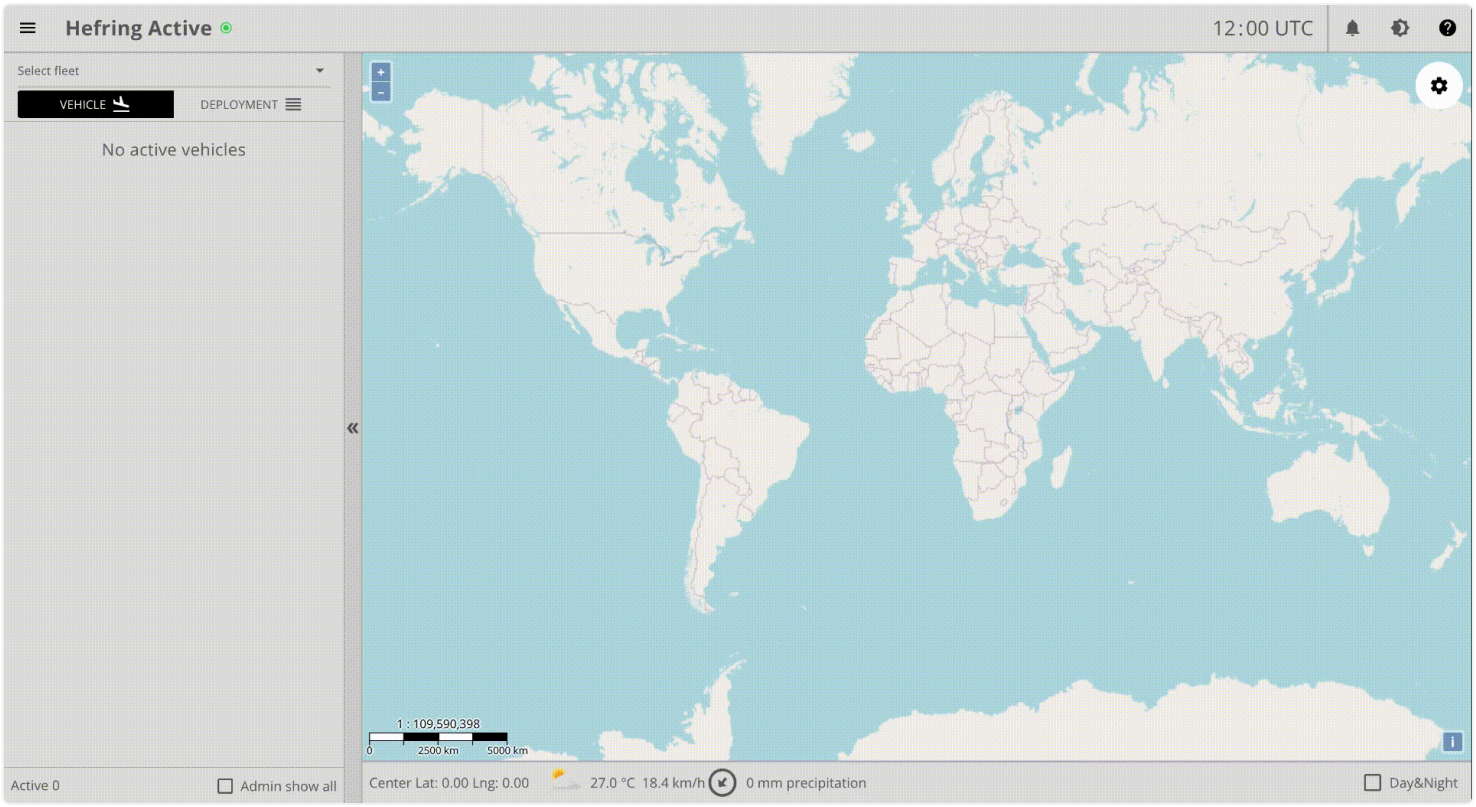
🌎 For easier map navigation, allow GPS geolocation in your browser.

Plotting a course with the Hefring interactive map:

1. Navigate to "**Deployments**" > "**New / deploy**"
2. Click "**New**" in the route template selection dialogue
3. Navigate to the desired map location
4. Click the button to start plotting your route
5. Click on the map to start drawing. Each click creates a **waypoint**

6. Double click to finish drawing
7. To edit your **route**, click the button, and click anywhere on a **line segment** to create a new waypoint, or click an existing waypoint to move it
8. Click the button to place your **assembly point**

☝ Your "**assembly point**" is where your glider will attempt to surface if there's an error, if the route is aborted, or if the glider has completed its deployment.



Waypoint definitions:

Waypoint templates can be defined as follows:

- Name
- Description
- Attainment radius
  - Defines the radius of a waypoint. Zero disables the attainment radius, and would require the vehicle to be exactly at the coordinates of the waypoint for it to move on.
- Perform hovering

    - Hovering makes the vehicle stop and do additional measurements, params can be defined. There are safe ranges (e.g. 10-11 m is too small). The larger the interval, the more likely it will be successful. Hover timeout sets the time the vehicle will try to attain position before giving up and continuing route.
- Perform drift
    - Perform drift is “hover”, but at the surface. Used to measure surface currents.

☝ Templates are available for easy selection during the deployment process.

Segment definitions:

Segment templates can be defined as follows:

- Name
- Description
- Navigation mode
    - Vehicle - default values
    - Custom depths
        - Max depth
        - Apogee depth
        - Min. distance to seabed
- Surface after
    - Vehicle - default values
    - Number of yo's
        - Subsurface yo's
- Safety zone along segment line

Edit sensor sampling:

You may define up to four sampling ranges, each containing the following parameters:

- From depth - set the minimum depth for sampling
- To depth - set the maximum depth for sampling
- Sampling interval - set a value defining how many meters between each sensor recording

Click "add range" to add a new range to your list.

You may define whether to sample sensor data on every 'yo', or at certain intervals. You may also decide during which 'yo' to start sampling:

- Start at 'yo' index - if you don't want to start sampling at the first 'yo'
- Interval 'yo' index - if you want to sample only every e.g. second 'yo'
- Sample on 'yo' - if you only want to sample during a specific 'yo'
- Telemetry interval is which sample you want to transmit over Iridium

To see the 'yo' index, close the current view and find the values on the now open "Segment" view.

☝ Templates are available for easy selection during the deployment process.

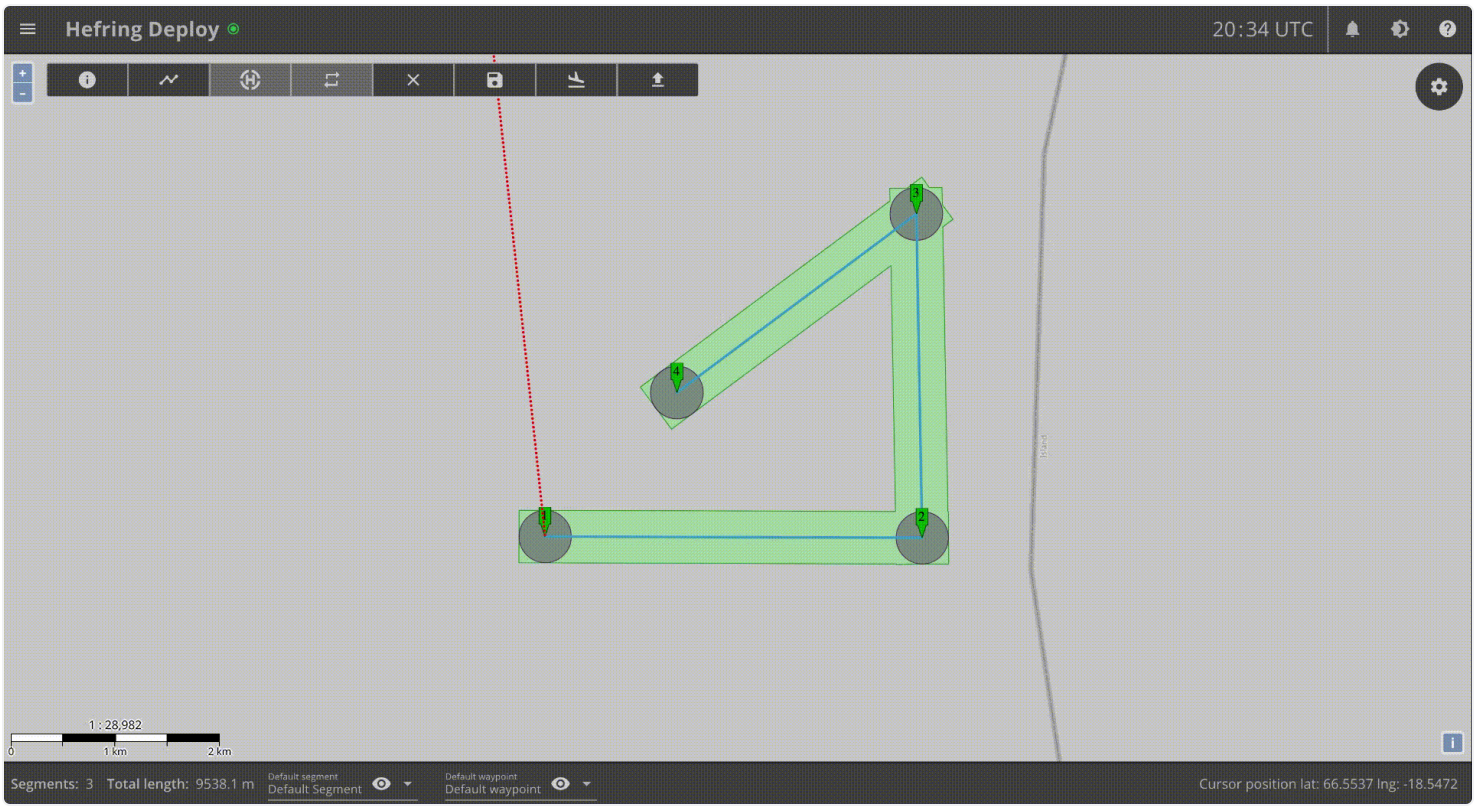
Vehicle deployment

Continuing from "Course plotting", follow these steps to finalize your deployment.

Deploy a vehicle:

1. Click the  button to deploy a vehicle
2. Select the desired vehicle from the list
3. Click the  button to upload route to vehicle
4. Click "**Continue**"
5. Name your deployment (optional)
6. Select project
7. Add a description (optional)
8. Define the file naming convention (optional)
9. Select starting waypoint, direction, action at completed route, and mission timeout
10. Select how to start (now, manual or at a given time)

11. Watch your glider go!



Route settings:

How to read and understand deployment info:

Billing

To find your invoices:

1. Navigate to "**Management**" > "**Billing**"
2. Use tabs to browse viewing options:

   Monthly

   "**Monthy**" gives you a quick overview of the current month, and of previous invoices. You can preview a preliminary invoice by clicking "**Preliminary invoice**". A .pdf file will open in a new tab in your browser.

   Projects

   This view shows concurrent expenses for specific "**project(s)**".

Deployments

This view shows concurrent expenses for specific "**deployments**".

Fleets

This view shows concurrent expenses for specific "**fleets**".

Additional Resources

HOME - Hefring Engineering

https://www.hefring.com/