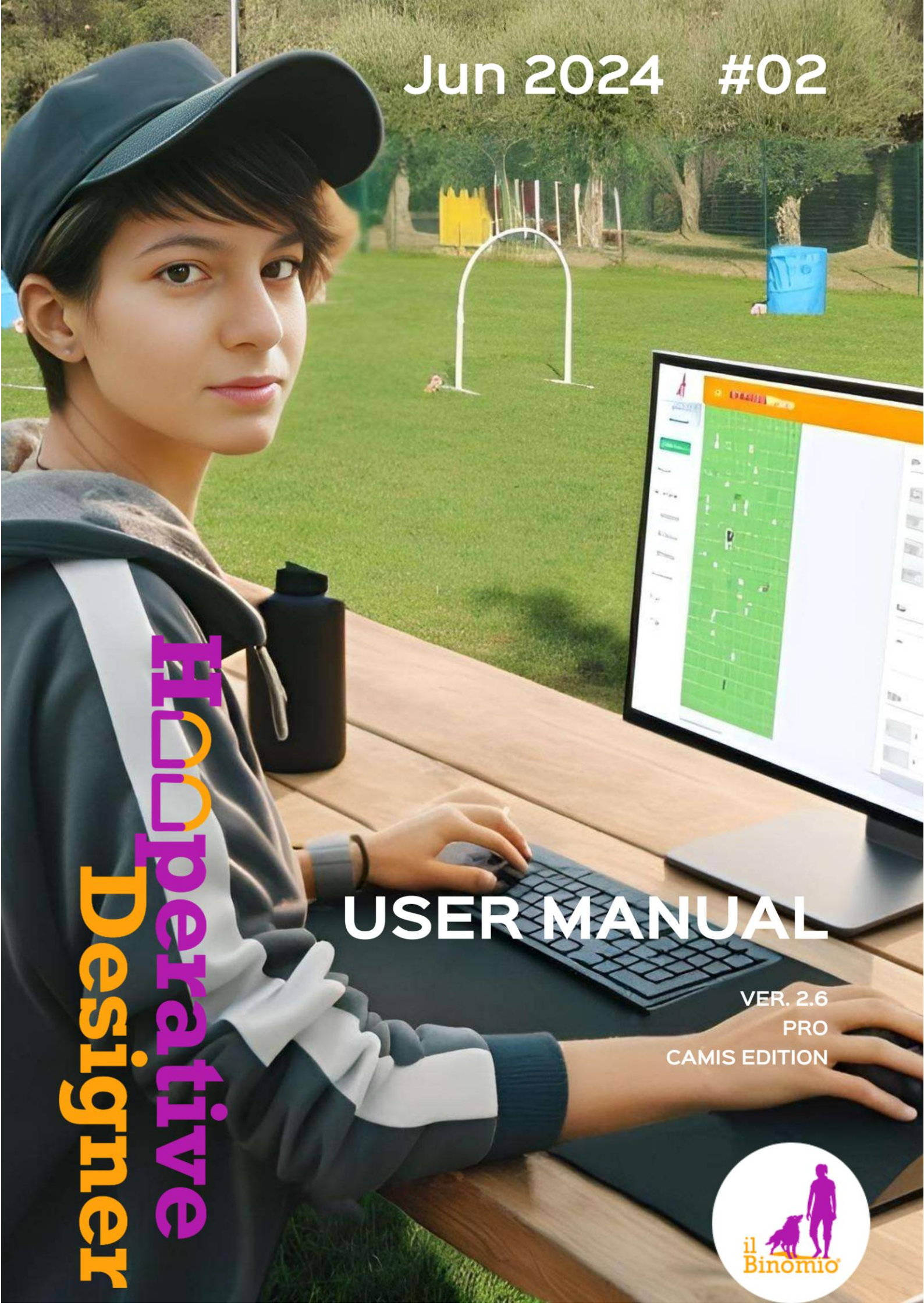

Jun 2024 #02

HOOperative Designer

USER MANUAL

VER. 2.6
PRO
CAMIS EDITION

il Binomio

il Binomio

Hooperative Designer

USER GUIDA (ver 2.6, PRO e CAMIS EDITION)

Sommario

1 Introduction

Hooperative Designer® is a tool for creating, designing, and sharing Hoopers courses, enhancing learning and development on competition courses.
Hoopers is fundamentally about having fun safely with your dog. Both fun and safety are tied to the quality of the courses designed and set up in the field. The sequence of obstacles, the presence of turns, the approaches, and distances are crucial elements. Course design itself is a fun yet creative and technically challenging activity.
This is why we created Hooperative Designer®, a web application designed to support handlers, instructors, and judges in designing Hoopers courses.
The primary goal is to have fun.
Therefore, the application is easy to use, created to facilitate all typical operations of course creation with a refined and pleasant graphic interface to enhance every project. Simplicity, however, is accompanied by some technical features designed to assist designers in defining smooth lines and adequate distances. Additionally, the sharing and network saving functions make Hooperative Designer® suitable for educational purposes, allowing users to exchange, analyze, and modify courses, forming real libraries and case studies.

2 What You Can Do with Hooperative Designer

Hooperative Designer® allows you to place and orient the equipment (Hoop, Gate, Barrel, Slalom, Tunnel) and the handling area that make up a Hoopers course on a field layout.
Once the course is designed, you can add numbering and visualize the dog's line simulation to ensure the lines are appropriate and the turns are smooth. Alternatively, you can view the simple line connecting the centers of consecutive equipment.
It is also possible to check the distances between consecutive equipment and, especially useful for judges, the distance from the handling area to the farthest piece of equipment.
Your project can be saved on the device in use for later reloading and modification or saved online in your personal project archive to be viewed at any time and from any location.
Some of the app's features include:

- Customizing the field: setting dimensions and grid, uploading a background image;
- Placing and orienting equipment on the field;
- Placing the Handling Area;
- Numbering the equipment to define the course;
- Automatically listing the placed equipment;
- Automatically simulating the dog's physical line;
- Viewing the distances between equipment;

- Viewing the distance from the Handling Area to the farthest piece of equipment;
- Saving the designed course;
- Loading designed courses;
- Exporting as an image.

3 How to access Hooperative Designer®

Hooperative Designer® is developed as a WEB application with responsive design. Therefore, simply use a web browser and enter the following URL:

hooperative.ilbinomiocinofilia.it

The login page will appear where you can enter your credentials (username and password).

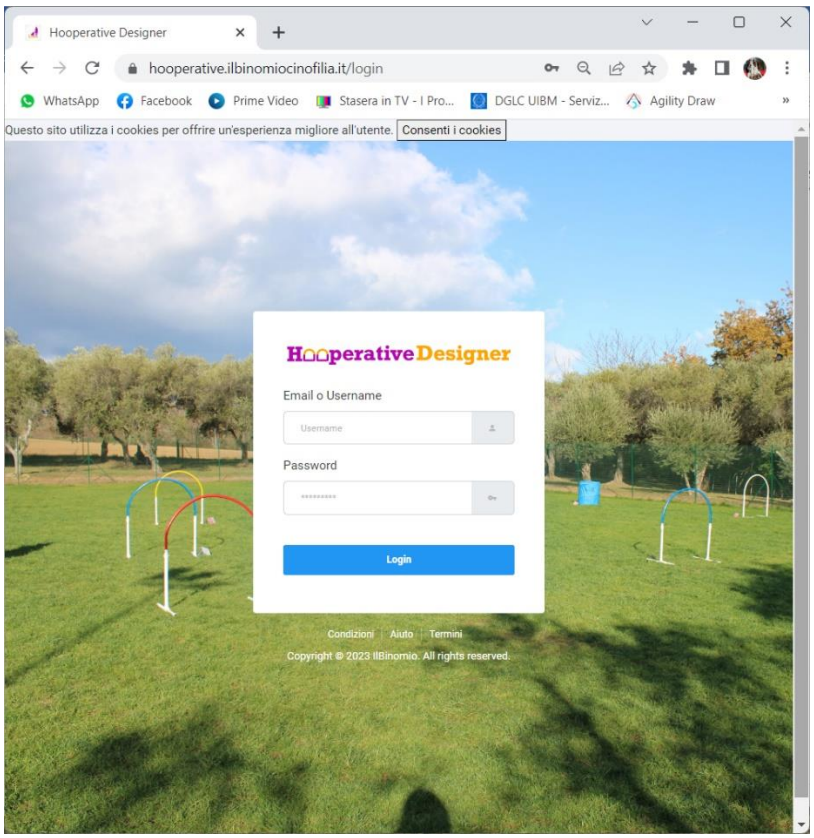

Figure 1: login page

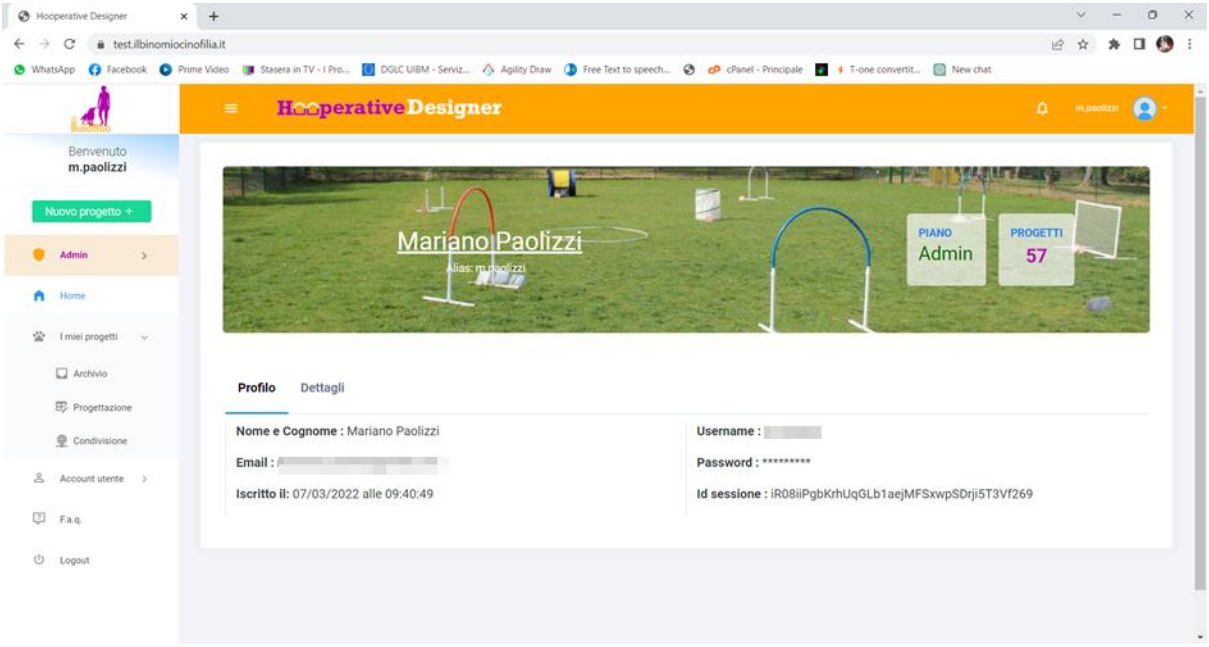

Figure 2: user profile

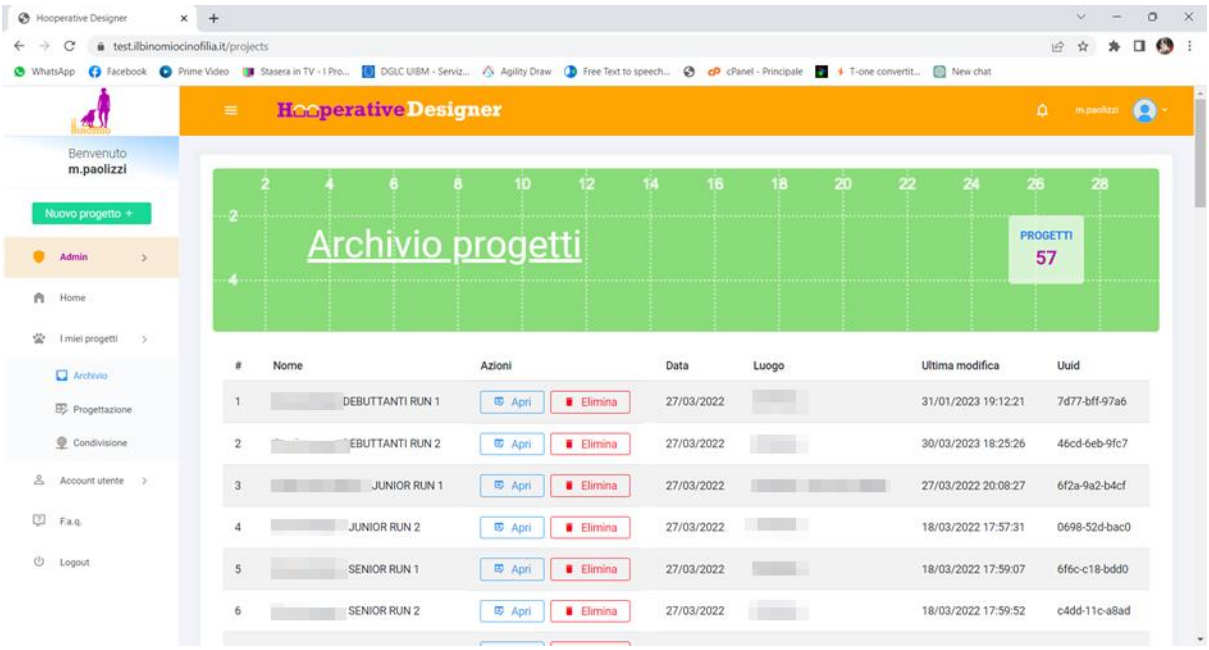

Figure 3: user project repository

4 User profile

Hooperative Designer® allows you to place and orient the equipment (Hoop, Gate, Barrel, Slalom, Tunnel) and the handling area that make up a Hoopers course on a field layout.

Once the course is designed, you can add numbering and visualize the dog's line simulation to ensure the lines are appropriate and the turns are smooth. Alternatively, you can view the simple line connecting the centers of consecutive equipment.

It is also possible to check the distances between consecutive equipment and, especially useful for judges, the distance from the handling area to the farthest piece of equipment.
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Some of the app's features include:

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- Automatically listing the placed equipment;
- Automatically simulating the dog's physical line;
- Viewing the distances between equipment;
- Viewing the distance from the Handling Area to the farthest piece of equipment;
- Saving the designed course;
- Loading designed courses;
- Exporting as an image.

5 Creating a new project

You can start designing a new course in two ways:

- From the main menu, clicking on "my projects\design";
- Clicking on the quick button NEW PROJECT + located above the menu.

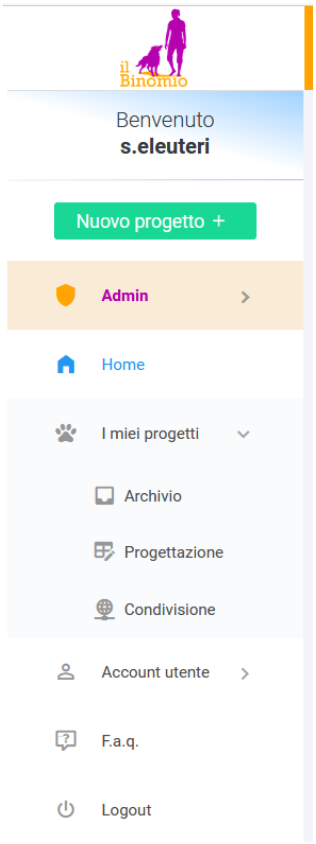


Figure 4: the menu

6 The design page

The design page consists of the following elements:

- The toolbar at the top;
- The toolbox immediately below the toolbar;
- The field with a variable positioning grid;
- The customization and saving fields ("project title block") on the top right;
- The fields for modifying the field dimensions and grid at the bottom right;
- The buttons for background customization ("upload background," "remove background," "fit") below the grid dimension fields;
- The equipment list placed immediately below the grid field.

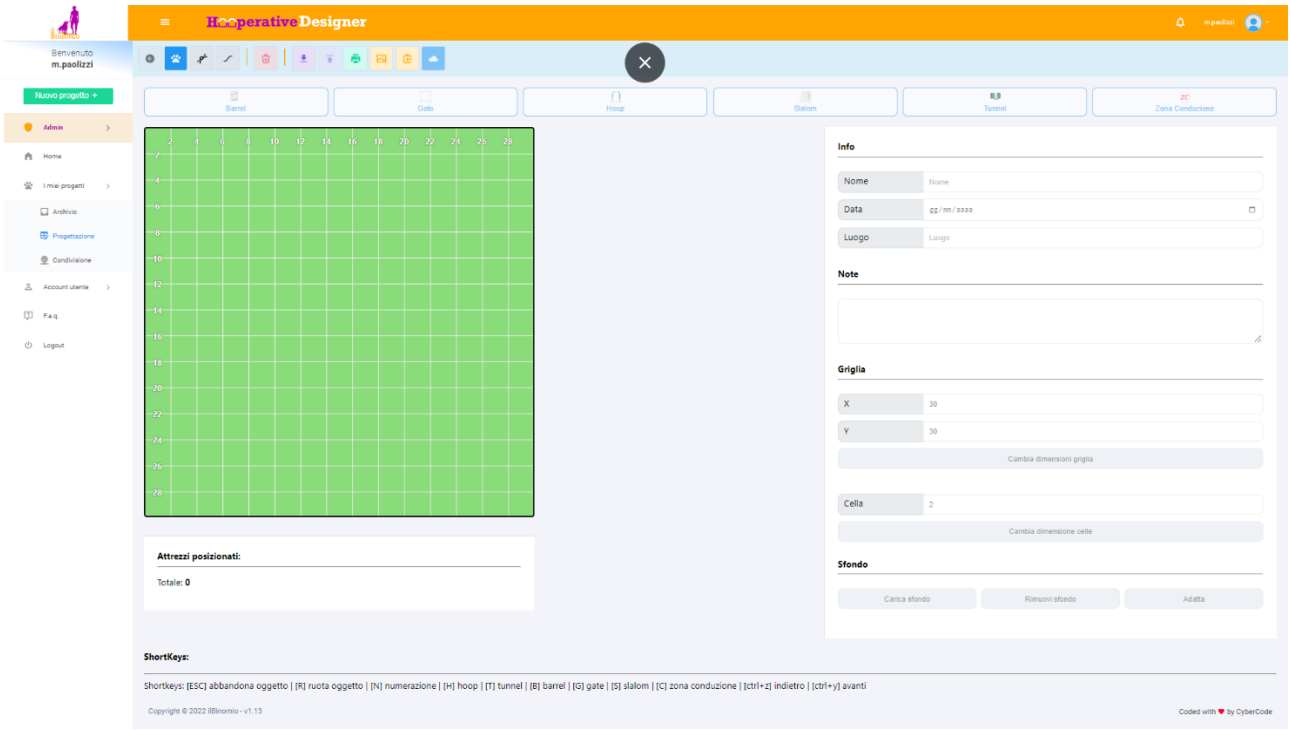


Figure 5: the design page

6.1 Toolbar

The toolbar consists of the following buttons (the function of each button is suggested by a tooltip that appears when the pointer hovers over it).

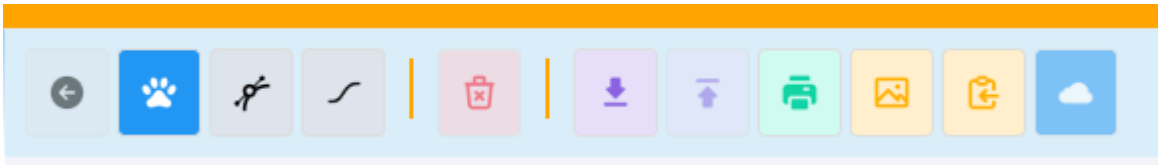
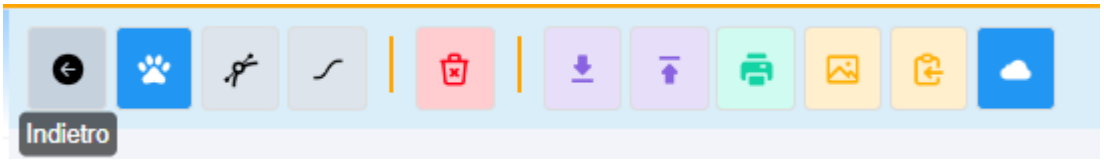
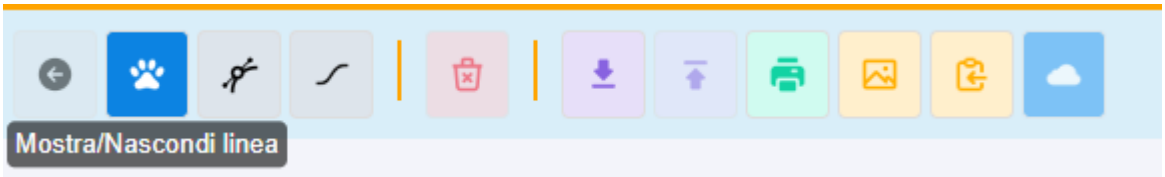


Figure 6: la barra degli strumenti

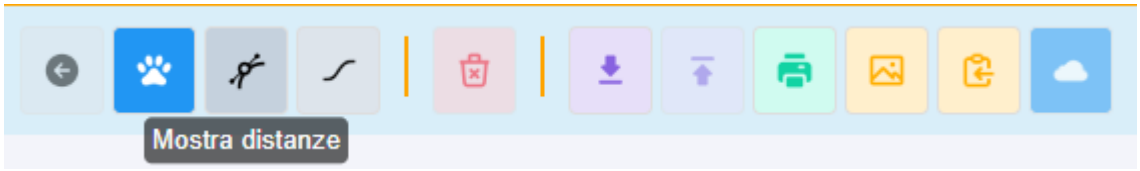
BACK: Clicking this button undoes the last action performed on the field grid (e.g., removes the last placed equipment).



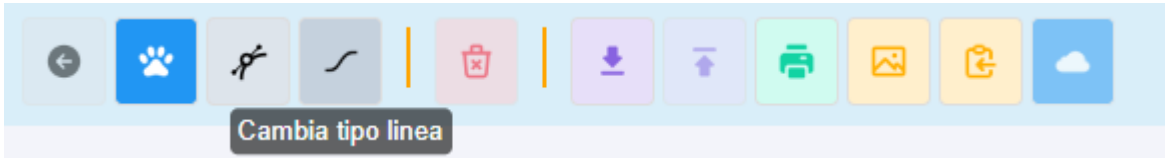
SHOW/HIDE DOG LINE: Once the course numbering is assigned, this button allows you to show (or hide) the simulated dog line; by default, the line is shown when at least two pieces of equipment are placed and assigned their respective numbers.



SHOW DISTANCES: Once the numbering is assigned, you can view the distances (in meters) between consecutive pieces of equipment and the distance from the handling area to the farthest equipment.

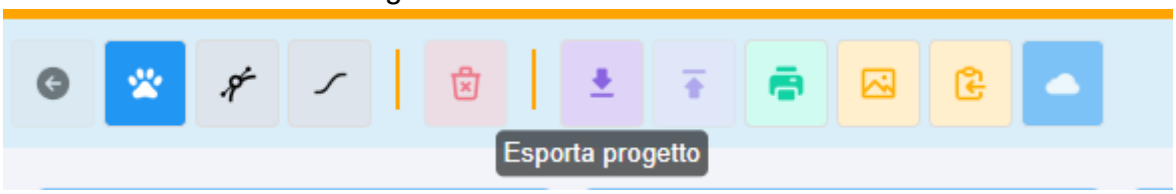


CHANGE LINE TYPE: Allows switching from the simulated dog line view to the line connecting the centers of consecutive equipment ("simple line").

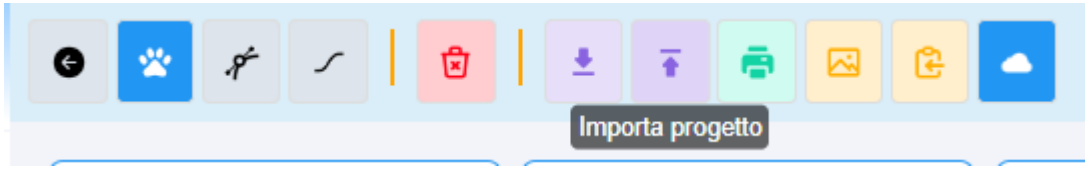


DELETE OBJECT: Removes the selected equipment from the drawing. The same result is achieved by pressing the DELETE key on the keyboard.

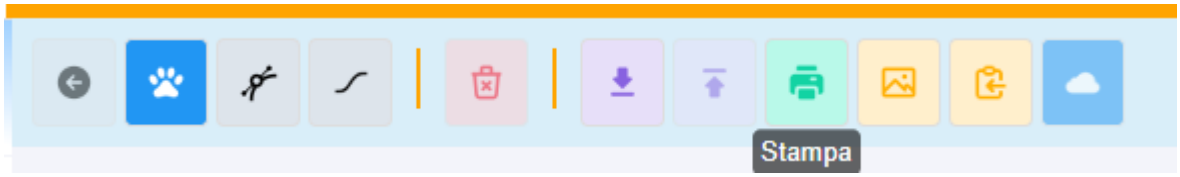
EXPORT PROJECT (down arrow): Allows you to save the current project on the device in use for later loading and modification.



IMPORT PROJECT (up arrow): Allows you to load a previously saved course project (with the EXPORT PROJECT function) from the device in use.



PRINT: Opens the print preview window to send the course to the printer.



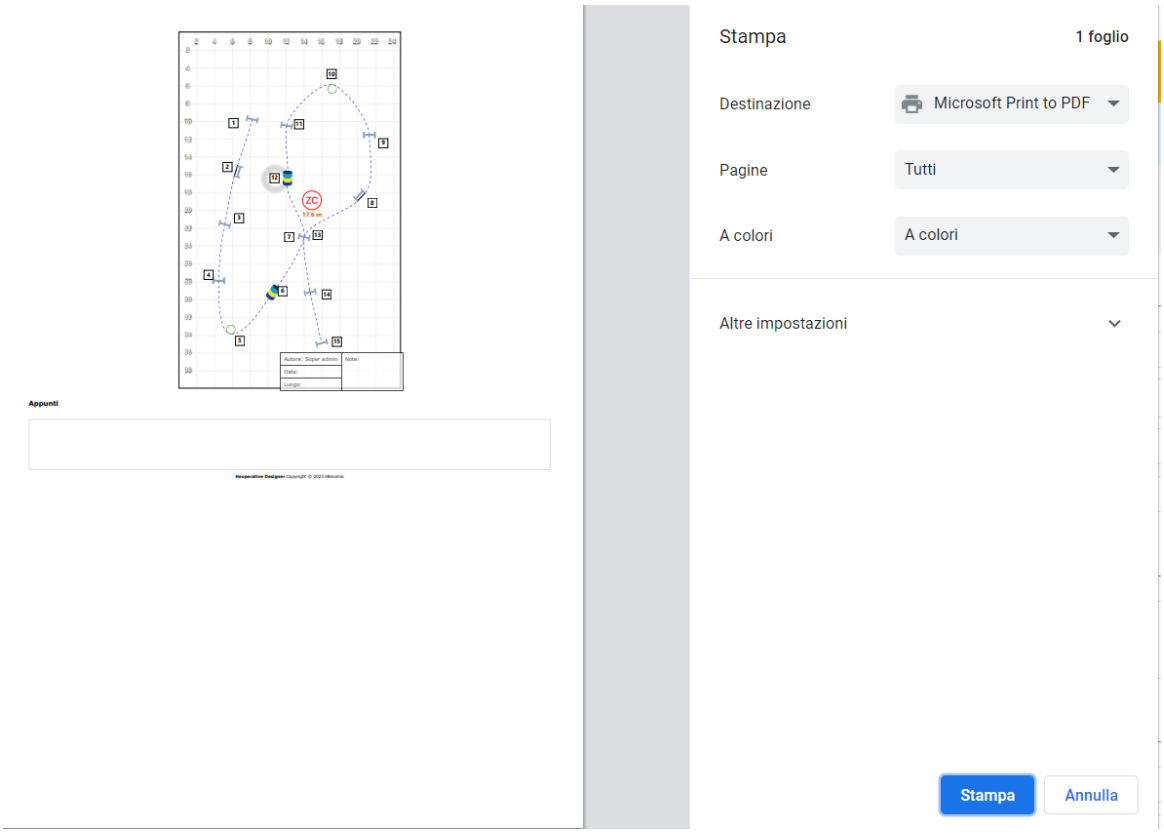
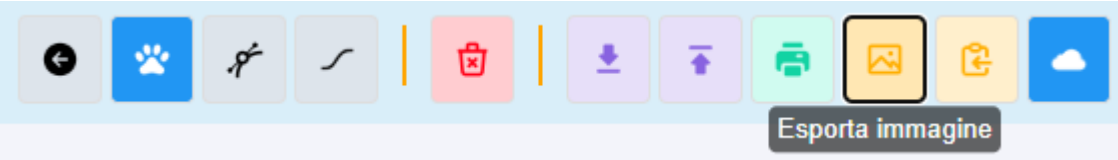
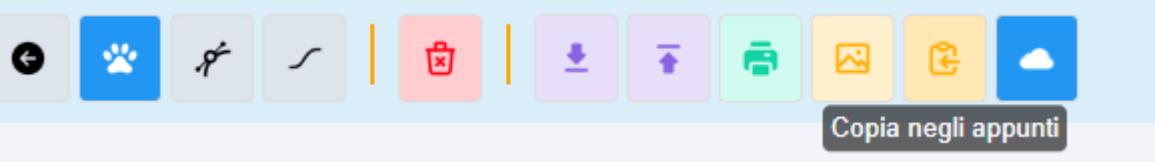


Figure 7: print preview

EXPORT IMAGE: Allows exporting the designed course directly as an image file (.png) on the device in use.

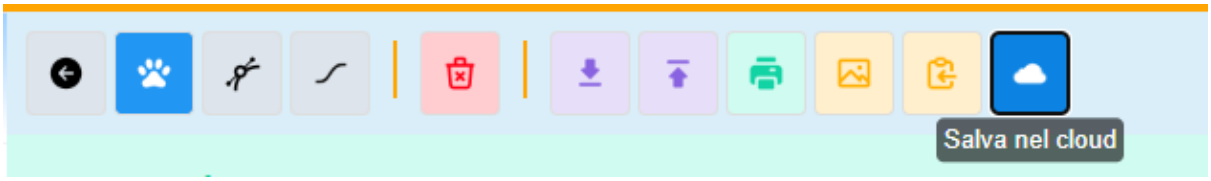


COPY TO CLIPBOARD: Allows copying the course as an image to the device's clipboard for quick pasting into other applications (e.g., to send via WhatsApp or insert into a PowerPoint presentation).



SAVE TO CLOUD: Saves the course project to the user's online archive on the www.ilbinomiocinofilia.it server. This way, the project can be reloaded at any time from any internet-connected device simply by logging into your profile. To save to the cloud, you must fill in all the fields in the "project title block" with Name, Date, and Location (optionally, you can add notes). The title block will appear on the course printout if

printed.



6.2 Toolbox

The toolbox allows selecting the equipment to place, inserting the Handling Area, and numbering.

Figure 8: la barra degli attrezzi

To place a specific piece of equipment, simply click on the corresponding button. Similarly, to insert the handling area and sequence numbers. The toolbox use is necessary when using a mobile device. If you have a physical keyboard, you can use the quick insertion mode by typing the initial of the element you want to insert (e.g., H for Hoop, T for Tunnel, C for Handling Area, etc.).

6.3 Project Title Block

The project title block consists of a set of fields necessary for saving a project to the "cloud" archive:

- **Project Name**: The name by which the project will be searchable in the online archive. It is advisable to use a specific and descriptive name for each project rather than generic labels like "test" or "course."
- **Date**: The reference date of the project in the format dd/mm/yyyy. It can be the date the course was designed or the date of the competition in which it will be used.
- **Location**: Typically, the reference location of the project, such as the competition venue for which it was designed.
- **Notes**: A free text box for notes or comments (e.g., the round of the course).

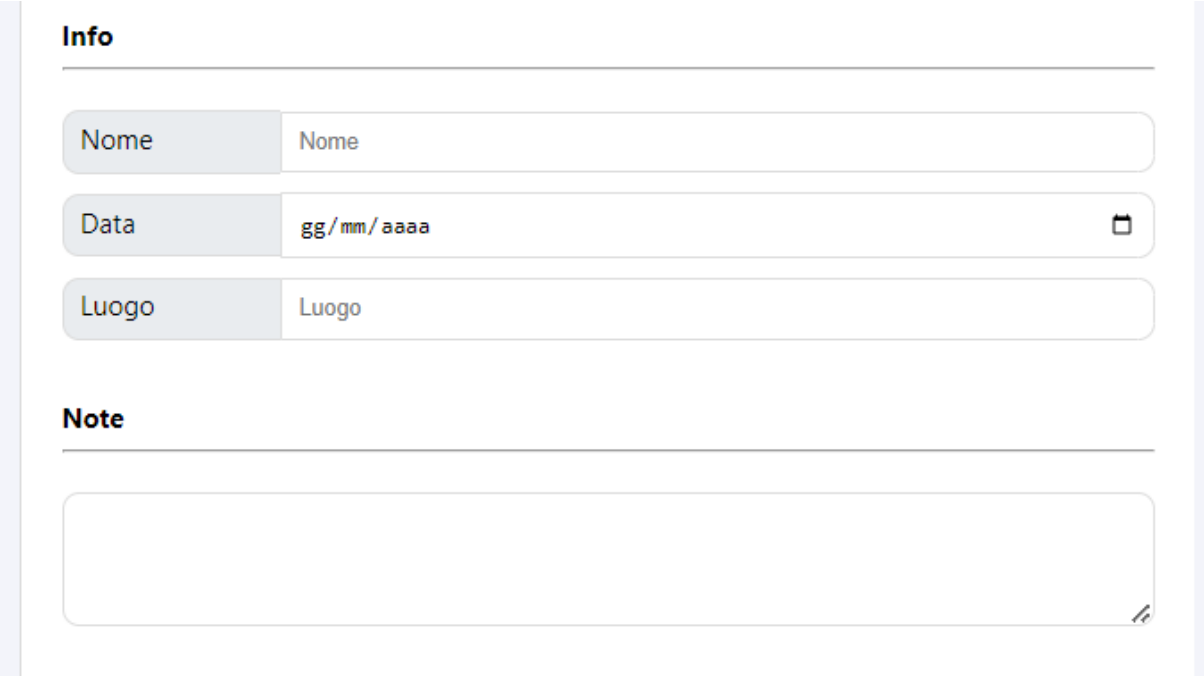


Figure 9: project title block

6.4 Grid Size Panel

The panel allows setting:

- The horizontal size (X) of the field for which you are designing the course;
- The vertical size (Y) of the field for which you are designing the course;
- The reference scale of the grid, i.e., the meters corresponding to a single grid square;
- The "change grid size" button to apply the settings for the field;
- The "change cell size" button to apply the settings for the grid unit;

Default dimensions are 30m x 30m with a 2m grid per square.

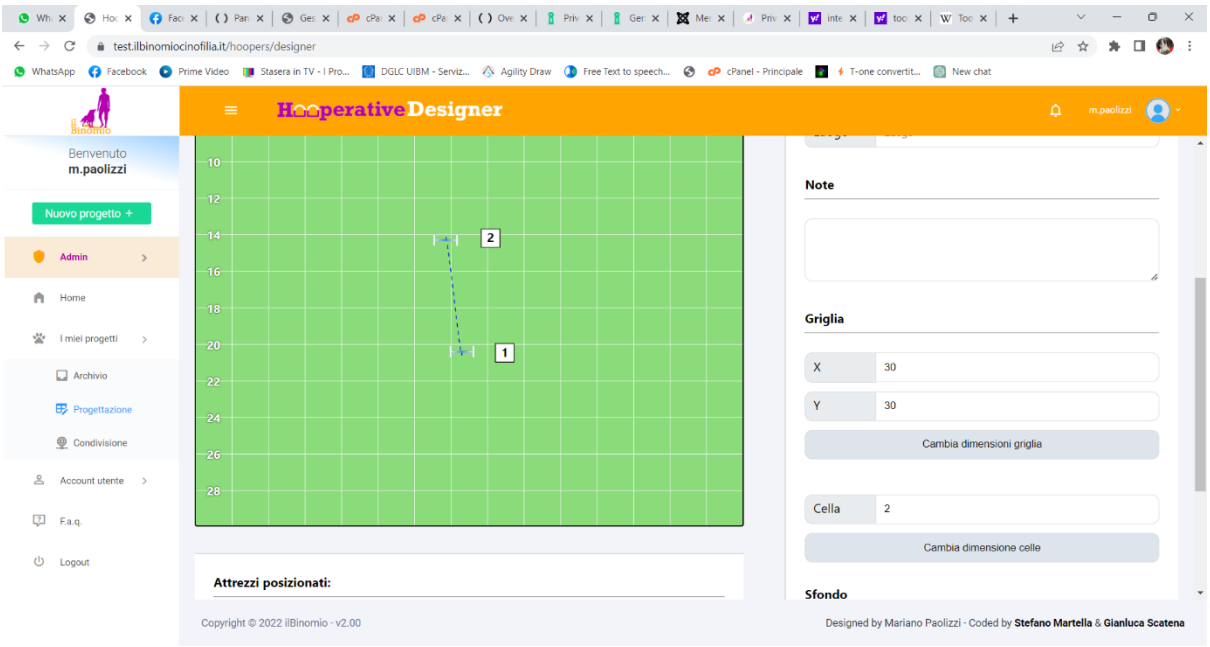


Figure 10: grid size panel

6.5 Equipment List

The "Placed Equipment" box shows in real-time the number of each type of equipment currently placed in the course. The total number of placed equipment is also indicated

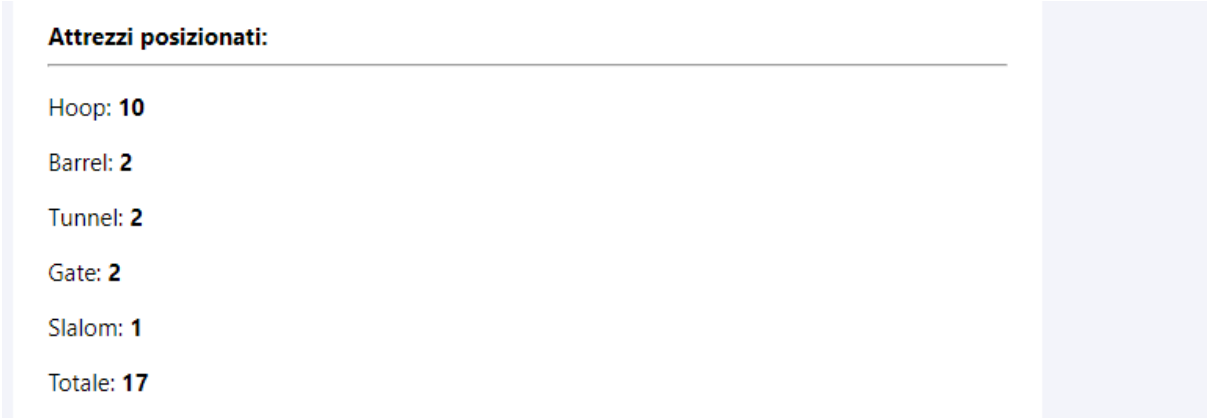


Figure 11: equipment list

7 Designing a Course

Designing a course involves the following steps:

- Placing the equipment on the field
- Assigning numbering
- Checking the dog's line
- Checking distances
- Customizing the project
- Saving, printing, or exporting the course.

8 Placing Equipment

To place the equipment on the field, simply select them from the toolbox.

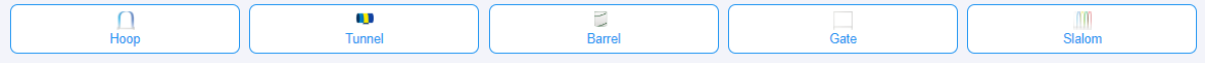


Figure 12: the toolbox

The equipment will be inserted onto the field where it can be easily dragged on the grid to the desired position. Similarly, the Handling Area is placed, and numbers are inserted.

To orient the equipment, just select it (left click or tap on the touch display) as placed on the field: a "rotation dial" will appear, allowing you to finely adjust the angle.

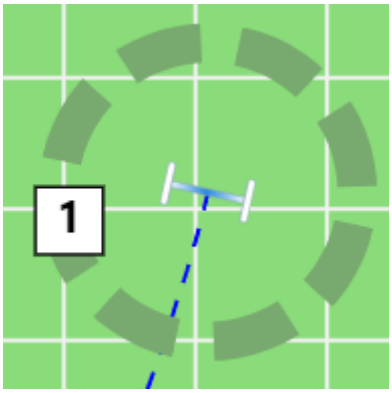


Figure 13:the "rotation dial"

9 Quick Placement of Equipment

Equipment can be quickly placed using the keyboard with the following shortcuts:

- [ESC] discard object
- [R] rotate object
- [N] numbering
- [H] hoop
- [T] tunnel
- [B] barrel
- [G] gate
- [S] slalom
- [C] handling area

This shortcut makes placing equipment especially quick when working from a PC: with one hand on the keyboard and one on the mouse, equipment is immediately inserted by typing its initial (H for Hoop, T for Tunnel… N for number, etc.) and oriented with the mouse using the rotation dial.

.

10 Number Assignment

To assign numbering to the course and possibly view lines and distances, press the N key on the keyboard or the "Number" button on the toolbox.

Figure 14: the number assignment button"

Numbers will be progressively inserted in sequence and should be placed near the corresponding equipment on the field. The connection between number and equipment is established by their proximity on the field. This pairing plays a fundamental role in the dog line simulation. Numbers can be selected and moved just like equipment but cannot be rotated.

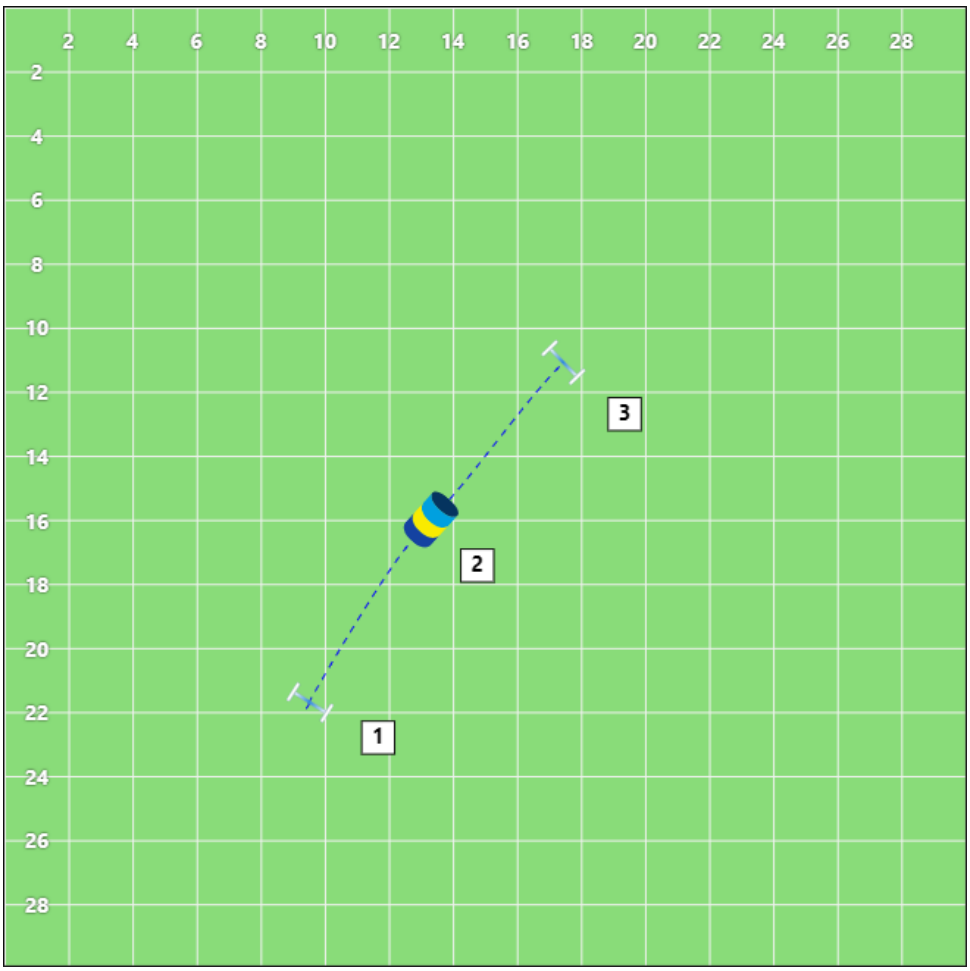


Figure 15: number assignment

It's possible that initially the dog line does not appear as desired: you can adjust it by moving the number symbol around the corresponding equipment. For barrels and gates, where the passing side may be ambiguous, an additional adjustment action is

rotating the equipment around its center using the rotation dial until the desired curvature and trajectory are achieved.

11 Checking the Dog's Line

Once at least two pieces of equipment and their respective numbers are inserted, the system automatically proposes the presumed dog's line based on the equipment placement and assigned numbering. The paw print button on the toolbar allows you to show or hide the line.

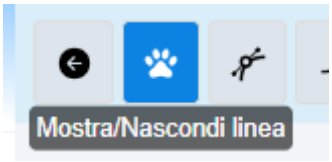


Figure 16:the "show/hide line" button

To achieve the best possible simulation of the line according to the assigned numbering, it may be necessary to adjust three factors:

1. For gates or barrels where the passing side is opposite the numbering side, it may be necessary to adjust the equipment's orientation using the rotation dial to have the line on the desired side.

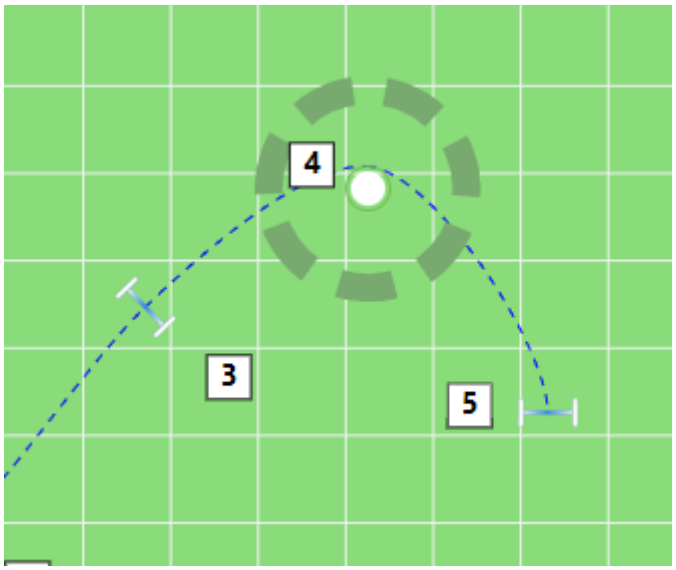


Figure 17: rotating gate or barrel to fix the line

2. To properly connect the line between successive obstacles, it may be necessary to slightly move the number around the obstacle.
3. After these adjustments, the line will provide a useful indication of the smoothness of transitions and turns, and you may need to modify the alignments between successive equipment or their mutual inclination to achieve the best possible course.

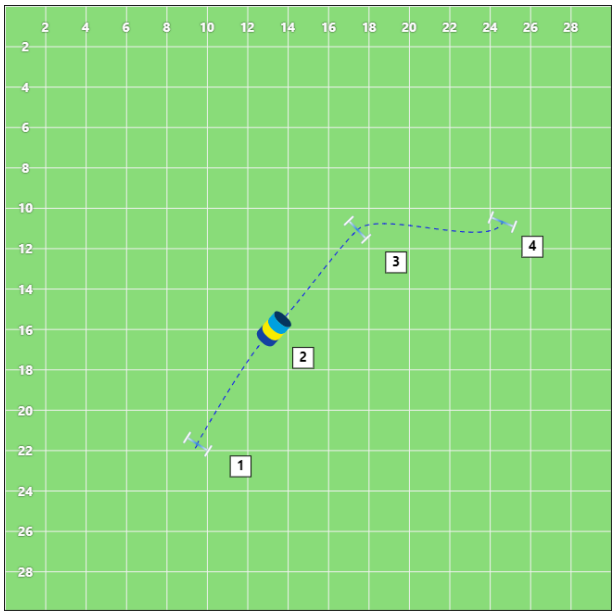


Figure 18: Example of incongrous line

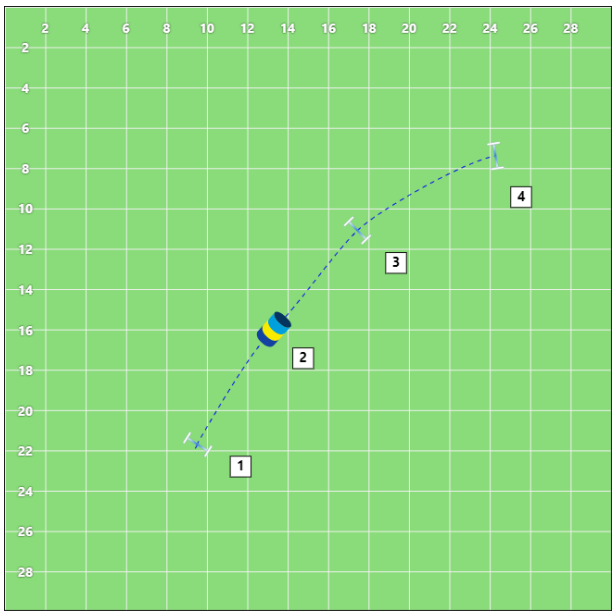


Figure 19: example of fixed line in order to be smooth

12 Viewing the Simple Line

As an alternative to the simulated dog line, it is possible to simply view the sequence of lines connecting the centers of consecutive equipment. To switch between the two line types, click the “change line type” button on the toolbar.

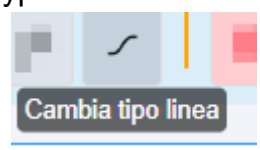


Figure 20: the “change line type” button

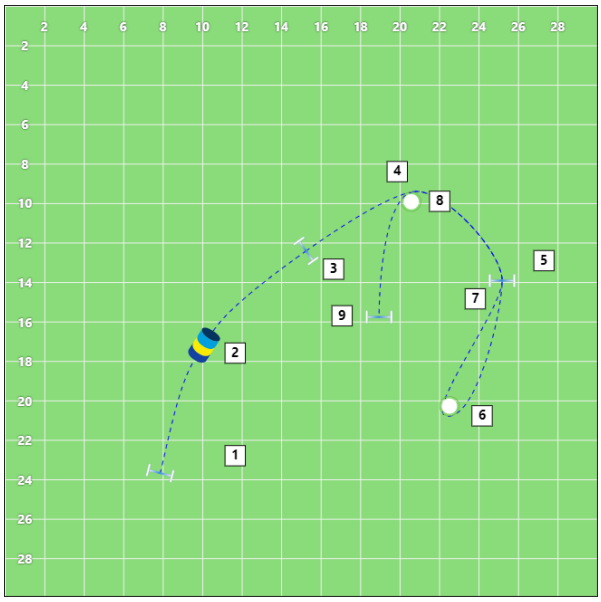


Figure 21: dog line

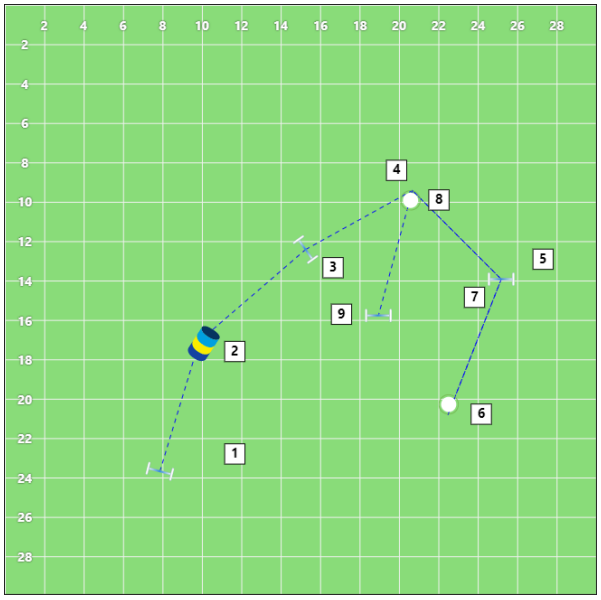


Figure 22: simple geometric line

13 Checking Distances

This function is useful for checking the conformity of a course and compliance with the regulatory parameters of a competition class.

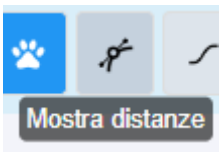
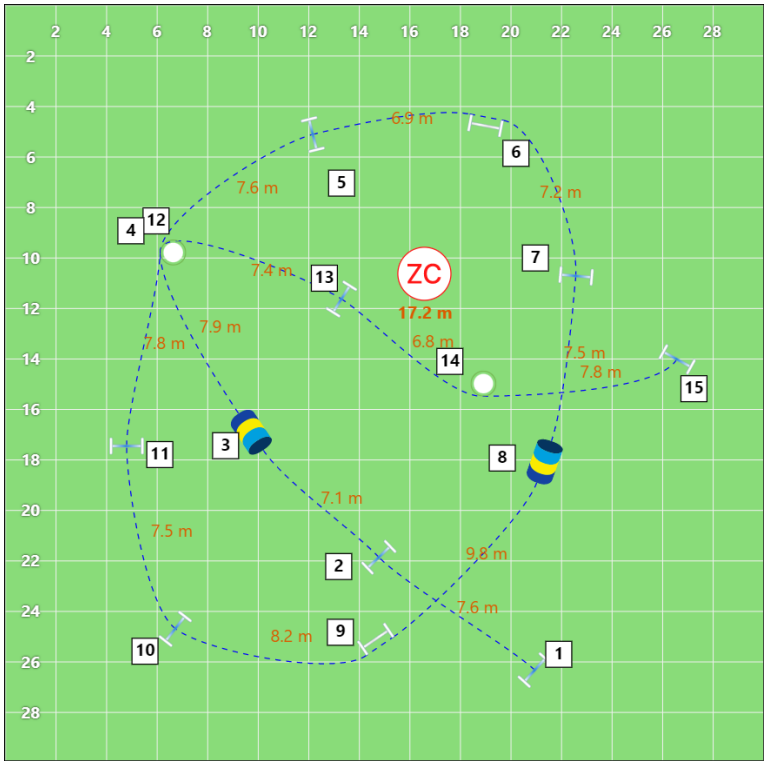


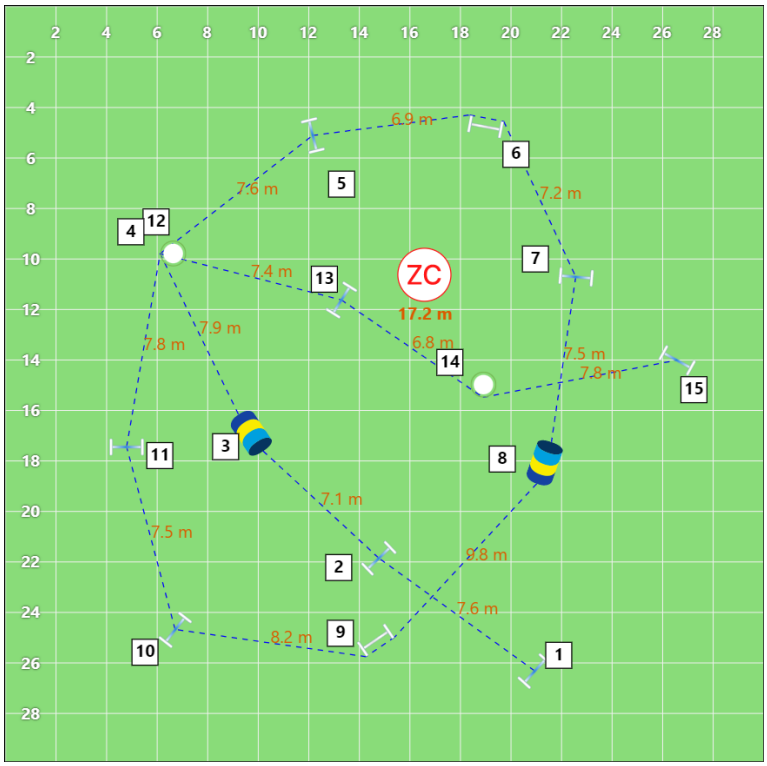
Figure 23: the "show distances" button

Through the "Show Distances" button on the toolbar, you can view:

- The distance between each pair of consecutive equipment
- The distance from the Handling Area to the farthest equipment.



- *Figure 24: checking distances with dog line*



- *Figure 25: Checking distances with simple geometric line*

14 Uploading a Background Image

It is possible to replace the default green background (HEX 89dc79 with white grid) with an image (.jpg or .png) from your device. This function is particularly useful when the course lines need to follow a predetermined figurative scheme or specific theme (e.g., Halloween pumpkin, Christmas tree, etc.) or to insert your logo.
The “Background” panel consists of three buttons:

- UPLOAD BACKGROUND: Allows selecting and importing an image file from your device as the project background.
- REMOVE BACKGROUND: Removes the uploaded background image and restores the default background.
- FIT: Adjusts the grid size to match the dimensions of the uploaded image.

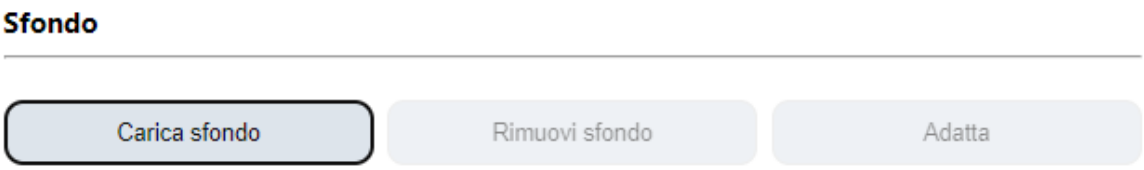


Figure 26: the background panel

Depending on the size set for the course field, it may be necessary to change the size of the image to be imported in advance.

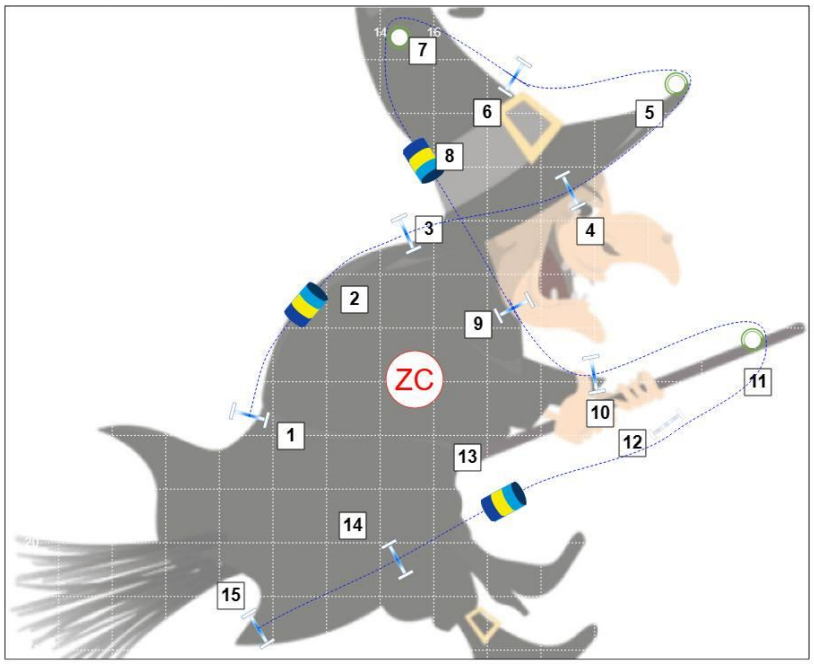


Figure 27: custom background example

15 Exporting the Project Locally

At any stage of design, the course can be saved to the device in use for later reuse.

Local project saving (exporting) is done through the appropriate button on the toolbar:

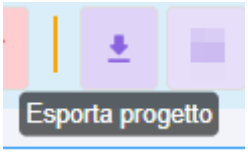


Figure 28: "exporting project" button

Through the usual file management window, you can name the file to be saved (with .json extension) and choose the location to save it.

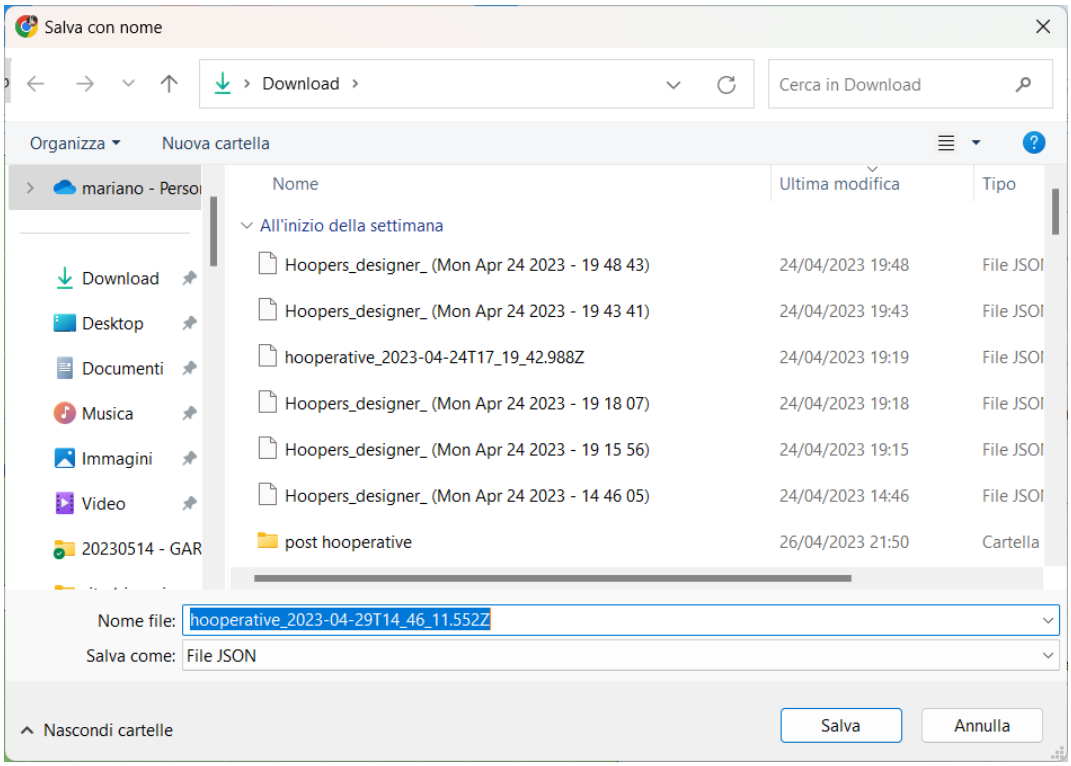


Figure 29: local project save window

16 Importing a Local Project

Locally saved project files (.json extension) can be reimported by pressing the appropriate button on the toolbar.

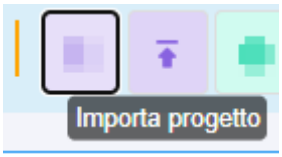


Figure 30: "Importing project" button

Through your operating system's usual file management window, navigate to the saved file's location, select it, and reimport it.

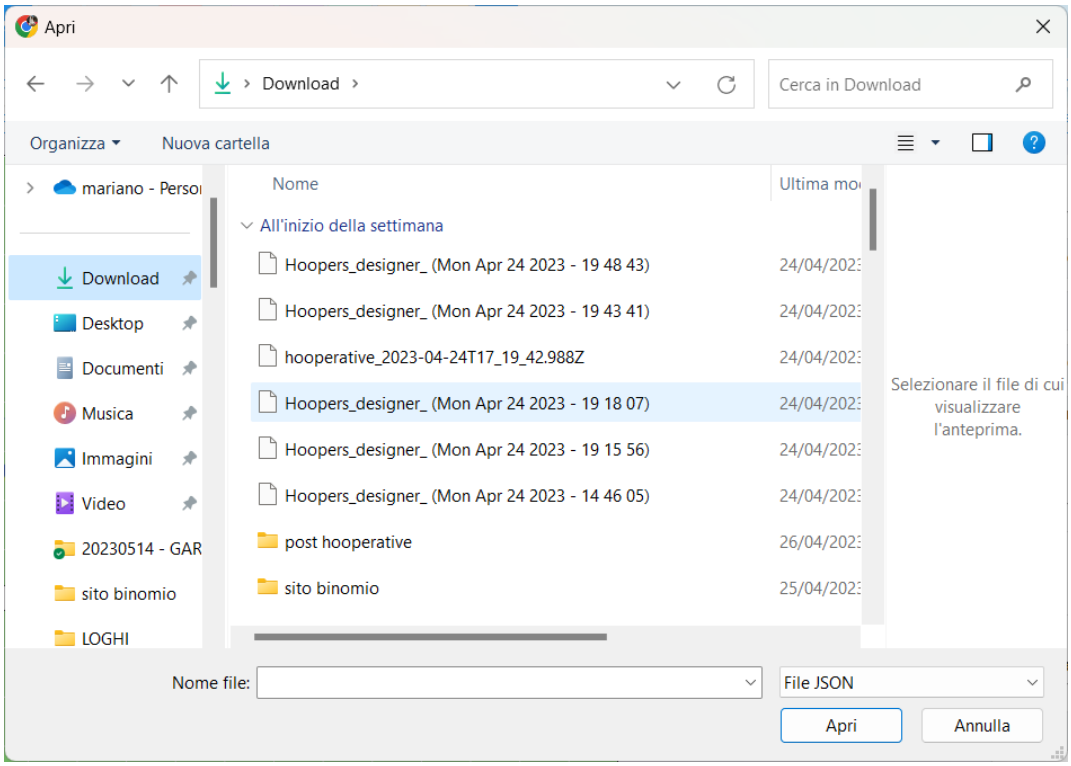


Figure 31: file project opening window

17 Printing the Project

To print the project (on paper or file), click the appropriate button on the toolbar.

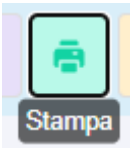


Figure 32: printing button

The usual print preview window will appear, allowing you to modify the printer settings. The project title block with any data and notes entered will be included in the printout.

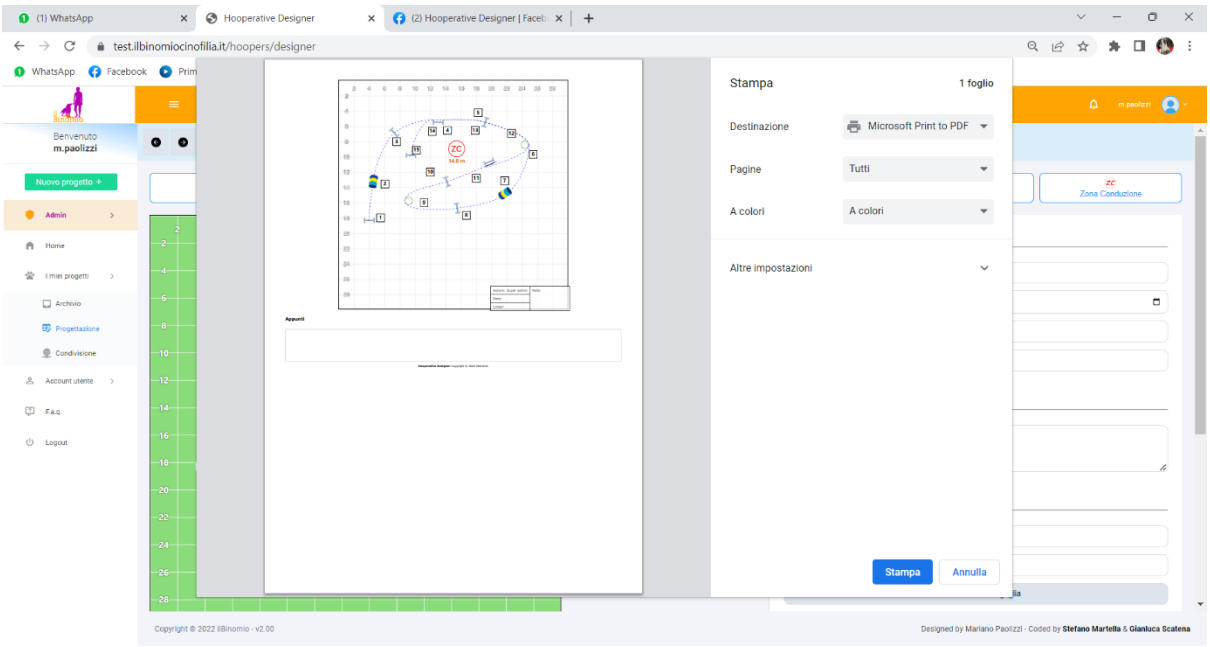


Figure 33:print preview

Any background images uploaded, will be included in the printout.

18 Exporting as an Image

The designed course can be exported as a .png image. Unlike the export function, it won't be possible to reimport the saved file for further modifications. This function aims to make the course immediately usable in one of the most common graphic formats.

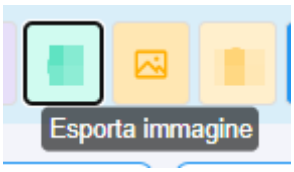


Figure 34: exporting as image button

19 Copying the Course to Clipboard

The designed course can be copied as an image to the device's clipboard for quick use in other applications (e.g., chat or image editing software) using the usual "paste" function of the operating system.

The image of the drawn path can be copied to the clipboard by pressing the corresponding button located on the toolbar:

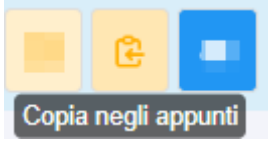


Figure 35: "clipboard copy" button

Once the button is pressed, the application will confirm the image's availability in the clipboard by displaying the message "Canvas copied to clipboard" for a few seconds.

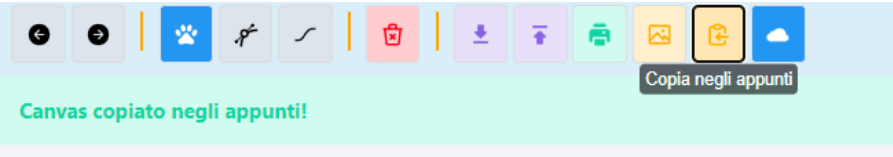


Figure 36: copy confirmation message

20 Sharing the Project

One of the most unique and original features of Hooperative Designer® is the ability to quickly and easily share your projects with other users. To share a course project with others, click the "sharing" item from the "my projects" menu.
The page is divided into two sections La pagina è articolata in due sezioni:

1. I progetti di cui l'utente è proprietario e cha ha condiviso con altri ("i miei progetti condivisi Projects owned by the user and shared with others ("my shared projects");
2. Projects shared with the user by others.

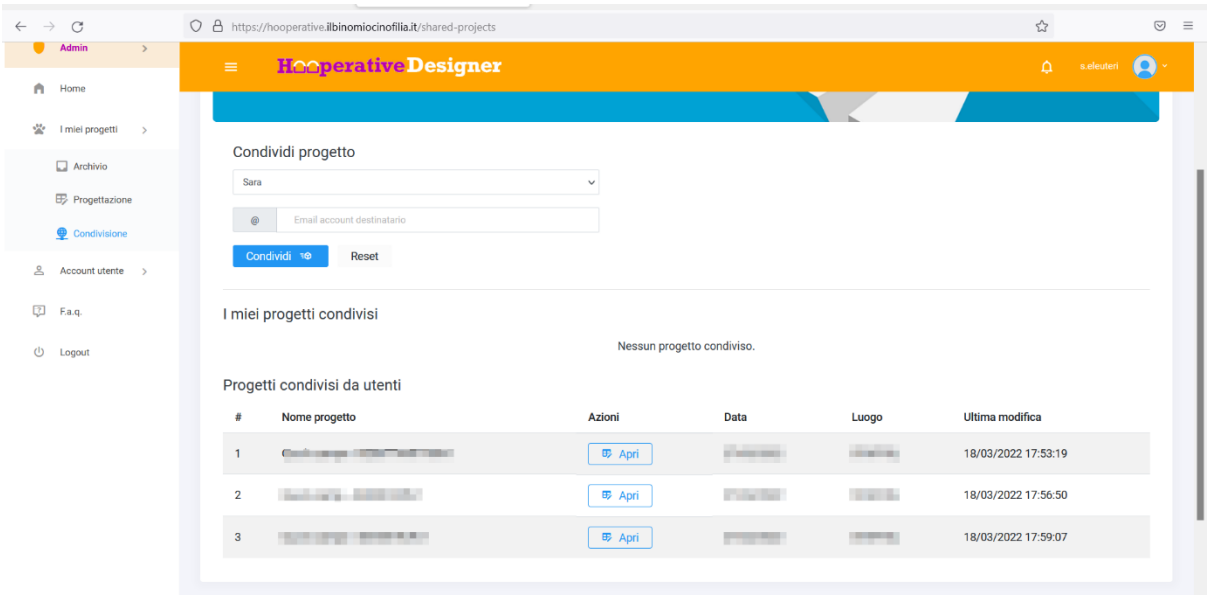


Figure 37: project sharing

By default, projects shared by other users can only be viewed but not modified (read-only mode). However, you can share a course allowing modification by checking the "write permissions" box. To share a project, select it from the dropdown list (listing all your projects saved online), specify the recipient's email, and click the "share" button.

Sharing can be removed at any time by clicking the “cancel sharing” button. Once shared, the other user can view it in their archive.

This function is particularly suitable for educational purposes (collective study or analysis of a course), situations where official courses are subject to approval by a supervisor, or simply situations of exchange between instructors and students.

21 Backward Compatibility

Hooperative Designer® version 2.0 brings significant innovations compared to the previous version (1.3 n.d.r) in terms of optimizing algorithms and code, particularly regarding equipment placement and line representation (the simulated dog line and the “new” simple line).
This improvement may require re-defining the lines with the usual methods when opening projects created with previous versions:

- Moving the number around the corresponding equipment;
- Rotating the equipment around its center.

Once the lines are adjusted, the project can be saved again, and no further intervention will be needed. Adjusting the lines to the new version takes less than a minute.

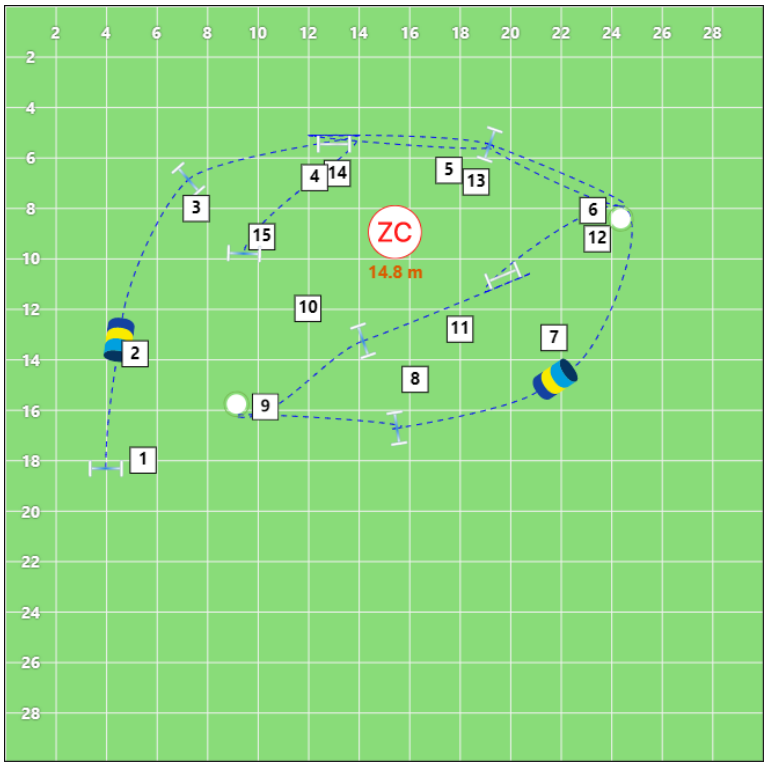


Figure 38: path imported from an earlier version

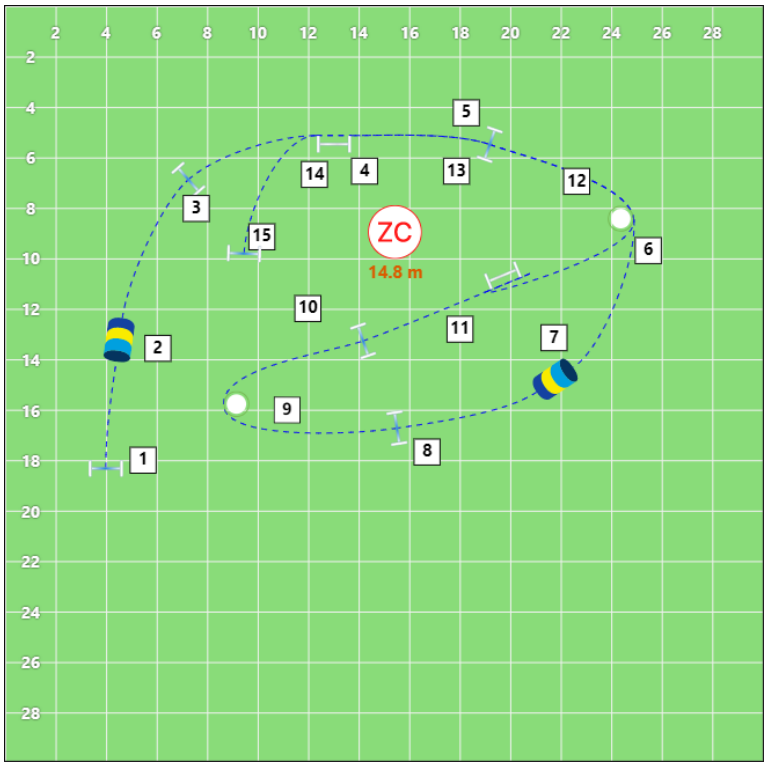


Figure 39: the same route after adjusting the lines

22 HOOPERATIVE DESIGNER® PRO

Hooperative Designer® PRO is a version equipped with some advanced features for designing, checking, and setting up courses. Compared to the standard version, it has the following characteristics:

- Manual dog line editing;
- Ability to export the list of placed equipment;
- 3D simulation and virtual walkthrough.

22.1 Manual Dog Line Editing

As in the standard version, when the course numbering is inserted, the dog's line between two consecutive pieces of equipment is proposed. However, the PRO version allows you to manually intervene in detail on each line segment. To do this, simply act on the "handles" that appear in the middle of each line segment.
The handles can be moved in any direction along the line itself to adjust its trajectory and curvature radius.

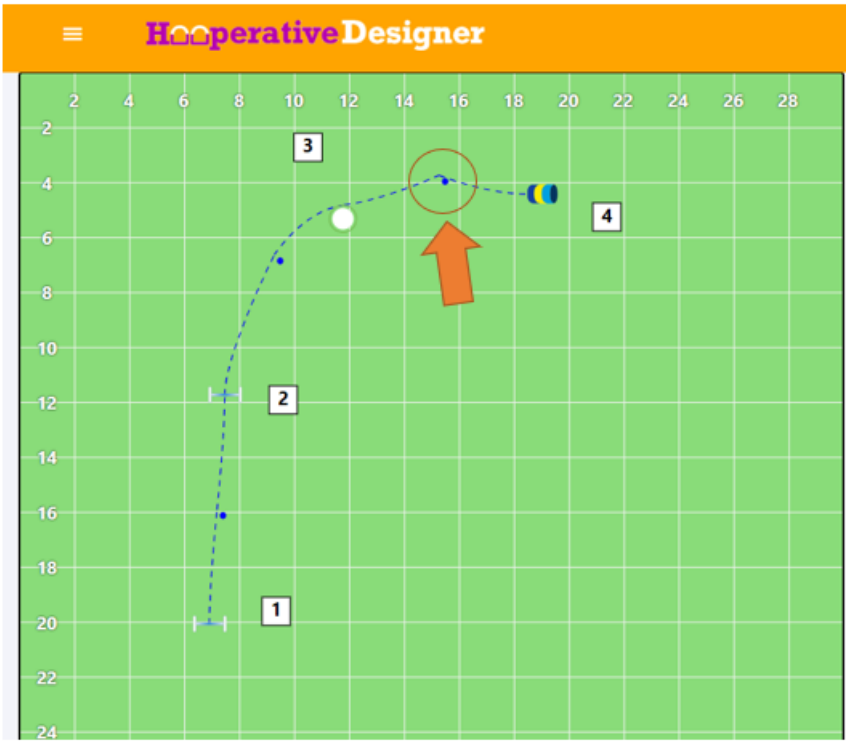


Figure 40: The "handles" for manual adjustment of the dog line

The adjustments through the placement of the number around the corresponding equipment and the rotation of the equipment itself remain unchanged for refining the dog's line.

22.2 Exporting the Equipment List

As equipment is placed, Hooperative Designer® updates the list, making it immediately available in the box below the course and transferring it to the printout in competition format. This way, at the time of course setup, the number of hoops, barrels, gates, tunnels, and slaloms to prepare is readily available.

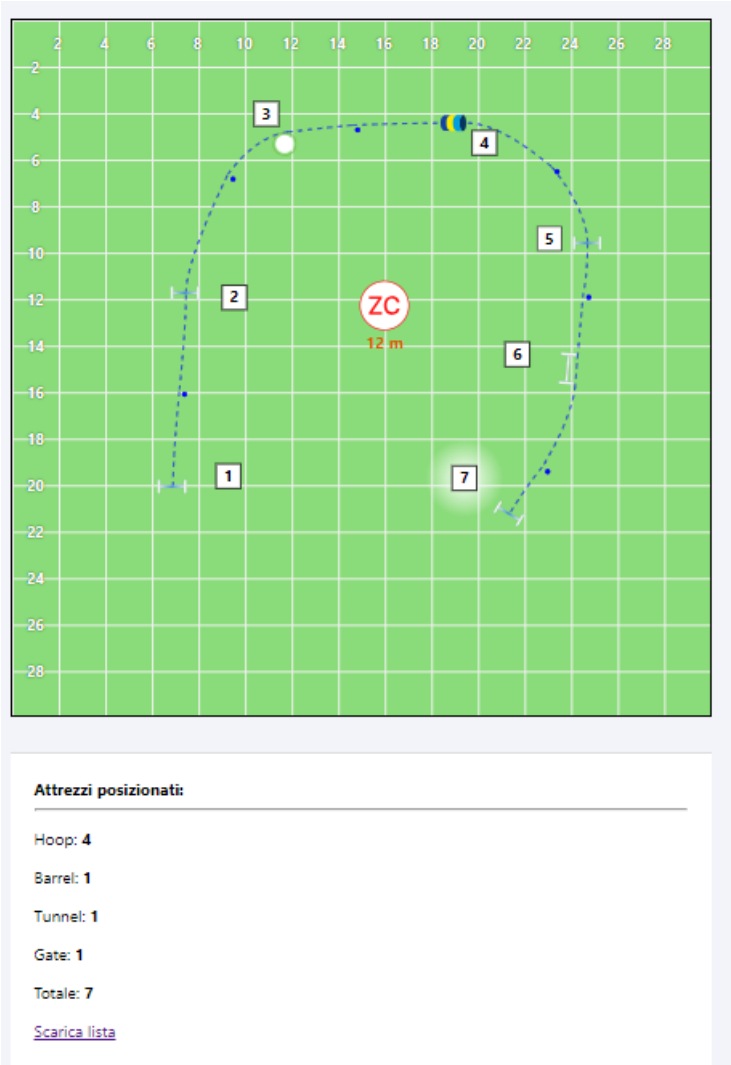


Figure 41: list of tools placed

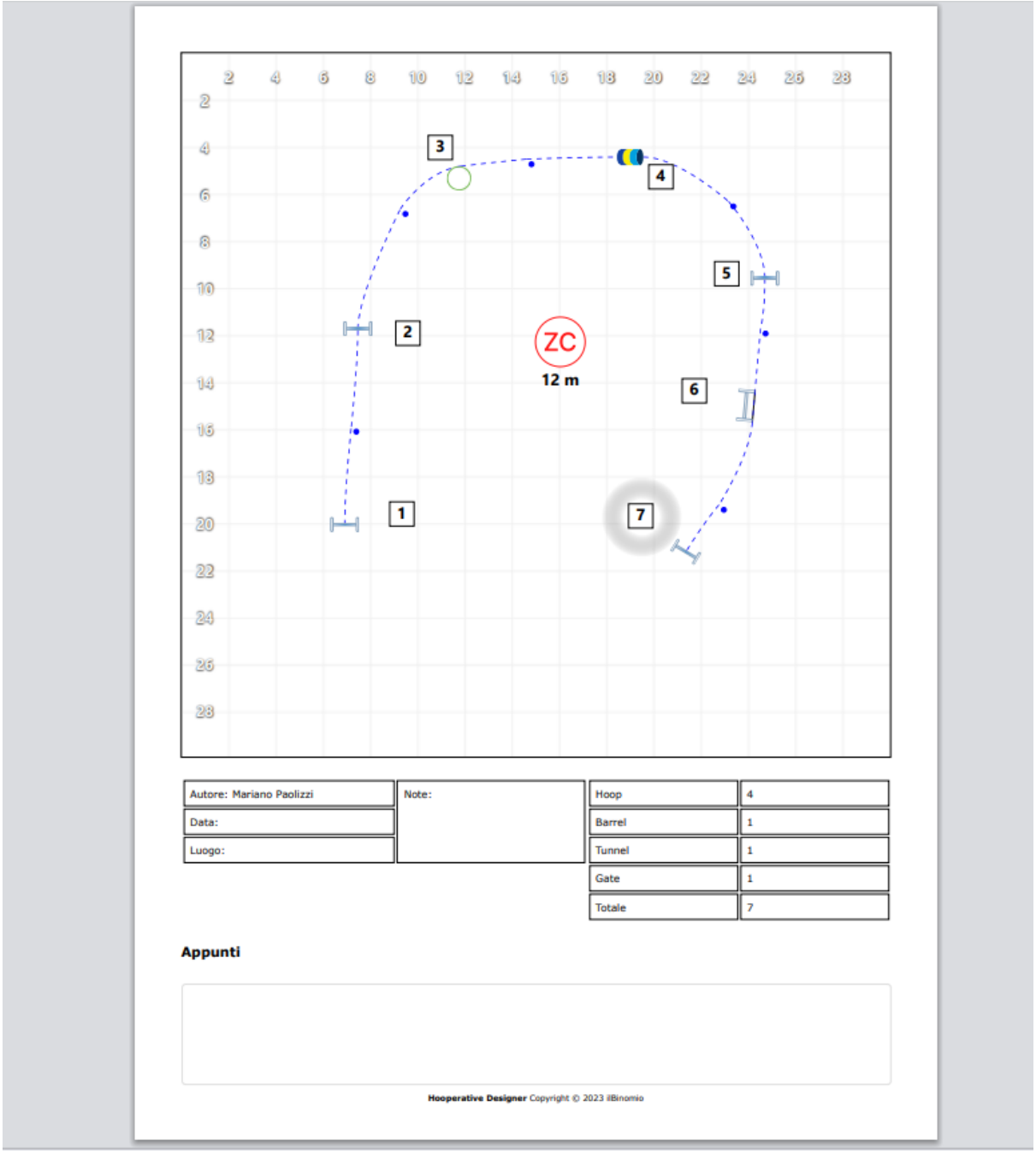


Figure 42: list of tools in the "race" format printout

Hooperative Designer® PRO also allows exporting the equipment list to a text file, useful for coordinating the competition staff without providing the course layout. The export is done through the appropriate link located below the context list labeled “DOWNLOAD LIST.” Clicking the link saves the list of placed equipment grouped by type to the default download folder. The file can be opened and customized with any text editor.

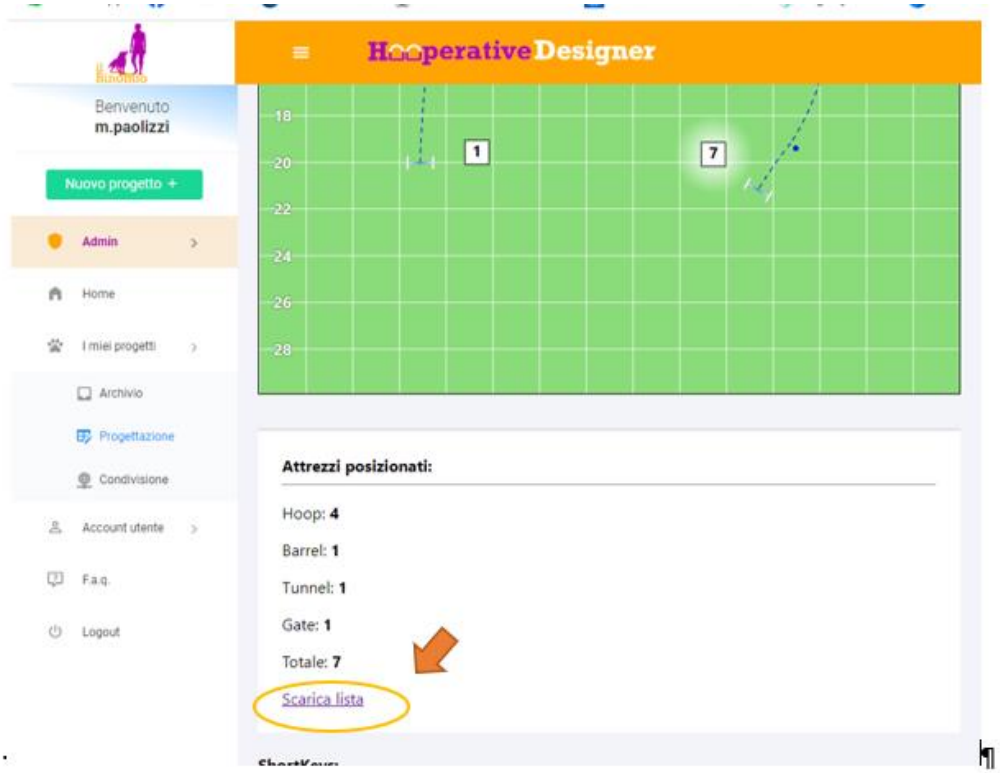


Figure 43: Exporting the tool list

Figure 44: text file containing the list of exported tools

22.33D Simulation and Virtual Walkthrough

The 3D function allows visualizing a three-dimensional representation (in space) of the designed course to realistically check its design characteristics. It is also possible to change the viewpoint in space, performing a real virtual walkthrough.
To switch from designing to 3D simulation, simply click the 3D button at the end of the toolbar.

Figure 45: the 3D button

The 3D view is very simple and effective: each piece of equipment is graphically represented in space and identified by the numbering assigned during design. For better visibility, when the pointer is placed on an equipment, the corresponding number is displayed in the space above.

Figure 46: "3D" view

- The controls are essential: on the left are three buttons respectively with the function of:

- close the "3D" view and return to the design;
- return the corrected view (which may have been rotated, translated and zoomed) to an orthogonal reference view;
- remove (and restore)the grid.

On the right is the Cartesian reference on which you can act to change the view in space.

Using the mouse, you can perform a virtual reconnaissance of the path:

- left click and up/down movements to change the angle between the path plane and the horizontal plane;
- left click and right/left movements to rotate the view around the vertical axis;
- wheel to vary the zoom;
- right click to translate the plane..

Figure 47: virtual reconnaissance

23 HOOPERATIVE DESIGNER® CAMIS EDITION

This is an advanced version of Hooperative Designer developed in collaboration with Renata Camis.

This special edition retains all the appreciated features of the PRO version and introduces advanced tools designed to further enhance the experience of designing Hoopers courses.

CAMIS EDITION features include:

- Ability to insert avatars of the handler and dog in both 2D and 3D views. The avatars are none other than Renata Camis and her remarkable Levi.
- Multilingual localization: the interface can be localized in Italian or English;
- Ability to select the automatic dog line mode (as in the base version) or the manual editing mode (specific to the PRO version);

- Automatic project saving;
- Viewing the name of the user sharing a project;
- Notification of a new project shared by another user;
- Ability to use projects as templates;
- Ability to insert directional arrows

23.1 Adding Avatars

To enhance the realism of the 2D course representation and the 3D simulation, this version allows inserting the representation of the dog and handler. Insertion occurs in the design mode (thus in the 2D project representation) and is rendered in the three-dimensional simulation.
The handler and dog are the avatars of Renata and Levi.
For insertion, use the appropriate buttons (available exclusively in the Camis edition) on the toolbox.

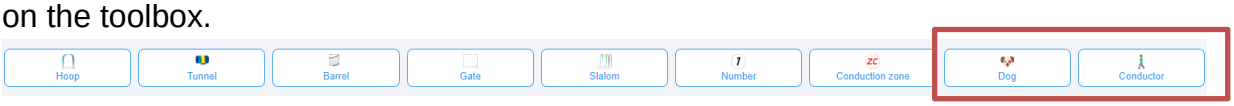


Figure 48: buttons for inserting avatars

Once inserted, the avatars will appear in all project representations:

- Project export as an image;
- Competition format printout;
- Local saving (“export project”).

Repositioning avatars is only possible in design mode, i.e., in the two-dimensional representation..

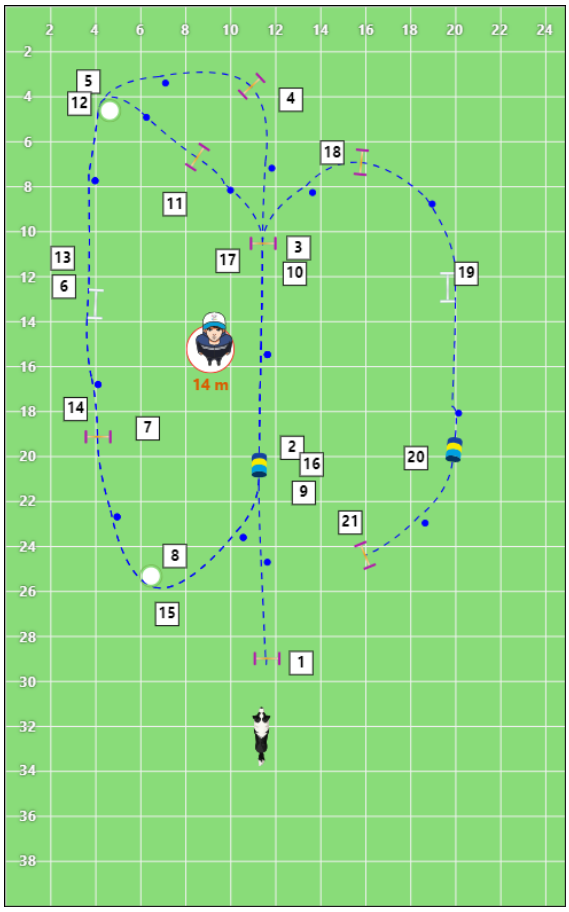


Figure 49: 2D project with dog avatar and handler

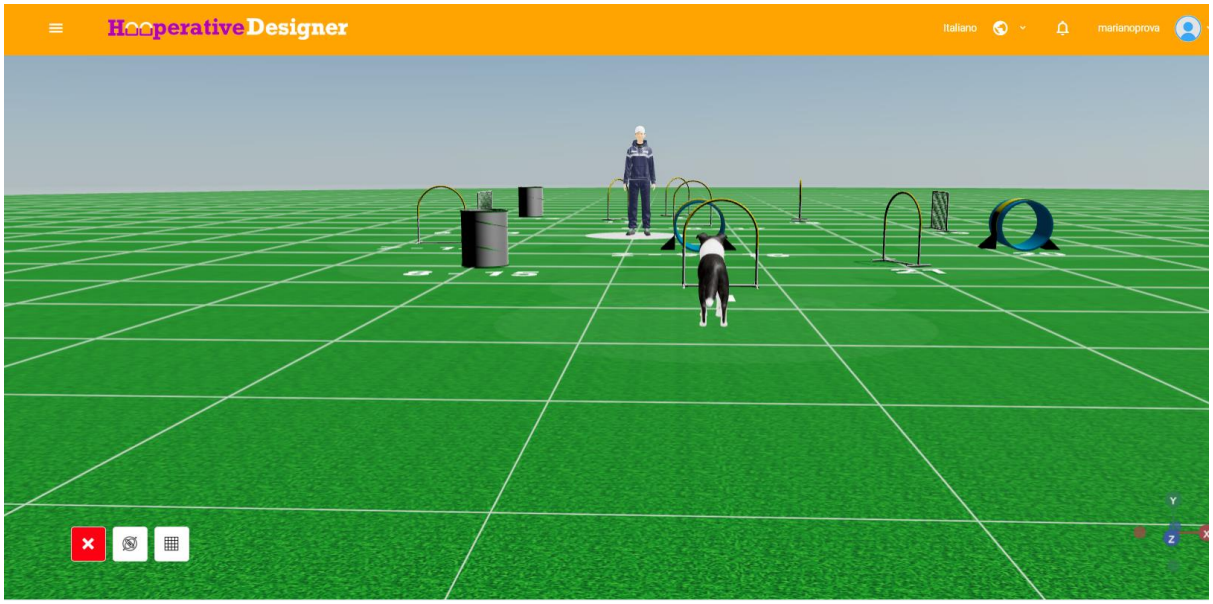
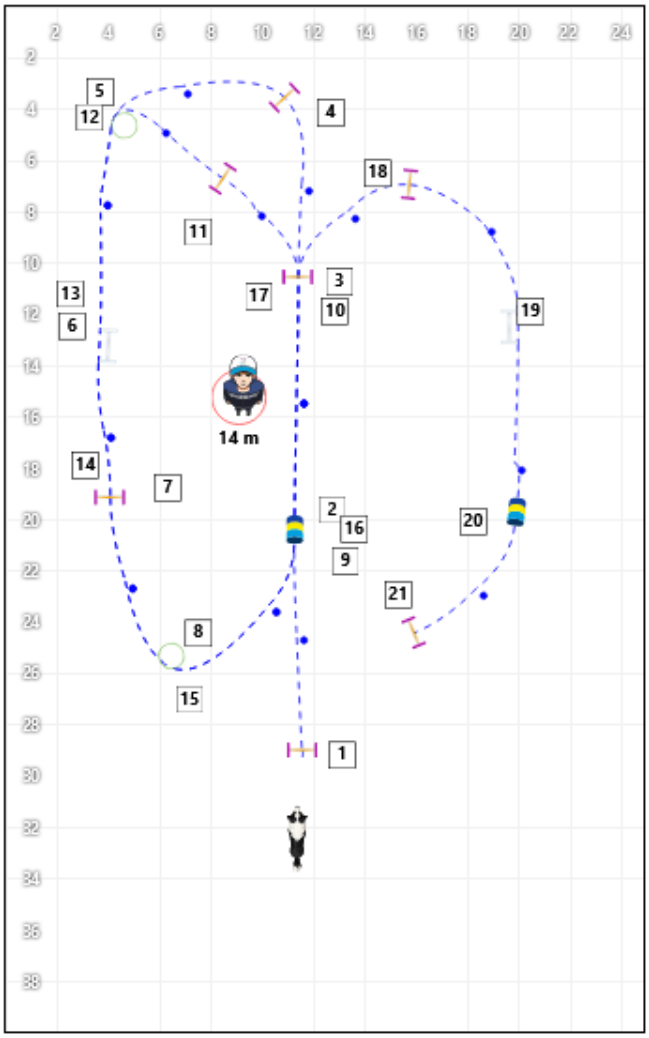


Figure 50: Three-dimensional rendering of dog and handler avatars



Autore: Mariano Prova	Note: note	Hoop	7
Data: 20/4/2024		Tunnel	2
Luogo: qui		Barrel	2
		Gate	2
		Numeri	2
		Totale	15

Figure 51: representation of avatars in the print layout by race

23.2 Changing the User Interface Language

The CAMIS EDITION allows the user interface to be localized in two different languages:

- Italian;
- English.

The language can be changed through the appropriate menu located on the page header bar.

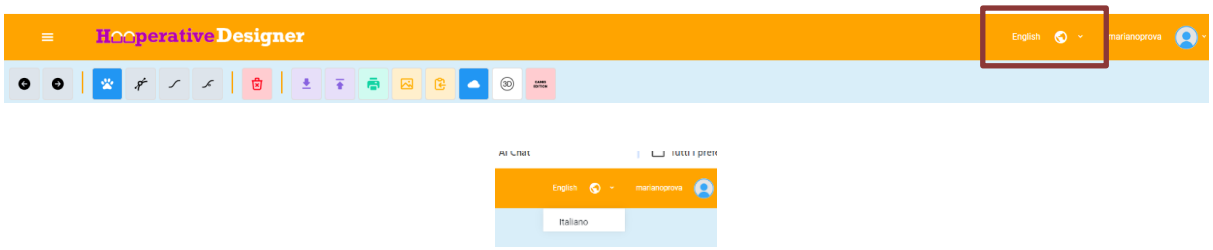


Figure 52: Changing the language of the user interface

It is advisable to change the language BEFORE starting a design: changing it during a project may result in unsaved data loss.
The system issues a warning to prevent the loss of work progress.

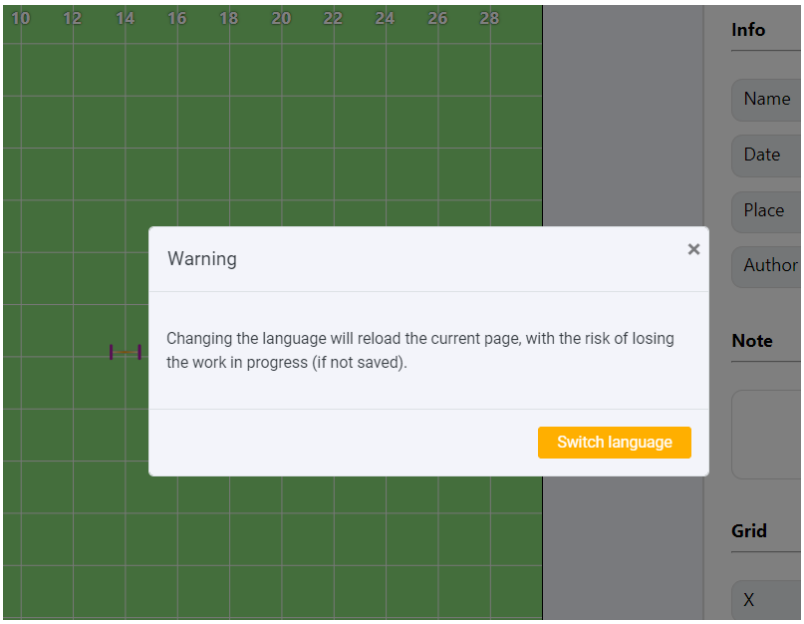


Figure 53: notice regarding request for language variation during a design

23.3 Changing the Dog Line Representation Mode

One of the main support functions for course design is the representation of the “dog line” in addition to the traditional line connecting the centers of the equipment.
In its base version, Hooperative Designer prioritizes simplicity and quick drawing, offering a completely automatic dog line simulation without user intervention (cfr.section 11).
In the PRO version, the user must refine the actual trajectory between the equipment based on their design by adjusting the “handles” (see section 22.1). The CAMIS EDITION combines both features, allowing the user to choose between the two modes, providing great design flexibility. The choice is easily made via a specific button labeled “show/hide manual line” on the toolbar.

Figure 54: the "show/hide manual line" button

23.4 Automatic Project Saving

In Hooperative Designer "CAMIS Edition," the value of the design work is further recognized and safeguarded through advanced data management features. Besides the ability to manually save projects both locally and in the cloud, this edition introduces an automatic saving system.

When the user stops interacting actively with the interface for a ten-second interval of inactivity, the system automatically saves the current project. This mechanism ensures that every change is preserved without requiring explicit actions from the user, preventing data loss in case of sudden interruptions or accidental window closures.

Automatic saves can be recovered within the user archive and are recognizable by the name composed of the string “Auto Save” and the date in yyyy/mm/dd format.

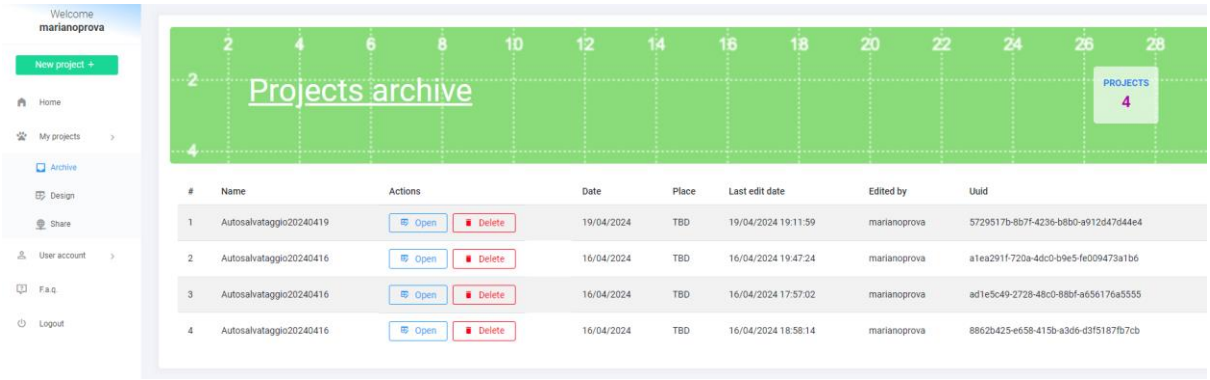
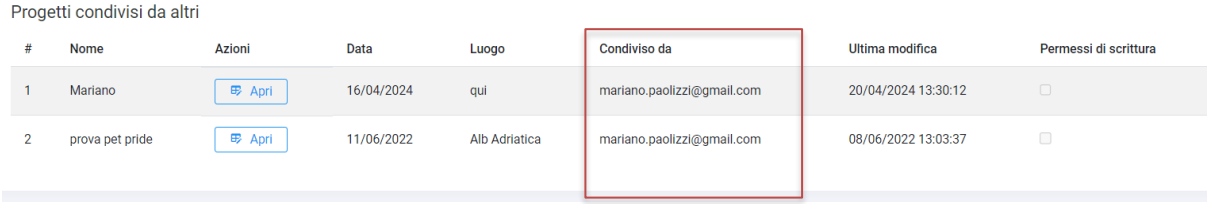


Figure 55: autosave

Unnecessary automatic saves can be deleted by clicking the appropriate button.

23.5 Viewing the User Sharing a Project

The visibility of shared projects within the archive has been improved by explicitly showing (column header “shared by”) the email address of the user who initiated the sharing.



23.6 Notifications

In Hooperative Designer, the functions of sharing and exchanging projects between users add significant value, finding effective application in education and creating course repositories and libraries. Recognizing the importance of these collaborative interactions, the functionality has been further enhanced to improve user experience. The new version of the software introduces an advanced real-time notification system designed to keep users immediately informed when a project is shared with them. This implementation allows the recipient to know when another user sends them a course, facilitating prompt viewing, review, or further modification of the shared material.

This feature is particularly valuable in educational and training contexts where rapid dissemination and resource exchange can greatly enrich the learning or training process. The real-time notification system ensures that project sharing is not only functional but also immediate, making Hooperative Designer an even more powerful and integrated tool for the user community.

In the CAMIS edition, each user can be aware of new shared courses through the bell-shaped notification icon located on the window header. In case of new shared projects, the bell will indicate the number. Clicking the icon will show the details related to the user sharing and the project name.

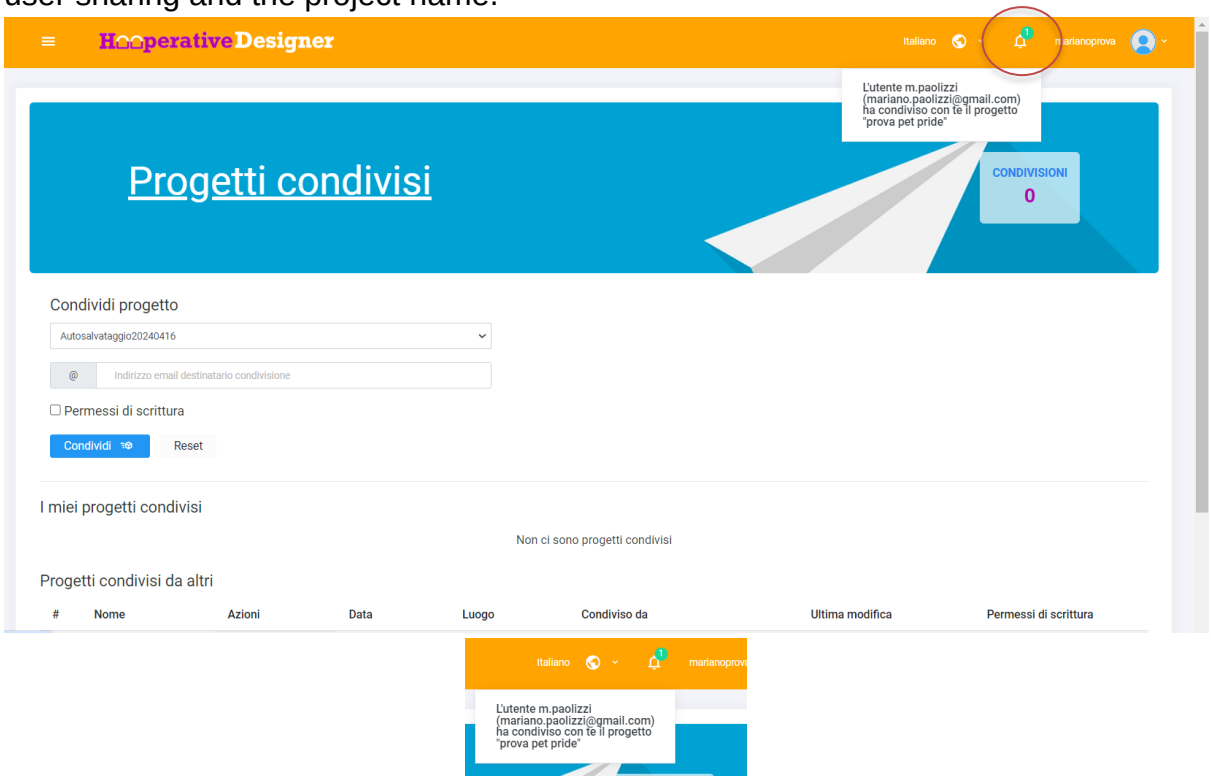


Figure 56: Notifications icon

23.7 Project Templates

This practical function allows reusing a project as a base or model (template) for subsequent projects. This situation is common when designing courses for a competition, allowing reuse of a configuration for different classes/categories or course variations (e.g., merely moving the Handling Area or reversing the numbering). Once the course is saved online, to modify it without overwriting the previous project, simply click the “duplicate” button on the toolbar.

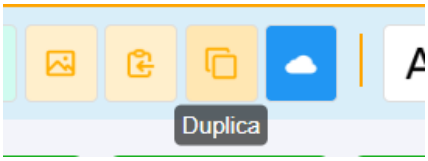


Figure 57: the "duplicate" button for reusing a route template

In the “name” field of the project title block, the suffix “(copy)” will be inserted. This copy of the course can be saved with a new name without overwriting the original.

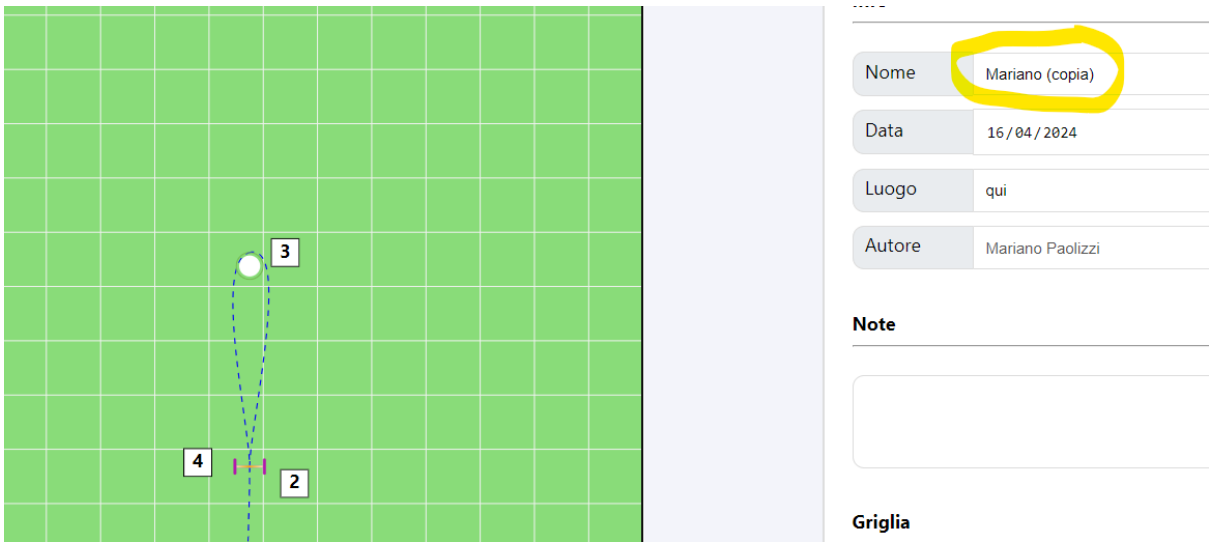


Figure 58: modifica del nome del progetto duplicato

23.8 Graphic Arrows

Hooperative Designer CAMIS EDITION enhances the educational activity by offering a new tool: the function of inserting directional arrows allows adding graphic symbols of arrows of different colors within the course, useful for indicating equipment, lines, and discriminations. These arrows can be moved and oriented like any other equipment in the application, providing greater flexibility in creating clear and intuitive courses. Using directional arrows can improve course understanding for both handlers and dogs, facilitating learning and navigation during training and competitions.

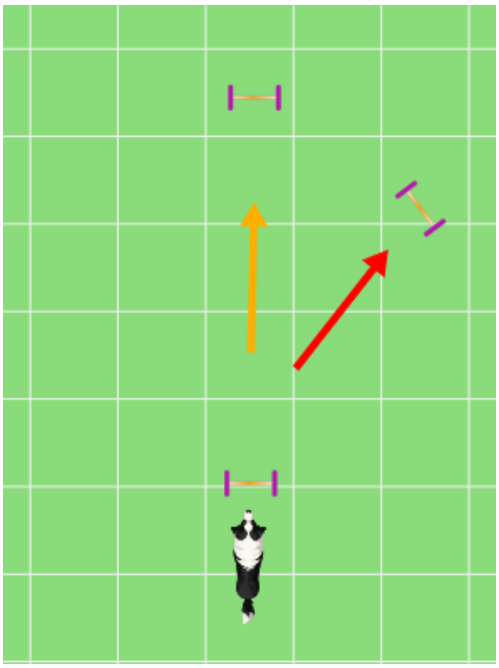


Figure 59: inclusion of directional arrows in the design

Directional arrows can be inserted by clicking the appropriate “arrow” button on the toolbar. A dropdown menu will allow choosing from three predefined colors.

Figure 60: the directional arrow input dropdown