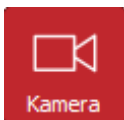


ARES Realworld

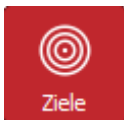
Instruction manual V1.3

ARES Realworld is a program for laser shooting training which detects and evaluates laser shots via cameras. It is based on the technology of Project ARES, but does not require a video projector. Instead, it allows the user to define any targets within the camera images. Thus, objects can become targets or shots on suspended targets can be evaluated.

Before the training can begin, the camera must first be set up and the targets defined. The two required settings menus as well as the game menu can be activated via the three buttons in the upper right corner. The corresponding menu then appears on the right edge, while the camera image is always visible on the left.



In this menu, the cameras can be selected and configured. The available cameras can be selected in drop-down menus. Without a license, only one camera can be used, while with a license, several cameras can be used simultaneously. By default, a second camera is selectable in the Licensed programs, but the option for up to 4 cameras can be activated in the Settings menu. However, depending on the computer and cameras used, it is possible that 4 cameras cannot be used simultaneously. The correct camera setting is explained later in this manual.



Here, the target areas in the camera image can be defined and configured. The targets can be assigned a name and a score. Targets can also have special functions such as starting the game or defining an area that is excluded during laser detection. Without a license, the number of targets is limited.

Rectangular, oval and polygonal targets are possible. To add a new target, first click on the corresponding button and then in the camera image. Rectangular and oval targets are defined by clicking and dragging, while for polygon targets the individual corner points are set by clicking. Each left click creates a new vertex and a right click completes the polygon. There is also a button to automatically create a series of concentric circle targets.

In addition, there is a possibility to define an area in which a ring target or an image is evaluated automatically corrected. This is described in a separate chapter.

Once created, targets can also be changed subsequently. To do this, they must be selected either by clicking on the target or the corresponding list entry. They are then displayed in green and square handle points appear at the corners and round ones in the middle of the edges. By left-clicking on the corresponding handle points, the corresponding corners or edges can be moved.

For polygon targets and rectangle targets, the number of corners can also be changed. A right-click on a corner removes it, creating a new edge between the adjacent corners. A double-click on an edge center point creates a new corner at this point, which can then be positioned.

By clicking in the center of a target, it can be moved as a whole.

Once a target is selected, it can be removed by pressing the Delete key or the corresponding button. It can also be duplicated by pressing a button, whereby the duplicate appears exactly above the selected one.

It is also possible to select multiple targets at the same time. This can be done either by holding down the CTRL key while selecting or by drawing a frame around the corresponding targets. These can then be moved as a group, scaled, deleted or duplicated.

Targets can also overlap. If a point is hit that lies in several targets, the target that is higher in the list of targets is always considered to be hit. The position of the targets in the list can be changed by clicking and dragging. For example, in a typical target consisting of concentric circles, it is important that the target defining the innermost circle is at the top and then the larger circles follow in order.



In the game menu, the game type can be selected and a number of shots can be chosen. The target game continues until all shots have been fired. The time game is also finished as soon as all targets have been hit at least once. In both games, the duration of the game and the score achieved are displayed. There is also a list that contains the data for each shot.

The game is started either by clicking the Start button or by firing a laser shot at a target previously defined as the Start button. In the case of the target game, the start signal sounds immediately and the game begins.

In the time game, on the other hand, a reloading sound is heard first and the text "Wait" is displayed on the button. After a random waiting time of between one and two seconds, the start signal sounds and the game begins. If a shot is fired within the waiting time, it is considered a false start and the game is ended. This is the same behavior as the drop target game in project ARES.

SETTING THE CAMERA AND LASER DETECTION

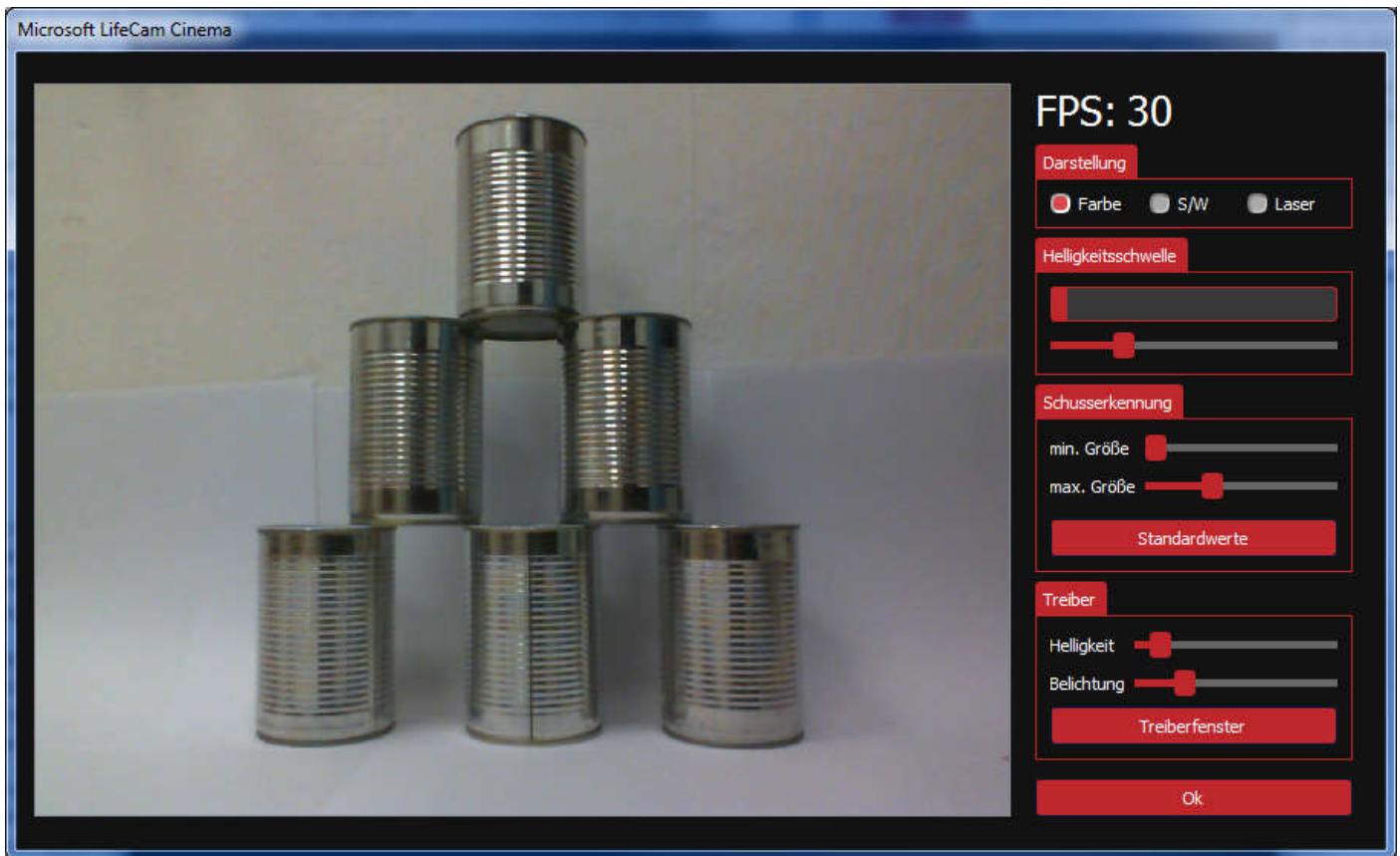
After a camera has been selected, the laser detection must first be set. A click on the button below the camera selection opens the corresponding window.

In this window, the camera image is displayed first. In the Display field, you can select whether it should be displayed in color or black and white. The third option "Laser" shows the evaluation of the laser detection. Here the whole image should be black and the places where a light flash was detected should flash red. In addition, two circles are displayed that show the minimum and maximum size that such a light flash must have in order to be evaluated as a laser shot.

The brightness threshold is relevant for laser detection. It specifies from which brightness a flashing point is recognized as a laser shot. The threshold must be set so that the display bar never moves further than the slider in the case of an image without a laser and that it does so in the case of a laser shot.

Laser detection can be significantly improved by a red filter foil in front of the camera, which suppresses extraneous light. Since laser detection reacts to changes in brightness, a foil may not be necessary for a still image. However, if movements are to be expected in the camera image, it is indispensable.

The two parameters for shot detection specify how large or small a bright spot must be to be considered a laser shot. This can be used to suppress possible image noise in the camera sensor or stray light. Normally, however, the default values should be used. Otherwise, it helps to display the evaluation of the laser detection to determine the correct size.



If there is always interference at a certain point in the image, for example because a flashing light of an electrical device can be seen, a target can be placed in this area which is configured as an area to be ignored. Light events in these areas will be ignored by the program.

Important for laser detection are the camera settings of brightness and exposure time. However, the two sliders only work if the automatic brightness or exposure control of the camera is deactivated. ARES Realworld does this automatically from version 1.3 on. Brightness and exposure should be set so that the frame rate, which is displayed in the upper right corner, is as high as possible, even though this may make the image appear dark. The Driver Settings button can be used to open the camera-specific driver menu to set any other parameters.

The settings of the camera are stored when saving and the program tries to restore them when loading the setting.

SAVE, LOAD AND SETTINGS

At the top left are the buttons for saving and loading and for general settings



Deletes all existing targets



Opens a configuration file with the extension ".arw". Target definitions, game and camera settings as well as general settings are stored in this file. If a file with the name "Realworld.arw" exists in the main program directory, it is automatically opened when the program is started.



Saves all settings in a file. If it is given the name "Realworld.arw", it will be loaded automatically at the next program start.



Opens the window for general settings. Here you can set the language, the volume and the colors of the targets and hits.



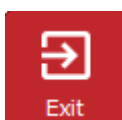
Opens the target generator



Switch to full screen mode



Switch to window mode



End program

TARGET GENERATOR AND RECTIFIED TARGETS

In ARES Realworld there is a target generator and the possibility to display a target created with it instead of the camera image. The target editor is started via the button "PDF-Tool". It offers many possibilities to generate a document with different ring targets and to save it as PDF so that it can be printed.

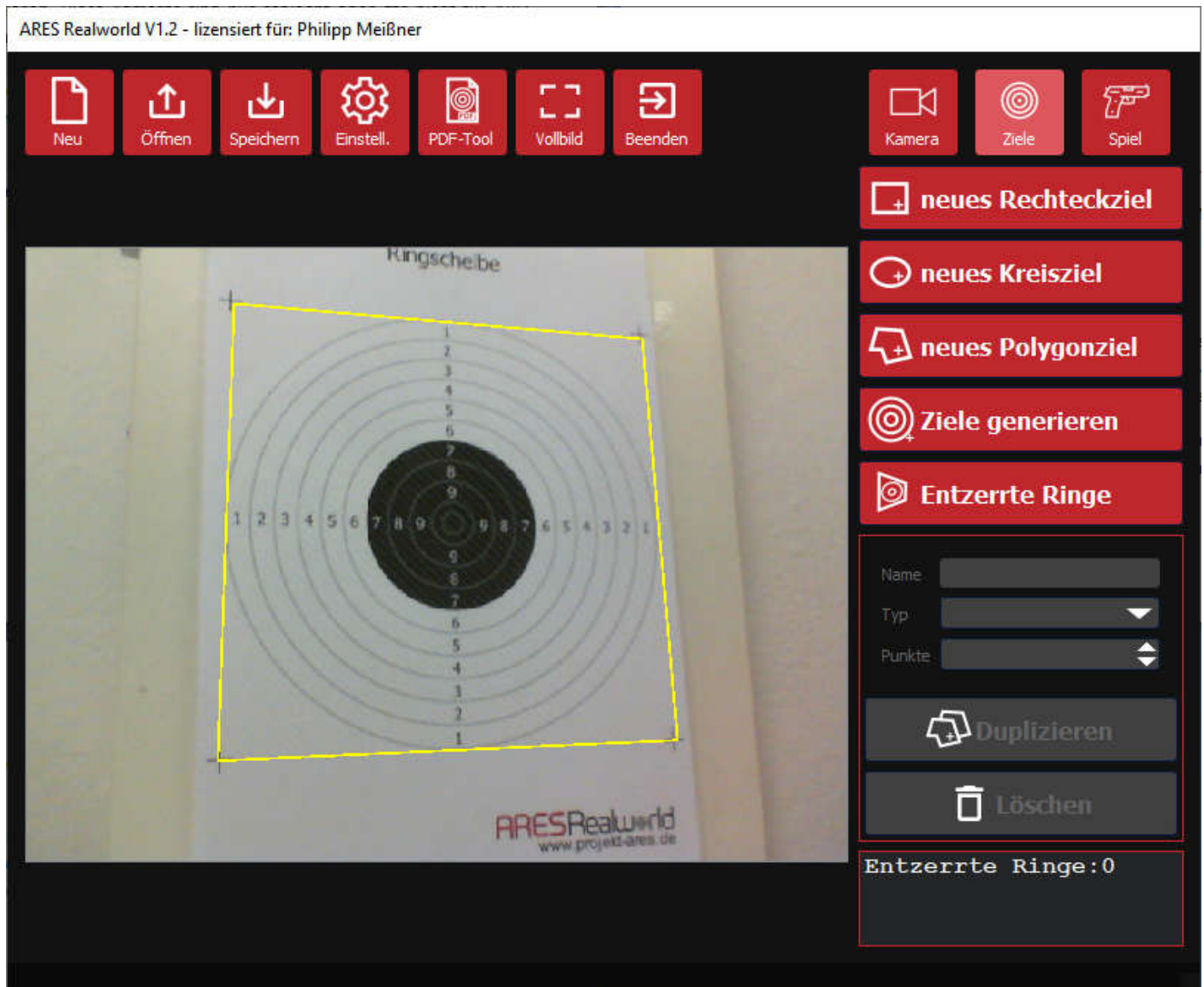
Among many parameters that determine the appearance of the targets, there is also the option to show position crosses. These are created exactly in the corners of the enclosing square and are used to position the target area for a "rectified target". Their function is illustrated in the following example.

First of all, a target is generated and printed with the target generator and the position crosses are also activated. It should be mentioned that the procedure only supports a single target, although the target generator can also generate sheets with several targets arranged in a grid.

The target is then hung and the camera is aligned so that it is well in the picture and all position crosses can be seen.

Now a target for "rectified target" is created in the program in the Targets menu. It is a rectangle where each of the four corners can be moved, but unlike the polygon target, no corner can be added or removed. These four corners are then moved to the position crosses in the camera image. Once this is done, ARES Realworld can now calculate the position of the individual rings.

The target object for an equalized target has a few special features compared to the normal targets. There may be a maximum of one of these objects and it cannot be renamed.



If you have created a target object for a rectified target, the option to display a target instead of the camera image opens up in the game menu. If you select this, the "Edit" button becomes active and you can make further settings. You can choose between a circle target and an image target.

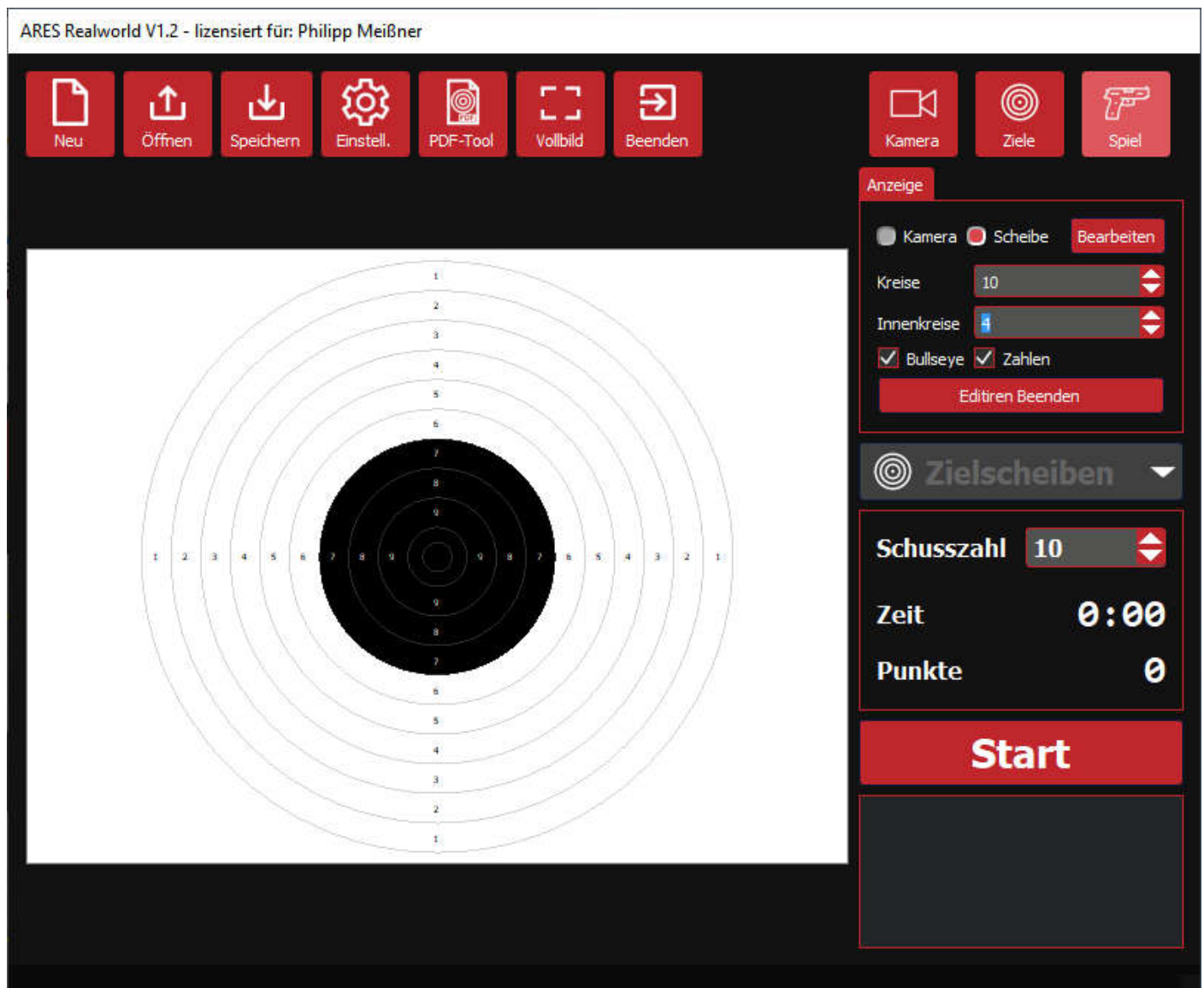
First, the description of the circle target which is suitable for the use of targets created with the target generator. The options for a circle target are similar to those in the target generator. You can change the appearance and the number of rings.

If this target display is active, all detected hit positions are converted and displayed on the target in their correct position. Likewise, the scored points of the hits are calculated, whereby their size is included in the calculation. This

means that a ring is considered to be hit if it has been "torn" even if the center of the hit is not yet in the ring. The size of the hits can be changed in the settings.

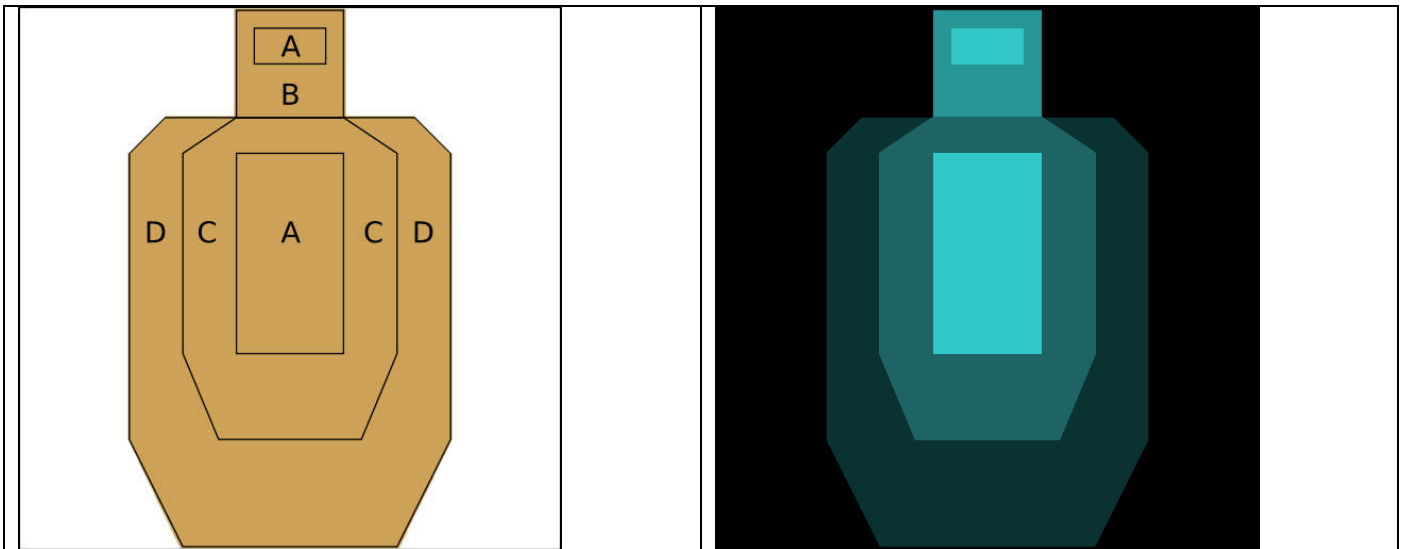
In the target display, only the "Targets" game mode can be selected, but not the time game mode.

Target faces configured as start buttons continue to work in this mode, even if they are no longer visible.



In addition to the circle target, there is also the image target. Here you have to specify two image files, where one image is used for display and the second one for the evaluation of the hits. In this second point image, the hit zones and the respective points are coded by in the red color channel. A value of 10 stands for one point. A value of 20 stands for 2 points and so on.

The whole thing is to be explained with the following example. The display image and the dot image of an IPSC target are shown. The display image is printed out and hung up as a target. It has a black frame so that the target object can be positioned exactly for a rectified target - crosses in the corners would also be sufficient.



The target is hung and the camera is aimed at it. Then the target object for a rectified target is inserted and positioned in the "Targets" tab. Now the two image files must be selected in the settings for the image target. The program then no longer displays the camera image, but the display image is centered and displayed in full. If the target is now shot at, the program converts the hit position accordingly and displays it. In addition, the color value from the point image is evaluated at the hit location in order to assign points accordingly.

ARES Realworld V1.3 - lizenziert für: Philipp Meißner

Neu Öffnen Speichern Einstell. PDF-Tool Vollbild Beenden

Kamera Ziele Spiel

+ neues Rechteckziel

+ neues Kreisziel

+ neues Polygonziel

Entzerrte Ziele

Ziele generieren

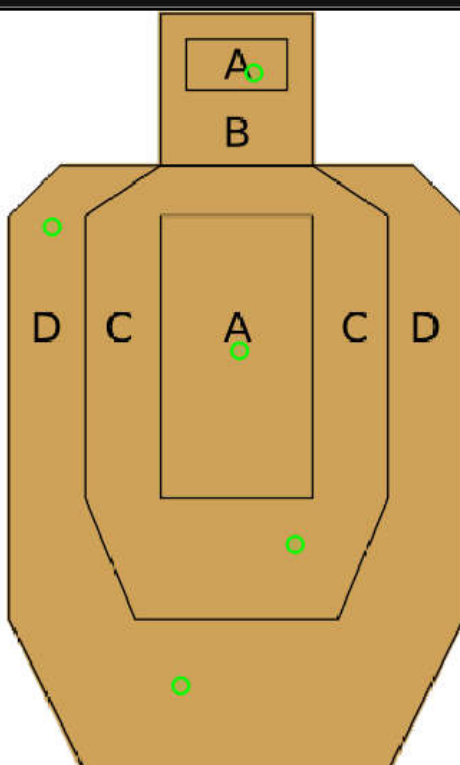
Name: Entzerrte Ziele
 Typ: ▼
 Punkte: 0

Duplizieren

Löschen

Entzerrte Ziele: 0

Neu Öffnen Speichern Einstell. PDF-Tool Vollbild Beenden Kamera Ziele Spiel



The target diagram shows a central zone 'A' with a hit marker. Surrounding it are zones 'C' and 'D'. Above the main target is a separate zone 'A' with a hit marker, and below it is zone 'B'. There are also hit markers in the outer 'D' zones.

Anzeige

Kamera Scheibe

Bearbeiten

Zielscheiben

Schusszahl 5

Zeit 8,89s

Punkte 15

Start

1	Treffer	5	5,18s
2	Treffer	3	5,85s
3	Treffer	1	6,42s
4	Treffer	1	7,96s
5	Treffer	5	8,89s