OSV 9 SOFTWARE

USER'S MANUAL

October 2022

Caution and safety precautions

- Never use any other charger than the supplied or a type approved by Swiss Timing. This could destroy the battery, cause damage to unit, and possible cause personal injury due to fire or/and electrical shock.
- Never bypass a power cord ground lead by breaking off the ground pin, or by using inappropriate extension cords or adapters.
- Never plug a power cord into the AC power source until you have made sure that all installation, cabling and power levels, are proper, and that the applicable procedures in this manual have been followed.
- Protect the equipment against splashing, rain and excessive sun rays.
- Never use the device if it is damaged or insecure.
- Verify the selection of the power distribution.
- Verify that the voltage quoted on the rating plate is the same as your voltage. Connect the appliance only to power sockets with protective earth. The use of incorrect connection voids warranty.
- This program may be modified at any time without prior notification.
- Do not open the case; there is nothing that needs servicing inside it. Nevertheless, if the case must be opened, you must call for some qualified personnel. The power supply cable must be disconnected before opening the case.
- During the transport of all Swiss Timing equipment delivered with a reusable carry case, the said case should be used at all times. This is imperative to limit the damage, such as shocks or vibration that can be caused to the units during transport.
- The same cases should also be used when returning equipment to Swiss Timing for repair. Swiss Timing reserves the right to refuse all guarantees if this condition is not fulfilled.
- If the installation includes a horn, be sure to maintain a sufficient security distance from the public.

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Environment

This symbol indicates that this product should not be disposed with household waste. It has to be returned to a local authorized collection system. By following this procedure you will contribute to the protection of the environment and human health. The recycling of the materials will help to conserve natural resources.

TABLE OF CONTENTS

1   INTRODUCTION

OSV9 system has been developed to replace OSV7/8 software. It has been designed to work with the Myria camera.

The system is divided into two main parts: a server and a client. Both applications can run on the same machine, or on different machines on the same DRC network, as shown in this schematic:
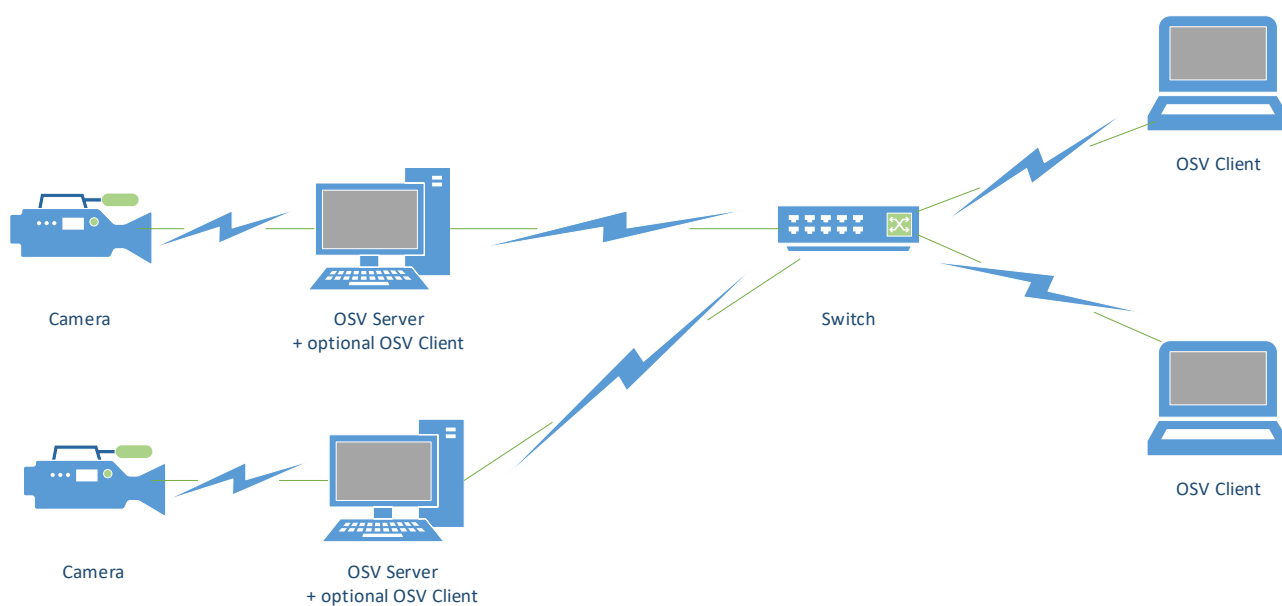
2 INSTALLATION

2.1 Requirements

- Windows 10
- DRC64 Runtime (version 5.2.x)
- eBUS SDK 64bit
- Network card parameters (use integrated network card) :
  - Jumbo frames : Enabled (9014 bytes)
  - Speed : 1 GB/sec Full Duplex
  - IP Address: 192.168.2.100
- Disk space : approx. 1 GB per minute of recording at 2500 img/sec
- Myria camera (at the moment, only this camera is supported)

2.2 Setup

DRC installer can be found here:
W:\Data_Handling\DRC\Artifacts\Production\STSA-FWK-DrcFramework\WC20-V1.00\Installer

The eBUS and the OSV installers can be found here:
L:\Developpement\05_Products\Photofinish\OSV9_Software\40_Software\Installer

Just follow the wizard to install the software. Both server and client applications will be installed.

3   FIRST START

3.1   Single PC

For the simplest configuration (both server and client on the same machine):
- Launch the **DRC Server**.
- Launch the **OSV Server** application by double-clicking on the corresponding shortcut. This window should appear:
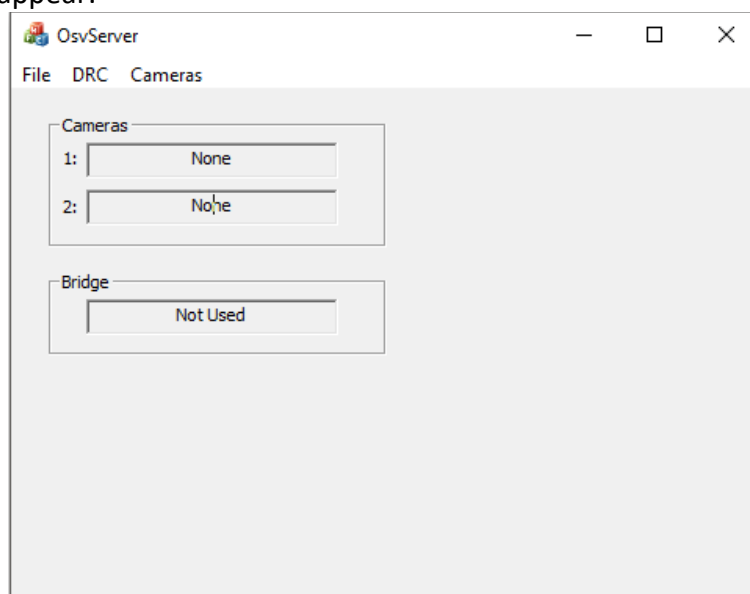
Usually, there is nothing to do in the OSV Server.
All the actions should be done from the OSV Client.

- Launch the **OSV Client** application by double-clicking on the corresponding shortcut. The main window (empty) should appear:
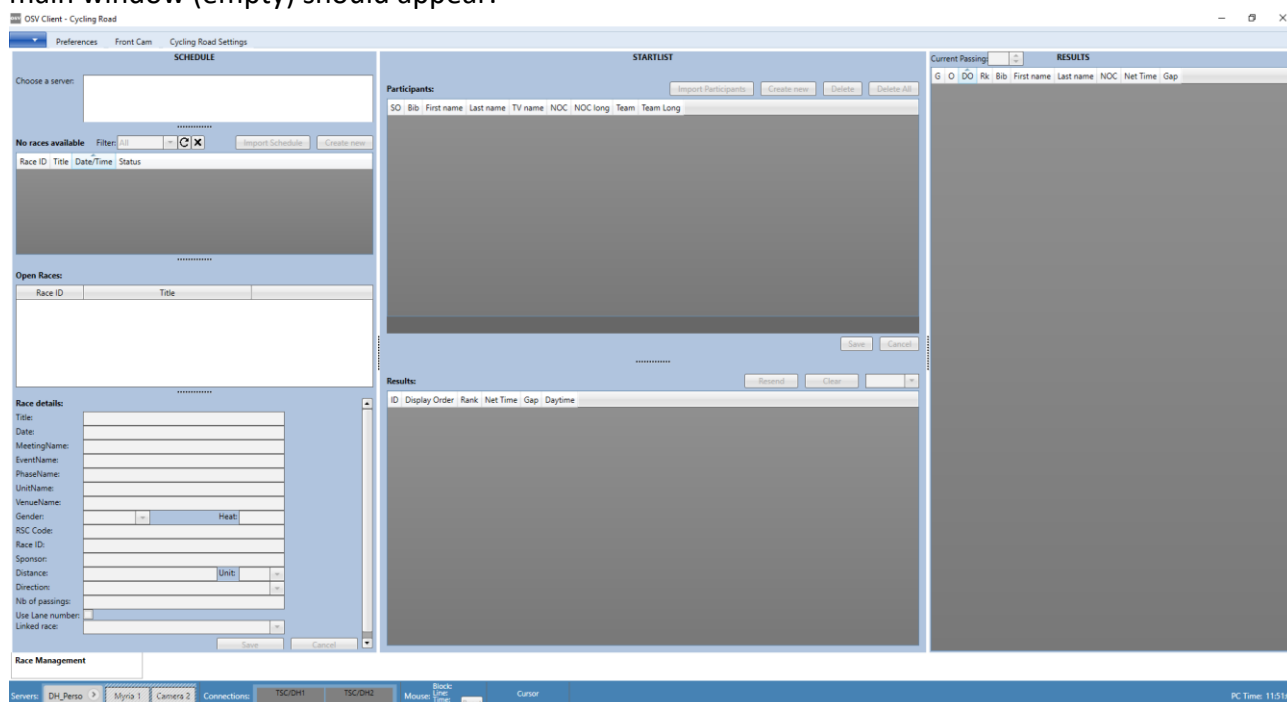
- Connect the client to the server by right-clicking (or double-click) on the server name in the status bar
- If the connection is successful, the server will become green.
- If the camera is connected and the network card has been correctly configured, you can connect the camera by right-clicking (or double-clicking) on the first camera name in the status bar
- If the connection is successful, the camera will become orange and the time and swivel angle will be displayed. The status bar should look like this:

- Create a new empty race manually by clicking on the button "Create new"
- Choose the name and the number of passings (= laps) of this race
- You can now select the tab with the name of the race and start recording (see chapter 5)

For configuration with bridge, there is only one difference:

- Launch the **OSV Server BRIDGE** (instead of OSV Server) after having started the bridge at least 1 minute earlier. All the other operations remain the same.

3.2   Multiple PCs: DRC Server configuration

For the situation where we judge the races on a different PC, we should apply the following principle for the DRC Server configuration:

The DRC Server on a PC with a camera run as a "Master Server"
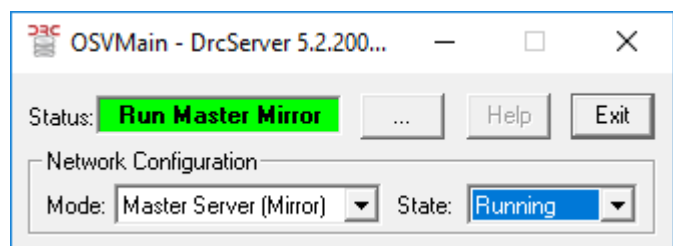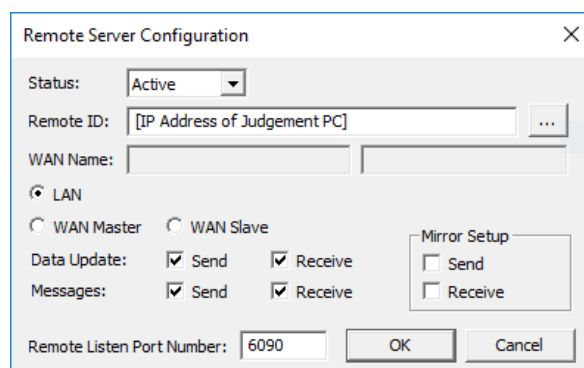
The DRC Server on a PC for Judgement or Diffusion run as "Client".
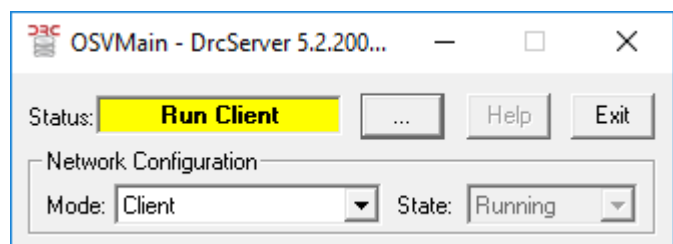
On the "Master Servers" (PCs with camera), in the "Network Status…", connect the clients that need to have access to the OSV camera.

For instance,

- OSV Main will connect to
- Judgement and Diffusion
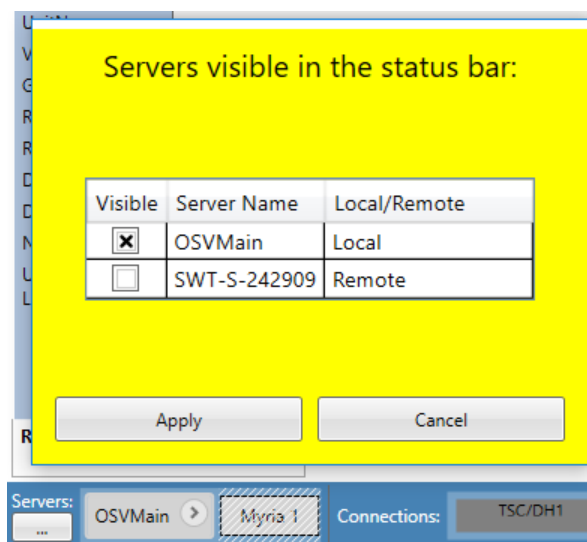
- OSV Backup will also do the same

Filter the OSV servers:

When we have multiple OSV Servers in a network, the OSV Server Filter will limit the number of visible server in the status bar.
By default only the local OSV Server is visible.

4 MAIN VIEW

List of all races on the server
- Right-click to open, zip, unzip, open file location or delete (Select all for delete : Ctrl-A)
- Double-click to open the race and go to its tab
- Use the Filter to find a race faster

List of open races
- Right-click to close or clear race data
- Double-click to go the this race tab
- Select to view startlist and results

Race details
- Edit fields
- Save or cancel modifications

OSV Server status
- Green = Ok
- Red = KO
- Gray= Not connected

Resources usage (server-side)
- Green = Ok
- Orange = Warning
- Red = Critical
- **+ Bridge info if it is used**

List of all OSV servers running on this DRC network

Startlist of the selected open race

Results of the selected open race

Results of the selected participant

Camera status
- Green = Ok (acquisition in progress)
- Orange = Ok, idle
- Red = KO
- Gray = Not connected

Synchronization status
- Green = Pulse or GPS sync
- Orange = Manual sync
- Blue = PTP OK (only with Bridge)

TSC Data connection status
- Right-click for options
- Currently supported protocols (choose in Cycling Road Settings ribbon tab):
  - OSV9 (STBP)
  - LIF files
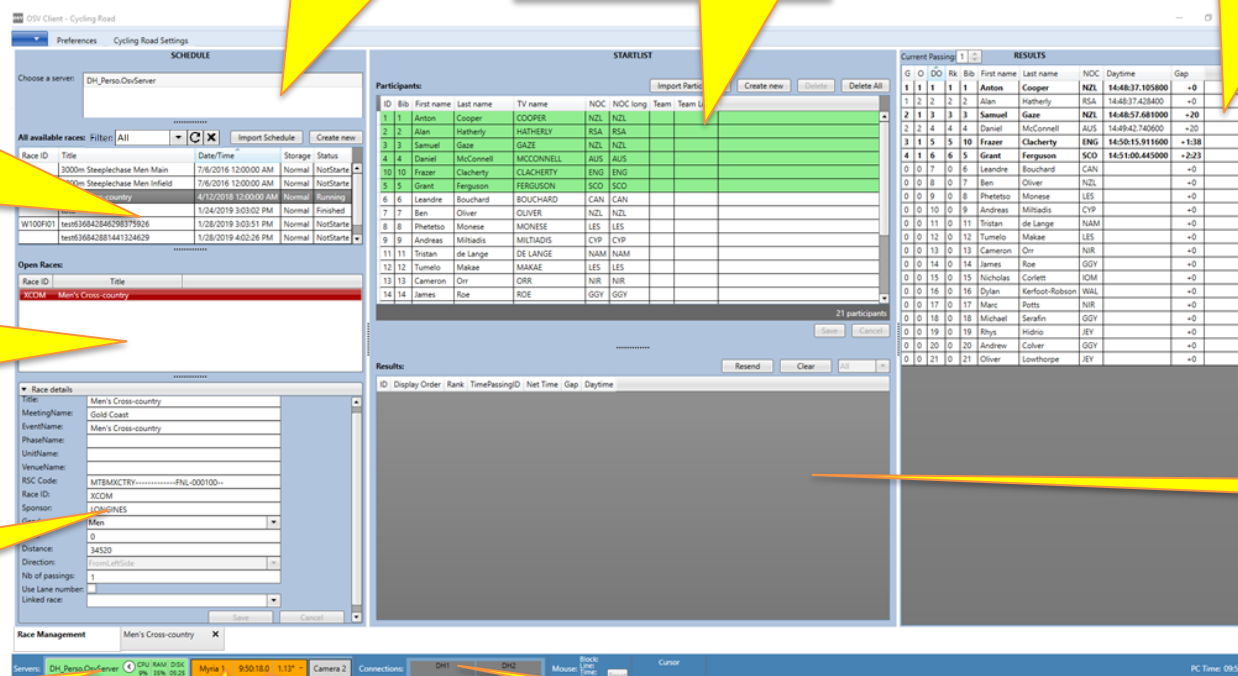
5   RACE VIEW

Judgment cursor

Main image

Schedule
- Change race status or clear race data with right-click

Race control
- Camera selection
- Start control (arm, recover, trig)
- Start time change
- Arm finish

Results

Live image

Camera settings and recording triggers

Preview image (timeline)

6   RECORDING

To record images, the camera needs to be started (green). The camera will automatically start when it is assigned to a race. Note that it is not possible to start the camera if the Image Settings or the Synchronization view is open.

Then, in the race view, in the race control area, you can manually assign the camera to the race (by selecting the camera and clicking "Assign"). Or the camera will be automatically assigned to the race when arming the start or the finish.

Note that the direction of a race cannot be changed when there is already some image recorded. So if you try to assign a camera configured as "Left to right" to a race which has already some image recorded as "Right to left", an error message will be displayed. The only way to do it would be to use the "Clear race data" option.

To know that the camera is correctly assigned to the race, look at these points:

- the tab of the race should become green
- the camera name should be just below the race title in the tab header,
- the live image should display the image of is currently passing on the finish line

If all these conditions are ok, it means that we are ready to record.

You can then configure the recording triggers (at finish), situated in an expandable area in the small Camera Settings area:

- Pulse : each pulse on the finish input will trigger the recording
- Transponder: each transponder passing (received through the TSC) will trigger the recording
- Auto-detect: when an object is detected in the image, it will trigger the recording
- F5: when pressing "F5", it will trigger the recording, depending on the "F5 Mode" chosen in the Preferences ribbon tab

For all these triggers, a portion of image will be recorded before the trigger, and a portion of image will be recorded after the trigger. The size of these portions can be defined by setting the time of each one. Note that, except for the F5 trigger, the finish must be armed for the triggers to work.

When recording, you can choose if the preview image should follow the live image or not, using the "Auto-follow" button in the small Camera Settings area. Some basic image settings can also be changed there, even during the race.

7   JUDGING

Zooming with the mouse wheel (+ Ctrl) and scrolling with the scrollbar, with the mouse wheel or by keeping the right-click pressed is possible in both the preview and the main images. Vertical scrolling is possible with Shift+Mouse wheel. Slow horizontal scrolling is possible with Alt+Mouse wheel. Horizontal zooming is possible with Ctrl+Shift+Mouse wheel.

To judge a rider, click on the preview image to display the chosen area in the main image. Then, a click on the main image will create a temporary judgment cursor (green). This cursor can be dragged with the mouse or moved with the arrow keys. When the cursor is correctly placed, press "Enter" to validate the cursor (or type a number directly). You need then to choose the bib of the rider and then press "Ok" to create the cursor. As soon as it is done, the ranking will be recalculated.
By right-clicking on a rider in the results view, you can either go to his cursor (double-click does the same), edit the cursor (change the time) or delete the cursor. You can hide the judgment cursors by pressing "C".

If available, transponder passings received through the TSC application can help the operator. Transponder cursors (blue) can be displayed in the main image by pressing "T". Also, when choosing the bib for a new judgment cursor, the closest transponder passings are displayed, and the closest one is even pre-selected.

For CRD only, if the groups automatically calculated by the system need to be modified, you can change them by selecting the rider you want as head of a group and pressing "G". This will create a new group. In the same way, if you want to "merge" two groups, select the rider who is head of the second group and press "G".

When all riders have been judged, you can set manually the status of the race to "Finished" by right-clicking on the race in the Schedule area of the race view. This will allow then to zip the race if desired.

The magnifier window can assist the judgment:

M : toggle show/hide the magnifier window
L : Lock vertically and add an new magnifier.
U: Unlock and remove last magnifier.
Use also the arrow key (up – down – left - right) to move the cursor

Shift Left / Shit Right will create a new judging cursor or move it fast.

8   SYNCHRONIZED JUDGING

When we judge a race from 2 cameras (ie main and infield camera) we can use the synchronized judging feature. It is like a remote control to from one OSV Client instance to other OSV Client instances.

Requirements:
      Both races must have the same Race ID
      Both OSV Client must configure the synchro judgment accordingly.
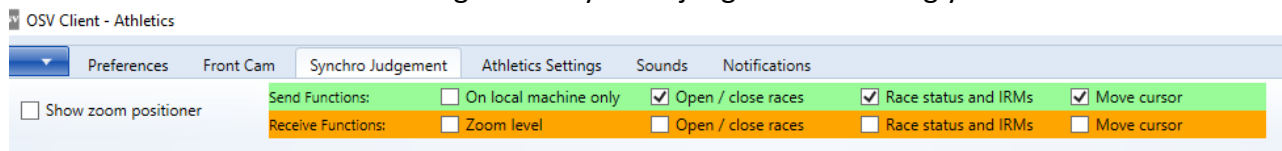
According to these settings, the synchro judgment will:

- Open and close races
- Create and move the judgement cursor.
- Set athlete results when confirming the cursor.
- Apply IRMs (DNF, DQ…) to athletes.
- Adjust the Zoom level.

8.1   Zoom position

When you are judging with dual instances (main and infield images)
you can configure the vertical zoom position in order that when
you click in an image, the other instance place vertically the zoom at the same
location.
In Synchro Judgement ribbon, check the "Show zoom positioner".

Insert at least 5 vertical references (one at very top, one at very bottom and other at judgement levels).

To the same on other instances (infield or backup), using the same vertical references. Infield views will have the references in reverse order.

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9   IMAGE SETTINGS

To setup the camera and all image settings, right-click on the camera (only when it is orange, impossible when it is green because it means that the camera is already in acquisition) and choose "Image Settings". In this view, the left part displays the image and let you choose between Matrix mode and ScanLine mode. The right part shows all parameters that can be changed.

In the left part, in ScanLine mode, you can select two areas for the automatic object detection. The small bar on the top serves as a detection indicator.
In Matrix mode, you can place the zoomed boxes anywhere you want on the alignment line.

In the right part, some settings can only be modified in Matrix mode (Scan Line Position for example) or in ScanLine mode (Scan Direction for example).

The Wi-fi card (integrated in the Myria camera) can be turned on or off (by default: off). The card can take up to 75 seconds to start.

A screenshot of the Matrix view can be taken by using the corresponding button. It will add the time of day of the camera on the picture and save it on the disk. This can be used for example in ALP to have a "proof" that the alignment has been correctly done.

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10 CAMERA TIME SYNCHRONIZATION

To synchronize the camera timer board, right-click on the camera (only when it is orange, impossible when it is green because it means that the camera is already in acquisition) and choose "Synchronization". In this view, you can either:

- Synchronize at a given time
- Synchronize at the computer time (from client computer)
- Synchronize with a pulse on an input at a given time (always Start input)
- Synchronize with a GPS (only with a Bridge or with a Camera with firmware > 2.0) and set the Leap Seconds
- Choose the polarity of the Start and Finish inputs (default: Normally Open)
- Choose what kind of pulses you want to be saved (first edge, second edge, both or none)

When the camera has been synchronized by a pulse, the camera time in the status bar should appear in green (instead of orange for a manual synchronization).

When using the bridge, the synchronization is done in the bridge (so the input cable or GPS must be connected to the bridge, not to the camera), which will then synchronize the camera with PTP. So the camera time in the status bar will appear blue. To know if the bridge is correctly synchronized (pulse or GPS), look in the "Resources" expander area next to the server name. The synchronization status is shown in the tooltip.

11 BACKUP

There are two kinds of backup possibilities:
- Race compression
- End-of-day full backup

11.1 Race compression

Each race (with the Finished status) can be zipped (by right-clicking on it in the list of all races). It will save some disk space by compressing the image data. It can then be unzipped if it needs to be reopened again.

Remark: to cancel an in-progress zipping operation (if it takes too much time or you need to review the image), press **Ctrl+C** in the Console window where the compression is running. DO NOT manually close the compression window while the process is running as it would corrupt the data.

11.2 End-of-day full backup

At the end of the day, or in case of important issues, it is recommended to do a "full backup". To do this, close the Client and Server applications and launch the "OSV Backup Tool". In this application, you can choose which day (or days) you want to backup. It will then create a big Zip file with all image data, results, event logs, DRC binary logs, etc. This Zip file can then be copied onto ST Network to allow the developers to look at the issues.

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12 SPECIAL FUNCTIONS

12.1 Fullscreen mode

During judgment, it can be useful to have the maximum space possible to display the big image (hide left and bottom parts). To switch into Fullscreen mode, just press "F11" (and press "F11" again to go back to normal mode). In the Preferences ribbon tab, you can choose to hide or not the left and/or bottom parts when switching to Fullscreen mode.

12.2 Image Crop

It is possible to crop a part of the recorded image. To do that, in the preview image, press the "Delete" key, then draw a rectangle with the mouse around the area to remove, and press "Enter" to confirm the crop. Note that it is impossible to crop an area containing a judgment cursor.
Be careful when cropping a part of the image as the cropped area cannot be recovered.

12.2.1 Auto Crop

It is possible to automatically crop all parts of the image which are too far from any judgement cursor. To do that, navigate to the "Preferences" tab in the ribbon and click the "Auto Crop" button in the "Image Data" group.
There are 2 options available to this feature:
- Keep movements : all auto detected movements in the images will not be cropped
- Confirm crop areas : all auto crop areas will need to be confirmed by the user

12.3 CRD Group Cursor

To help define the groups in CRD, it is possible to display a special kind of cursor, the CRD Group Cursor. In the preview image, press "X" to enable this cursor. It will display a semi-transparent area corresponding to the gap time between two groups. The cursor will follow the mouse pointer as it is moved. The value of the gap time (=width of the area) can be configured in the Cycling Road Settings ribbon tab (top of the window).

12.4 Basic export

To export a basic image, you can press "E" in the main image and then draw a rectangle with the mouse. Press "Enter" to export the selected area into two image files on the desktop (one with judgment cursors, one without and one with cursors and a sponsor logo). The output folder, file name, extension (bmp, jpg or png) and logo can be chosen in the Preferences ribbon tab.

12.5 Cursors colors

To change the color of the permanent judgment cursors (default: red), temporary judgment cursor (default: green) and transponder cursors (default: blue), open the Preferences ribbon tab and choose the desired colors.

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12.6 Gamma correction

If the image is too dark to be judged, you can apply a gamma correction to make judgment easier. In the Preferences ribbon tab, you can choose the value of the gamma correction to apply, between 0.4 (brightest) and 1.0 (original image). By pressing Ctrl+R and drawing a rectangle (validate with Enter), you can define the area to be "gamma corrected". This area will always take the full width of the image. Then, by pressing Ctrl+Shift+R, you can switch between the gamma corrected image and the original image.

12.7 Start time offset

In some competitions (for example CRD Grand Tours), the start time of the race is given by a commissaire while the race has already started. The commissaire gives the current race time and a pulse, and the system must calculate the daytime of the start (by subtracting the race time from the pulse time). To do that, you must enable the "Use start time offset" option in the Preferences ribbon tab. Then, when you click on the Arm Start button, you can enter the offset (= race time) that will be subtracted from the next pulse to calculate the start time.

12.8 Auto-Arm finish

It is possible to automatically arm the finish 5 seconds after the start is triggered. To do that, check the box "Auto-arm finish" in the "Preferences" ribbon tab.

12.9 Front Cam

The Front Cam can be used with OSV9. It must be connected and configured (which messages must be sent to the Front Cam) in the Front Cam ribbon tab.

12.10 Manual Start

In ATH sport module only, when the user edits the start time of a race, the race will be flagged as Manual Start. A checkbox is visible in the race command panel and allows to toggle between Manual Start and Normal Start. When the Manual Start flag is set, all the times/gaps are rounded at the $1/10^{th}$ of a second, instead of $1/100^{th}$ of a second. If the user wants to assign a pulse (for example a not-armed pulse) as start time without setting the Manual Start flag, the best way is to find the pulse in the Pulses list, right-click on it and assign it as start pulse. The other way is to enter the start time manually, save it and then un-check the Manual Start checkbox.

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12.11 Sport Modules

OSV Client always loads a sport module (defined by which shortcut has been chosen). A sport module can propose some specific functionalities, ranking algorithms, options, protocols or views. Currently, there are 3 sport modules available:

- CRD (Cycling Road)
    - Time precision is fixed (1 sec)
    - Time rounding mode is fixed (truncate)
    - Automatic group calculation
    - Special CRD group cursor
    - STBP and LIF protocols available
- ATH (Athletics)
    - All time precisions available, zero-test mode enabled when choosing 1/10000 sec
    - Time rounding mode is fixed (round up)
    - Manual start (rounding at 1/10 sec)
    - STBP, LIF and LEGACY (CSV input, LST output) protocols available
- ALL (All other sports)
    - All time precisions and rounding modes available:
        - Truncate: The reminder is removed from the current value.
          Example precision 10ms: Truncate 17.234565 = 17.230000;
        - Round Up: If the reminder is > 0 the current value is rounded to the next upper value.
          Example precision 10ms: RoundUp 17.234565 = 17.240000;
        - Round: If the reminder is >= 5 the current value is rounded to the next upper value, else the reminder is removed from the current value.
          Example precision 1ms: Round 17.555555 = 17.556000; Round 17.244001 = 17.244000; Round 17.244500 = 17.245000;
        - Round to even: If the reminder is != 5 the current value is rounded same as Round, else it is rounded up or down toward the nearest even number.
          Example precision 1ms: RoundToEven 17.555555 = 17.556000; RoundToEven 17.244001 = 17.244000; RoundToEven 17.244500 = 17.244000;
        - Ceil: If the reminder is > 0 the current value is rounded to the next plus value. With positive and negative time its rounds towards plus infinity.
          Example precision 10ms: Ceil 17.234565 = 17.240000;
        - Floor: If the reminder is > 0 the current value is rounded to the next minus value. With positive and negative time its rounds towards minus infinity.
          Example precision 10ms: Floor 17.234565 = 17.230000;
    - STBP, LIF and LEGACY (CSV input, LST output) protocols available

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12.12 Important shortcuts

To show/hide judgment cursors: C
To show/hide transponder cursors: T
Toggle display between daytime and net time: D
Send results (if mode is not Immediate): Ctrl+S
Show About dialog (containing the list of all Keyboard shortcuts): F1
Switch to/from Fullscreen mode: F11

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13 ISSUES

- Impossible to connect to the camera:
    - o Check the camera (should be blinking)
    - o Check the PoE adapter (LEDs should be green)
    - o Check the network cables (should support 1GB/s)
    - o Check the configuration of the (integrated) network card of the server

- Impossible to connect to the server:
    - o Check that the OSV server is launched
    - o If not on the same machine, check the DRC network configuration

- Impossible to stop the OSV Client: it says that races are still open.
    - o Close the OSV Client with the menu Exit (leaving races open)
    - o After restarting, if a race is still in the "Open Races" list, close this race with a right mouse click.
- Impossible to stop the OSVServer: it says that races are still open.
    - o Make sure that no clients is connected to this OSVServer (event across the network)
    - o If no client is connected and the OSVServer does not want to close, kill it through the "Process status" of the DRCServer.

NOTES

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