



ISUSCOREFS

User Manual

Version 3.4 | June 2016



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.

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1 INTRODUCTION

About This Document

This document describes the operation of ISUScoreFS.

Associated Documents

- FS ISUCutterFS Manual
- FS ISUCalcFS Manual

About ISUScoreFS

This application is part of the ISU Judging System and can be run in two different modes: first one is the Expert mode, and the second one is the Judges mode.

ISUScoreFS is the Scoring part of the ISU Judging System. It provides features to easily enter elements of the current skating performance. Data are then sent to the Judges terminals. Entries can be corrected and deleted. If the Video Replay is used, elements can be reviewed after the performance. The application also manages the communication of the entire Scoring system with the ISUCalcFS results software.

2 SYSTEM REQUIREMENTS

2.1 Minimum Requirements

- Intel Processor i3 or higher
- Microsoft® Windows® 7/8/10 64bit
- At least 4 GB RAM
- At least 128 GB hard drive
- 1 Gbit network connection
- RTSP device: Teradek Cube with HDMI/HDSI source depending on camera used

For the capturing of the video signal, we recommend at least a consumer HDMI camera. However, we rather recommend a semi-professional or professional camera with an integrated monitor to easily follow the skater. In addition, depending on the number of video clients used, it is necessary to split the video signal to another RTSP device.

Previous software versions involved less hardware requirements. Updating an obsolete system may work, although we strongly recommend to also update the hardware.

2.2 Tested Hardware

ISU Judging System – Judges

- ASUS EeeTop ET1620
- MSI AP16 Flex

ISU Judging System – Technical Panel, Cutter

- Lenovo i3 notebook
- Dell i7 Latitude
- Dell i7 M4800 Precision

3 INSTALLATION OF TERADEK CUBE

3.1 Preparations

First, configure the correct IP in order to use the web frontend.

Connect the cube to the power and start the device, using the small dip switch. Wait until the display indicates the running status.

Enter the menu by pressing on the black cursor button.

- navigate to 'Network Setup'
- navigate to 'Ethernet'
- navigate to 'Configure'
- navigate to 'IP Address'
- enter your IP address for the Teradek:



Figure 1 - Teradek cube IP settings

- Return by pressing the red button
- You may have to change the subnet mask.

3.2 Configuration Using the Web Frontend

Connect the cube to your network and use a notebook or other connected computer. Open a browser and enter "http://" plus the IP address of the Teradek.

At the first start, a setup wizard of Teradek is indicated. Please go through all steps and select a decoder 'VLC (RTSP) software decoder such as VLC'.

On the second run, a login screen appears where you use 'admin'/'admin' by default.

First, go to Video Setup -> Device Setup and activate the de-interlacer. You may further disable audio to improve system performance.

Then go to Video Setup -> Stream Settings and on Quickview Stream. Please disable this stream for better performance. On primary stream, please note the link for this stream; we will later need this information when configuring the ISUCutterFS.

Further, please update the Teradek with the latest firmware. A tutorial how to do this is available at <https://support.teradek.com/hc/en-us/sections/203355508-Cube-Cube-Pro-Brik>.

In the new firmware, please activate the RTSP/RTP Multicast package by adding a predefined license in the following screen:

The screenshot shows the Teradek web interface. At the top, there is a navigation bar with the Teradek logo and several menu items: Info, System (highlighted), Network, Video Setup, Remote, and Logout. A dropdown menu is open under 'System', listing options: System Time, User Settings, Licenses (highlighted), Firmware Upgrade, System Reboot, and Setup Wizard. Below the navigation, there is a section titled 'Add-On Activation'. It states 'The following add-ons are currently installed on this device:' and shows a table with one entry: 'License Activation Key'. Below this, there is a text input field for 'Activate a New Add-on with License Key:' and an 'Add Key' button. At the bottom of this section are buttons for 'Purchase New Licenses', 'Remove Selected Add-ons(s)', 'Export', and 'Import'. The next section is titled 'Free Add-ons' and contains the text: 'Click to select which add-on(s) you wish to activate and then press the "Install Add-on" button below.' Below this text is a table listing various add-on packages and their corresponding license keys.

Add-on Package	License Key
RTP/RTSP Multicast Package	d34c241cd2a6b48dc1c628f7a493553aee5e17b
Proxy Recording Package	60658c2eee81c1a16f9d9c2617c889bfcaeb1e88
Quickview RTP Push Package	3e199d765d8ba78c2e1cbe4429c315ae2363e0d3
RTP Push Package	4b2a1b494ee6399df2561a3fe9cb60b8a7bf1c5f
RTSP Announce Package	7366876eb8a9f644a917f4c31db694aa0375a6d4
Teradek Bond Package	1062d837602d7beca14f60a36f7e4234532e3aa
ZIXI Streaming Package	35105db72f9496cc46469f6eb2a0087fe7b25b76
Teradek Core Direct Package	4829cd20c21b7901ee2188b9b2afaca86f243dc7
Serial Port Control Package	22054a98fc36dbdcaacc5c54a8a173da89c35c98a

At the bottom right of the table, there is an 'Install Add-on' button.

Figure 2 - Teradek cube licenses and add-ons

It is recommended to change the streaming from unicast to multicast in the streaming settings:



The screenshot displays the Teradek web interface for configuring streaming settings. At the top, there is a navigation bar with tabs for Info, System, Network, Video Setup, Remote, and Logout. The main content area is titled "Stream Settings" and contains several sections:

- Primary Stream / Quickview Stream:** Two tabs are visible, with "Primary Stream" selected.
- Stream Application:** A dropdown menu for "Stream Mode" is set to "RTP/RTSP".
- RTSP Settings:** Includes input fields for "RTSP Port" (554) and "Max Clients Allowed" (30).
- Authentication:** Radio buttons for "Enabled" and "Disabled", with "Disabled" selected.
- Multicast:** Radio buttons for "Enabled" and "Disabled", with "Enabled" selected. Below are input fields for "Streaming Interface" (Wired), "Destination IP Address" (239.192.20.1), "Multicast TTL" (5), "Video Port" (4510), and "Audio Port" (1210).
- RTSP & RTP over HTTP:** Radio buttons for "Enabled" and "Disabled", with "Disabled" selected.

Below the settings is a "Video Stream Output" section with the text: "The streaming video on this device can be accessed using the following links:". A tab labeled "Primary (RTSP)" is selected, and the RTSP link is displayed as: "RTSP: rtsp://10.1.13.188/stream1". At the bottom of the interface are buttons for "Apply", "Cancel", and "Hide Advanced Settings".

Figure 3 - Teradek cube streaming setting

Please check the correct video input and encoder settings with Video Setup -> Encoder Settings and Show Advanced Settings (in the lower right part of the window):

The screenshot displays the Teradek web interface for Encoder Settings. The navigation bar at the top includes 'Info', 'System', 'Network', 'Video Setup', 'Remote', and 'Logout'. The 'Encoder Settings' section is divided into 'Primary Encoder' and 'Quickview Encoder'. The 'Primary Encoder' settings are as follows:

- Video Bitrate (bps):** 2000000
- Audio Bitrate:** Audio Disabled
- Output Resolution:** 1280x720p, 25
- Key Frame Interval:** 0.5 sec
- Title Text:** ISU 2014
- Aspect Ratio:** Auto
- Advanced Encoder Options:**
 - Caching (range: 70-1000): 300 ms
 - Intra Refresh Mode: Disabled
 - Compression Profile: High
 - Frame Structure: Field
 - Audio Sample Rate: 48000 Hz
 - SEI Timing: Enabled
- Rate Control Options:**
 - Rate Control Mode: Auto
 - Max Transmission Rate: 10.00 Mbps
 - Static Scene Detection: Disabled
 - Complexity Detection: Disabled
 - Adaptive Framerate: Disabled
 - Low Bitrate Mode: Disabled

Buttons for 'Apply', 'Cancel', and 'Hide Advanced Settings' are located at the bottom of the settings panel.

Figure 4 - Teradek cube encoder setting

- Video bitrate should not be less than 2 Mbit (2000000 bps) and not higher than 2.5 Mbit if more than 8 clients are connected to the Teradek with unicast. If there are less than 5 clients, a bit rate of 5 Mbps can be used.
- For multicast, a bit rate of more than 7 Mbit is preferred.
- Key frame interval must be the lowest selectable value – in this case 0.5 sec.
- Compression profile should be changed to 'Main' or 'Baseline' if there are some issues on the video clients.

All other settings should be the same as indicated in Figure 4 - Teradek cube encoder setting.

Note: If you are using two Teradek Cubes with multicast in one network, you have to use unique multicast IP addresses.

4 INSTALLATION OF ISUSCOREFS

To set up the programs, please download ISUScoreFS from www.isujudingsystem.com.

1. Select the language to use during the installation:

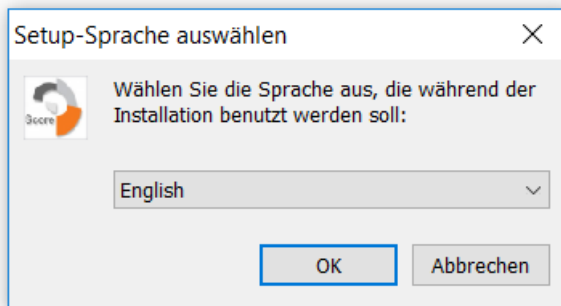


Figure 5 - Setup set language

2. Click [OK]. This will direct you to the license agreement.

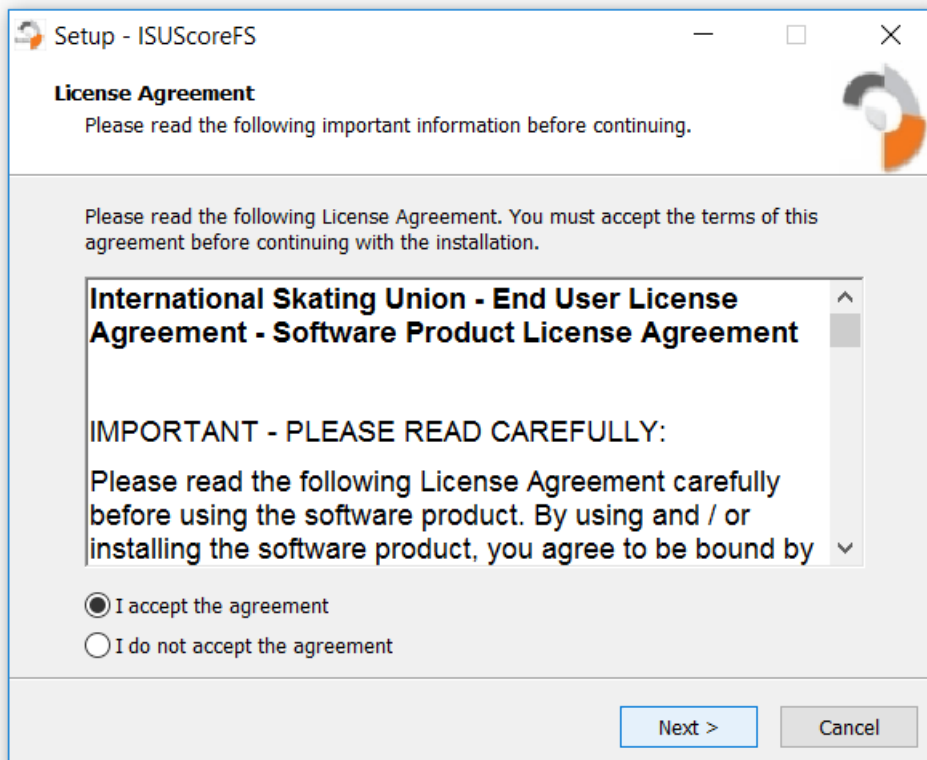


Figure 6 - License agreement

3. Please read carefully, then click [Next] and follow the Setup Wizard.

Select which ISUScoreFS component you want to install. For the Expert, select Expert SD version, or if you want to install ISUScoreFS on a Judges Terminal, select Judge SD version.

If you wish to use video replay, select Cutter to install ISUCutterFS program. Please note that ISUCutterFS needs to be run on a separate PC. It is an application to cut, save and manage video recordings. For details, refer to the ISUCutterFS Manual.

If you are using the new RTSP (Video over Network) hardware, enable video over network (RTSP).

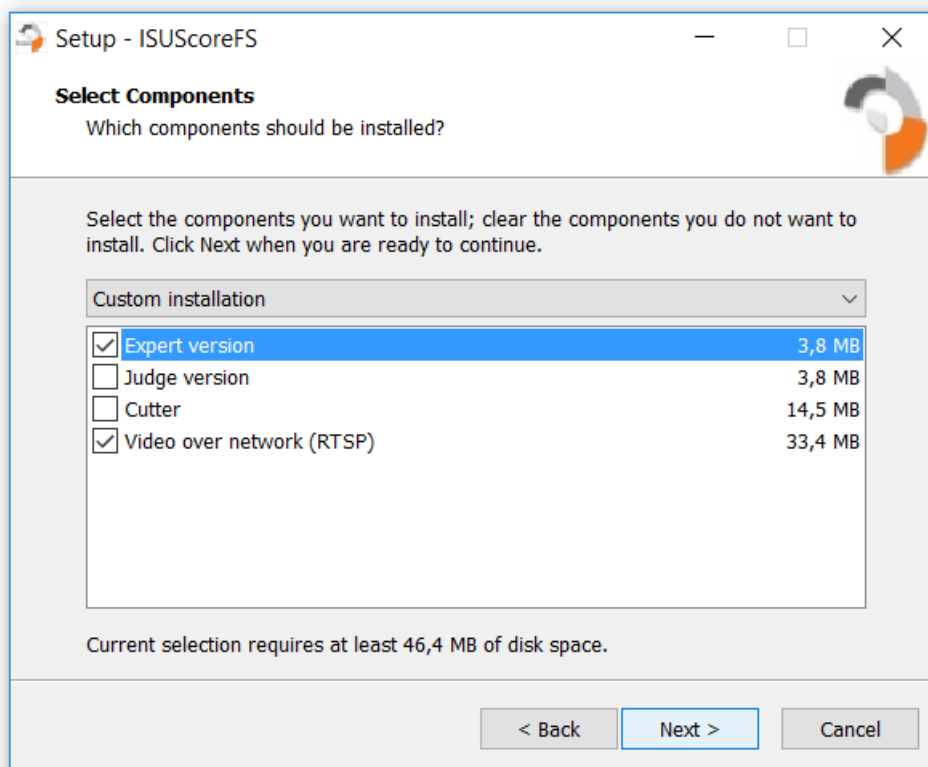


Figure 7 - Enter custom installation

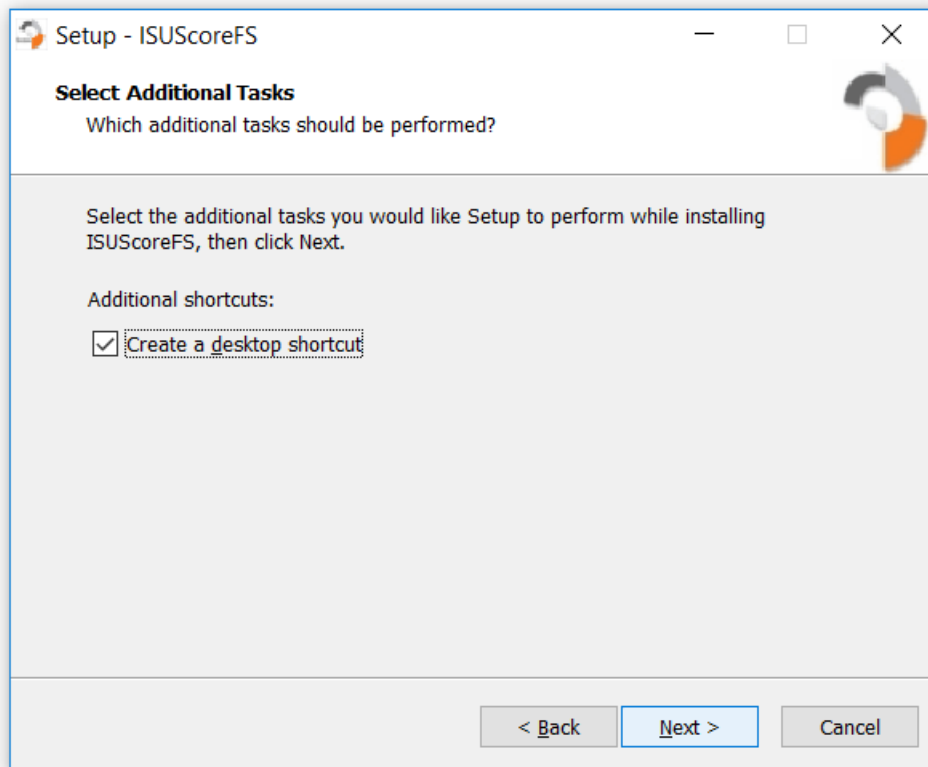


Figure 8 - Select additional tasks - create desktop icons

4. Confirm with [Next] or return to the previous pages in order to modify the settings. The installation process starts.

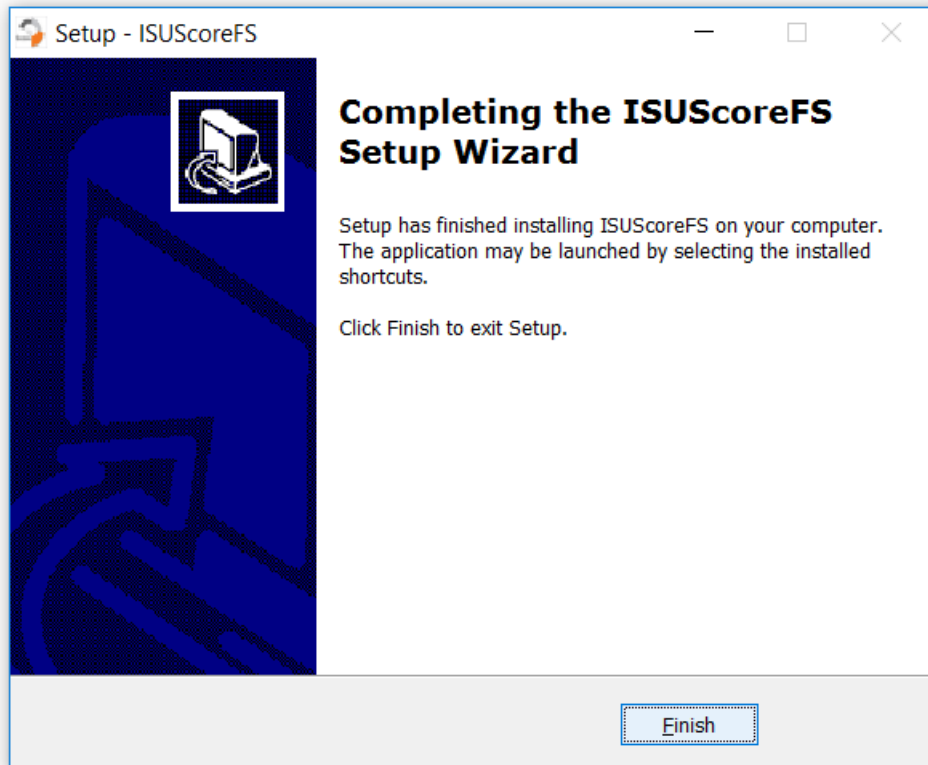


Figure 9 - Click Finish to exit the setup

5. Once the installation is finished, you are ready to start working.

5 MENU STRUCTURE

Once you have installed ISUScoreFS, the following screen is opened when you start ISUScoreFS:

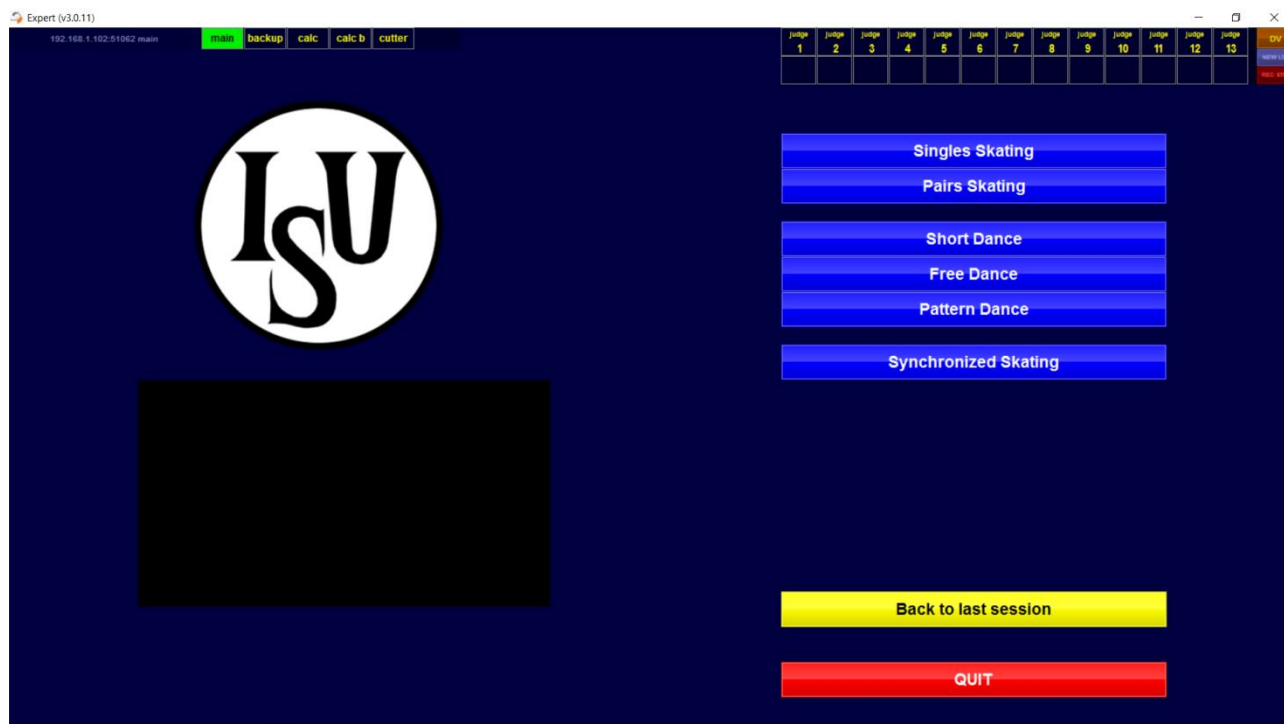


Figure 10 - ISUScoreFS Opening Screen

You can choose the following commands:

5.1 Main

Click [main] in the main menu bar, if this PC is supposed to be used as the main system. If the connection is established properly, the button is marked green (see Figure 11).

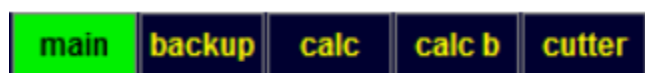


Figure 11 - ISUScoreFS main system

5.2 Calc connection

The [calc] field shows if ISUCalcFS is connected to the Expert. Green indicates a proper connection, while red indicates a disconnected ISUCalcFS PC.

5.3 Cutter connection

The [cutter] field shows if an ISUCutterFS is connected to the Expert. Green indicates a proper connection, while red indicates a disconnected Cutter.

The Cutter application processes the video signal of a DV camera and saves the complete performance of a Skater. Supported by the Caller, the operator sets the Trim In / Trim Out marks for the individual elements. These marks are then sent to the Judges terminals.

This application provides an easy to handle option to review and replay the performance elements. Trim In and Trim Out marks can be modified, replaced and deleted as desired.

5.4 Judge commands

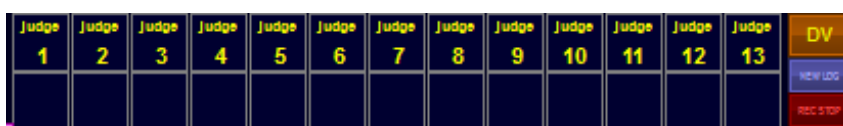


Figure 12 - ISUScoreFS - Judge1 to 13 buttons

Judge 1 to 13 shows if these judges are connected to the Expert. Green indicates a proper connection, while red indicates a disconnected Judge. It further indicates if judges have sent their marks or if they request help. By pressing the lower field of the judge panel, a 'Hurry Up' message is sent to the judge.

5.5 DV command



Figure 13 - ISUScoreFS - DV button

If a DV device is connected to the Expert and the video screen remains black, you can re-initialize the video with this command.

5.6 NEW LOG command



Figure 14 - ISUScoreFS - NEW LOG button

The Expert logs all incoming and outgoing messages in a text file. To avoid that the hard drive is running out of storage space, please use this command from time to time to delete these log files.

5.7 REC STOP command



Figure 15 - ISUScoreFS – Rec stop button

The video processing is handled by ISUCutterFS. However, if there is any problem with a recording and the Expert cannot receive the stop command from the Cutter, you can press this button to manually stop the recording to avoid the hard drive running out of storage space.

5.8 ISUScoreFS Figure Skating segments



Figure 16 - ISUScoreFS - skating segment buttons

6 RUNNING THE COMPETITION

6.1 Expert

Click the skating segment (see Figure 16) or start an event with the connected ISUCalcFS. For example, if you start 'Short Dance' – below screen appears.

Note that certain elements of the screen may (depending on the competition and the settings made) differ from this one, but the basic layout is the same.

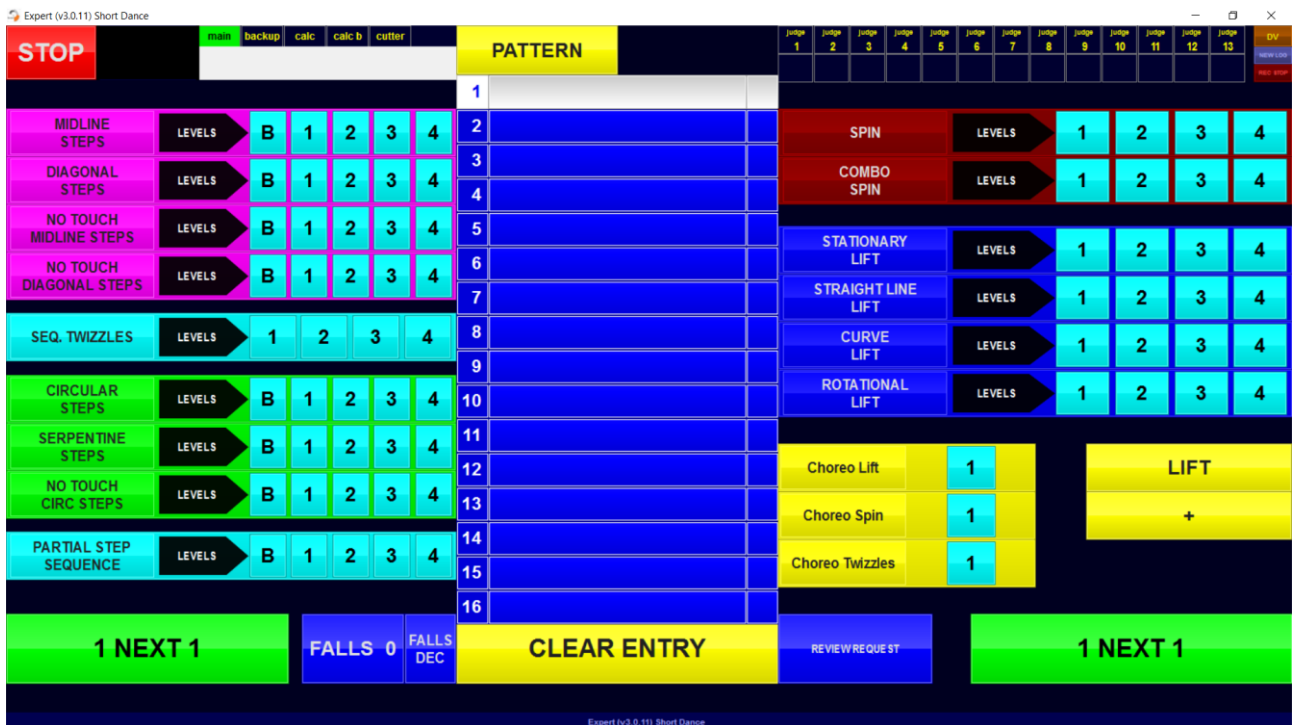


Figure 17 - Expert Screen – Short Dance



Figure 18 - Expert Screen - Pairs

The right upper part of the screen indicates connections and help requests of the Judges (see section Judge).



Figure 19 - Connection indicator

- Green – Connection
- Red – No connection
- Yellow – Judge requests help

The second line can be used to send a “Hurry up” message to the Judges. Click on the corresponding Judge who is to receive the message. The corresponding field is highlighted yellow, and the Judge receives a message on his/her screen.

Once the corresponding Judge has selected [Send marks] (see section Judge), the corresponding field on the Expert screen is switched back to green.

When the Expert confirms the help request by clicking on this button again, it becomes green again (see also section Judge).

The upper left part of the window indicates the connection to ISUCalcFS and (if applicable) to ISUCutterFS.

Red – No connection

Green – Connection

When the Skater is performing, enter the elements using the corresponding buttons. Elements are then indicated in the central part of the screen. Select the [NEXT] button to enter the next element.

Note: We strongly recommend selecting the [NEXT] button after each element to ensure that all elements are sent to ISUCalcFS.

In addition, the elements are verified in this step. Invalid elements are marked with '*'.

The [CLEAR ENTRY] button deletes the element in the current line. Use [Review request] to mark the current element. This mark is used as reminder to review the element in the video replay.

[Deductions] opens the deductions entry screen:

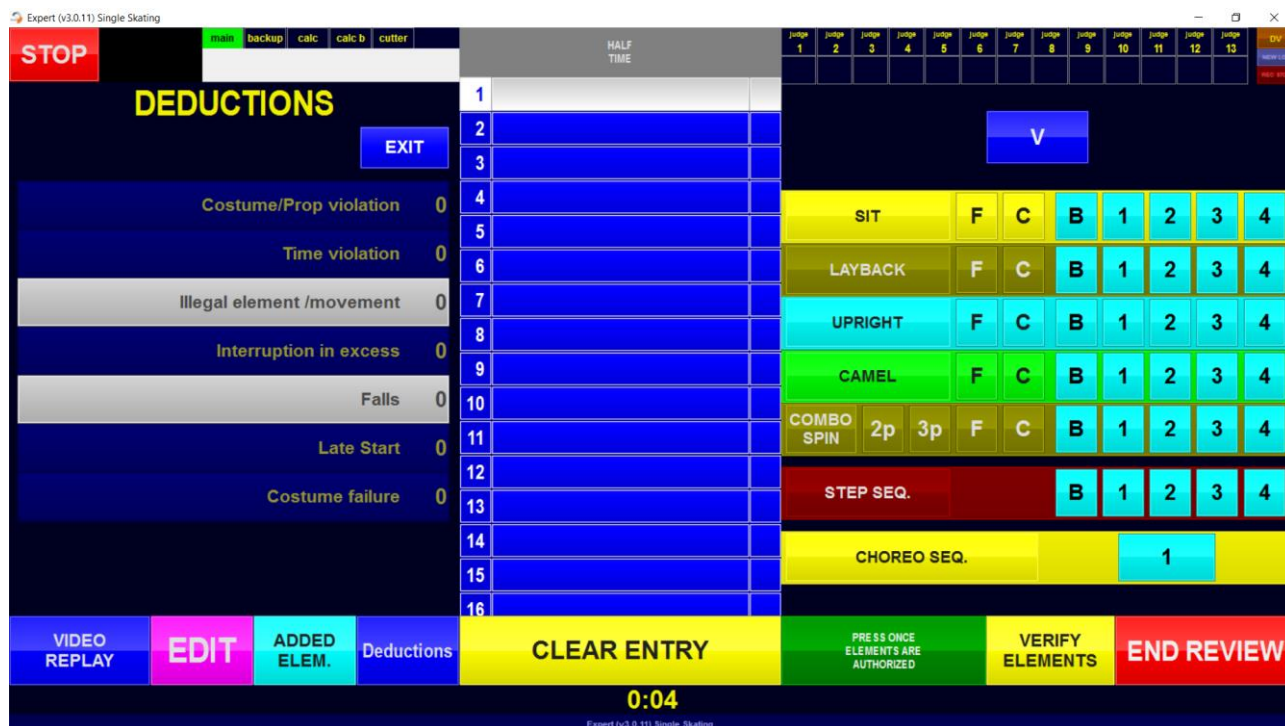


Figure 20 - Deduction window

If a Referee is entered in the Expert configuration, the Referee can enter certain deductions. Otherwise, only the Expert can enter deductions.

Note: Illegal elements and falls are always entered by the Expert.

The deduction window is closed using the [EXIT] button.

Once the input of elements is finished, select the [STOP] button. Some of the buttons become inactive.

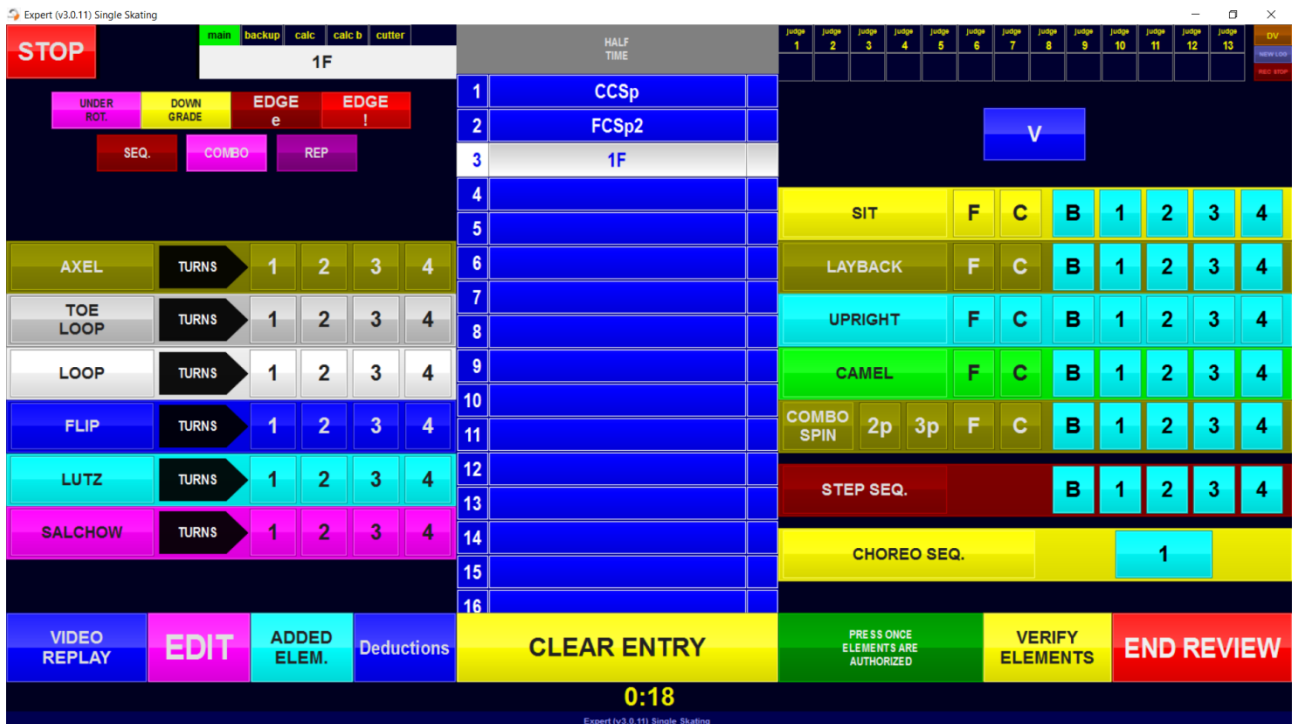


Figure 21 - Elements entry finished

Now, elements can only be edited or deleted using the [EDIT] button. [ADDED ELEM.] allows the Expert to add an element. If available, [VIDEO REPLAY] switches to the video replay mode.

If you have finalized the input and editing of elements, click [PRESS ONCE ELEMENTS ARE AUTHORIZED]. The button is then labelled ELEMENTS AUTHORIZED.

The Judges receive a message on their screen that the elements are authorized (see Figure 27).

Further entries are unnecessary, as the system is controlled by ISUCalcFS. ISUCalcFS now prepares the next Skater.

6.2 Judge

1. Double click the ISUScoreFS Judge desktop shortcut (see Figure 22).



Figure 22 - Desktop shortcut for ISUScoreFS Judge

2. The following screen appears:

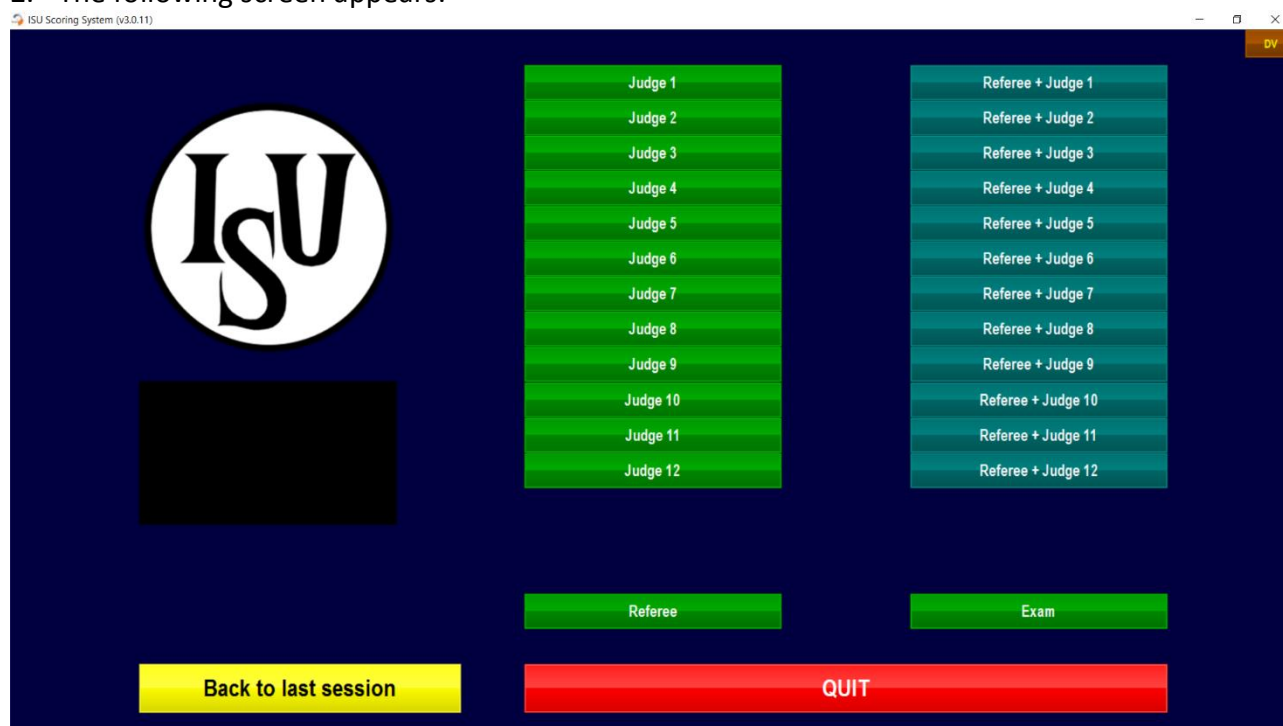



Figure 23 - Basic layout of judges screen

The basic Judges screen shows the green Judges column for the main system on the left side. The right part provides a feature to define that a selected Judge also works as Referee.

If Judge does not connect to the Expert, please check your hardware and network settings.

If the problem still exists, you can manually connect by clicking the  button. An input dialog appears where you can enter the IP address followed by ':' and the port number.

Select the Judges position by clicking the corresponding judge number button.



Figure 24 - Judge screen after selection of Judge button

The left part of the screen shows all elements entered by the Expert. (Note that above screen already contains elements). The field right beside the elements displays the score entered for these elements.

The right part of the window is the video screen that can be used to view video sequences of the individual elements. Select the element you want to review. Note that the video replay is only available if a video hardware is correct installed and running.

Right beside the video screen is the connection status indicator for the connection to the Expert: green – connection ok, red – no connection. The TCP button is used to reconnect to the Expert. The Log Clean clears the log. IP can be used for directly addressing the Expert.

There are also buttons to control the Video Replay: [PLAY] – play normal speed, [FAST] – play fast and [LIVE] – return to live video.

Below the video screen is the field to score the technical elements with a range of -3 to +3. Right beside the scoring field is the [Help] button to call the Expert for help, if necessary. If you call for help, your individual Judge number starts flashing in the right upper corner of the Expert screen (see section 6.1 Expert). The [Help] button on the Judges screen is highlighted red.

Below the scoring field is the field to score the components. Click in the corresponding field (or touch the corresponding field, if you are working on a touch screen terminal). The following screen is opened (As an example, we have selected Skating Skills):

SKATING SKILLS

Criteria:

- Balance and rhythmic knee action and precision of foot placement
- Flow and effortless glide, cleanness and sureness of deep edges, steps and turns
- Power/energy and acceleration
- Mastery of multi directional skating
- Mastery of one foot skating

CLEAR [] 0.25 0.5 0.75

0 1 2 3 4 5 6 7 8 9 10

TECHNICAL ELEMENTS SKATING SKILLS TRANSITIONS PERFORMANCE CHOREOGRAPHY INTERPRETATION SEND MARKS

Figure 25 - Component score

For reference purposes, this screen provides an overview on the most important criteria of the selected component. Now enter the score for the selected component by selecting the buttons [0] – [10] and [0.25] to [0.75]. You can delete your entry by selecting the [CLEAR] button. Return to the technical elements by clicking [TECHNICAL ELEMENTS] button.

Now select Transition and all other components and follow the steps described above.

If the Referee / Expert has entered a deduction, the Judges can check the deductions selecting the [DED] button. The following screen is opened:

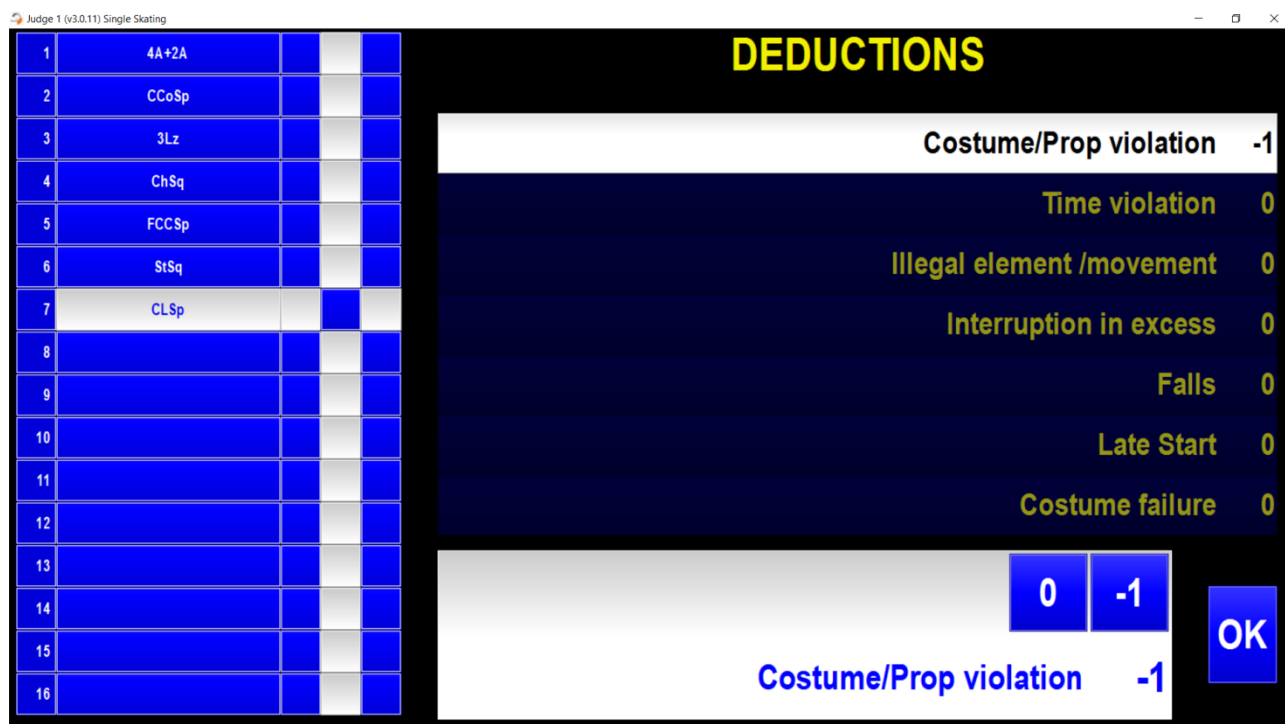


Figure 26 - Deductions field at Judges Terminals

Judges can only review deductions, but are not allowed to modify them. Select the [Exit] button to return to the previous screen.

When the Expert has authorized the elements (see section 6.1 Expert), the Judges screen indicates that the elements are authorized.

When you have finished entering the score, select the [SEND MARKS] button. The button is then labelled [MARKS SENT] and becomes highlighted green:

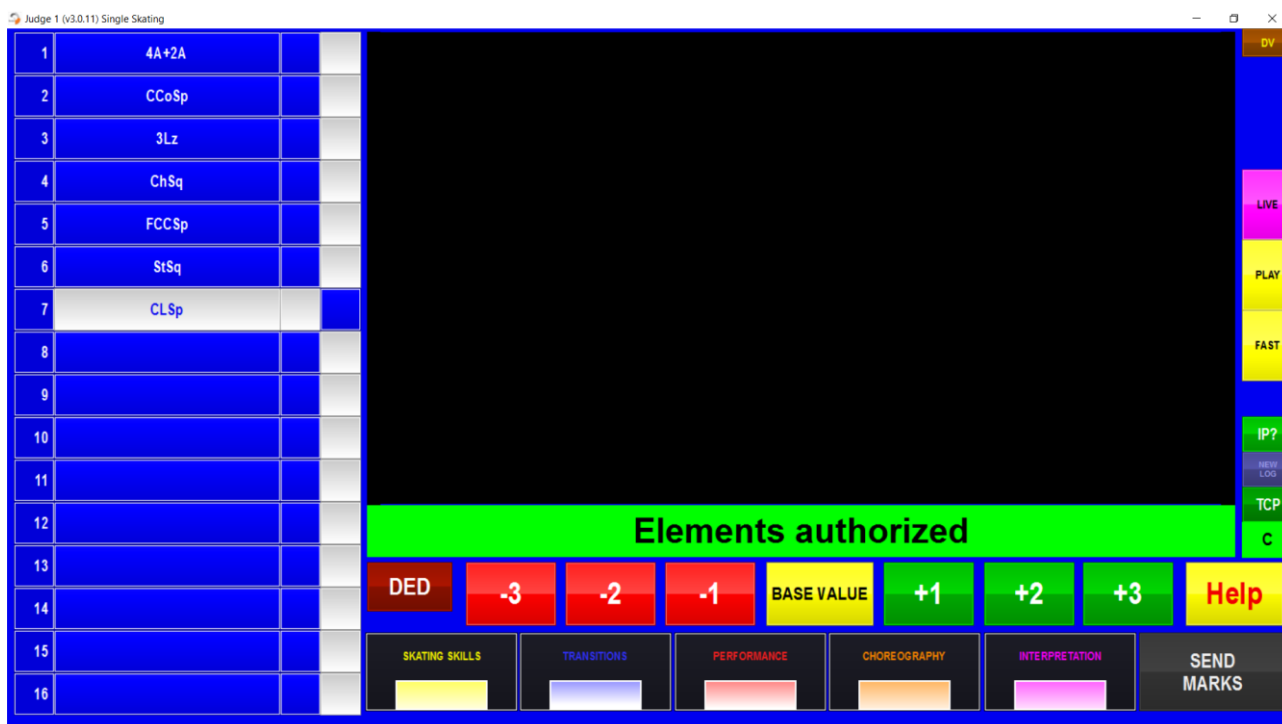


Figure 27 - Elements authorized

6.3 Referee

The Referee screen is basically the same as for the Judges (see Figure 24). Follow the instructions for the scoring of elements as described in section Judge.

To select the Referee, click  button.

The Referee has the ability to judge a lift with a video analysis:

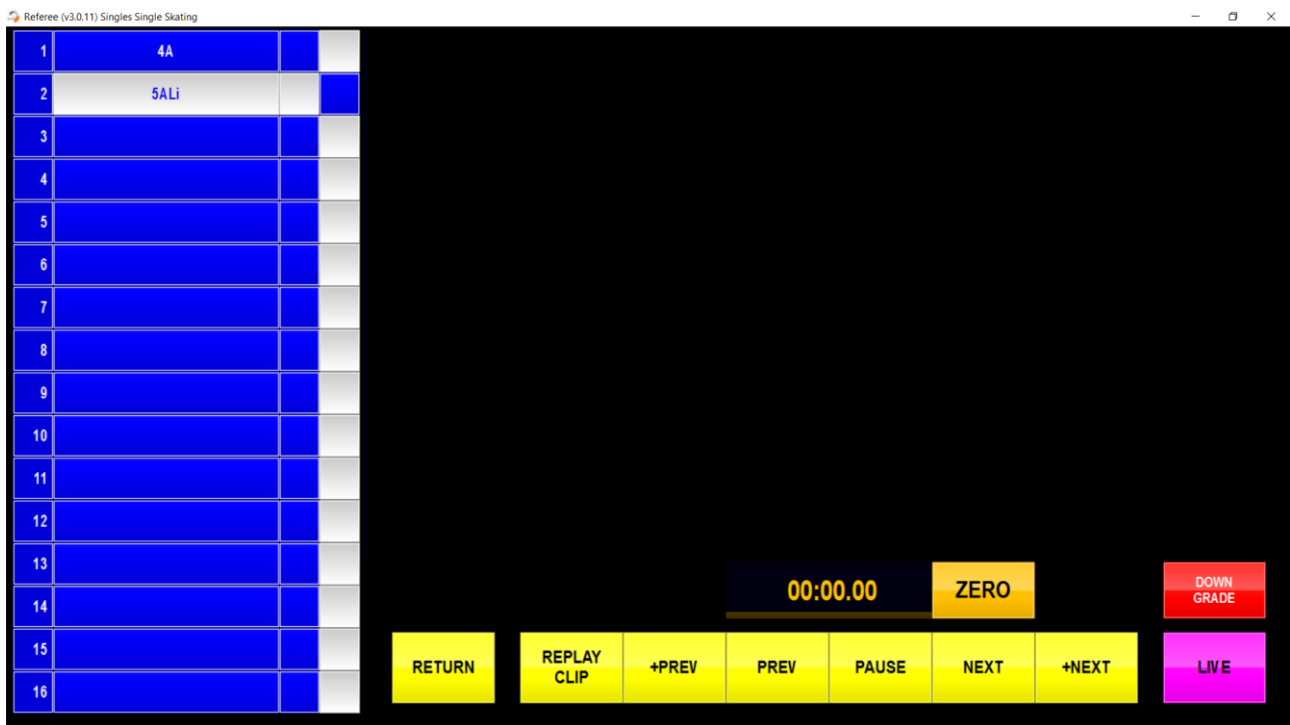


Figure 28 - Referee Video Analysis



Select the element to analyse. Then Replay starts or start the Replay using button [REPLAY START]. Pause the video by pressing [PAUSE] or directly touch on the video. Move forward or backward in the clip to reach the start of an element here a lift. Mark the timecode as start by pressing [ZERO] right beside the running time indicator. Then move to the end and you'll see the length of the lift element in the Time View. Judge if it is too long by pressing [DOWNGRADE] or remove this deduction by pressing [DOWN GRADE] again. Go back using the [RETURN] button.

7 OPERATOR CHECKLISTS


7.1 Expert Competition Checklist

3. On the desktop, double-click the shortcut for ISUScoreFS Expert.
4. Check if all Judges are connected properly.
5. Enter performed element and confirm with [Next].
6. Enter deductions, if no Referee is set up.
7. Select [Stop] when the Skater has finished the performance.
8. If necessary, edit / delete or add elements.
9. Authorize elements.

7.2 Referee Competition Checklist

1. Select [] button or for example [] button on Judge main screen, if the selected Judge is supposed to also work as Referee (see Figure 23).
2. Enter component and elements score.
3. Enter deductions.
4. Select [Send marks].

7.3 Judge Competition Checklist

1. Double click the shortcut for ISUScoreFS Judge (see Figure 22).
2. Select your judge button, e.g. [] button (see Figure 23).
3. Check if you are properly connected to the Expert PC.
4. Enter component and elements score.
5. Select [Send marks].

7.4 Exam Competition Checklist

1. Select [] button on main screen (see Figure 21).

8 RTSP CONFIGURATION

The ISUScoreFS folder contains the video configuration file rtsp.ini:

```
[rtsp]
; fps =
file = temp.h264
stream1 = rtsp://192.168.1.200/stream1
deinterlacing = 0
resync = 1
loglevel = 0
```

'file' specifies the location of the recording file. The local folder is the program folder, i.e. the file = temp.h264 directly stores the file in the program folder. Make sure you have write access to this folder.

'stream1' specifies the URL for the RTSP stream.

'deinterlacing' is reserved for future use.

'resync' = 1 means that a resync is done after each skater to be sure all timings are in sync. If 'resync' = 0 a complete re-init is done.

'loglevel' = 0 is the indicator for what kind of messages are logged. 0 is errors only, above 30 is verbose.

If rtsp.ini does not exist, the software applies the former DV handling.

9 FAQ AND TROUBLESHOOTING

9.1 The video screen of ISUScoreFS remains black or is frozen.

ISUScoreFS does not receive data from the RTSP stream.

- Check if all devices are connected to network.
- Check if camera is connected to RTSP device.
- Check if all devices are powered and running.
- Check for errors shown at RTSP device.
- If you're using multiple RTSP devices with Multicast, be sure that every device has its own multicast address.

Re-connect all devices with the PC. Re-start ISUScoreFS or re-initialize it using [DV] button in the upper right corner of the screen.

9.2 The video image is hitching or is not indicated properly.

This issue may be caused by performance problems:

- Processor too slow; other applications may impact the performance.
- Network jam
- Video bit rate is too low
- Too many clients are connected to the RTSP device

9.3 ISUScoreFS cannot connect to judges or ISUCalcFS

Check if:

- All network components are connected and working properly.
- The network has been set up correctly, i.e. if the Scoring PC is connected to the network
- Avoid using multiple networks, i.e. WiFi and LAN
- The Scoring System is running properly.
- The Operation mode 'Main' or 'Backup' is chosen in the upper left control bar.
- ISUScoreFS contains the correct IP address and the correct port.

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10.2 Version history

Version	Date	Modifications since last version
1.0	03/01/2005	Initial Version
2.0	19/01/2006	Update
2.1	20/05/2011	Layout changes
3.0	06/08/2012	Update ISUScoreFS Version 1.1.11 dated 06.08.2012
3.1	03/12/2012	Updated screenshots and settings
3.2	06/11/2013	Updated system requirements
3.3	01/08/2013	
3.4	14/06/2016	Updated for ISUScoreFS 3.x

NOTES

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