

# Dartfish User Guide

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# Chapter

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## *Introduction*

# 1 Introduction

Dartfish software provides advanced video tools to enhance your training programs and improve athletic performance. The system works both during workout and afterward when time allows for a more in-depth analysis of a performance.

## During the workout

Using Dartfish **InTheAction**\*, you will be able to provide instant visual feedback to your athletes. This feedback will supplement your personal coaching and allow you to maximize the benefits of using the muscle memory (proprioceptive) of your athletes and students. Thanks to a wide variety of customizable play modes, the use of video can be fully integrated into your usual activities with athletes on the field.

## After the workout

Dartfish software's set of video analysis features allow you to create new perspectives and innovative views of your athletes' performances:

- You are able to compare and view performances as never before to highlight areas needing improvement.
- You can annotate video with text and drawings to aid and communicate analysis
- Dartfish's video management system helps you manage all your training videos with ease and efficiency.

## Share your analysis

You can share your analysis with anyone, anywhere to continue the communication and learning experience. You can send video clips via e-mail, create enhanced CD/DVDs or even publish interactive analysis on the Internet.

## Make sense of competition footage

**Tagging**\* is Dartfish's notational analysis tool. Use it to create a descriptive index of the key events in a game or other long video. **Tagging** has tools to turn your index into a focussed team feedback presentation and also display frequency statistics of each event. Tags are created by clicking a set of fully customizable buttons, or by import from your sports own statistical tools, or even from the **Dartfish Note** app.

## Display data on video

For those working quantitatively, measurements of time, distance and angle can be made on video and recorded in a **Data Table**. The Data Table can even record changes in measurement or changes in position of **tracked**\* objects.

Using the **Data Readers**\*, you can link to data from any device or software that can create a CSV (character separated value) file and relate the output to what the video shows.

Dartfish is also capable of simultaneously recording video and data using **InTheAction**\*. This allows data to be displayed or graphed on video immediately after capture. Dartfish has developed links to several force platforms but also makes its SDK (software developer kit) available to you to develop your own links.

## Use Dartfish special effects for unique analysis opportunities

**Stromotion**\* and **Simulcam**\* are tools used by sports broadcasters world-wide to analyze and explain movement to their audience. Users of Dartfish can also benefit from these tools.

**Simulcam** is the only way to get a realistic comparison of video when the camcorder is panning. **Stromotion** and **ball tails**\* give an understanding of how performers and objects move from one position to another.

! *\*Asterisked features are not available in all Dartfish editions*

## 1.1 Support and help to use your software

This manual provides help to learn the range of Dartfish software features but it isn't the only source of help available to you.

Start with the video demonstrations on the Start page, which guide you through getting started with the basic features. Then, increase your understanding by reading these help chapters or using the more comprehensive video based tutorials available online.

### The Dartfish Customer Care Portal

In addition to this help, a wide range of support is available to you and the easiest way to access all of this is by following the links on the **Start Page** of your Dartfish software. This is your gateway to:

- Training Resources: Learn at your own pace with tutorials, comprehensive guides, instructor-led online seminars or arrange tailored training courses.
- Technical Support: Search the Dartfish knowledge base and find answers to your questions or contact our experienced team directly.
- Download Section: Get your products, updates, drivers and release notes online.
- Product Information: Get an overview of your previously registered products, retrieve your license key at any time or register another product.

💡 *An alternative way to access the Customer Care Portal is to use your browser to take you to <http://support.dartfish.com>*

### Registering your software

Your first step in getting support is to register your software because the possibilities available to you vary according to the support package supplied. In the case where you have multiple users of the same software, each user can register and create their own sign-in because the support package is linked to the software and not to its users.

Note that registering your software is not the same as providing the licence key during installation or activating it after installation. Registration is the process that identifies you as a user of your software and it is highly recommended that all users should register in order to benefit from Dartfish support.

The easiest way to register is via the Help menu of your software *Help > Product Registration*. Otherwise the registration code is required. This can be found at the bottom of the **product key** used to install the software.

### Talk to us

Dartfish has evolved and developed thanks to a continuous dialogue with users, we look forward to your comments and suggestions to help enhance future versions. Our continuing goal is to make every software release better to fit the needs of our users.

# Chapter

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*Getting familiar with  
Dartfish*



## 2 Getting familiar with Dartfish

Whether you are new to Dartfish or looking to improve your knowledge, this chapter is essential reading. It covers all the basic information and skills that you will need in order to be able to use Dartfish effectively.

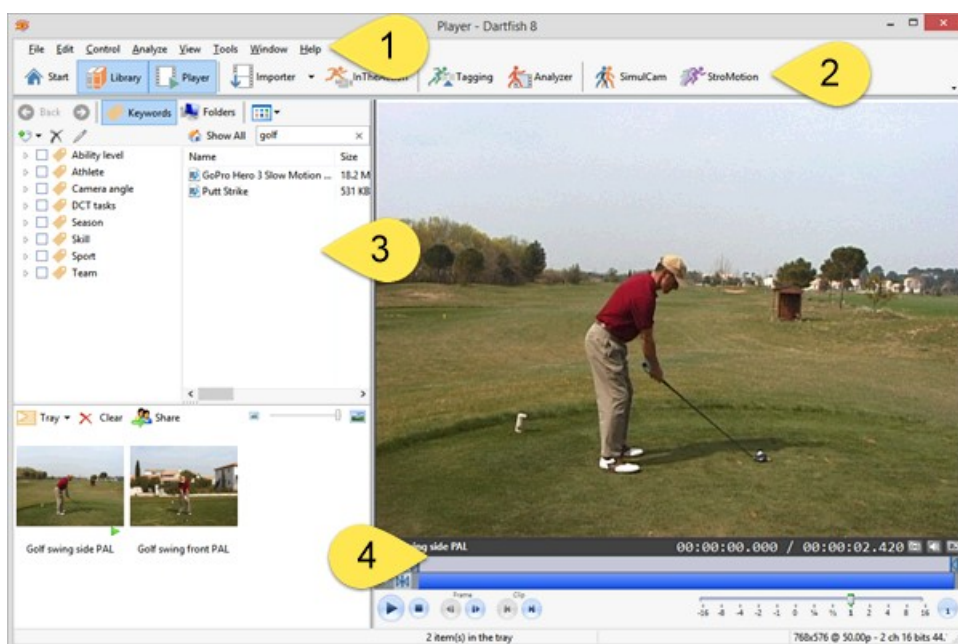
You will become familiar with:

- [The Dartfish workspace](#) and the Start Page
- [Video playback](#)
- The basics of the [Video Library](#)
- [Saving projects and videos](#)
- [Sharing video clips](#) between Dartfish's different modules and with other athletes or coaches.
- [Remote controlling](#) Dartfish software.

After getting familiar with Dartfish you will be well on your way to using the broad range of analysis, instructional and video sharing features that comprise this complete Sports coaching tool.

### 2.1 The Dartfish workspace

Dartfish workspace is designed so you can navigate through the video analysis and sharing processes easily. Following, is an illustration of the Dartfish workspace.



1. The **Menu bar** to access different Dartfish views and functions. Click a menu at the top of the program window to see the related menu commands.
2. The **Toolbar** buttons control what appears on the workspace such as the library and each module (e.g. Analyzer)
3. The **Library** allows you to manage, locate and share video clips and Dartfish projects. The library includes:
  - **Folder View** and **Keyword View** (on the left) to locate the files.
  - **Items List** (on the right) which lists the located files.
  - **Tray** (at the bottom) is a working area for storing video clips that you want to work with.

4. The module window is to carry out your tasks such as video capture, replay, comparison and drawings.

*! Context menus are also available throughout the program. Place the mouse pointer in the pane in which you want to work. Press the right mouse button, and select a command from the menu.*

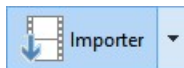
### 2.1.1 Displaying Dartfish Modules

Dartfish is composed of modules - each with individual functions for analysis, instruction, sharing etc. A module is displayed in two ways:

1. by clicking the appropriate **Toolbar button**.
2. by selecting the module from the **Tools menu** in the **Menu bar**

You do not need to close a module to open a new one - clicking on a module button automatically replaces the old one with your selection. Only the **Library** can be simultaneously displayed next to another module.

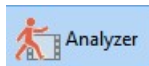
The core modules are listed below. Other modules may be available based on the Dartfish software edition you purchased. Read the relevant help chapters to learn how to use them.



**Importer** - import video files from a range of video devices and drives.



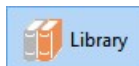
**Player** - playback and trimming of video clips



**Analyzer** - comparison of clips, drawing tools, key position analysis and publishing.

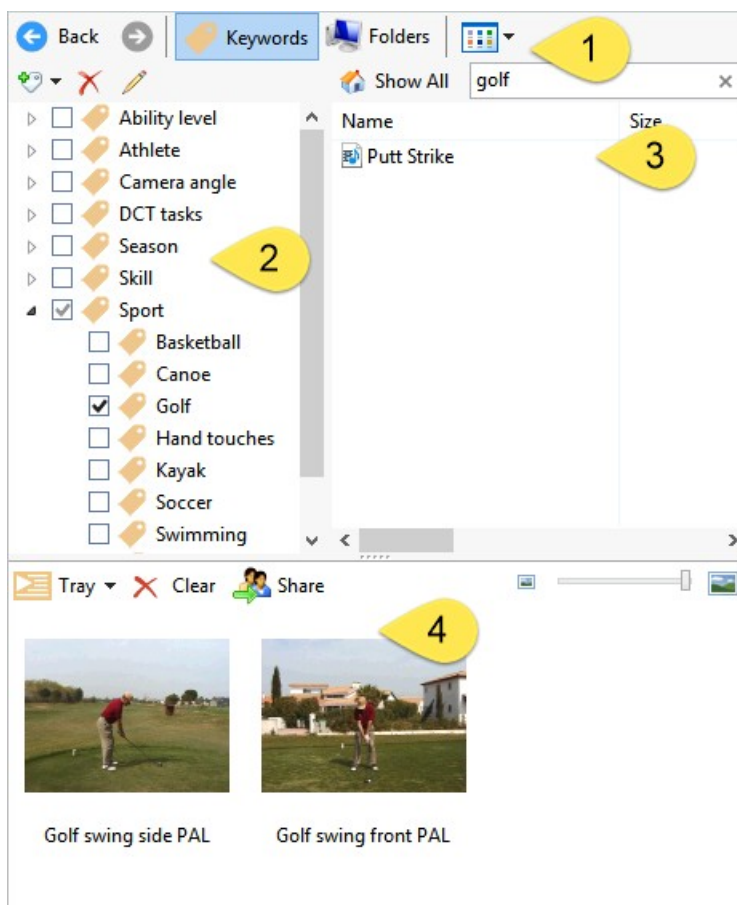
### 2.1.2 The Library

The Library allows you to locate, load, manage and share video clips. It is displayed and hidden using the **Library button** on Dartfish's toolbar.



*💡 F8 keyboard shortcut - closes/opens the library; it has the same function as clicking the library button.*

The library module is shown below with its four main parts labeled:



1. The **Library Toolbar** contains buttons used to control the appearance and content of the Items List.
2. The **Keywords View** is used to locate video clips matching categories and values selected (see link). When this area displays its **Folders View**, the content of selected windows folders will be displayed in the Items List.
3. The **Items List** is a list of video, image and project files that can be used by Dartfish.
4. The **Tray** gives you immediate access to recently imported or used video clips. It is also used to share video clips between Dartfish modules and also share by email, CD ROM and Internet.

### 2.1.3 Resizing panels

The windows can be resized both vertically or horizontally as follows:

1. Place your cursor over the boundary between two panels.
2. Once the cursor shape changes to a double-headed arrow, click and hold down the left button of your mouse. Then you can move the cursor until the window is at your desired size.

**!** When you close the software, the new layout is saved.

### 2.1.4 Repositioning panels

To make most efficient use of the screen, panels can be relocated to different positions around the workspace.

#### Unlocking/locking the workspace

Before panels can be repositioned, the workspace must be unlocked:

1. Select Window menu > Lock Workspace
2. After repositioning panels, repeat (1) to relock the workspace to prevent accidental changes to the layout

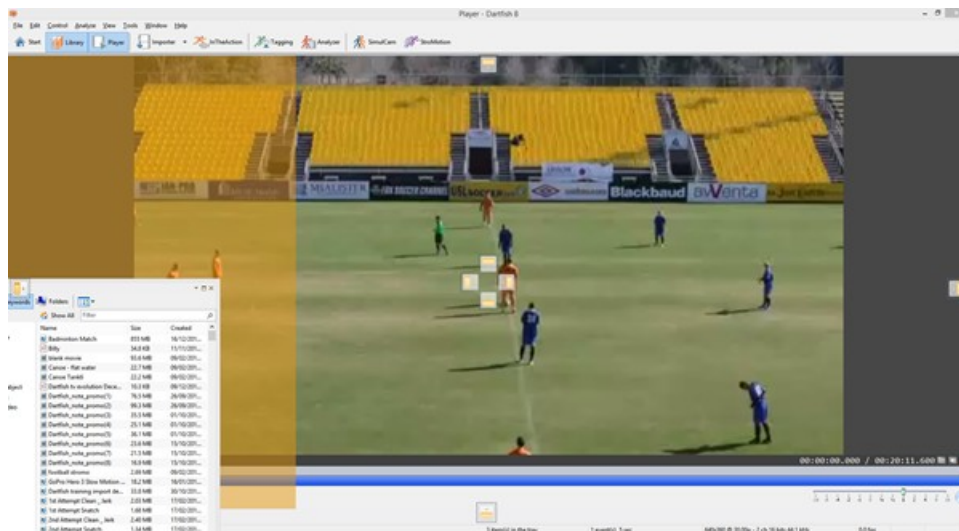
#### Docking panels around the workspace

When the workspace is unlocked, the title bar of each panel is visible. Panels are moved by dragging the title bar with the mouse:

1. Unlock the workspace
2. Click and drag the title bar of the panel to be repositioned
3. While still dragging the panel, move the mouse to one of the position guides found in the middle of the top, bottom, left or right of the workspace (alternatively similar guides are found in the center of the workspace).



4. When the mouse is correctly positioned, orange shading will highlight the final position of the panel



5. Release the mouse
6. Lock the workspace

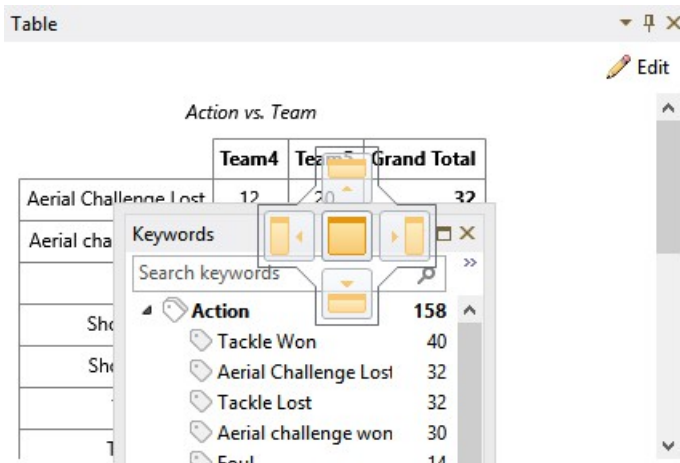
#### Floating panels

Panels can also be left floating above the workspace. To do this, proceed as for docking the panel around the workspace but release the mouse at any position on the workspace outside a position guide.

## Docking panels with other panels

Modules such as Tagging comprise of multiple panels. These can be docked together

1. Unlock the workspace
2. Click and drag the title bar of the panel to be repositioned
3. While still dragging the panel, move the mouse over another panel. A position guide appears.



4. Position the mouse over one part of the position guide, orange shading will highlight the final position of the panel
5. When the mouse is correctly positioned, orange shading will highlight the final position of the panel
6. Release the mouse
7. Lock the workspace

## Resetting the workspace

To return each panel to its original position in the workspace:

1. Select *Window menu > Reset Workspace*

## 2.2 Video playback

The ability to control playback (play, pause, play frame-by-frame, modifying playback speed, etc.) is one of the simplest benefits of using video analysis software.

### 2.2.1 Opening & closing clips

#### Open a single video

- Double clicking the corresponding file name in the **Items List** of the **Library** OR
- Drag & drop your chosen clip onto the **video display**

To open multiple clips:

1. Select the clips (usual Windows selection methods apply)
2. Drag & Drop the selection into the **Tray** (Player, InTheAction, Tagging) or the **Storyboard** (Analyzer)

## Clip selection

Once open, clips in the Tray or Storyboard can be selected by a double click or by clicking the **Next Clip** or **Previous Clip** buttons on the **Player control**:



## Alternative clip selection methods

- Keyboard commands: CTRL+N and CTRL+P
- [Remote control](#)

## Closing clips

Clips aren't really closed, instead they are removed from the **Tray** or project.

To remove a clip from the **Tray**:





- Click the **Clear** button on the Tray's toolbar
- Tap the DELETE key
- Right-click the clip and select Remove from Tray from the quick menu









To remove a clip from a **Storyboard**:

- Right-click the clip and select *Delete* from the quick menu
- Drag another clip onto the **video display** (replaces the current clip)
- From the menus select *File > New* (begins a new project with empty Storyboard)

### 2.2.2 Video panel controls

All the different modules have some control over how video is played. The video panel controls for the **Player** module are shown below. Most modules will have some of these features although not all controls will always be available according to that module's specific needs. Some buttons have an alternative function activated using the right mouse click

	Feature	Description	Alternative function (right-click or CTRL+click)
	<b>Play/Pause</b>	Play becomes a pause button when the video is playing (keyboard shortcut: SPACE)	
			
	<b>Stop</b>	The quickest way to return to the start of the clip (SHIFT+S)	
	<b>Play speed</b>	Each click cycles through the slow- Returns to '1' full speed motion speed possibilities	

			
	<b>Fast backward/forward</b>	Each click cycles through the fast forward/backward speeds	Returns to the previous play speed
	<b>Frame backward/forward</b>	Plays the video one frame at a time (CTRL+ LEFT, CTRL+RIGHT)	Moves the video by the <b>Jump Length</b> defined in the Dartfish <b>Options</b> (default 10 frames)
	<b>Previous/Next clip</b>	Move to the next or previous clip in the Tray/Storyboard/Events list depending on the current context (CTRL+P, CTRL+N)	
	<b>Cue In/Out</b>	Set the start point and end point of the video. Used to prevent replay of unwanted footage at the beginning or end of the clip	Reset Cue In/Out to the beginning/end of the clip
	<b>Replay options</b>	Controls whether the current clip plays, then stops at the end or one of these alternatives: - Loop play current clip - Play playlist of Tray/Storyboard/Events List - Loop play playlist	
	<b>Snapshot</b>	Saves an image of the current frame to the clipboard	Saves an image of the current frame as a file
	<b>Full Screen</b>	Displays video full-screen (F11)	Select a secondary monitor on which to display the full-screen view



## Slow motion

Control over slow motion replay is given in the following ways:

- By using the Speed control

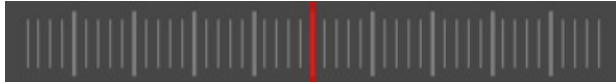




- By using the frame backward/forward buttons



- By using the jog wheel



Gentle dragging of the jog wheel gives fine control over movement

## Fast seek

Rapid movement through a video is given in the following ways:

- Using the **Fast backward/forward** buttons



On arrival at the desired position, right-click (or CTRL + CLICK) these buttons or the **Pause** button to return to the previous replay speed

- By using the **Jog Wheel**



Rapid dragging of the jog wheel scrolls quickly through a video

- By dragging the **Playhead**

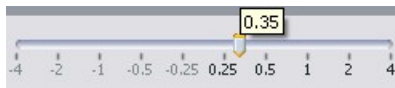


## Legacy controls

The controls described above arrived with Dartfish 9. These have not been implemented in all modules and are most notably absent from the Analyzer and InTheAction. In these modules you'll find set of controls which are broadly similar:



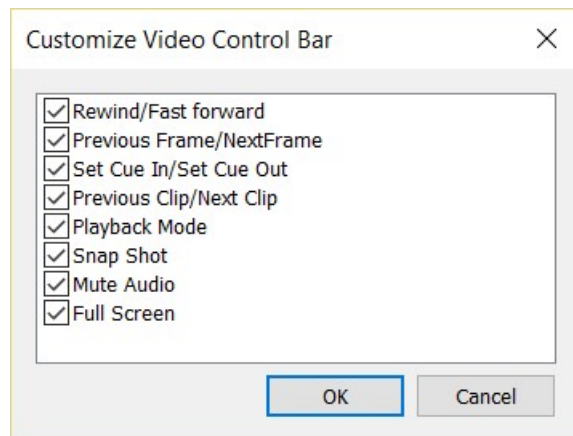
Fast forward and slow motion are integrated into a speed control, shown below. Clicking a number will set the speed cursor accordingly (e.g. 0.5). You can also click and drag the cursor to select a precise speed (e.g. 0.35 as illustrated above).



If preferred, you may use the legacy controls throughout Dartfish by selecting this option from the menus *Tools > Options > General* then select **Legacy** from the **Video control** section.

## Displaying and hiding buttons

1. From the menus, select *Tools > Options > General* then click the **Customize** link in the **Video control** section.
2. Choose the buttons which you want on your play control:



### 2.2.3 Trimming video clips

Trimming video clips, that is setting new cue in/out points, is often necessary. Perhaps because unnecessary footage has been captured at the start or end of the clip. Perhaps because you can analyze or coach more effectively if the clip is shortened to show only specific actions.

## Setting cue in/out points

1. Position the **Playhead** at the point where the video is to start playing
2. Click the **Set Cue In** button



3. Position the **Playhead** at the point where the video is to stop playing
4. Click the **Set Cue Out** button



5. The trimmed section is now highlighted with yellow shading on the timeline. This is the part of the video which will play.



## Alternative method

1. Position the **Playhead** at the point where the video is to start playing
2. SHIFT + CLICK the **Playhead**
3. Position the **Playhead** at the point where the video is to stop playing
4. CTRL + CLICK the **Playhead**

## Reset cue in/out



Right click the **Cue in** and **Cue Out** buttons

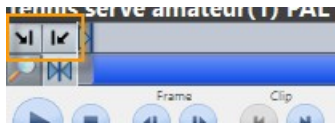
## Saving the trimmed video

Once the new in and out points are set Dartfish will use them each time the video is opened.

You also have the choice of saving the trimmed video clip as a new file (see [Saving a new video](#) to learn how to do this).

## Setting cue in/out points using legacy controls

Certain modules, notably the Analyzer, continue to use the legacy controls (see [Video Panel Controls](#)). Here, the buttons to set Cue In/Out are found on the left side of the **Timeline** (see below) and the Cue In and Out points are represented on the Timeline by **cue in/out markers** (  /  ).



In addition to using the buttons, Cue In/Out markers can be dragged into position.

## Reset cue in/out points using legacy controls

1. Right-click on either the **cue in/out markers** or the **Playhead**.
2. Select *Reset In/Out Points* from the quick menu



## 2.3 Saving projects and videos

When working with many Dartfish modules you will have the choice of saving a **project** or saving the video file resulting from the project.

### Saving a project

When you save a project you are saving all the information that relates to the creation of that project; the video files used, the settings chosen etc. Generally you will save projects if you wish to make changes to the project to get a better result or because you wish to base a new project on the settings used previously.

**!** *It is important to note that projects do not actually include the video files used by the project. For example, saving a project using two 5Mb video clips will not end up in a project file somewhere over 10Mb. It also means that if sharing projects with other Dartfish users, you will also need to give them the video files used by that project.*

## Saving a video clip

When you save a video clip you are creating a new video file that can be used by other Dartfish modules or shared with others - even those who do not have the Dartfish software will be able to play back video clips on their own computers.

### 2.3.1 Saving a project

Select **File > Save** (or **File > Save As...**) from the **Menu bar** to save a project. The type of project (and project file icon) depends on the module currently in use when saving:



- Analyzer project



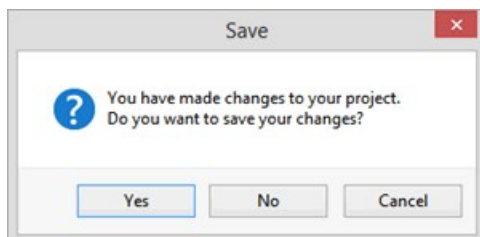
- SimulCam project



- StroMotion project

**!** *If a project is saved in a Monitored folder of your Library (see section [Defining your library in the Library chapter](#)), it will be displayed in the Items List.*

**!** *If you did not save a project when changing modules, you will be prompted to do so. Select Yes to save a project.*



## To open a saved project

- Double-click on the project icon in the Items List
- Select **File > Open** from the Menu Bar.

## To start a new project

Select **File > New** from the Menu Bar. If you did not save the current project, you will be prompted to do so (see above). Starting a new project will also clear the Storyboard of the Analyzer.

### 2.3.2 Saving a new video

Select **File>Save Movie...** from the **Menu bar** to save a new video. A wizard will guide you through the saving steps. Different wizards are shown based on the module currently opened.

#### Video Trimming Wizard

The Video Trimming Wizard will launch when the **Player module** is open. Complete the wizard to save a trimmed version of the clip currently loaded in the Player (see [Trimming video clips](#) to learn how to set the cue in/out values). This simple wizard only offers the opportunity to choose where the trimmed clip will be saved and not to rename it or convert it.

#### Video Saving Wizard

The Video Saving Wizard will launch when the **Analyzer** module is open. Complete the wizard to save a montage of the analysis contained in the **Storyboard** (read the chapter on the *Analyzer*). The main steps of the wizard are:

1. Selecting the video settings (see [Converting video](#))
2. Entering the file information, i.e. a file name and the category/values to classify the new video (see *Organizing your library* to learn more about the file name and categories)
3. Selecting the destination folder

## 2.4 Sharing video files

Dartfish offers many ways of sharing videos with athletes or other coaches. The Video Sharing Wizard guides you through the process of selecting and compressing video before exporting it to the appropriate media. The choices of sharing destination are:

- **Dartfish.tv** - Dartfish's online analysis sharing website. You can upload to your organization's **channel** if you have been given upload rights or to your own **myDartfish Cloud**.
- **My Computer** - copy your video to a folder, to an external drive or to a network server.
- **Email** - the video clip is compressed and attached to an email in your default email program (see note below).
- **Recordable CD or DVD** - burn video to CD or data DVD directly from Dartfish.
- **Enhanced Recordable CD or DVD** - creates a CD with an easy-to-use interface customized with your branding and contact information.
- **Internet** - send video to a FTP location.

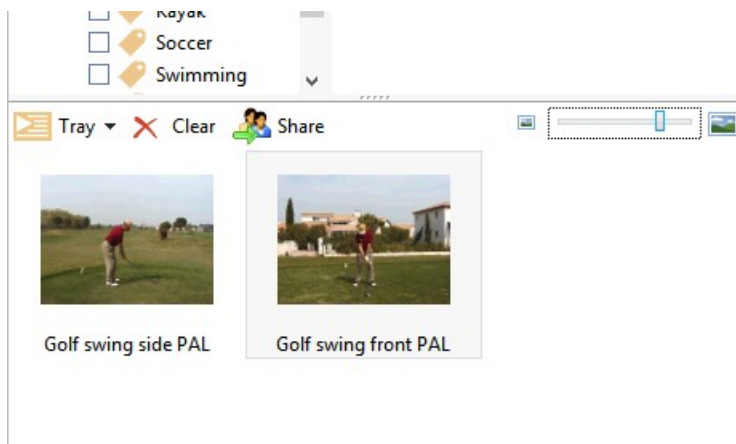
*! The share by email option works for any MAPI email software such as MS Outlook or Outlook Express. For other email software or web-based email like Hotmail you will have to attach video files through the software or website itself.*

### 2.4.1 Video Sharing Wizard

#### Loading clips for sharing

The Video Sharing Wizard is a feature of the Tray. Start by loading the video clips you wish to share into the Tray. To do this, drag-and-drop video files from the Items List to the Tray. Hold

down the [Ctrl] key while clicking on the files to select multiple files.

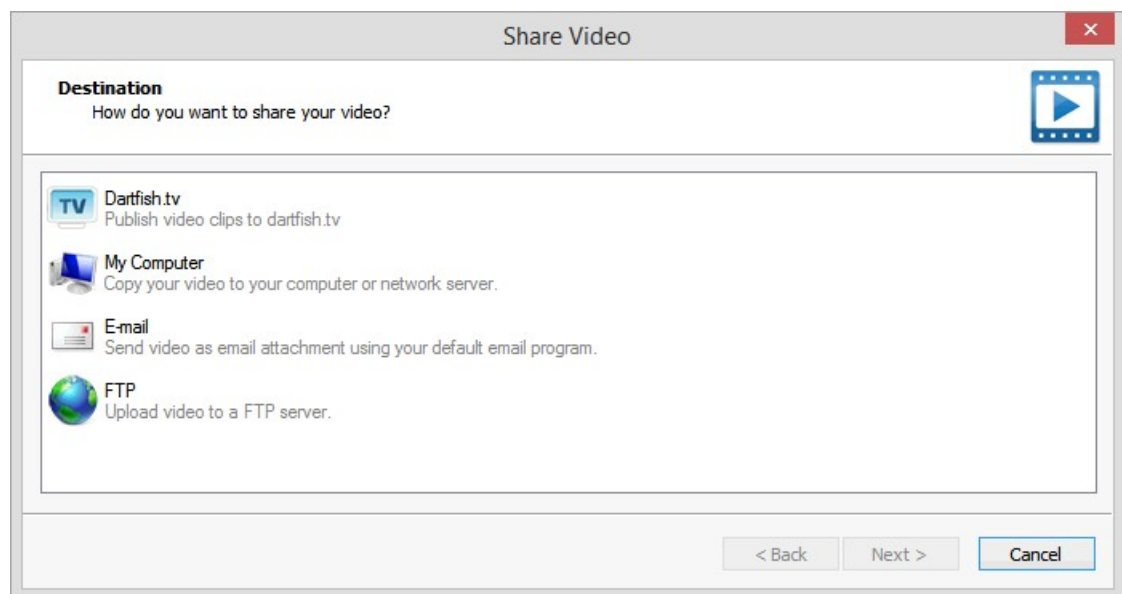


Once video clips are loaded, click the tray's Share button.

## The Video Sharing Wizard

The process of sharing is guided by the Video Sharing Wizard. Three steps are common to all sharing destinations.

1. Select the sharing Destination - Click on a destination then on the Next> button (at the bottom of the window) to proceed.



2. Select which videos you wish to share. "Check" those to be shared as shown below or click the Select All button:



3. Choose the video settings (encoding profile) appropriate for the selected destination (see [Video settings](#) for information on the different encoding profiles).

Specific additional information may be entered according to the selected destination. Read the information displayed in the wizard to complete these information (also see the Outputs from Dartfish - Publishing & Sharing chapter).

## 2.4.2 Converting video

When sharing or storing video, there are two important considerations:

1. File Size: video file sizes can be very large which can be a problem when storage space or the distribution method have limited capacity.
2. Video streaming: unless video files will be played from a local drive there are likely to be limits on the rate at which data can be streamed. The amount of video data streamed per second is expressed as its bit rate. Most obviously, video played from the internet needs to have a lower bit rate than that produced by a typical video camcorder. Networks and optical drives also impose limits on the maximum bit rate of video which can be played from them.

These considerations are addressed by compressing video by means of encoding and any Dartfish process which results in the creation of new video offers a range of suitable encoding profiles.

### About video encoding

The subject of video encoding is a difficult one involving many variables but to enable the best choice for encoding video with Dartfish it is useful to have a basic understanding of the following:

*Image quality:* Compression results in a loss of image quality – for any video format, the greater the compression the lower the image quality. Direct comparison between formats based purely on bit-rate is difficult because more recent codecs such as Windows Media 9 and H.264 achieve greater compression (smaller file size and a lower bit rate) for the same perceived image quality as older codecs such as MPEG-2 and AVI (DV).

*HD versus SD:* High definition (HD) video images appear sharper than standard definition (SD) because they have higher resolution (more pixels). When Dartfish encodes video it almost always retains the resolution of the source video; so when an encoding profile name refers to HD or SD this is a reflection of the resulting bit-rate and perceived image quality and does not indicate a change in resolution.

*Intended use:* This, more than any other factor, will influence the encoding profile chosen. For Dartfish analysis one of the Windows Media profiles is generally the best choice but if the video is being created for playback on an iPhone or upload to Dartfish.tv, one of those specific profiles might be used. If video is being created for use on the internet your web master may have a preferred video format.

*Encoding versus re-encoding:* Dartfish processes such as *Save Movie (Player)*, *Convert*, *Share* and *Publish Events (tagging)* re-encode the source video using the selected profile. Changing the video format can result in a loss of quality, although this won't be noticeable unless repeated. This is not an issue for Dartfish processes which create new video; **Save Movie (Analyzer)**, **Simulcam/Stromotion**, **Analysis recorder**.

### Dartfish encoding profiles

A complete list of Dartfish encoding profiles, their bit rates and suggested use can be found in the Options (*Tools menu > Options > Encoding Profiles*). The different formats available are summarized below

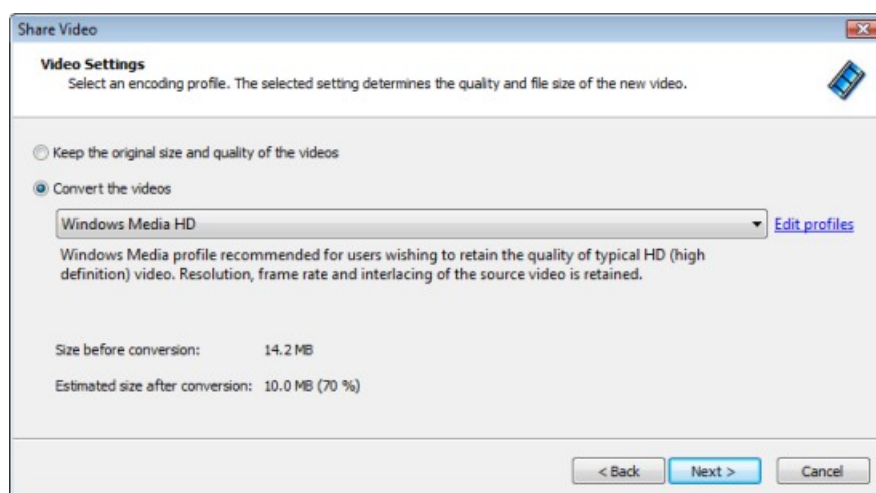
Format	Intended use
Windows Media	Windows media encoding offers a good quality to compression ratio and is the preferred option for producing video from Dartfish when the



	<p>output will be played on a computer's media player or in Dartfish.</p> <p>Windows media video can also be used for internet but your website administrator may prefer another format.</p>
Windows Media for Analysis Recorder	Highly compressed and reduced frame rate WMV used by the Dartfish <i>Analysis Recorder</i> to encode video (Pro and TeamPro editions)
MPEG-2	<p>MPEG-2 video is produced by many camcorders and is also the encoding used for DVDs.</p> <p>These profiles will be the preferred encoding for users who wish to maintain a library of MPEG-2 video or who produce DVDs.</p> <p>To carry out analysis tasks Dartfish needs to create an index for each MPEG-2 file. Encoding by Dartfish creates the index but if the file is moved or shared with other Dartfish users the index needs to be recreated, which delays access to the file. This may be a reason for some users to avoid MPEG-2.</p>
MPEG-4 (H.264)	The MPEG-4 encoding profiles are used to produce H.264 encoded video for playback on mobile devices and YouTube.
AVI (DV)	<p>AVI (DV) is the video format created from camcorders using DV tape.</p> <p>AVI (DV) is an old format which is less compressed than WMV or MPEG and this encoding will be primarily used by tape camcorder users who wish to maintain a library of DV video.</p>
Dartfish.tv encoding profiles	<p>Contributors to Dartfish.tv can download the encoding profiles used to produce video for their channel. Use of these profiles offers the possibility to create video which is already encoded, thereby speeding up the publication process.</p> <p>These profiles can be exported/imported to distribute within an organization.</p>
SWF (Flash)	Flash encoding is only used by Dartfish to create video for Analyzer Mediabooks.

## Video Settings in the Sharing Wizard

The Video Sharing Wizard includes a Video Settings step in which you can choose to share the original video, or re-encode it.

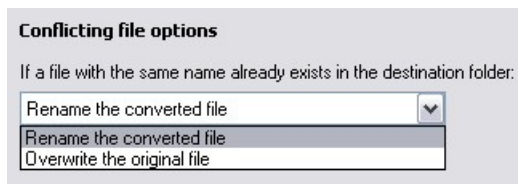


## Video Conversion Wizard

Existing Video files on your hard drive can be converted to a range of other video formats with the Video Conversion Wizard. The process is as follows:

1. Select files from the Items List or from the Tray. Multiple files can be selected by holding down the ctrl key and clicking each file.
2. Point at one of the selected files and click the right hand mouse button
3. Select Convert from the context menu that appears.

The subsequent process of choosing file format and location is the same as that for saving new movies but you are reminded to pay special attention to whether you want to replace the existing file or create a new file with a different name.



## 2.5 Remote controlling Dartfish

Many of Dartfish's buttons and controls can be activated by remote control. This powerful option allows you to record or present without the restriction of having to stand next to the the computer. There are three types of remote control:

### Jumi wifi remote

Jumi is an app for iOS which allows the creation of custom remote controls which function on a WiFi network. Its range is therefore only limited by network access but it requires the presence of a WiFi network which allows the communication between the app and the computer.

### Streamzap remote and IR receiver

The Streamzap shipped with Pro and Live editions of Dartfish prior to Dartfish 6. If you have one it may still be used with more recent versions. It uses its own Infrared receiver and has a range of around 25 meters.

### Windows Media Centre remotes

Any remote control device supporting Windows Media Centre commands can be used to remote control Dartfish. Buttons on these devices can be configured to better meet the needs of a Dartfish user.

#### **More on this**

- [Jumi remote control](#)
- [Streamzap remote control](#)
- [Windows Media Centre remote control](#)

### 2.5.1 Jumi remote control

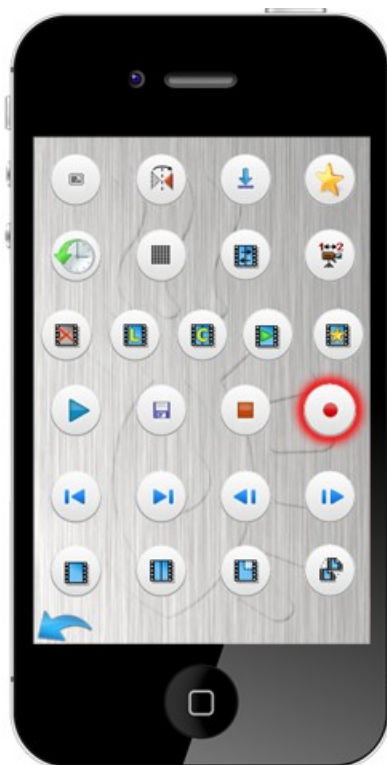
Jumi is a remote control app for mobile devices for which Dartfish have created a customized remote control. It communicates using WiFi

#### PC Installation

1. From the menu bar choose *Help > Technical Support* (if you have not yet registered on our Customer Care site, choose *Help > Product Registration* first)
2. Select the **Downloads** page
3. Run InstallJumi.exe and follow the on-screen instruction to install the controller software (Jumi Controller's icon should appear in the Windows system tray)
4. The first time Jumi Controller runs, you are required to supply a master password: any password can be entered – the same password will later be used to connect your iPhone to your PC.
5. Click Save to finalize the controller configuration.
6. Run Dartfish6\_Remote.zip.JumiTAP.jumi. A 'file imported successfully' message should appear confirming that Jumi is now customized for Dartfish.

#### Installation on mobile devices

1. Download **jumiremotes** from the App Store or Google Play
2. Make sure your computer and your mobile device are connected to the same wireless network
3. Launch the **Jumi remotes app**, you should see your PC listed
4. If your PC is not found automatically, tap Add then enter the same IP addresses and port number that are displayed by the Jumi Controller on your PC
5. Enter the master password you created previously, and select **Login** or **Login & Save** if you want to save the password for future logins



## Using the Jumi Remote control

The Jumi remote controls many of the functions in different Dartfish modules. We recommend that you start by becoming familiar with the buttons that control replay and learn the rest as you find you need them. The icon on each button matches those found in Dartfish.

## Troubleshooting the Jumi Remote control

An installation and troubleshooting guide can be downloaded from the [Dartfish Customer care site](#).

### 2.5.2 Streamzap remote control

The Streamzap remote control is no longer provided by Dartfish but if you have one, it can still be used with the latest versions. It communicates with Dartfish via an Infrared receiver provided with the control.

This device will not function without the installation of drivers. Be careful to install the correct drivers depending on whether your computer is running Windows 32-bit or 64-bit.

#### To install the remote control drivers on 32-bit Windows:

1. From the menu bar choose *Help > Technical Support* (if you have not yet registered on our Customer Care site, choose *Help > Product Registration* first)
2. Select the **Downloads** page
3. Find **RemoteControl\_32bit.exe** in the list of downloads for your product and click the **Download button**
4. Double click the downloaded file to run the installation program
5. Connect the receiver



When the receiver is connected for first time Windows will detect it and install the drivers for that USB port. Depending on your Windows setup this is a two step process:  
In the first step, Windows asks whether you want to go online to search for drivers. The answer to this is **No, not this time**.

In the second step you are asked if you want to install manually or automatically. The answer is **Automatic [Recommended]**.

6. Windows should successfully install drivers software for the infra red receiver.

#### To install the remote control drivers on 64-bit Windows:



1. From the menu bar choose *Help > Technical Support* (if you have not yet registered on our Customer Care site, choose *Help > Product Registration* first)
2. Select the **Downloads** page
3. Find **RemoteControl\_64bit.zip** in the list of downloads for your product and click the **Download button**
4. Right-click the downloaded file and choose the *Extract All* option from the menu
5. Now, complete steps 1-4 to install the 32-bit Windows driver but **DO NOT CONNECT THE**

#### RECIEVER

6. Now plug in your USB infrared reciever.
7. Open Windows **Device manager** and choose *Hardware and Sound > Devices and Printers > Unspecified*, you will find **Streamzap Remote Control**.
8. Right-click the option and choose **Properties** then select the **Hardware** tab. Click **Properties** and click **Change Settings**.
9. Select **Update Driver**, then select **Browse my computer for driver software**.
10. Browse your computer for the files you extracted in step 4.
11. Select the folder **x64** and click the **Next button**
12. Click the **Install button**

## Trouble shooting installation


Look for the Dartfish Remote icon in the system tray area of the Windows taskbar:

- If it is red:  The remote control is installed and functional. Ensure that the receiver is pointed towards the remote control, batteries are fresh, the receiver is within range and there aren't other sources of infra red interference - the flashing red light on the receiver confirms when an IR signal is received but not whether it is strong enough or from which source.
- If it is grey:  The remote control software is installed but the IR receiver is not connected. If it is connected to a USB port the likelihood is that drivers are not installed for that USB port correctly. Try removing the receiver and connecting it to a different USB port.
- If it is not present: In a small number of cases the Streamzap software does not automatically start after installation. In this case you can force it to start by restarting the computer or manually activating its executable file at /program files/Streamzap/Remote/zremote.exe.

## Using the Streamzap

The Streamzap remote controls many of the functions in different Dartfish modules. We recommend that you become familiar with these buttons and how they can help you coach more effectively. If this looks like too much to remember how about starting with the group of six buttons under Play and Pause. You can learn the rest as you find you need them.



 Now that you can use Dartfish remotely you should be able to display video in full screen. Type [F11] or look for the Full Screen button at the top of the remote.

### 2.5.3 Windows Media Centre remote control

Many manufacturers produce remote controls, keyboards and other devices designed to control the media applications in Windows. You can use these to remote control Dartfish.

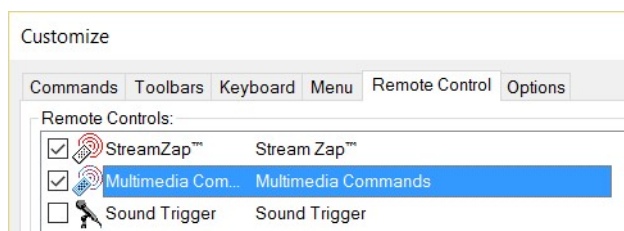
#### Installation and use

Install the device receiver according to the manufacturer's instructions. Usually this will be a simple case of 'plug-and-play'

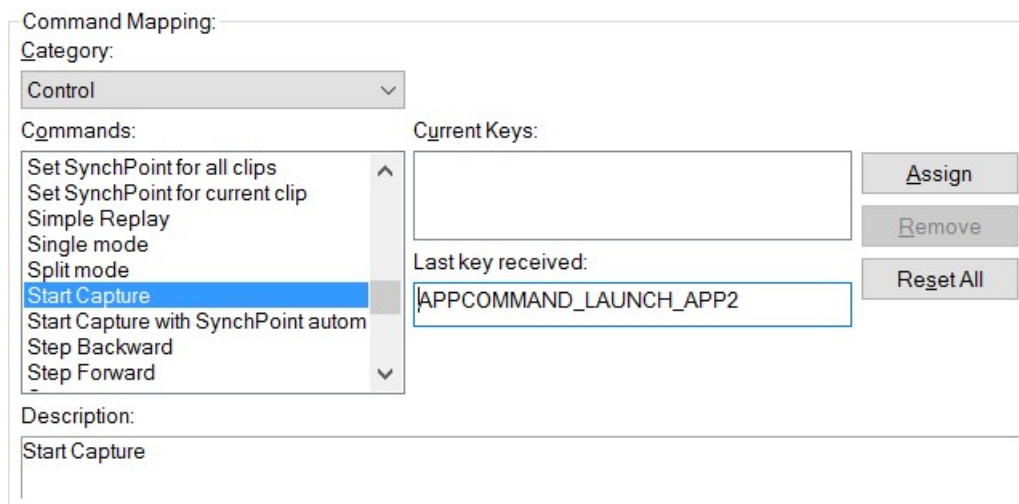
#### Customization

Because your device is not specifically intended for Dartfish, it may lack buttons for functions which you require. Dartfish can be configured to reassign commands sent from the remote to alternative functions in the software. For example, you may wish to reassign a remote control button to trigger recording. To do this:

1. Click *Tools menu > Customize...*
2. Select the **Remote control** tab



3. Select the command to be assigned to a remote control button.  
You may first select a category to make the search for a command easier. For example, the **Start Capture** command is found in the **Control** category:



4. Press a button on the remote control.
5. Confirm that a valid command has been received by checking that a corresponding entry appears in the **Last key received** field
6. Click the **Assign** button

## 2.6 The next steps

In this chapter, you learned the basics of Dartfish software.

Your next step is to learn how to get video from your digital camera onto your computer so that you can experiment with your own video straight away. Read the Capturing Video chapter.

You can learn more about how Dartfish can help you find relevant video files with the Organizing your library chapter. It will explain in detail the advantages of using categories to classify and find your video clips.



# Chapter

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*Video Library*

## 3 Video Library

The **Video Library** is a complete set of features used to locate and manage the files you wish to analyze or share:

- The video library is "built" from the Windows folders containing those files that are relevant for use with Dartfish.
- Because you are likely to analyze many video files, Dartfish helps you locate relevant content using a flexible video content management system called **Keywords** which allow you to describe the content of video clips more comprehensively than relying on organizing video into different Windows folders.
- Dartfish uses a **Library module** which offers rapid access to your content as well as a variety of tools to help you locate relevant video files.
- The Library module has a powerful sharing feature called the Tray. It provides a workspace containing files which are being worked with. This not only makes them readily accessible for use in Dartfish but also allows you to share content by a variety of media including email, Internet and CD ROM.

*In this chapter you will learn how to:*

- [Define your library](#). Learn how to include the content you wish to see in the Dartfish Library.
- [Organize your library](#) using Dartfish's Keywords.
- [Locate video files](#) using Dartfish's array of search tools.
- [Create Playlists](#) from the contents of the library.
- [Share video files](#) by email, CD/DVD or Internet.
- [Convert video clips](#)
- [Correct video errors](#) such as incorrect interlacing, aspect ratio or orientation.

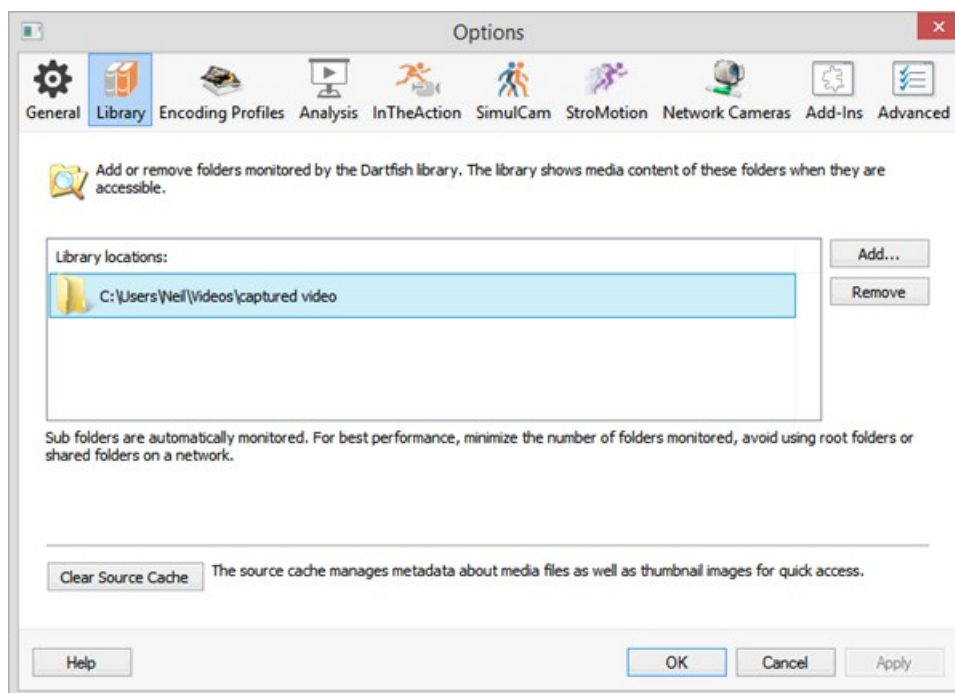
### 3.1 Defining your library

The **library** is the collection of ALL the video files that you want to use with Dartfish. These files can be stored on several folders on your hard drive.

To define the library you must tell Dartfish which folders to monitor. Only the video clips found in these folders will show in the Library module. The default monitored folder is the windows 'Videos' folder

#### To add the contents of a folder to the library

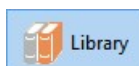
1. From the menu bar, select *Tools > Options* (or keyboard F3)
2. Click on the **Library** option



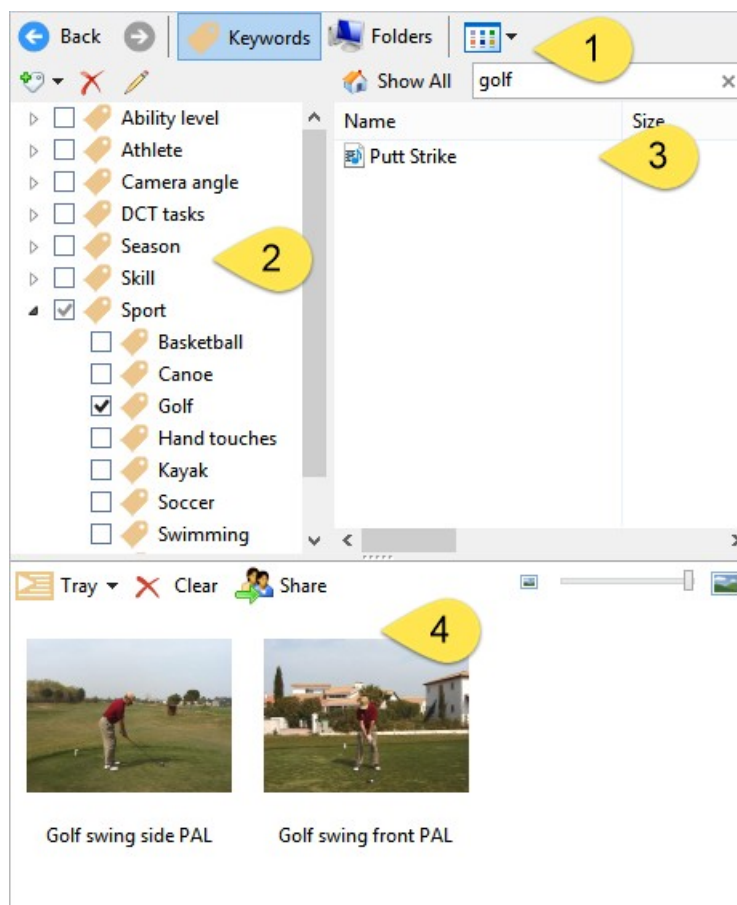
3. Click on the **Add... button**. A browser window will open.
4. Choose a folder and click on OK. The sub folders of this folder will also be included in the library.
5. Repeat steps 3 and 4 to add additional folders.
6. To remove a folder from the list, click the folder in the list and click on the **Remove button**.

## 3.2 The Library workspace

The Library module is your route to accessing the content of the library. It is displayed and hidden using the Library button on Dartfish's toolbar.



The library module is shown below with its four main parts labeled:

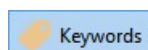


1. The Library Toolbar contains buttons used to control the appearance and content of the **Items List**.
2. The **Keywords view** is used to filter the Items List for video clips matching categories and keywords selected. When this area displays its **Folders view**, the content of selected windows folders will be displayed in the Items List.
3. The **Items List** is a list of video, image and project files that can be used by Dartfish.
4. The **Tray** contains thumbnails of recently created or opened videos. Think of it as giving you quick access to the files you are currently using.

### 3.2.1 The Library Toolbar

The function of the **Library Toolbar's** buttons is to help you locate the items you wish to use from the **Items List**. These buttons have the following functions:

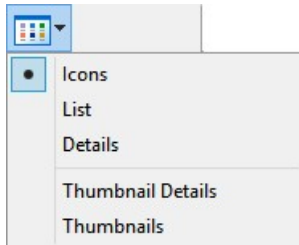
- **Keywords button** - to display a list of categories and values by which the Items List can be filtered. To learn more about doing this see the topic [Locating video files](#).



- **Folders button** - this displays a list of Windows folders. The Items List will show the contents of the folder selected from this list



- **View Type button** - to control how items are represented in the Items List. Items can be displayed in a simple list or showing details such as file size and category/values used. The thumbnail views show an image of the first frame of video.








- **Back/forward navigation buttons** - As different categories and folders are selected from the Folders view or Categories view the Back and forward buttons become available to navigate between them.



### 3.2.2 The Items List

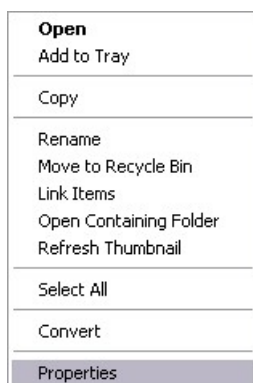
The Items List is a list of items that Dartfish is able to use. This includes video clips, images and Dartfish projects, each represented by its own icon examples of which are shown below:

-  - Video clips (exact image will vary according to default video application on your system)
-  - Picture files (exact image will vary according to default picture viewing application on your system)
-  - Analyzer projects
-  - SimulCam projects
-  - StroMotion projects

### File management using the Items List

File management functions such as file renaming, deletion and copying can be carried out from the **Items List**. Display the range of options as follows:

1. Point the mouse at the item(s) you wish to edit.
2. Click the right mouse button. A context based "Quick menu" appears.



3. Left click the function you wish to use.

 *The use of the Convert function is explained in the topic [Converting video clips](#).*

## Opening video clips

There are three methods of opening a video file from the *Items List*:

1. Point at the item and double click the mouse.
2. Drag and drop the item from the Items List on to the video display. This method offers more flexibility when there is more than one video display to choose from.
3. Drag and drop the item onto the Tray section of the Library module. From here it can be added to the video display as needed.

## Opening Projects

Projects must be opened using the relevant Dartfish module. Either the appropriate module is opened first or, if a project item is double clicked (method 1 above), the appropriate module will start, closing the current module if necessary.

## Opening Images

Image files can be opened by double clicking them however they will not be opened into Dartfish, instead the default image viewing software on your computer will be used.

### 3.2.3 Item Properties

Further information about items can be revealed by using the **Details view** or the **properties window**.

#### Details View

Details view is selected by clicking the *View Type* button on the *Library Toolbar*. The details view reveals additional file and categorization information about each item as shown below.

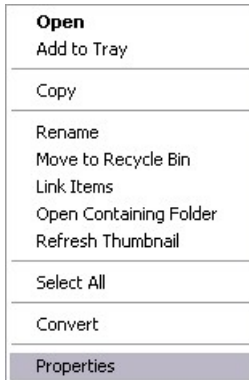
Name	Size	Type	Created	Club
 Iniaki Iron 7	6.39 Mo	Clip vidéo	18.04.2005...	Drive

💡 *These details can be exported as a CSV file see the topic [Exporting keyword data](#).*

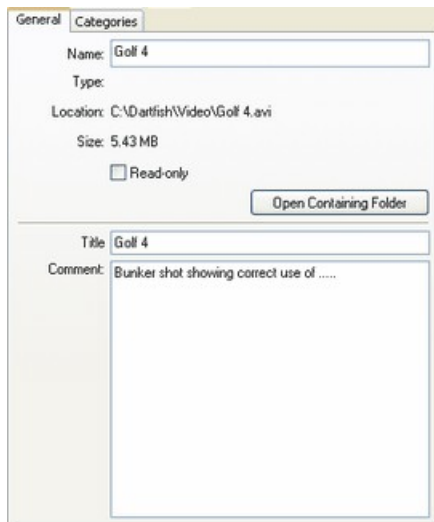
## The Properties window

To display an item's properties:

1. Point the mouse at the item.
2. Click the right mouse button. A context based "Quick menu" appears.



3. Select the *Properties...* option. The **properties window** appears for the selected item as shown below.



Although much of the properties information is similar to that displayed in **Details view**, there are two useful pieces of additional information:

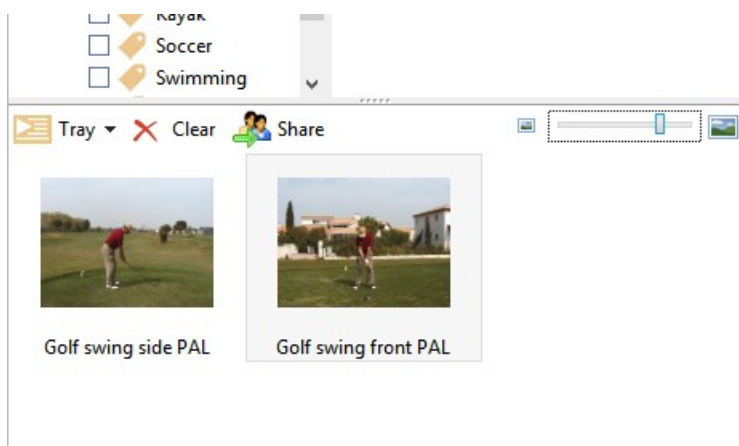
1. **File location** - the folder on your hard drive where this file is located. The Open Containing Folder button allows you to open this location to see other content of this folder.
2. **Comment** - comments can be edited in the properties window and can be used to provide additional information about the file. This is particularly useful if you intend to share the file (see [Sharing video files](#)) as your comments will be included with the video (depending of media chosen).

## The Properties window - source info tab

The properties window also shows information about the video source. Some of these properties can be modified to correct errors in the video. See [Correcting video property errors](#)

### 3.2.4 The Tray

The **Tray** is a working area for the collection of video files currently being used. It allows you rapid access to files you want to analyze and provides a method for taking files from one module to another.



Additionally, organizing items into the Tray is the first step for sharing video files (see [Sharing video files](#)).

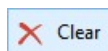
### Adding clips to the Tray

Items will appear in the Tray when:

- Video clips are opened from the Items List.
- New clips are captured from a video camera.
- Video clips are added by drag & drop from the Items List.

### Clearing the Tray

Selected items are removed from the *Tray* by clicking the *Clear* button.



If no files are selected the entire content of the Tray is cleared.

### File management using the Tray

The items appearing in the Tray are a representation of the original file so unsurprisingly, the file management functions available to items in the Items List (see [The Items List](#)) are also available to items in the Tray.

1. Point the mouse at the item(s) you wish to edit.
2. Click the right mouse button. A context based "Quick menu" appears.





3. Left click the function you wish to use.

### 3.3 Organizing your library

Your Dartfish software includes a versatile video management system called **Keywords**. The Keywords are used to describe the contents of your video clips in a simple and clear manner. For example, you can define **categories** such as the name of the athlete, discipline, location of the filming, assessment of performance etc and each video clip can be classified and easily located by using Keywords in any or all of these categories.

Continuing this example, it becomes very easy to locate videos containing "John Smith" doing "Bench press", "Incorrectly" and distinguish these from video of other athletes or even of "John Smith" throwing the "Javelin".

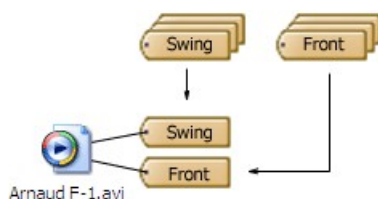
#### 3.3.1 Understanding Keywords

To understand the Keywords system, you must be able to distinguish between the following elements:

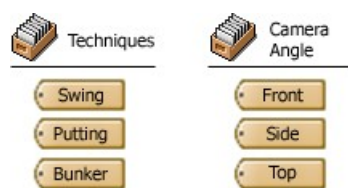
- The File Name that is defined for each video clip physically stored on your hard drive. A video clip is identified with the icon illustrated below, with the file name displayed underneath (as you can see in Windows Explorer).



- The Keywords that represent the details of each clip. For example "Swing" and "Front" can be used to describe a video clip containing a swing filmed from the front in golf.
- The process of classifying consists of assigning keywords to your video clips, i.e. labeling them.



- The Categories that group the Keywords of the same kind.



### 3.3.2 Defining your categories

To help you decide what categories and keywords you need, imagine you have several hundred video clips on your computer. How would you label each one to identify it? When you look for these video clips one year from now, what might you be looking for?

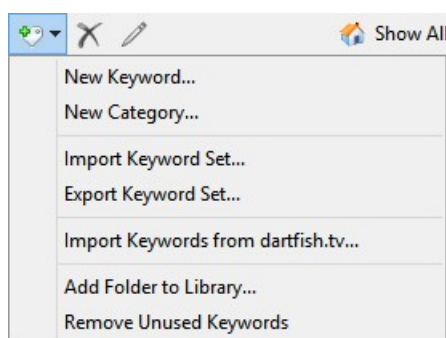
- Perhaps you film different sports or different disciplines within a sport. For this create a Sport category or a Discipline category with values for each sport or discipline that you work with.
- Perhaps you will want to compare video clips filmed from the same angle. That will be much easier if you are able to distinguish clips filmed from the front and ignore those filmed from the side. In this case, you may use the category Camera Angle.
- So, what else might you look for? Age group perhaps if you want to compare athletes of a similar age; An Assessment category if you want to be able to distinguish video where a skill is performed well from where it is performed badly.

Once you have replied to these questions, you can create the nomenclature that will allow you to classify and locate your video clips.

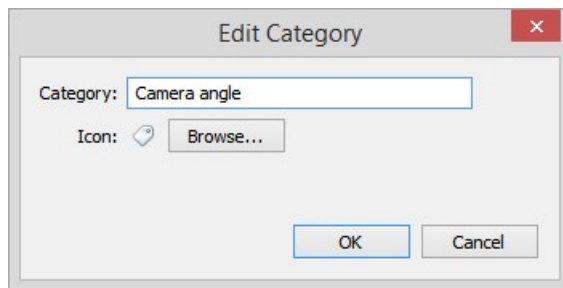
### 3.3.3 Editing categories and keywords

#### To create a new Category

1. Click on the New button at the top of the library and select *New category...* from the menu that appears.



2. Enter the name of your new category (e.g. Camera angle) and click OK.




The new category will appear in the Library **Categories list**.

### To rename a category:

1. Right-click on a category label and select Edit... from the context menu
2. Type the new name and press the enter key on the keyboard.

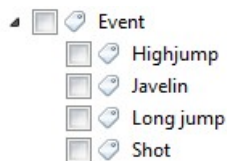
### To delete a category:

1. Click your mouse on a category to select it.
2. Click on the Delete category or value button in the category tool bar .
3. Confirm the action by clicking OK. The category will disappear from the Categories list.

**!** *When a category is deleted all keywords within that category are also deleted. Video clips using those keywords are not deleted but they will lose the deleted values.*

## Creating & Editing Keywords

Keywords appear beneath the category headings. If needed, click on the icon to the left of a category to expand its list of corresponding keywords. In the example below "Event" is the category and "highjump", "javelin"... etc are the keywords used to describe the video clips.



Creating, deleting and renaming keywords is done in the same way as for categories (see [Editing categories](#)) except that you start by selecting the category which contain the keyword.

### 3.3.4 Classifying video clips


Once your categories and keywords have been defined, you can classify your video clips. This process consists of assigning keywords to your video clips, i.e. labeling them, in the same way as you would label your suitcase to help you recognize it.

It is not just video clips that can be classified; any item that Dartfish lists in its Items List can be categorized to make it easier to locate.

### To add a keyword to an item:

1. Select the item(s).
2. Drag the item on to the desired keyword.

Remember that you are not limited to adding a single keyword. You can repeat this process as often as you like BUT only one keyword from each category can be added to each item.

 *You can classify several video clips at once. To do this, press on the Shift or Ctrl button on your keyboard while left clicking with your mouse on the clips you wish to classify. Then drag and drop the files to a keyword as described above.*

### To change the keyword attached to an item:

1. Select the item(s).
2. Drag the item to a different keyword within the same category.

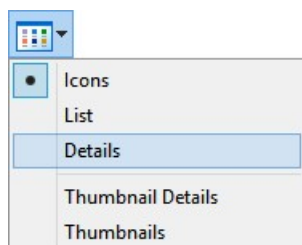
 *It is often better to add keyword to your video clips as they are captured from your camera. To find out how to do this, see the topic [Setting Clip Properties](#)*

## 3.3.5 Removing keywords from video clips





As seen in the topic, [Editing categories and keywords](#) deleting a keyword from the categories list will also remove that keyword from any items which hold it. However it is also possible to remove a keyword from a video clip.

### To remove a keyword

1. Click the View Type button at the top of the Library module




2. Select Details.
3. Alter the width of the Items List so that you are able to see the headings for each category (these are only visible in Details or Thumbnail Details views). To do this you will click and drag the right hand border of the Items List.
4. Find the keyword you want to remove. To do this you may have to make the Items List wider still or use the scroll bar at the bottom of the Items List.
5. Right click on the value and choose Rename from the context menu. The keyword will enter an editing mode as shown below:

Name	Club	Size
 Iniki Iron 7	Drive	6.39 Mo
 Iniki_0305(2)(1)	Drive	8.18 Mo
 Iniki_0305(2)	Drive	8.18 Mo
 Iniki_0305(3)	Drive	9.28 Mo

6. Delete the existing keyword (Backspace key on your keyboard).

### 3.3.6 Importing/exporting keyword sets

The category and keyword information for each video clips is stored in a small extra Metadata file (with a **".dartclip"** file extension). Although this is not visible in Dartfish's **Items List** you can see it using Windows Explorer as shown below.

 Iniaki_0305(4).avi	9'935 Ko	Clip vidéo
 Iniaki_0305(3).avi.dartclip	1 Ko	Dartclip files
 Iniaki_0305(3).avi	9'512 Ko	Clip vidéo
 Iniaki_0305(2).avi.dartclip	1 Ko	Dartclip files


When your video clips are shared, the recipient will also inherit a new set of categories and keywords provided the metadata file was also shared. All Dartfish's sharing processes include metadata.

### What happens when inherited categories match existing categories?

Provided that the spelling and capitalization is identical, the new video clips will fit neatly into the existing keyword system. But if, for example, the new video clip has a value of "Front View" and you use a value "front view" then both keywords will now appear in your library.


When you and your fellow coaches will use the same categorization system (or you have more than one computer) you can export a set of Category/keywords from one computer to another.

### Exporting Categories/keywords

1. Click the **Add a new category or keyword button** .
2. Select the *Export keyword set...* option.
3. Save the export file.

**!** *Make sure you know where the export file has been saved as it will be passed (by disk, network or email) to the other coach or computer.*

### Importing Categories/keywords

1. Click the **Add a new category or keyword button** .
2. Select the **Import keyword set...** option.
3. Locate and open the file to be imported. The new categories and keywords are now visible in the **Keywords view**.

### 3.3.7 Exporting keyword data

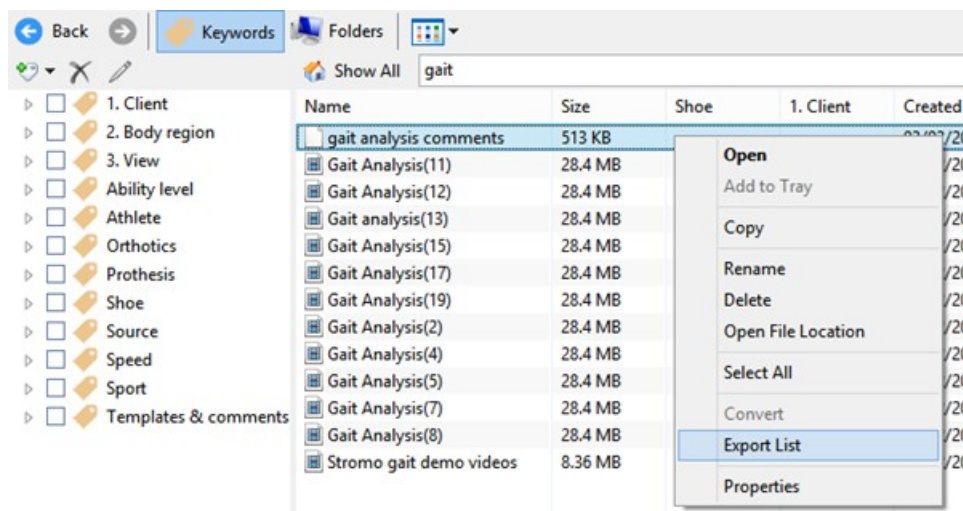
Dartfish allows the export of the video library's keyword data in a CSV file that allows the data to be stored and analyzed in databases and spreadsheets.

keywords associated with video files contain a lot of information that may be of more benefit than assisting with finding and identifying the content of video files. For example, specialist shoe shops gather information about the shoes that customers buy as a result of video analysis; researchers making observations from video may record that information using keywords.

### To export Category/keyword data as a CSV file

1. Use the search and filter tools to isolate the video clips with data to be exported.
2. Point the mouse anywhere on the **Items List** and click the right mouse button.

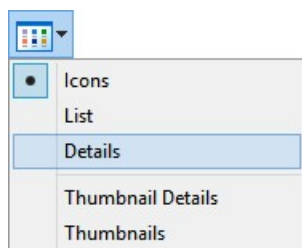
3. Choose *Export List* from the context menu that appears.



4. Save the CSV file. It can be reopened by spreadsheet software such as MS Excel.

It is not necessary, but it may help, to change the library view to one of the **details views**. This will allow you to see what data is held for each file prior to export. To do this:

1. Click the **View button** at the top of the library.



2. Select **Details** or **Thumbnail Details** view.

## 3.4 Locating video files

Dartfish's Library module offers three methods for helping you to locate specific video files from the Items List.

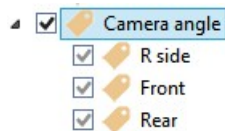
- **Keywords view** - displays a list of **categories** and **keywords**. The content of the **Items List** is filtered to reflect files matching categories and keywords selected.
- **Search** - the search box allows a text based search of filenames, categories and keywords of the contents of the library.
- **Folders view** - the typical way of locating files using MS Windows folders. The **Items List** displays the content of the selected folder.

### 3.4.1 Using Keywords

When using the **Keywords** system all video clips (and other Dartfish projects) in the **Library** will be listed in the **Items List**. That could amount to a lot of files! You can filter the **Items List** to show only relevant clips by selecting the **categories** or **keywords** for those clips.

#### Filtering the Items List by category

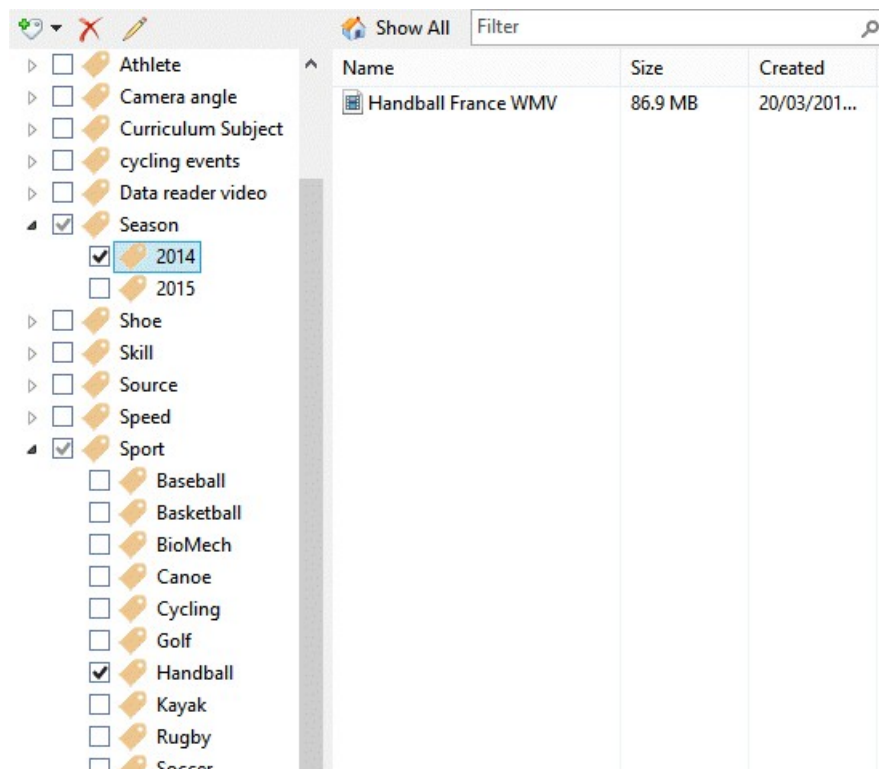
1. Display the **Library module**
2. In the **Categories List**, click the box next to the category of video you want to search for. A tick symbol appears in the box and all keywords within that category will also be selected



3. The Items List will display all clips which are labeled with keywords from that category.

#### Filtering the Items List by keyword

1. In the Categories list, click the [+] symbol next to the category containing the keyword you want to filter by. An expanded list of keyword is displayed.
2. Click the tick box next to the keyword of video you want to search for. The Items List will display all clips which are labeled with keywords from that category.




3. As we saw when filtering by category, you can select multiple keywords to extend or refine your search. Where multiple keywords are selected from the same category, videos with any of those keywords will be displayed. Where multiple keywords are selected from different categories, the keywords cross-reference each other: in the example above, only Handball games from the 2014 season are displayed. It is this ability to search for content in different



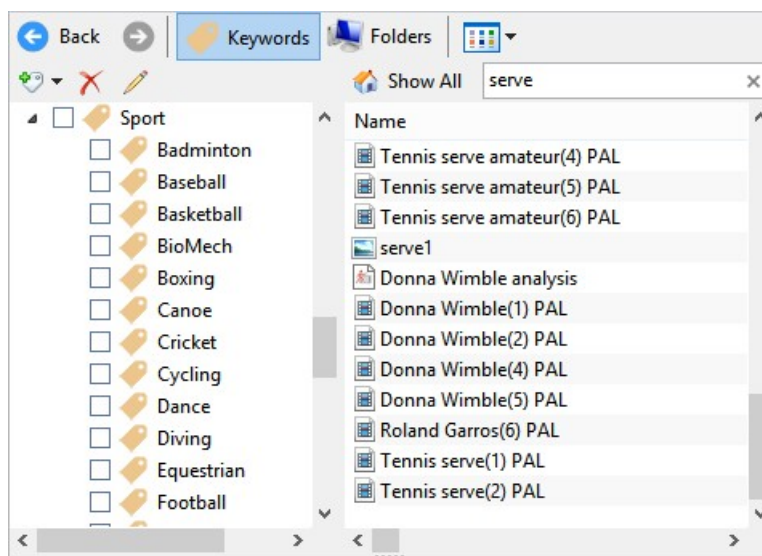
ways which makes keywords a more powerful way to organize your videos compared with Windows folders

## Removing filters

1. EITHER: Click the box next to each category or keyword that you want to exclude from the filter such that the tick symbol disappears.
2. OR: Click the Show All button  above the Items List.

### 3.4.2 Using Search

When using the **Keywords view**, a **search box** can be found above the **Items List**. This can be used to search for all or part of the text in the file name, **keywords** and **categories** of a video clip. For example a search for "Serve" could yield the following results:



To use the Search:

1. Type search text.
2. As you type, the corresponding results will be displayed in the **Items List**

## Combining Search and keyword filters

When keywords are used to filter the Items List, search results are based around the selections made as follows:

- Search first - subsequent category/keyword selections filter the search results only.
- Filter first - subsequent searches are based on filtered results only.

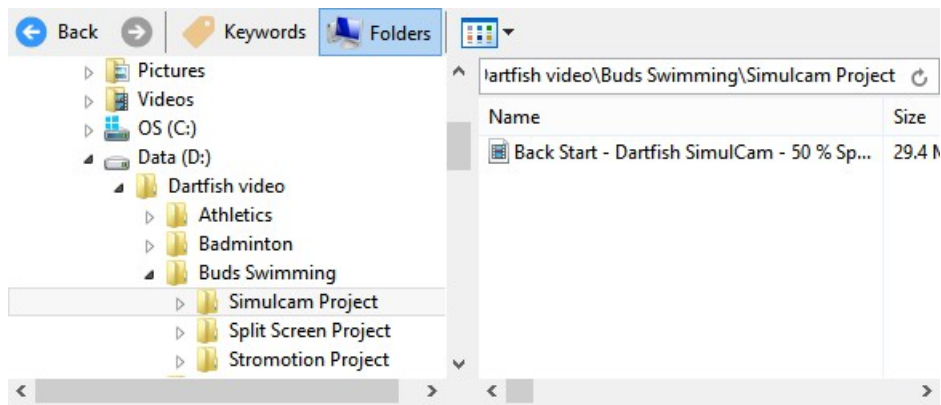
### 3.4.3 Using Folders

The **Folder view** creates a way of searching drives and folders on your computer for items. Although we recommend the use of keywords as a more versatile method for cataloguing your video library there may be occasions where you prefer to identify video clips by the folder where they are located. For example if you want to examine the contents of a CD or networked drive (including these types of location in your video library is not recommended).



## Filtering the Items List by folder content

1. Display the Folders view by clicking the button at the top of the library.
2. In the Folders view, click the folder you want to examine.
3. The Items List will display all clips in the selected folder.



*Although it is not possible to use Dartfish's Items List to move and copy files from one folder to another, the contents of the Tray can be copied to different folders using the Windows Drag & Drop methods or by Copy & Paste. This should be understood as a way of distributing content rather than a full file management tool as Cut & Paste is not available.*

## 3.5 Saving the tray's content

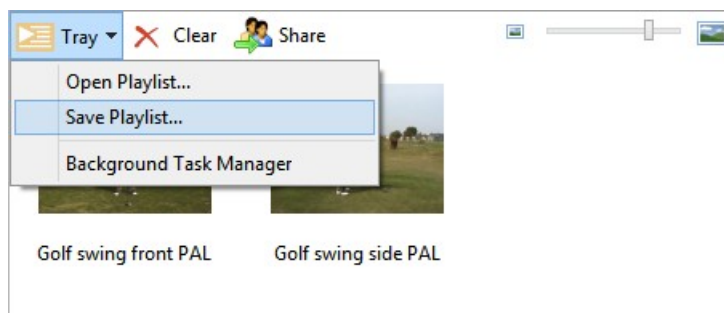
The contents of the **Tray** can be saved as a **Playlist** which can be reopened in the future. This is useful for any situation where you will want to work with a collection of clips; creating a Playlist will be more efficient than locating the same clips in the items list, for example:

- A set of clips illustrating techniques to be practiced in a coaching session.
- Clips captured during training which you want to keep together for later feedback or editing.
- All video resources used while Tagging a game (TeamPro and ConnectPlus editions).

### Creating a Playlist


A **Playlist** is created by saving the **Tray**, to do this:

1. Click the **Tray button** found to the left hand side of the **Tray**.



2. Select the *Save Playlist...* option.

3. Enter a file name and select a folder location for the **Playlist**.

 *Playlists can be saved into any folder you like but if you select one of the library folders (see [Defining your library](#)) your Playlist will appear in the items list; allowing you to categorize, search for and open playlists in the same way as you would with video clips. Playlists appear in the Library with the following icon:*

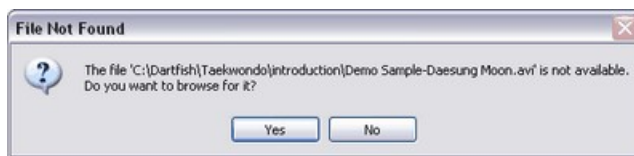


## Reusing a Playlist

A **Playlist** is used by opening it, to do this either double-click its icon in the **Items List** or proceed as follows:

1. Click the **Tray button** found to the left hand side of the **Tray**.
2. Select the *Open Playlist...* option.
3. Locate the file on your computer and click the Open button.

When a Playlist is created it does not duplicate the video clips it contains but simply instructs Dartfish where the original clips can be found. If a clip contained in a Playlist is moved to another folder, deleted, or the folder containing it is unavailable (for example, a disconnected network folder or external hard-drive) then Dartfish will be unable to find it. When the Playlist is opened you will be offered the opportunity to find the clip.



If the **No button** is clicked the Playlist will continue to open the remaining clips (and continue to warn you if the files are not found).

## Modifying a Playlist

Once the Tray's content has been saved as a Playlist, changes made by adding or removing clips from it are not automatically saved. These modifications must be saved using the same procedure as creating the original Playlist. You have the choice of saving a new Playlist with a new name or overwriting the original.

## 3.6 Sharing video files

The Tray is used to share video to a variety of destinations including network drives, email, CD and internet. To learn more about all the outputs from Dartfish see the [Dartfish outputs - publishing & sharing chapter](#)

### 3.7 Converting video clips

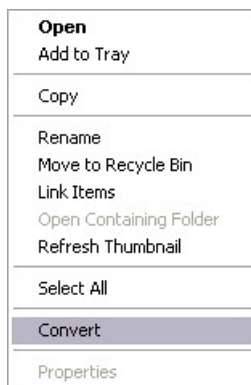
It is possible to use Dartfish to convert video files into other formats. Reasons for doing this may be:

- To reduce the space they occupy on your hard drive
- To reduce the **bit rate** (the amount of data per second) to allow smooth streaming across a network or the internet
- To reduce the publishing time to the internet - particularly when using **dartfish.tv**
- To use a preferred format for a specific destination e.g. MPEG-2 for DVD

#### To convert video

Conversion is guided by the **Video Conversion Wizard**.

1. Step 1 - select the files to convert from the **Items List** or the **Tray**. To select multiple files, hold down the CTRL key while clicking on the file names.
2. Step 2 - Display the **Tray** or **Items List context menu** by right-clicking on any of the selected items. Select **Convert** to launch the **Video Conversion Wizard**.



3. Step 3 - **Video Settings**. Select an **encoding profile**. The profile chosen affects the video format and the degree of compression. For more on video encoding profiles see Converting Video in the Getting Familiar chapter.
4. Step 4 - **Destination**. Choose a destination folder for the video. The default is to return converted video back to the same folder as the original files. Converted clips will not replace the originals and will have a different file name. For example, "Marathon.avi" might become "Marathon.wmv". However, you are able to choose what action to take if there are other files with the same name located in the destination folder. You can either overwrite the existing files or rename the converted files.
5. Clicking the **Next button** at this stage starts the conversion. When complete, the new files can be found in the **Items List** or **Tray**.

### 3.8 Video Formats and Dartfish

Dartfish can play a variety of common video formats. This allows the use of video content from a variety of sources and devices. The following formats are supported.

- AVI (DV - PAL, NTSC - Type I & II, uncompressed and DivX)
- High Definition (HD) in HDV or AVCHD
- Windows Media (WMV)
- MPEG (MPEG-1, MPEG-2)
- MPEG-4 (H.264-AVC)

This is just a broad guide as the subject of video encoding is not a simple one - some devices and software encode video files using codecs that cannot be decoded by Dartfish. Others may create files with a proprietary file extension that is not recognized by Dartfish. Our advice is to try to play it and you'll soon find out if it works!

💡 *If your device produces video which you think Dartfish ought to support but doesn't, please contact [Dartfish Support](#) for further advice.*

## HD (high definition) video and Dartfish

The increased resolution of HD video can be highly beneficial for video analysis however it also has downsides. Four times more pixels can require more storage space and processing power, although this varies considerably depending on the encoding bit rate used by your camcorder. The difficulty is not just with image resolution; the complexity of encoding profiles such as MPEG-4 require five times more processing than standard definition MPEG-2. The result may be that analysis tasks such as split-screen comparison or even frame-by-frame playback require above average computer resources.

For those using HD it is particularly important to be aware of the recommended computer specification. See the [Customer Care Site](#) for details.

### 3.9 Correcting video property errors

Some video devices produce video which fails to describe, or describes incorrectly, certain video features and this can lead to problems with appearance. Dartfish allows you to manually correct video properties.

#### To display the video properties

1. Right-click the video item in the Library's Items List or Tray
2. Select Properties from the quick-menu
3. Select the Source Info tab

The following errors can be corrected:

#### Interlacing errors

Interlacing errors occur when the two fields which comprise each frame of interlaced video are incorrectly displayed. If interlaced video is incorrectly described as progressive then a characteristic jagged edge is seen on moving objects, such as shown below.



Where the two fields are displayed in the wrong order, the video will appear to jump back and

forwards when played frame by frame or in slow motion.

## Aspect ratio errors

When a video is displayed in the wrong aspect ratio the image will appear distorted; squashed or stretched.

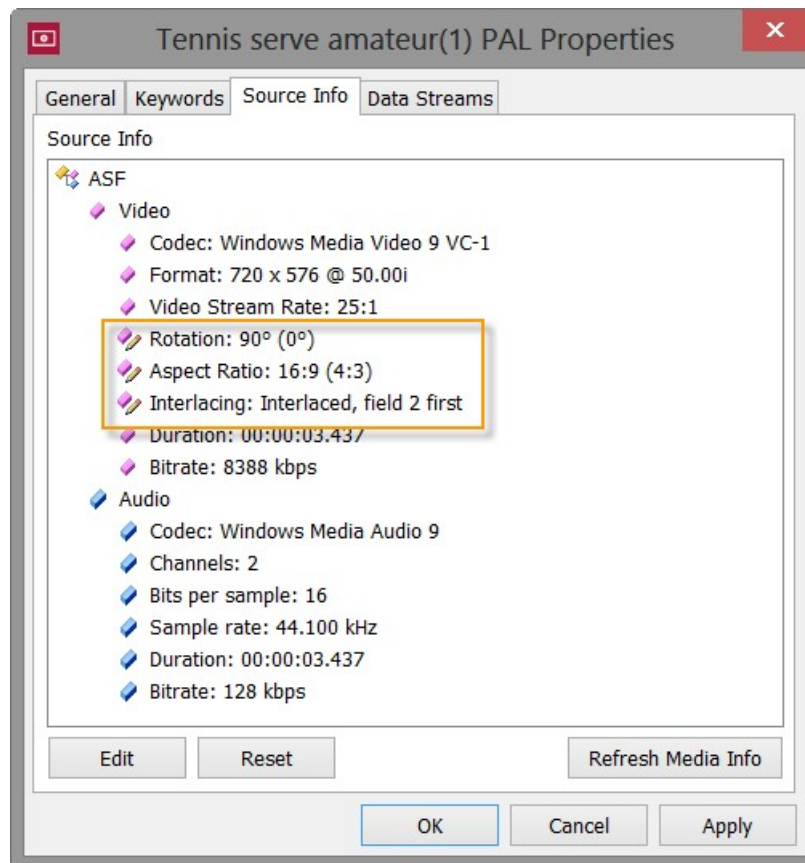
## Rotation errors

Rotation errors can happen when the camera has been held in portrait orientation so the video looks like it is on its side when played.

## To adjust properties

Only properties with a pencil icon next to them can be edited.

1. Click on the value to edit
2. Select the correct value from the drop down list
3. The corrected value is displayed next to the original value as shown below:



## 3.10 The next steps

This chapter covered the use of the Library and explained how to create a library using Categories and Keywords to manage video clips. Specifically, you learned to:

- Define folders and drives to be contained in the library.
- Define appropriate Keywords for your needs.

- Describe the content of your video clips by using categorized keywords.
- Share video by disk, email or Internet.
- Archive and backup video on CD.

We recommend that you take some time now to define the folders and/or drives that you want in your Library, create categories and keywords suitable for your use of video and then, if you have existing video clips, assign appropriate values to each.

If continuing your journey through Dartfish Help then you might want to learn how to import video and capture video 'live' using the InTheAction Module (read chapter Live capture & instant replay during training).

Dartfish is also able to share video by producing Media Books from the Analyzer module.

# Chapter

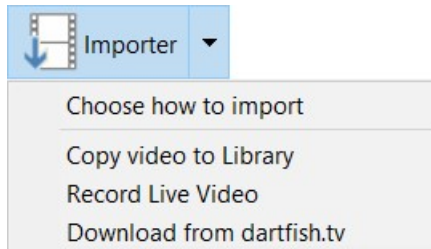
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# IV

## *Importing video files*

## 4 Importing video files

The **Importer** module adds video to the Library by one of three processes; by copying video files, by recording a video stream or by download from dartfish.tv. Access to these processes is via the **Importer button** on the toolbar, which allows you to select an import method from its drop-down menu.



If unsure which tool is correct for you, the *Choose how to import* option will present a list of video devices and sources. Dartfish will then start the correct tool according to your choice.

### Copy video to Library

Copies files from any disks or folders internal to, or connected to, your computer. This includes:

- Camcorders recording to memory card, hard-drive or internal memory
- DVD camcorders
- DVDs or CDs in your computer's optical drive
- Card readers
- Folders on your computer, network or external drive.

### Record Live Video

Records a live feed from a device capable of delivering a video stream; this is recorded by Dartfish to create new video files.

- Video converter devices. These devices are used to convert the video output from devices which don't provide a digital stream which can be used directly by a computer e.g. the HDMI output from a camcorder
- IP Cameras
- Webcams
- DV and HDV camcorders

### Other ways of adding files to your library

There are two further modules which record a live video stream, but they are only found in certain editions of Dartfish:

1. **InTheAction** facilitates the entire process from live video capture to analysis for those who want to give immediate feedback.
2. **Live tagging** has a specialized version of the video recorder which allows an index of video content to be created while recording.

For the sake of completeness there are three further ways in which files can be added to the Dartfish library:

3. A new folder is added to the list of folders monitored by Dartfish (see [Defining your library](#)).
4. The results of a Dartfish project are saved.
5. Video files are copied or saved into a library folder by a process external to Dartfish, for



example by using MS Windows file management tools or by using the import software supplied with many camcorders.

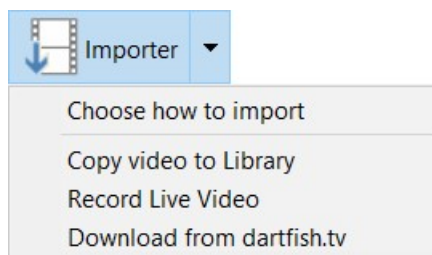
*! When new files are added to a monitored folder by an external process they won't automatically appear in the Library - you must remember to refresh. From the menu bar choose View > Refresh.*

## 4.1 Copy video to Library

The **Video File Importer** copies files from any device on which Windows is able to recognize a file structure (for a fuller description see [Importing files to the library](#)).

To import video files into the library:

1. Connect the external device or insert media into the appropriate drive. If the device doesn't simply plug and play you may need to refer to the device's documentation to learn how to do this. For example, many camcorders require that you select a connection mode.
2. Select *Video File Importer* from the drop down menu on the *Importer* button.



3. A step-by-step Wizard is launched to guide you through the process of selecting, copying and categorizing video files. The steps of the wizard are covered in the following topics.

### Importing files from Camcorders

Many camcorders permit a maximum file size so when you make long recordings several video clips are created. For certain types of device (currently AVCHD camcorders and DVD) Dartfish automatically detects sequential files and creates a single video clip.

### Indexing video

Some video formats do not have an index; preventing accurate identification of video time position. Tasks which rely on this, such as stepping through the video and synchronizing multiple clips, become unreliable. Dartfish creates an index when these videos are imported or opened. Access to the video is delayed during indexing, but the index is retained allowing immediate subsequent access.

### Importing from DVD

In addition to importing files from data CDs/DVDs and importing from DVD camcorders via a USB connection, Video File Import copies video files from a video DVD in a form that can be used in Dartfish software : the DVD's VOB files will be renamed with an MPG file extension to allow them

to be played by Dartfish.

- DVD import is not designed to capture a video stream from a DVD player. In order to import DVDs your computer must have a disc drive capable of reading DVDs or import is direct from the DVD camcorder connected by USB.
- If your computer's DVD player automatically plays the disc after insertion, stop it and close the player to allow Dartfish to access the disc.
- Many commercial DVDs are copy protected. Dartfish will be unable to import video files from copy protected DVDs. Video DVDs that have been created by a home DVD Video Recorder or a DVD camcorder are usually not copy protected.

#### **More on this**

- [Video File Importer - selecting files](#)
- [Video File Importer - naming and filing videos](#)

### **4.1.1 Copy video - selecting files**

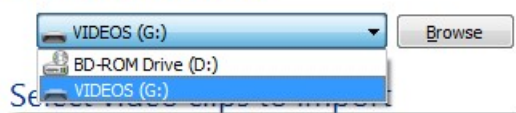
In the first step of the importer you choose the source of your files and then can select or deselect which files you wish to import.

#### **Select source drive**

Select a device or select the **Browse...** option to select a specific folder.

Even if you made a specific choice of video source from the importer, all connected sources are listed. When selecting the source, remember it may not always be obvious how your computer identifies your device; in the example below the camcorder is simply identified as "Removable Disk (G:)"

#### Select video source



**!** Dartfish automatically recognizes the file structure on certain devices and displays the videos from that device. On other devices it will be necessary to click Browse and select the appropriate folder.

Browsing only shows folders and not their contents so when confronted with the message, "No Items Match Your Search" do not assume that the folder is empty.

#### **Select Files**

Files are selected by placing a tick in the check box at the top right of the thumbnail.

Proceed to the [next step](#) by clicking the Next button at the bottom of the Importer

### 4.1.2 Copy video - naming and filing videos

In the final 2 steps of the wizard you will define file name, assign keywords and select a folder for the imported files.

#### File name

The title has two roles depending on the source device type:

- For sources from which Dartfish will join concurrent files (AVCHD camcorders and DVD), the title represents the name of the new file that will be created.
- For other sources, the file name allows you to rename the often meaningless name assigned by the camcorder. The same filename will be used for all imported files but suffixed with an index number e.g. filename(1)

#### Add keywords to video clips

Dartfish **keywords** can be added to video clips as they are imported. As discussed in the [Organizing your library](#) topic, keywords are a highly effective way of cataloging video content. To add keywords you will create a matrix of categories and keywords.

Rename imported files

Lanzarote camp swimming day2

Leave blank to use original file name

Add keywords to the video clips

Categories	Keywords	
Analyst	Neil Melville	
Coach	Richard H	
Athlete	Victor	▼

- Edit the matrix by clicking to select and then clicking again to edit. Press the Enter key to confirm your selection.
- You can type a new category or keyword or select one already existing in the Library
- The matrix you create will be retained for future imports. You can choose not to use a keyword simply by editing and deleting it. If a category in the matrix has no keyword, no keyword will be applied.

#### Select destination folder

The final step before import allows you to choose the destination for imported files. This is the Windows folder where your files will be stored.

**!** *Even if you use keywords to organize your library, your files are still stored using the Windows folder system. It is perhaps best to import to one of your library's monitored folders but any folder you choose will automatically be monitored by Dartfish.*

*! It is recommended that you choose a folder on a local drive, rather than on a network; this will ensure rapid copying and smooth playback and analysis*

The folder structure of the removable media will be maintained after import. For example if my memory stick contains a file K:\Videos\file.mpg it will be imported as ..\destination folder \Videos\file.mpg.

## Finish

Your final choice is whether you wish the imported media to be included in the **Tray**. Regardless of the choice made all media can be located in the Library **Items list**.

## 4.2 Video Recorder: capture a video stream

### Record Live Video versus Copy Video to Library

These days we have grown used to using devices which record video files which can then be [transferred to a computer](#). However, an alternative workflow is to have the video device feed video directly. The computer then creates the video file.

In the case of webcams, IP cameras and older DV/HDV camcorders, streaming is often the only way to get video onto a computer. For the Dartfish user the advantage of recording versus importing is that the video is available for analysis almost immediately.

### Tape camcorders

A DV/HDV camera is connected to a computer via a firewire cable (also known as IEEE 1394 or i-link). This requires that your computer has a built-in Firewire port or an Express card slot which would allow one to be added. There are different types of Firewire so be sure to buy the correct cable. In general, your camcorder will have a 4 pin connector. Your computer can either have a 4, 6 or a 9 pin connector.



"4" pin connector  
to Firewire port



"6" pin connector  
to Express card

To capture recorded video from tape, switch on your camera to its "Play" or "VCR" mode. To record a live stream, switch it to "Record" mode

### Tapeless camcorders plus video converters

Modern camcorders no longer stream video in a form that can be directly recorded by a computer.

To obtain a live stream it is necessary to use converter hardware to convert the AV output. This can be analog (usually composite or s-video) or digital (usually HDMI). Digital is the preferred option and to retain full HD video the HDMI output must be used.

In theory, Dartfish can work with the video produced by a wide range of converters. In practice, it is hard to predict which will allow Dartfish to manage the recording process. For this reason we recommend several converters which we know will work:

Device	Connection	Notes
Blackmagic H.264 Pro Recorder	HDMI/SDI > USB	Professional quality digital converter. Requires power supply.
AVerMedia Live Gamer Portable	HDMI > USB	A lower price tag than the Blackmagic device and doesn't require an additional power supply. No control over output which is 30fps with a 1080p input or 60 fps with a 720p input.
Canopus ADVC 55 / 110	Composite > Firewire	Professional quality converter but this model offers analog, standard definition video only. Firewire connection needed. Can be powered via Firewire if 6-pin cable used.
Canopus ADVC HD50	HDMI > Firewire	Professional quality converter providing HD video. Now superseded by the Blackmagic as laptops with Firewire not readily available.
Terratec G1	Composite > USB	A budget solution which uses a USB connection and does not require any additional power source.

## Webcams

Webcams are suitable for some types of analysis; generally where there is limited camera movement and where the better image control and larger optical zoom of a camcorder is not required. Dartfish recommends webcams which offer an MJPEG stream, otherwise the stream will be relatively uncompressed and require greater processing power, perhaps beyond the capabilities of lower specification computers. Particularly recommended is the [Logitech C920 webcam](#) for the following reasons:

- Good image quality - the Lifecam has a glass lens and good quality sensor and has some automatic image improvement features, plus it is possible to have some control over zoom and exposure
- Fixes to standard tripod
- MJPEG video stream - video is compressed without reducing resolution

## IP cameras

An IP camera is a device which streams video across a network using internet protocols (IP). There are a wide range of IP cameras offering a wide range of features and although designed for security or other monitoring purposes, they can offer a practical solution for live video capture needs with Dartfish.

IP cameras are ideal for fixed installations: Stadiums, gyms, sports halls, golf driving ranges etc. The camera and cable infrastructure is fixed and all the user has to do is come with his laptop and connect to the network. Because that network might even be a wireless network, one can imagine possibilities that this offers to Dartfish users. Furthermore, multiple cameras can be connected to the network and the user can pick which he wants to view/record.

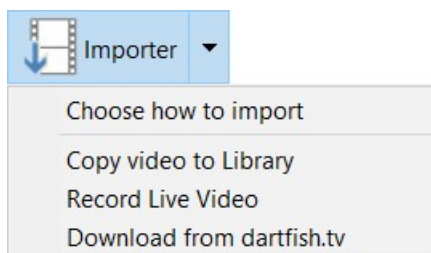
Simpler use cases such as bike fitting or gait analysis are also candidates, but only where the benefits listed above plus better lenses and better zoom capabilities, outweigh the low cost and easy connection advantages of other solutions.

Cameras complying with the ONVIF standard are supported. Where PTZ (remote controlled pan, tilt, zoom) is required the device must comply with ONVIF version 2.

### 4.2.1 Setting up the capture device

#### To activate the video recorder

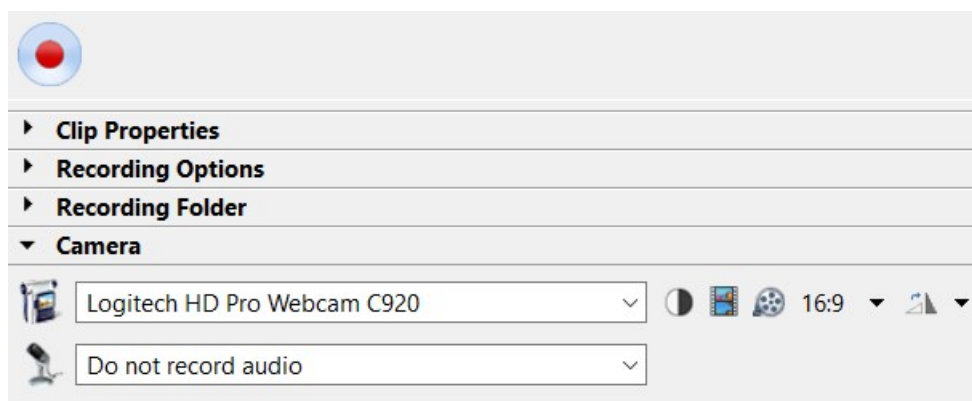
Select *Record Live Video* from the drop down menu on the Importer button.



#### Selecting a Capture Device

The lower part of the module contains several settings. Clicking the headings expands each setting to view the details.

In the **Capture Device** section the video (and optionally audio) devices are selected: Select your camera from the **Camera** drop-down list. When a successful connection to a camcorder is established the **Record button** will be active (red) and the streamed video is shown in the video display.



If the device or camera that you are using does not appear in the capture device list, it is possibly because of one of the following reasons:

- Camera not switched on
- Correct cable not present or disconnected
- Camera not properly installed and recognized by Windows
- Hardware fault with cable or camera or capture card
- Device not supported by Dartfish

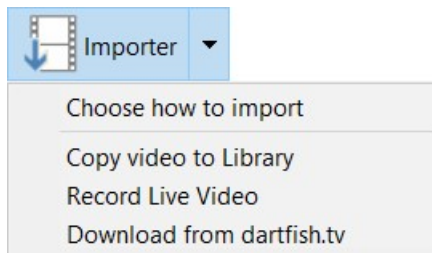
**For more information about the types of device which can be used by the video recorder see the following topics**

- [Video Recorder: capture a video stream](#)
- [Setting up the Logitech C920 webcam](#)
- [Configuring an IP camera](#)

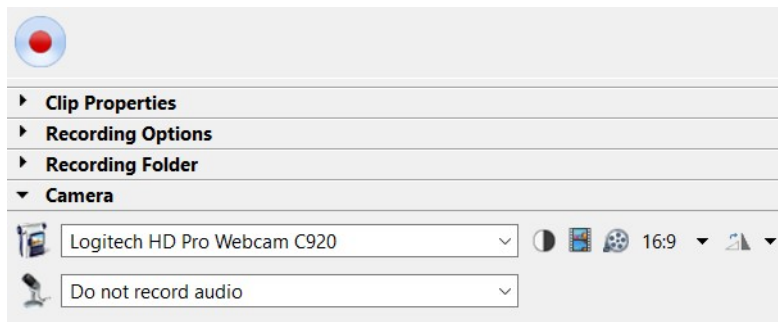
## 4.2.2 Setting up a webcam

The Logitech C920 is the webcam recommended by Dartfish because of its video quality and ability to provide a MJPG encoded video stream. To set up the webcam, connect it via its USB cable, then:


1. Select *Record Live Video* from the drop down menu on the **Importer** button.

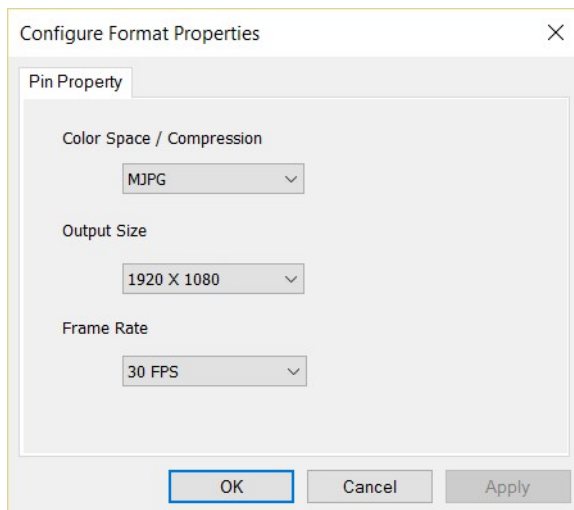


2. The **Capture Device** settings are found in the settings section below the video display: Select Microsoft Lifecam Studio from the Select capture device drop-down list.
3. When a successful connection to a camcorder is established the Record button will be active (red) and the streamed video is displayed in the video display.



## Configure format


Click the  button to the right of the selected device to configure these recommended video settings:



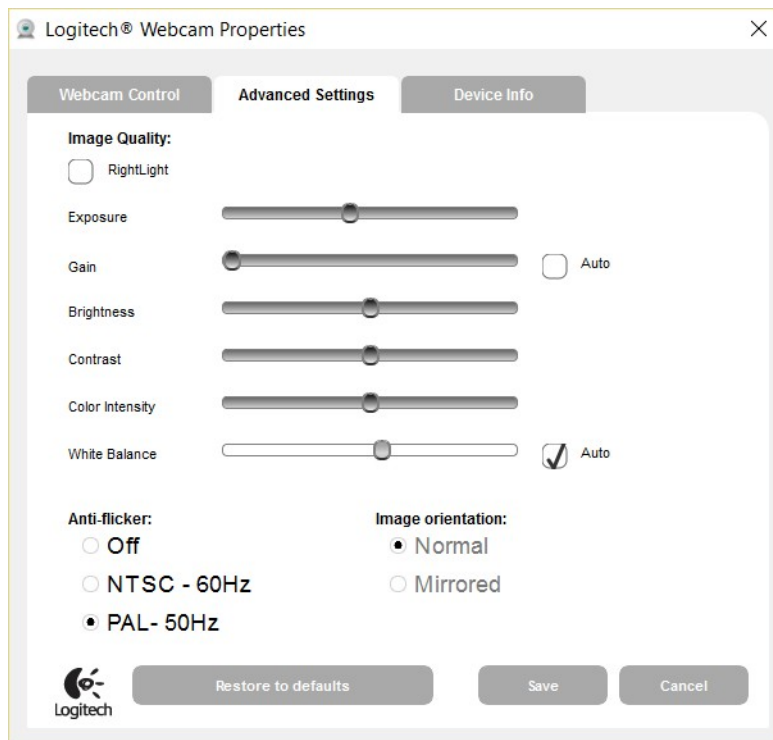
- **Frame Rate:** 30.000
- **Color Space / Compression:** MJPG  
If this option is unavailable your chosen webcam may not offer compressed video and the resulting video stream will be 'heavy'. This will result in large files which less powerful computers may struggle to play smoothly.
- **Output Size:** 1280 x 720  
You may prefer to use a lower resolution if working with a computer below Dartfish's recommended specification

## Configure device

These features which allow you to improve the image from the webcam:

1. Click the  button to the right of the selected device
2. Click the **Camera Control** tab
3. Experiment with settings to achieve the best image. Pay particular attention to the **Exposure setting** to reduce motion blur.





### 4.2.3 Using Network (IP) cameras

An IP camera is a camera that streams video across a network. In this topic we start from the point of assuming that your camera is successfully set up on your network and is accessible to the computer(s) that will record from it.

#### Who uses IP cameras?

IP cameras are ideal for fixed installations: Stadiums, sports halls, tennis courts, golf driving ranges, classroom monitoring etc. The camera and cable infrastructure is fixed and all the user has to do is connect his computer to the network. Because that network might even be a wireless network, one can imagine possibilities that this offers to Dartfish users. Furthermore, multiple cameras can be connected to the network and the user can pick which he wants to view/record.

Simpler use cases such as bike fitting or gait analysis are also candidates, but only where the benefits listed above plus better lenses and better zoom capabilities, outweigh the low cost and easy connection advantages of other solutions such as the [Logitech C920 webcam](#)

#### Dartfish support for IP cameras

Cameras compliant with the ONVIF standard are supported. Where PTZ is required the device must comply with ONVIF version 2.

In theory, Dartfish should be able to record from any ONVIF compliant device. In practice, the implementation of the standard is variable between manufacturers and we are continuing to learn how to make all function optimally with Dartfish. As we learn more about how ONVIF is implemented, we can expect a wide range of cameras to function without any need for further software updates.

There are three parts to configuring an IP camera:

1. Use the camera's own [configuration tools](#) to define some essential parameters as well as other features of the video
2. Enable and [configure ONVIF plugin](#) in Dartfish
3. [Select camera](#) and (optionally configure video/audio stream)

#### 4.2.3.1 Configure an IP camera

The initial configuration of the camera is typically done via its web page simply by entering the IP address of the camera into a browser but a dedicated utility may be provided by the camera manufacturer. Consult the camera user manual on how to access and configure the device.

### Important parameters

Some properties of the video stream can be modified directly from Dartfish later. Among those which can only be defined from the camera configuration, it is important to check the following:

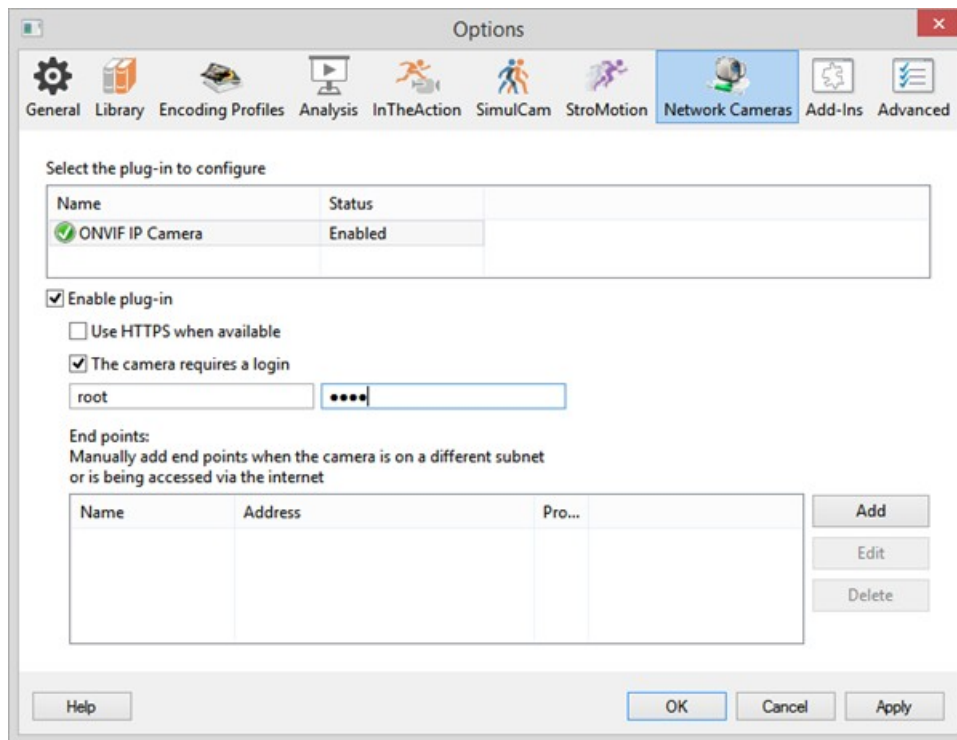
- Update firmware: There may be a button or link to do this on the configuration page. Otherwise, the manufacturer's support website should be checked to discover if there is an update. Interoperability with Dartfish may depend on this.
- Set date and time of camera: This may be important to ensure correct communication between the camera and computer.
- Set sensor base frame rate: The sensor frame rate must be set to the frequency of the AC power of your country e.g. 60 Hz/fps for the US and 50 Hz/fps for Europe. Failure to do this may result in poor image quality and flickering video.

**!** *The sensor frame rate is not the same as the frame rate of the video received by Dartfish. You can [configure that from Dartfish](#).*

#### 4.2.3.2 IP camera setup in Dartfish

### Enable network camera

1. From the Dartfish *Tools menu* > *Options* > *Network cameras*



2. From the list of plug-ins, select ONVIF IP Camera then check the Enable plug-in option
3. Enter user name and password (if user profiles defined for camera require login)

*! The login relates to user profiles created on the camera. Dartfish does not allow the user to login to individual cameras but instead offers a global login which gives the user access to all the cameras with user profiles with those login credentials.*

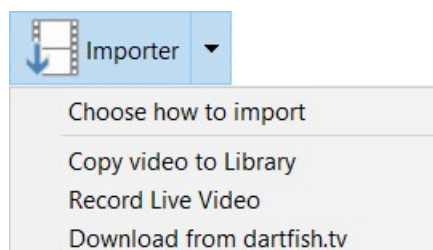
## HTTPS or HTTP?

Selecting the Use HTTPS when available option ensures that communication between camera and computer is secure. However, be aware that:

- Not all devices offer HTTPS encryption. Ticking the box here has no effect.
- HTTPS does not encrypt video, it only provides secure communication between camera and computer of information such as login.

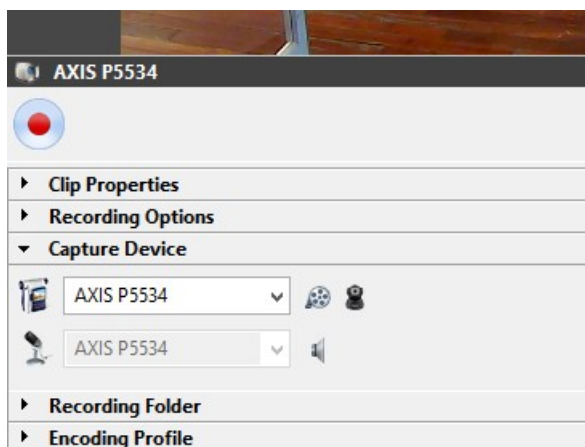
## Device selection

Select *Video Recorder* from the drop down menu on the *Importer* button.



Any available camera can be selected in the Capture device section of the module.

After selecting a camera, buttons to configure video, audio and (if available) PTZ settings will be displayed next to the selected device.



When a successful connection to a camera is established the record button will be active (red) and the streamed video is displayed in the video display.

## Disabling the audio source

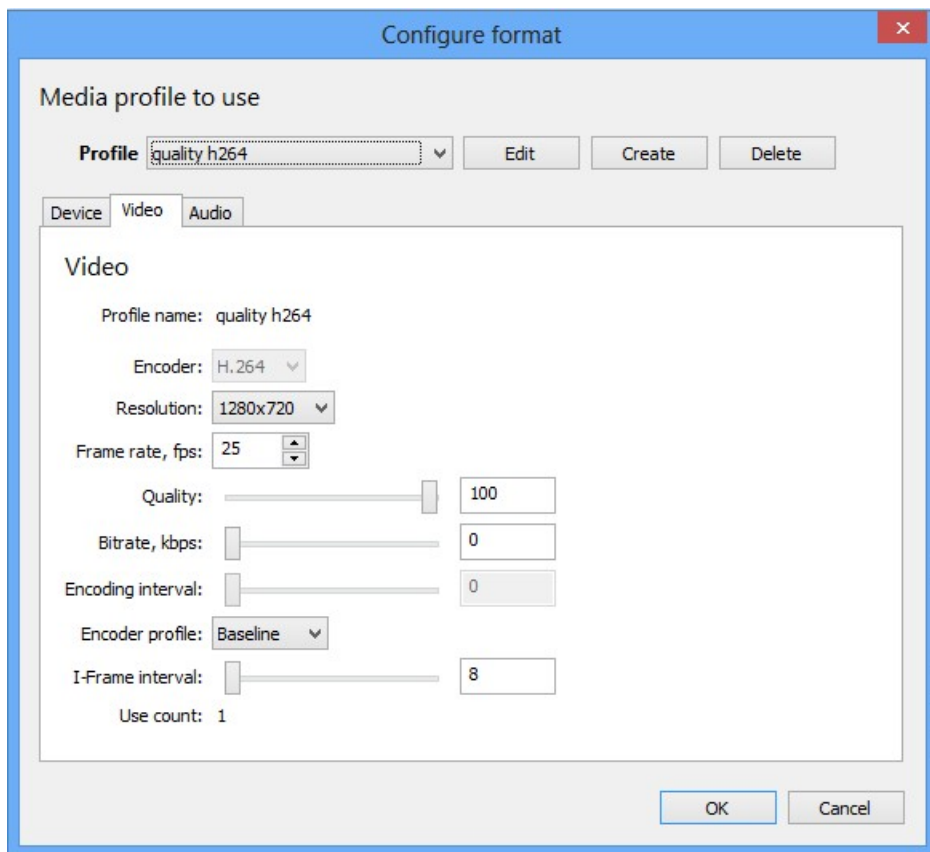
Unlike other sources of video, when using an IP camera, it is not possible to use a different audio source other than the camera. It is possible to disable audio recording:

1. Click the Configure audio button
2. Select the profile that you want to use according to your video requirement
3. Click the edit button
4. Choose (None) for the AUDIO SOURCE property

**!** *Audio is switched off on this media profile for all users of the camera and not just for the software where the choice was made, be aware that the change may affect other users.*

## Configure video properties

It is possible to set some common properties of the video stream using Dartfish software: Click the configure format icon shown next to the selected device. The optimal/easiest way to define video settings is to choose one of the camera's pre-defined profiles. However, to meet the bandwidth requirements of your network or particular analysis needs, you may want to create or customize a profile.



- Encoder: H.264 and MJPEG are supported. MPEG-4 is not supported  
H.264 offers better image quality/compression ratio but may introduce latency (delay in the 'live' image appearing on the screen).  
MJPEG generally provides lower latency but for any given quality file sizes will be larger
- Frame rate/encoding interval: For technical analysis we often want the highest possible frame rate so you should be aware that media profiles can use both these properties to define the effective frame rate i.e. the frame rate at which the device is encoding and delivering frames to Dartfish. To configure the effective frame rate, some devices use the frame rate parameter, others the encoding interval and others use both in combination. In the latter case the encoding interval parameter influences the frame rate parameter  
e.g. base frame rate = 60, frame rate parameter = 30, encoding interval = 2, effective frame rate = 15 fps.
- Resolution: Choose a resolution which allows the level of detail required for analysis.
- Quality: Set between 80-100%. Quality below 80% is usually not suitable for video analysis.
- Bitrate: This property sets a bit rate limit so it is best to configure it to something that is supported by the network e.g. 5 Mbps for SD video and 8-12 for HD video, then adapt the other settings to provide the best image quality within the specified bitrate constraint. Frames are dropped if the bitrate property is exceeded.

This is a generic set of properties defined by the ONVIF standard. Some cameras may not allow certain properties to be modified by the user e.g. in the image above, encoding interval cannot be set. Also remember:

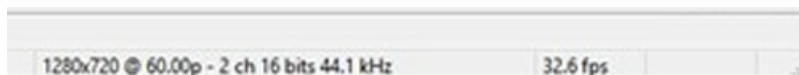
- Other video settings (where available) can be modified on the camera's configuration page
- Some or all settings may be unavailable to you if your user profile does not have administration rights
- Creating and modifying media profiles affects all other users of the camera

## Configure audio properties

Audio encoder: G.711 and G.726 codecs are currently not supported. The audio encoder must be AAC.

## Check if the media profile configuration is appropriate

Just because a video image is seen in Dartfish does not mean that it is a correct video image! The frames per second (fps) indication shown in the Dartfish status bar provides a good indication when there are problems with the configuration.



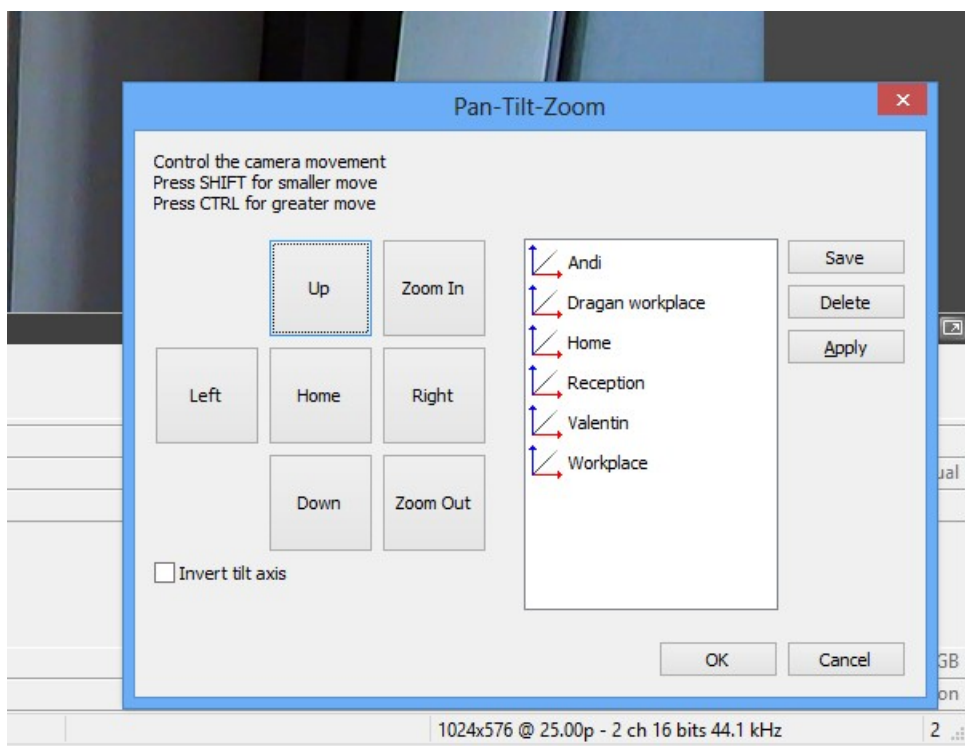
e.g. in the above image the bit rate exceeds the capacity of the network - you can see that the video stream being sent by the camera is 60 fps but video is being displayed at 32.6 fps.

### 4.2.3.3 Pan-tilt-zoom control

## Configure PTZ (Pan-tilt-zoom)

Some IP cameras allow remote control of the direction and zoom of the camera. Dartfish supports PTZ by providing a PTZ control

To display the PTZ control, click the *PTZ* button next to the selected device (or right click the video display)



On the left of the PTZ control, buttons remote control pan, tilt and zoom and on the right there is a list of preset positions.

Create a preset by:

1. Pointing and zooming the camera
2. Click the Save button
3. Enter a name for the preset

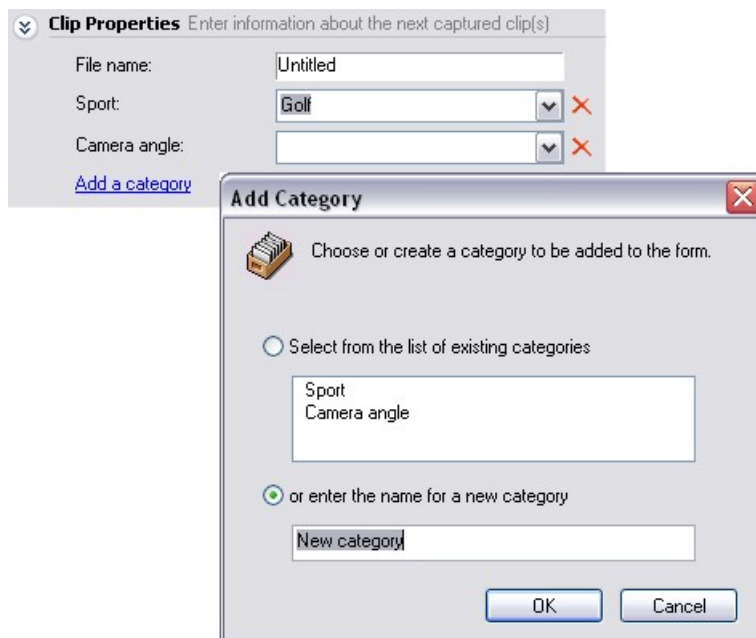
 *Users of Dartfish tagging can add a PTZ move button to a tagging panel to integrate camera control into the tagging workflow.*

#### 4.2.4 Setting file properties

Use the **Clip Properties** to set the **File Name** and **keywords** for newly captured clips. This information defines a **Capture Form** that will be used to name and categorize the video clips during capture. Read the section [Organizing your library](#) to learn more about categories and keywords.

#### Defining the Capture Form

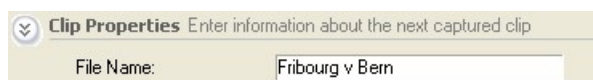
1. Click the Add a category link. The Add Category dialog will appear.



2. Select a category from the list or create a new one.
3. Click OK. A new category box will appear on your Capture Form.
4. Repeat steps 1-3 until boxes for all the categories you want to use are displayed on your form.

#### Using the Capture Form

1. Type a file name in the file name text box.




- Each file captured using this file name will be numbered sequentially. For example if you type "Training Apr10", each captured clip will be named Training Apr10(1), Training Apr10(2) etc.



- The filename you use must follow MS Windows file naming rules: Max length 256 characters; use of ":", ";", "/" or "\" is not possible.
  - If no file name is specified a generic name of Untitled(1) etc will be given.
2. Select the keywords you wish to give the clip by selecting them from the drop down list for each category box. For example, you might intend to capture all of the men's Giant Slalom competitors in Chamonix. Your form should look like this

If a keyword does not already exist, for example a new competitor, you can type that value into the appropriate box. This new keyword will appear in the **Library module's** categories list after clips have been captured.

*! If a category is to remain with no keyword, for example if the name of a competitor is unknown, the value may be deleted from that category box (select it and use the Backspace key on your keyboard). Do not use the Clear button  as it will remove the category box from the form.*

## 4.2.5 Using Recording options

A difficulty when recording a video stream is to guess when the action that is to be recorded will start. It is common to start recording too early and create a file that is longer than necessary. Worse still, recording is started too late. Recording options are intended to prevent this. There are two recording options:

**Pre-record** - constantly stores a defined number of seconds of video in the computer's memory. When recording is started the stored video is included in the video file created. Setting one or two seconds of Pre-record compensates for user and computer reaction time or allows you to view the action and decide whether to record it or not afterwards.

**Recording Duration** - it is possible to define how long the captured clip will be. Recording will automatically finish at the end of the defined duration. This simplifies recording to the single button press that initiates it but it is especially valuable when longer videos are to be recorded; for example, start recording a game and return one hour later when it has finished.

### To set Recording Options

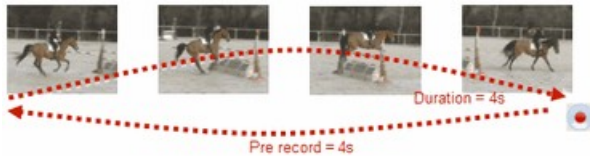
1. Expand the **Recording options** section
2. If a fixed **Recording Duration** is to be used 'check' the tick box next to the time
3. Set values for **Recording Duration** by first clicking on the hours, minutes or seconds value then editing the time by typing a number by using the scroll buttons.
4. Set a value for **Pre-Record Duration** by typing a number by using the scroll buttons



In the example shown here a 2 second pre-record is being used but the 5 second recording duration is not and recording will be stopped manually.

## More about Pre-Record: Recording after the action has completed

You may witness many performances which are of no value to you. How can you efficiently select which of these you want to record for use in Dartfish? By setting a larger Pre-record it is possible to make an assessment of which actions are worthwhile. In the example below, recording is only started AFTER the jump has completed: A pre-record of 4 seconds allows for decision making time and by also setting the recording duration to 4 seconds we ensure that it is always the previous 4 seconds that are recorded.



! The largest possible Pre-Record time is based on the amount of RAM memory available

### 4.2.6 Selecting a recording location

The **Recording folder setting** both displays the current Windows folder where video will be stored and allows you to select a different location. The recording location default is the "Videos" folder on your computer. To change recording location:

1. Click the **Change folder** link. A standard Windows **Select Folder...** window appears
2. Browse for and select a folder or click the **New Folder button** to create a new folder in the currently selected folder.

### Choosing a recording folder

Apart from organizing your files where it is convenient to find them in the future you must choose a drive with sufficiently fast write-speed. Video files are large and data-rich so attempting to save to a location where the file writing speed is too slow is akin to quickly pouring a lot of water down a narrow pipe! The result is dropped frames and jerky playback. Typically, data transfer to a network location is too slow to successfully create video files.

💡 *Record to a local drive and then use the Share function of the Library's Tray to copy the files to other locations.*

### 4.2.7 Using an encoding profile


Dartfish can encode video as it is recorded. This is used to:

- Reduce video file size.
- Prepare the video for its final destination. For example, video which will be played from an

optical disc or streamed across a network or the internet must have a appropriate bit rate in order to achieve smooth play back

- Reduce dartfish.tv publishing time. If the encoding profile of your channel is used while recording, re-encoding is not necessary during publishing

▼ Encoding Profile


☒ Record video stream

AVI Motion-JPEG (Original format) ▼

[Edit profiles](#)

☒ Create converted clip
 

MPEG-4 H.264 SD ▼

Add converted clip to tray ▼

## Record video stream

Select this option to create a video file using the video encoding provided by the video source. The original format is displayed next to this option and from some sources it is possible to select from multiple formats.

## Create converted clip

Select this option to create a video file using the selected encoding profile. See [Converting video](#) for further information on the different encoding profiles.

## Add to tray options

When both **Record video stream** and **Create converted clip** are selected, two video files will be created. These options allow you to decide which file(s) will be loaded into the Tray after recording and therefore be immediately available for use.

Creating two files is useful when two formats of video are required for different purposes - for example, a high quality file for use in Dartfish Software and an internet quality ready to be quickly uploaded to a website.


## Edit profiles

The **Edit profiles** link takes you to the encoding profile options where you can:

- Learn about the bit rate and file sizes of the encoding profiles provided by Dartfish
- Download the encoding profile for any dartfish.tv channels to which you have access

When a converted clip is created from a video source which already provides encoded video, background conversion is used. The video stream is always recorded until the conversion is completed successfully. This has the following implications:

- When recording is stopped there may be a delay before the clip appears in the library. Conversion progress can be monitored using the [background task manager](#)
- If conversion fails, the original recording should be available as a backup - whether or not the **Record video stream option** is selected
- Unencoded video streams e.g. RGB or YUV are converted directly without using background conversion

 *Although encoding during recording offers the convenience of a video file already suitably encoded/compressed for its final purpose, it is possible to re-encode any video file in the library simply by right-clicking it and selecting Convert from the context menu. Sharing and publishing*

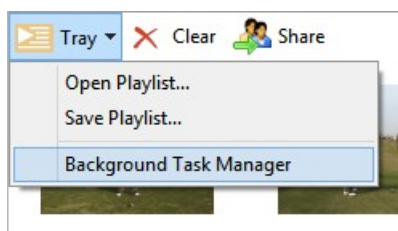
*features also re-encode video.*

#### 4.2.8 The background task manager

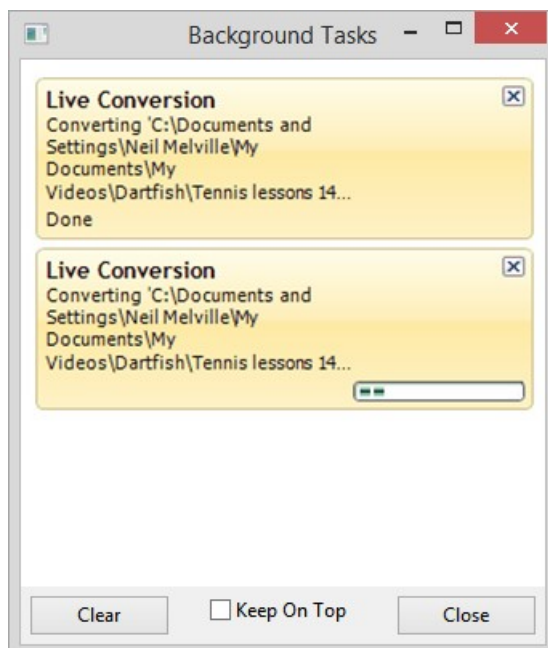
When an [encoding profile](#) is used to encode (convert) video as it is captured, the full quality video is stored by the computer until sufficient resources are available to complete the conversion. This may not happen until some time after the capture. The **Background Task Manager** helps you keep track of the progress of creation of encoded clips and if necessary allows cancellation of the process.

#### To view the background task manager



1. From the Tray section of the Library, click on the Tray button.



2. Select Background Task Manager from the menu.





#### To cancel tasks

If the progress indicator for a task shows that it is not yet complete  then the task can be canceled by clicking its close button . Clicking the same button on completed tasks does not undo the process, it simply removes the item from the list. All complete tasks can be removed by clicking the **Clear button**. This may help in identifying which tasks are still incomplete.

### 4.2.9 Capturing video to Library

Once setup, the process of capturing video is a simple one; click a single button to start and then stop capture at the beginning and end.

Click the **record button**  at the start and end of the clip. The second click is unnecessary if the [recording options](#) are set to end recording automatically

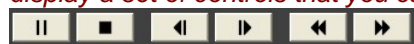
The pause recording button  allows you to pause capture but create a single video clip

**!** *Pause recording is only available from certain video sources. For more information see the [Live Requirements document](#) on the [Customer Care site](#).*

### Replaying captured clips

The clips you have captured will now be listed in both the **Tray** and **Items List** of the **Library** module. Play the video by double-clicking it in either location. Unless another module is manually chosen, the video clip will open in the **Player** module

 *Finding footage on tape: if using a DV or HDV tape camcorder, the DV Import module will display a set of controls that you can use to control the camera when it is in its 'Play' mode.*



*Alternatively, you can use the equivalent controls on the camera itself.*

## 4.3 Download from dartfish.tv

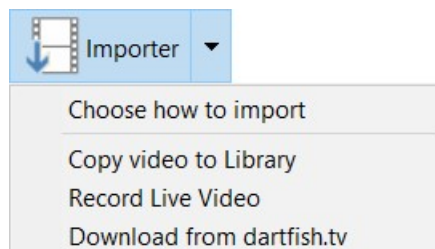
Dartfish.tv is Dartfish's video analysis sharing platform. Content from dartfish.tv can be imported from

- A dartfish.tv channel - if you are subscribed to a collection and have been given download rights by the channel administrator
- Your Smart Cloud - if you have a myDartfish subscription.

In addition to video, the Importer will bring Key Positions, video and key position descriptions, events when these have been applied to the source video by Dartfish software. These features will not be included when the downloaded video has been annotated by the Dartfish Express app.

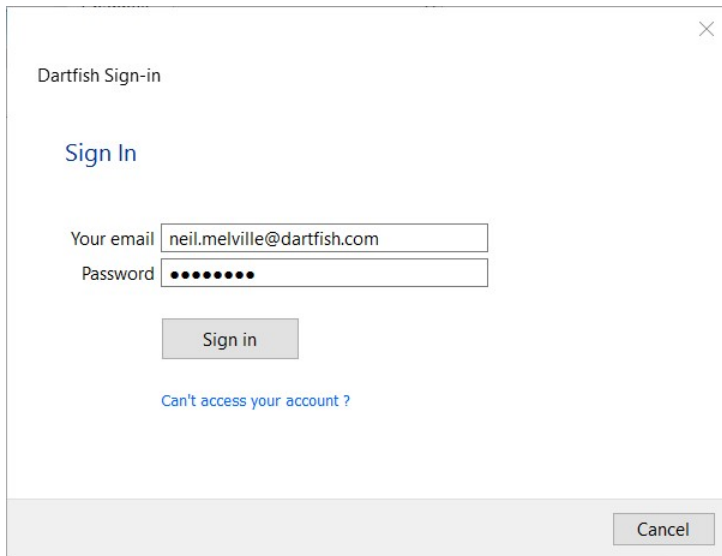
### To download from dartfish.tv

Select *Download from dartfish.tv* from the drop down menu on the *Importer* button.



### Sign-in

Next, sign-in using a dartfish.tv account.

A screenshot of a 'Dartfish Sign-in' dialog box. It has a title bar with a close button (X). The text 'Dartfish Sign-in' is at the top left. Below it is a blue 'Sign In' link. There are two input fields: 'Your email' containing 'neil.melville@dartfish.com' and 'Password' containing seven dots. Below the password field is a grey 'Sign in' button. Underneath the button is a blue link that says 'Can't access your account ?'. At the bottom right of the dialog is a grey 'Cancel' button.

Typically, you will have created this account when either:

- You received an e-mail invitation to view content on a dartfish.tv channel
- You subscribed to a myDartfish plan
- You accessed subscription content (e.g. pay-to-view) or subscription-only features on a dartfish.tv channel

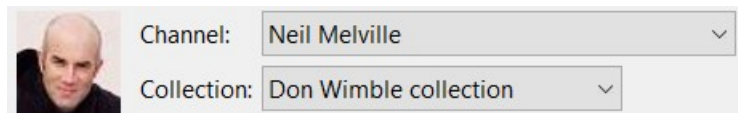
**!** *If you can't recall your password click the 'Can't access your account' link*

## Download

1. Select the destination folder for the downloaded video

A screenshot of a folder selection interface. It shows a folder icon and the path 'C:\Users\Neil\Videos'. Below the path is a green progress bar and the text '129 GB free'. To the right are two blue links: 'Change folder' and 'Open folder'.

2. Choose the channel (or Smart Cloud) and collection which contains the video(s).

A screenshot of a selection interface. On the left is a small profile picture of a man. To the right are two dropdown menus. The first is labeled 'Channel:' and has 'Neil Melville' selected. The second is labeled 'Collection:' and has 'Don Wimble collection' selected.

3. Select the desired videos then click the Download button



## 4.4 The next steps

This lesson covered ways to import video files or record a video stream.

If continuing your journey through Dartfish Help then you might want to learn how to capture video 'live' using the *InTheAction* Module (read chapter Live capture & instant replay during training).

Dartfish is also able to share video by producing Media Books from the *Analyzer* module.

# Chapter

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*Live capture & instant  
replay during training*

## 5 Live capture & instant replay during training

The InTheAction module is a combination of Dartfish capture, replay, comparison and analysis features brought together in a way that allows the delivery of video feedback during training sessions.



The aim here has been to make the technology easy to use without the presence of a computer being disruptive to training itself. Some of the key features which allow this to happen are:

- Remote controlled - for complete ease of use, a single button on the remote control can control both capture and replay.
- Simplified video capture - in automatic mode only trigger capture at the start of the action. A fixed number of seconds is captured from this point.
- Automatic instant replay - replay happens automatically as soon as capture is complete. Pause and set replay speed by remote control.
- Comparison - compare captured clips side by side with a reference clip.
- Synchronization - synchronization of clips is based around the moment when you trigger capture making comparison of 2 clips both easy and quick.
- Drawing/annotation tools - illustrate coaching points using a range of drawing tools

### *In this chapter*

- [Preparing InTheAction for use](#)
- [Instant visual feedback during training](#)
- [Comparing clips during training](#)
- [Using drawings in InTheAction](#)
- [Self coaching with live delay](#)

### 5.1 Preparing InTheAction for use

At the start of your coaching session using **InTheAction** you will spend a short time preparing it for use. Of course you'll need to connect the camera, perhaps more than one camera, also in this section you will learn to adapt the [Record](#) and [play](#) parameters according to your specific needs.



### 5.1.1 Selecting capture device

#### IMPORTANT NOTE: About using video devices with InTheAction

InTheAction works by establishing a link that allows live images to pass directly from camcorder to computer. For this reason it only works with camcorders and devices capable of providing a video stream. Tapeless camcorders do not offer this functionality.

It is still possible to use InTheAction with these camcorders in conjunction with converter hardware: the camcorder's video output to TV is connected to the converter which creates a digital video stream which can be used by Dartfish. Converters can be used with analog and HDMI video sources.

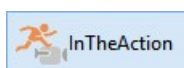
Further advice on sources of video can be found in the topic [Video Recorder: capture a video stream](#)

The latest advice on the use of camcorders and other imaging devices can be found on the [support section of our website](#).

The information below applies equally to DV camcorders and other video streaming devices.

#### Setup capture devices

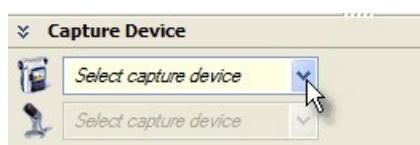
After connecting the camera, the next step is to launch the InTheAction module and select your camera as its video input. To launch the InTheAction module click on the InTheAction button on the toolbar:



InTheAction module has two tabs at the top of the module:



- **Setup Input Devices page** - to select the capture device(s); choose the appropriate device from the drop-down list. Once selected, you should see the images transferred from capture device (camera).



If your device is not listed, make sure that your equipment is correctly connected (see Video Recorder in the Video Library chapter), switched on and has not automatically switched off - many cameras do this after a fixed interval. Taking the tape out of the camera prevents automatic power off every few minutes.

Usually input device selection is only required the first time you connect your camera to your computer. It is necessary if there is more than one input device or if several different cameras are used.

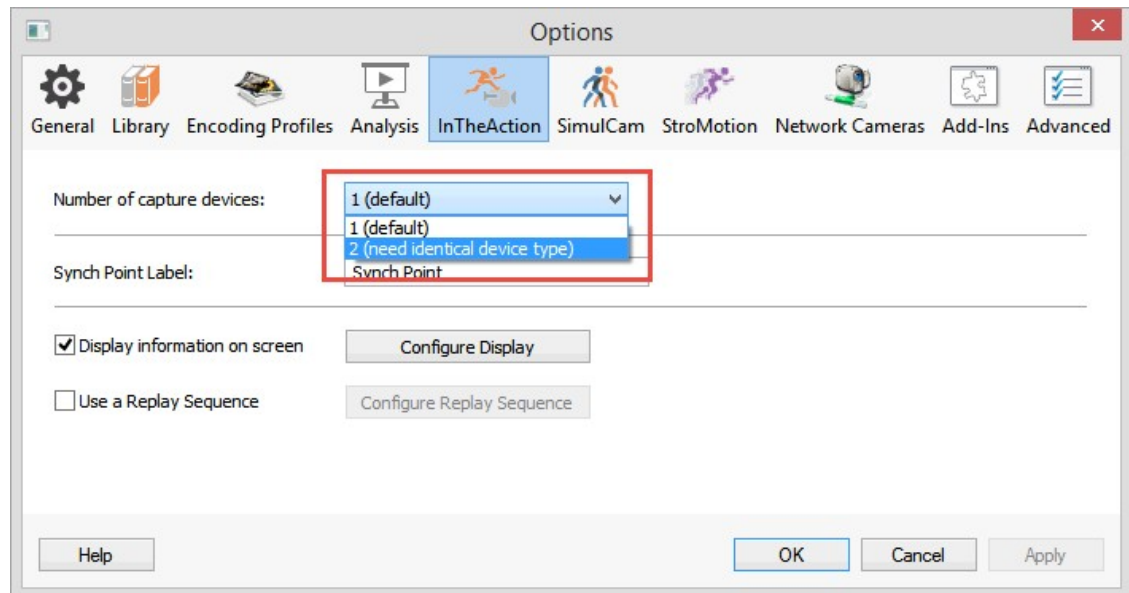
- **InTheAction page** - is where the capture and replay features are found. Click on this tab once you have selected the capture device.

### 5.1.2 Using more than one camera

InTheAction can record from up to two cameras simultaneously, for example, rear and side view of a runner on a treadmill. InTheAction allows simultaneous replay of both clips.

#### Choosing multiple video inputs

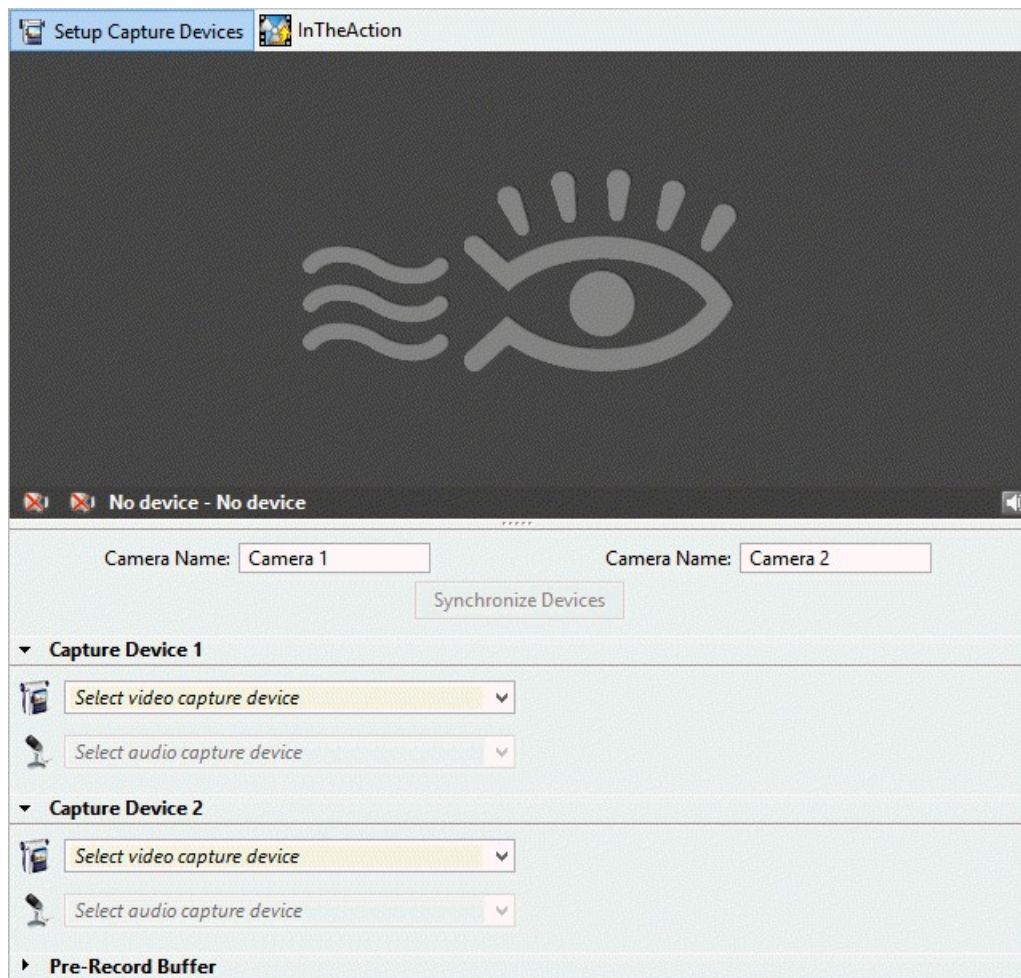
1. Open the **Dartfish options**, select *Tools > Options* from the Menu bar (F3).



2. Select the **InTheAction options**
3. From the **Number of capture devices** section, select **2 (need identical device type)** option - Identical devices are recommended because it requires much more computing power to process video from different hardware.

#### Setting up multiple video inputs

1. Launch the **InTheAction** module.
2. Select the **Setup Input Devices** tab.
3. Select the second camera from the corresponding drop-down list



4. Optionally, a name for each camera can be provided in the **Camera Name** fields found immediately below the **video display**. These names will be included in the file names of recordings.

### 5.1.3 Defining recording settings

Recording settings can be found below the video display of the **InTheAction module**. Here, **Clip properties** such as file name, **Recording options** such as **Prerecord** and **Recording folder** can be defined.

#### Clip properties

Clip Properties

File name:

US championships 1968

Athlete:

Bob Beamon

×

Sport:

Long Jump

×

Add keyword category

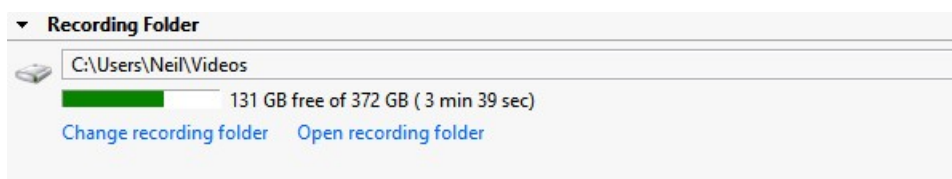
Apply to last recorded clip

If you intend to keep the recordings that you make when using InTheAction you should take a moment to define the **Clip properties** which will be assigned to the video files that are saved. The clip properties are:

- **File name** - Your video files will be saved with the file name entered in the text box.
- **Category/Keyword(s)** - Keywords are both searchable and filterable in the Dartfish **Library** and they add additional description to the video which may be undesirable or impractical to include in the file name. Click the **Add keyword Category** link to build a categories form which can be completed for each recording - either by selecting keywords already in the Library or typing new ones. See Organizing your library in the Video Library chapter for more information about the use of keywords.

Once defined, these properties will be assigned to all subsequently recorded clips, until a new file name or keywords are specified. If more than one file is recorded using the same **File Name** property, Dartfish will automatically suffix each file name with a number in order to prevent one recording from over-writing another.

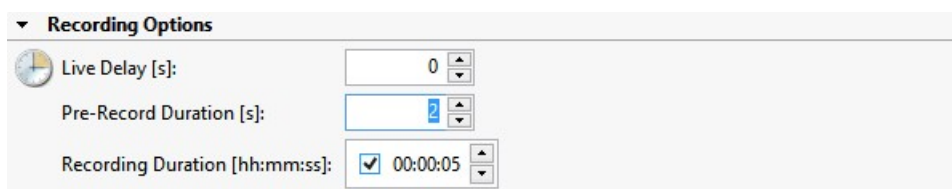
## Recording folder



The default setting is for recordings to be saved in the Windows **Videos** folder. Click the **Change recording folder** link to specify where recordings will be saved on your computer.

*! It is highly recommended that the Recording Folder should be on a local drive with sufficiently fast write speed. For example a folder on a network or a low speed SD card may not be able to save video data sufficiently quickly to capture effectively. The result is dropped frames and jerky video.*

## Recording duration



**Recording duration** is one of three properties in the **Recording options** section. Setting a recording duration allows you to make recordings using a single button click - you start recording and Dartfish automatically stops after the set time. This is useful when recording closed skill activities where the duration can be predicted. For example, for a golf swing, a recording duration of 3-4 seconds might be set. For gait analysis, a recording duration of 6-8 seconds might be set.

To use a fixed recording duration:

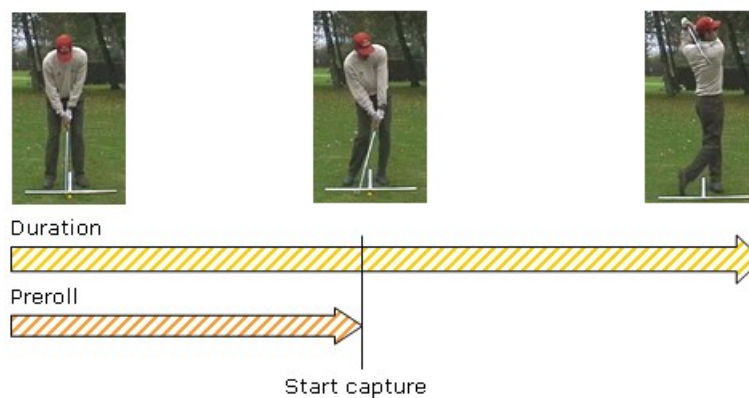
1. 'Tick' the box next to the time
2. Click on the hours, minutes or seconds figure that you wish to adjust (most likely seconds!)
3. Type a number or use the scroll buttons to set a time

## Pre-record duration

**Pre-record** forces the computer to continually store a specified amount of video in its memory (RAM). When recording is started the stored video is included at the beginning of the new clip.

This is really useful in many situations where it is difficult to predict when a performance will start or a particular action (e.g. an error) will take place. For example, if you wait until you see a golfer start to move before starting to record, you may miss the first moments of the swing. If you try to second-guess when the swing is about to start you may start recording too early. The amount of prerecord required might be one of these possibilities:

- 0 seconds - if the action is easily predictable or cyclical such as treadmill running, cycling etc
- 1-2 seconds - to account for reaction time (both your's and the computer's) if you start recording as the action begins
- Equal to, or greater than, the recording duration if you intend to first watch the performance, assess whether it is worth recording then start to record
- At a useful comparison point, or **synch point** - The moment when you start recording creates a **synch point** on the video. Synch points are used to easily synchronize video clips for comparison (see [Comparing clips during training](#)). For this reason it may make sense to trigger capture at an obvious point for comparison e.g. when the club strikes the ball as shown in the following diagram.



💡 The largest amount of Pre-Record that can be set is limited by the amount of available memory allocated to Dartfish. This can be modified. See the topic [About pre-record buffer](#)

! Remember that the recording duration always defines the length of the clip, irrespective of the pre-record value. If the recording duration is 5 seconds and the pre-record duration is 2 seconds, the clip will be five seconds long, not seven seconds. Two seconds of recording will take place before recording started and three seconds afterwards.

## Live Delay

See the topic [Self coaching with live delay](#)

### 5.1.4 Defining a replay sequence

Once you have captured a video clip, the **InTheAction module** will replay it automatically based on the criteria defined in the **Replay Sequence**.

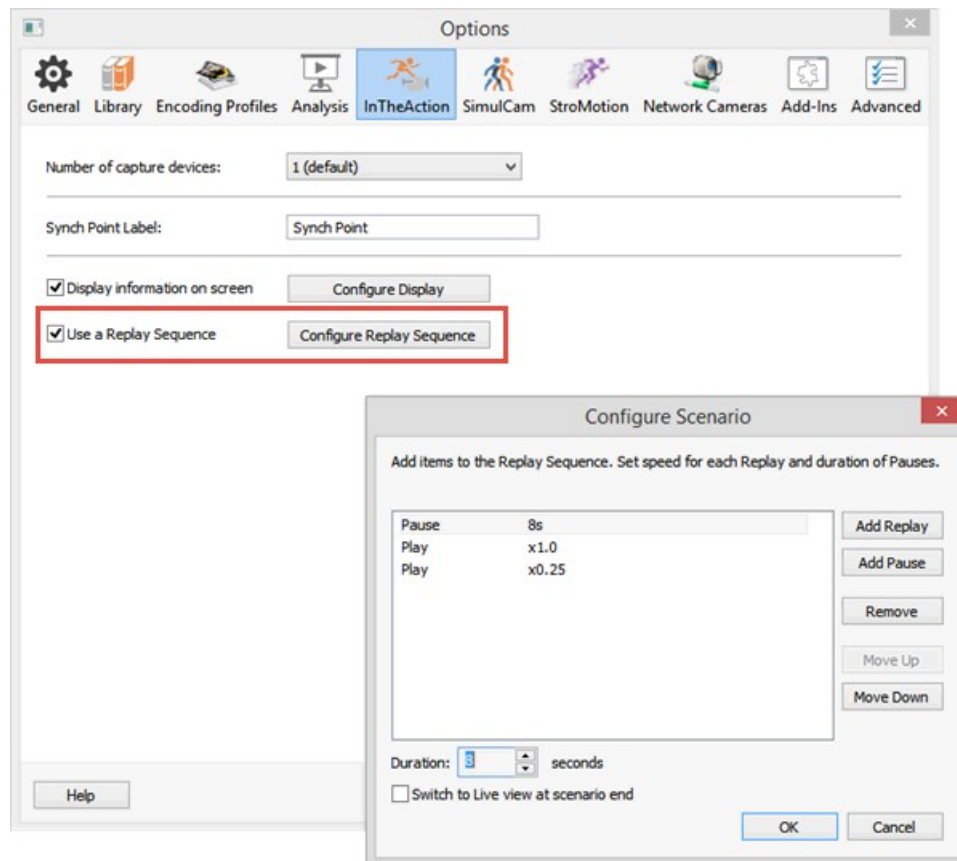
By default, no scenario is used for the replay sequence and replay speed is manually controlled by the user. Defining a scenario automates this.

## Creating a replay sequence



In the following example, an 8 second pause allows the athlete to join the coach at the computer screen, together they then view the clip once at full speed and then in slow motion. To create such a scenario:

1. Display the InTheAction options (*Tools menu > Options > InTheAction*).
2. Activate the replay sequence function by clicking the **Use a Replay Sequence** check box.
3. Click the **Configure Replay Sequence** button
4. Click the **Add Pause** button and set the **Duration**.
5. Click the **Add Replay** button and set the **Speed** to x0.25.
6. The Replay Sequence is ready to use and appears as shown in the following image.



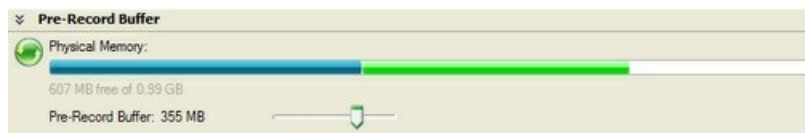
 *When using a replay sequence it is still possible to control playback (pause, play etc.) by the other video playback controls and remote control.*

### 5.1.5 About pre-record buffer

By default, Dartfish uses half the available RAM memory to store pre-record. If you are unable to set enough pre-record it is possible increase the memory **buffer** reserved for pre-record.

#### To increase Pre-record buffer

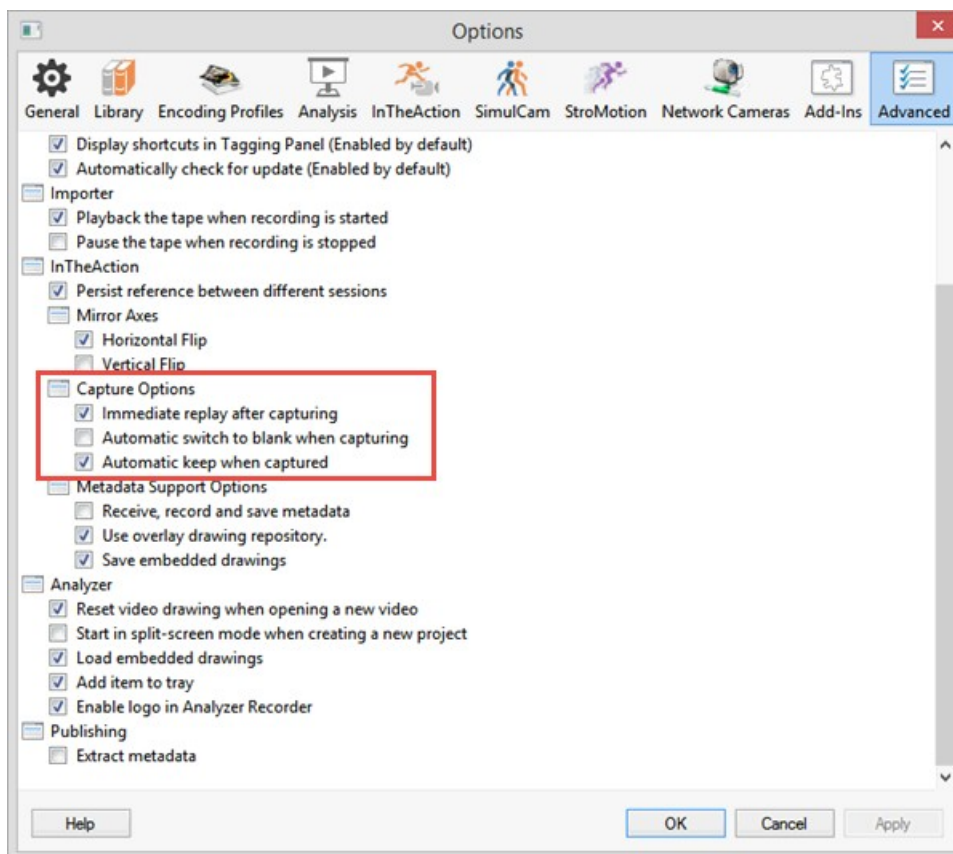
1. Select the Setup Capture Devices screen of InTheAction .
2. Drag the slider to define the size of the buffer.



The blue section shows the memory being used by other processes, the green section shows the memory dedicated to pre-record. The green section turning red is an indicator that more pre-record buffer than is advisable has been set. This is liable to affect the performance of Dartfish and other functions of your computer.

### 5.1.6 Advanced InTheAction settings

In addition to the settings defined within the **InTheAction module**, there are some advanced settings in the Dartfish **Options** (*Tools menu > Options > Advanced*). This topic does not seek to cover these comprehensively but instead will focus on the **Capture Options** which may further enhance how you integrate video feedback into your instruction.



- **Immediately replay after capturing** - deselect this option if you prefer to make several recordings before reviewing. Particularly useful if you wish to prevent video distracting the performer and/or you wish to leave the display blank or showing a reference clip.
- **Automatic switch to blank when capturing** - select to disable replay during recording. This may be useful as confirmation that recording is taking place but its main function is to reduce the processing load on the computer by focussing on recording rather than replay.
- **Automatic keep when captured** - deselect to prevent video being saved automatically if this is not required. Videos can be manually saved with the **Keep** button below the video display or on the remote control.

## 5.2 Instant visual feedback during training

Once you have defined the InTheAction settings (see [Preparing InTheAction for use](#)), you can start using the InTheAction module. These are the steps:

1. If using the **remote control** (see [Remote controlling InTheAction](#)), use **full-screen view** (type F11). Recommended to give the largest possible video image.
2. Capture a video clip.
3. The clip automatically replays.
4. Repeat for the next action

### 5.2.1 Recording and replaying

#### Recording

1. The video image from the camera should be visible when using InTheAction's **Live view**. The choice of views is controlled by the buttons at the top left of the module:



**Live view** - shows the image from the camera



**Simple Replay view** - shows replay of the last captured clip or any clip opened from the Tray.



**Blank view** - blanks the screen (prevents it being a distraction!).



**Comparison view** - compares the replay clip with the reference clip.



**Reference replay view** - shows replay of a reference clip.

It is not necessary to be in **Live view** to record but for the first recording, it gives guidance that the camera is pointing in the right direction.

2. Click on the red **Record** button or use the equivalent remote control button (see [Remote controlling InTheAction](#)).



During recording, the icon on this button will change to a flashing red square (**Stop Recording**)



3. Click the button again to stop recording

This step may not be necessary if a **recording duration** has been set (see [Defining recording settings](#)).



## Viewing


Once you have captured a clip, replay will start automatically.

Replay of the clip can be controlled by using the **playback control**, or by using the equivalent remote control buttons (see [Remote controlling InTheAction](#)). Read the [Getting familiar chapter](#) to learn the functionality of each button.



You are not restricted to replaying the last captured clip. Any of the previously captured clips will be found in the **Items List** or **Tray** of the **Library**. In fact any clip from your library can be played in InTheAction, enabling you to show reference clips as well as recordings.

You can also use the **Next clip** and **Previous clip** buttons on the **playback control** to move through the content of the **Tray**. This enables the **full screen view (F11)** of the video to be retained and can also be remote controlled.

 *At any point you can capture again. It is not necessary to switch from Replay view to Live view to initiate capture.*

### 5.2.2 Remote controlling InTheAction

Because InTheAction is a tool for use during a training session you shouldn't be a slave to the computer! Now is the time to install the remote control (see Remote controlling Dartfish in the Getting familiar chapter) and learn to use its features.

As has been emphasized several times in this chapter already, all commands covered in this section can be executed by remote control: Either the Streamzap issued with Dartfish prior to version 6 or the App version for iOS and Android devices:

**Streamzap IR remote control**

**Jumi remote for iOS and Android devices**



### 5.2.3 Using a sound trigger

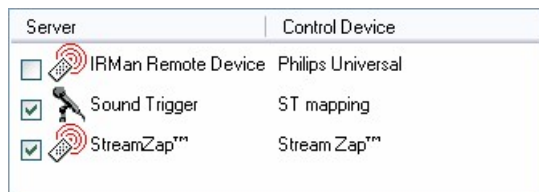
A sound trigger can be configured to start recording in reaction to, for example, a club or bat striking a ball, a starting klaxon or even a voice command.

To use the sound trigger it must be activated and then configured to respond to the correct volume of sound.

#### Activating the sound trigger

Before use, the sound trigger must be activated. To do this:

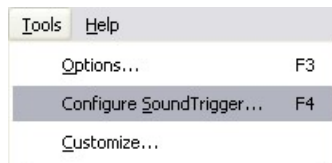
1. Select *Tools > Customize...* from the Menu bar.
2. Select the **Remote Control** tab.
3. Tick the box next to sound trigger to activate it.



4. Close the **Customize** window. It is not necessary to configure the trigger at this stage.

## Configuring the SoundTrigger

1. From the menus select *Tools > Configure SoundTrigger...*



- **Hardware configuration.** The input device will generally be set to "Microphone". Your computer will need to be equipped with a built-in or external microphone.
  - **Detection configuration.** Select the profile that is a closest match to the type of sound used as a trigger then adjust the **Sensitivity slider** to an appropriate level; where incidental sounds do not trigger capture but the trigger sound does. Both the **hit counter** and the **Sound Trigger Server Status** will help you assess which sounds do and do not trigger.
2. Close the **Configure SoundTrigger Properties** window. The sound trigger is now active and can be used as a method of triggering InTheAction capture.

**!** *The sound trigger reacts to the volume, not the words spoken or nature of the sound. Therefore sound triggers will only work if louder than other incidental noise.*

## 5.3 Comparing clips during training

It may be beneficial to compare the last captured clip to a reference clip when working during training. You have the choice to display both clips side by side, blended together or in a picture-in-picture mode.



The steps to compare in InTheAction are to:

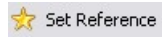
1. Define (set) a **reference clip**.

2. Activate the **Comparison view** and capture a clip. The captured clip is automatically compared to the reference clip
3. If needed, synchronize the last captured clip with the reference

## Setting a reference

To set a reference clip, proceed as follows:

1. Load a clip from the **Tray** or from the **Library items** into the InTheAction module
2. Click the **Set Reference button** found below InTheAction **playback controls**.



 *You can also use any other clip already saved on your hard drive as a reference clip.*

## Viewing the reference clip

The reference clip can be viewed at any time by clicking on the **Reference replay button**.



To work with **comparison view**, click on the **Comparison view button** on the left edge of the InTheAction module.



The screen display will be split in two, the reference clip on the right and on the left the last captured clip.

## Using Comparison view

1. Capture a video clip.
2. At the end of the capture, the clip is automatically displayed next to the reference clip.
3. Use the playback buttons to control the replay
4. Choose a comparison layout:




**Split Screen** - where the clips will be displayed side-by-side.



**Basic Blend** - both clips will be superimposed on top of each other.



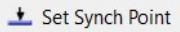
**Picture-in-Picture** - the reference is displayed in the corner of the replay clip.

5. For **Blend view** the degree of transparency of each image can be controlled by moving slider on the blend control  from one side to the other

## Synchronizing clips InTheAction

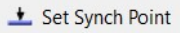
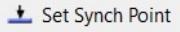
In order to effectively compare two clips, they must be showing comparable behaviour, for

example, you can't compare two divers if one is at a different point in the routine. Synchronizing clips is often unnecessary with InTheAction because a synchronization point is set when capture is triggered. Provided that you always trigger at an obvious moment each time you capture, clips will always be synchronized.

1. Activate the **Replay view**.
2. Find the moment on the clip that is to be the synchronization point.
3. Click .
4. Repeat for the **reference clip** if necessary (use the **Reference replay button** to display the reference clip).

## Alternative synchronization method

It is not always necessary to switch between **Reference** and **Replay** views as described above. Here is an alternative method:

1. Set up the comparison as described above
2. Click the first video image (the **timeline** below the video will be color-coded blue)
3. Find the **synch point** position in the video
4. Click .
5. Click the second video image (**timeline** color-coded green)
6. Find the **synch point** position in the video
7. Click .
8. Click **Play** button

## 5.4 Using drawings in InTheAction

### The drawing toolbar

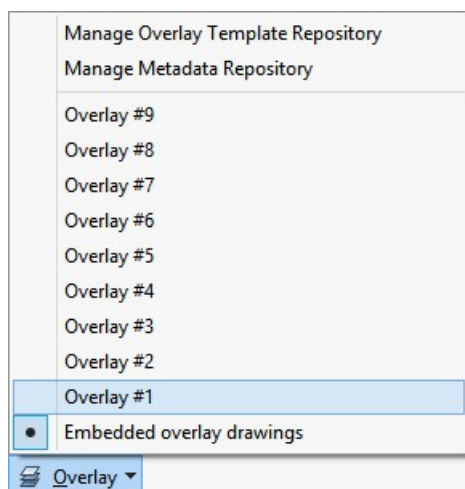
The right-hand side of the **InTheAction module** has a range of drawing tools which can be used to annotate video images, assist with analysis or coaching. The use of these tools is identical to the [Analyzer module's](#) drawing tools and is explained in that chapter.

### About drawing overlays

One unique feature of **InTheAction** is that it is possible to create up to nine drawing overlays. These allow you to choose different drawings for use at different points in the video or reuse drawings from one InTheAction analysis to another.

### To create and use a drawing overlay

1. Select one of the overlays from the **Overlay button** found below the **video display**



2. Add drawings to the video image
3. Selecting an overlay displays its drawings on the current video

## Manage overlays

Overlays can be renamed or deleted. To do this:

1. Click the **Overlay button**
2. Select the *Manage Overlay Template Repository* option
3. Select an overlay from the list
4. Click the **Rename** or **Delete** buttons

## Embedded overlay drawings

The **Embedded overlay drawing overlay** is a special overlay which only displays drawings used as the recording was made. Consider this example:

- You add a line to **Live view** in order to aid observation of an axis of motion of a performer or the swing plane of a golfer.
- Now you record the performance
- The drawings you added are now automatically stored in the Embedded overlay drawings overlay

**Embedded overlay drawings** are special in another way - they form part of the metadata ( **dartclip**) of the video. This means that when a video recorded in **InTheAction** is viewed in the **Analyzer**, its drawings will be visible

*! This feature was actually designed to enable the simultaneous recording and display of data captured from external devices (TeamPro Data edition required). Although you may find other uses for it, bear in mind that drawings embedded in this way cannot be modified in the Analyzer. If this proves to be more of a help than a hindrance, the feature can be disabled in the advanced options: Tools menu > Options > Advanced > InTheAction > Save embedded drawings (deselect)*

*💡 Remember, drawings can be hidden at any time by clicking the Show/Hide drawing button on the drawings toolbar*

## 5.5 Self coaching with Live Delay

**Live Delay** provides a completely hands-free way of reviewing video during training which makes it especially useful for self-coaching. It simply delays the display on the computer screen of the images that the camera continuously observes. It's like a mirror but one that waits a predefined number of seconds before showing your reflection. Enough time for the athlete to finish a routine, drill or exercise then assess how he or she performed.


For example, a coach might explain adjustments required using the range of InTheAction features explained earlier in this chapter and then leave the athlete to practice, using **Live Delay** to confirm the adjustment is being executed correctly.

### To use Live Delay

1. The InTheAction module is activated and video input set up as described previously (see [Preparing InTheAction for use](#)).
2. Determine the amount of delay required. For example a golf swing takes, say 2 seconds, add another couple of seconds as a margin for error, then it might take a further 5 seconds to get to a position to view the computer display after the swing - the live delay required is  $2 + 2 + 5 = 9$  seconds
3. From InTheAction's [Recording Options](#) change the **Live delay** value. The largest amount of seconds you can set is related to the amount of available RAM memory of your computer. It is not necessary to change the **Pre-record** or **Recording duration** settings as they do not affect Live Delay
4. Click on the **Live Delay view button**.



5. Press F11 on your keyboard to have a **full screen view** (press F11 again to leave full screen).
6. That's it! No button presses, no files recorded, no comparison, no pause or replay. Just a simple tool to help with self coaching.

 *Using live delay doesn't prevent the use of other InTheAction features. As soon as the capture button is pressed/clicked, capture begins according to the pre-record and duration settings and replay commences straight away. However, recordings are made of what is coming through the camera lens and not what is happening on the screen - always refer to the live action when triggering recordings.*

## 5.6 Next steps

**InTheAction** allows you to review and compare performance while training takes place but to review these performances at a later date you should learn how to load, synchronize and compare clips in the **Analyzer module**.

The Analyzer module will also allow you to publish your clips into a **Mediabook**; a remote coaching tool complete with audio and text guidance (read the chapter on the Analyzer).

# Chapter

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VI

## *Analyzing Performance*



## 6 Analyzing Performance

Dartfish's Analyzer module is packed full of features to help observation and understanding of movement. This chapter guides you through these allowing you to:

**Compare** video - Up to 4 clips can be compared side by side and 2 clips can be **blended**. It is quick to **synchronize** clips to make the cation contained comparable. You are not limited to just four clips in your analysis as a project can contain multiple analyses in its **Storyboard**.

**Annotate** video - A collection of **drawing** and **note** tools help enhance observation, make **measurements** of distance, angles and time and add text to video clips. Tools exist to enhance the effectiveness of drawings such as **automatic tracking** and **fading** them in and out at relevant positions in the vide clip. Text or audio **comments** can added to an analysis to create a lasting record of your analysis and to save time, previous comments can be imported from previous analyses.

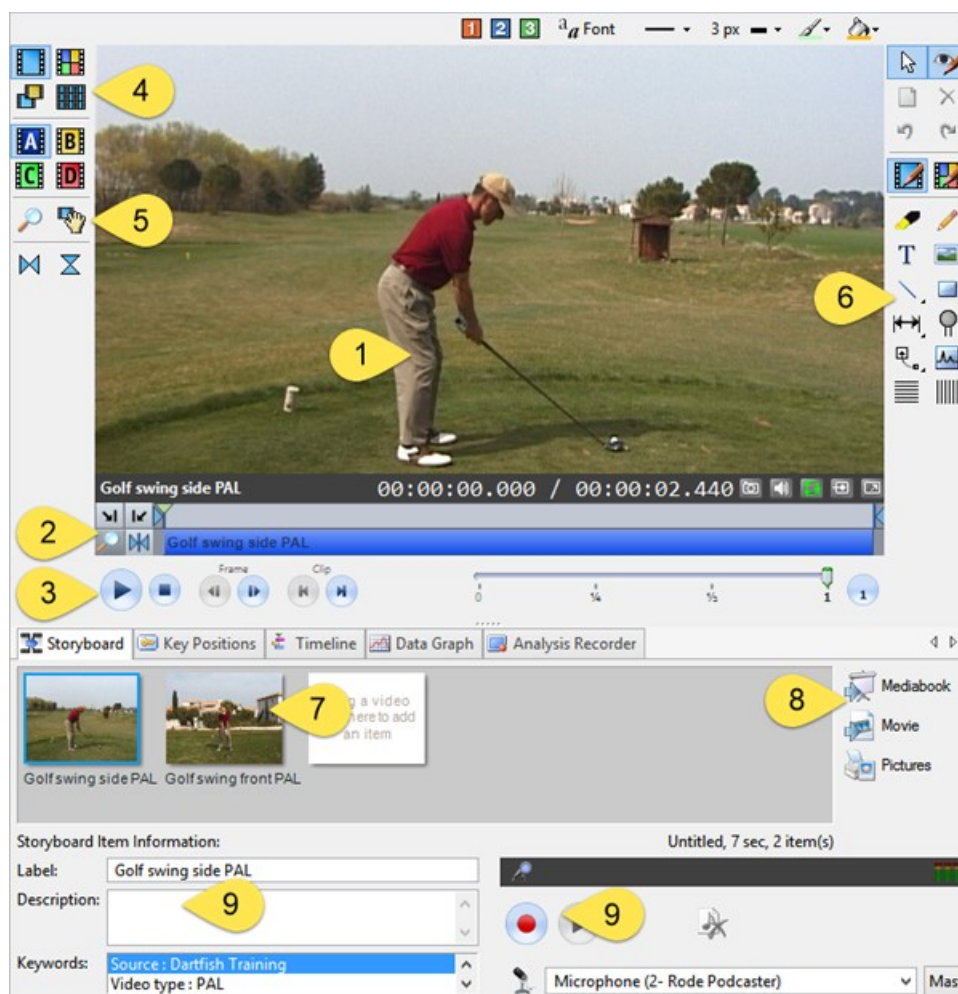
Identify important moments - **Key Positions** can be identified and drawings and comments added to them. Each key position can also be a **synchronization point**, allowing more than one synchronization in each comparison.

### *In this chapter*

- [Analyzer workspace](#)
- [An analyzer project - the Storyboard](#)
- [Enhancing images](#)
- [Drawing on the video](#)
- [Adding written and audio comments](#)
- [Analyzing key positions](#)
- [Comparing performances](#)
- [Key position mosaic](#)

## 6.1 Analyzer workspace

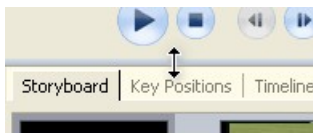
The **Analyzer** workspace is illustrated below:



Its main constituents are:

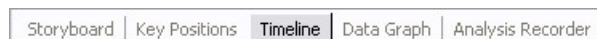
1. **Video display** - to display the clip(s).
2. **Timeline** - for visual identification of the current video position; to control the **playhead** position and set the **cue in/out points** to define the playable part of the video.
3. **Play controls** - (underneath the timeline) to control the video playback.
4. **Display buttons** - (top-left) to change the screen display. You can select among **Single-screen**, **Split-screen**, **Blend** and **Mosaic** modes. The **A**, **B**, **C** and **D** buttons show/hide up to four loaded video clips: In split-screen modes, they are used to select between up to four clips to display simultaneously.
5. **Image Enhancement tools** - (underneath the C, D buttons) to **align**, **zoom in/out** or **flip** the images.
6. **Drawing tools** - (on the right) to draw on the video.
7. **Storyboard** - (underneath the play controls) contains the different analysis of an **Analyzer** project.
8. **Publishing** - (on the right of the storyboard) to publish your analysis on different media (CD, e-mail, printer, Internet) or to create a **movie** of the Storyboard.

9. **Description** - (at the bottom) to add written and audio comments. To see this area it may be necessary to resize the panel. This is done by click and dragging its top border using the mouse shape shown in the following illustration.



## Analysis panel features

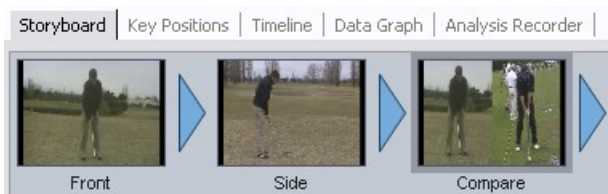
The bottom part of the module consists of a multi-page panel and, depending on which edition of Dartfish you have the following pages can be seen :



- **Storyboard** - An analysis is likely to comprise of several videos, or even several analyses. The **Storyboard** allows all to be collected in one place. For example, a Storyboard might contain videos showing before, then after, instruction and also a **split screen comparison** of both.
- **Key Positions** - Much motion analysis is concerned with the static as much as the dynamic. **Key positions** bookmark these moments of interest within the video, enabling observation and annotation. Key Positions can also be published as **pictures**, complete with any **drawings** added.
- **Timeline** - When one video is loaded, this page offers a more detailed view of its timeline. When multiple videos are loaded, the timelines of all can be seen together, to aid understanding of the position of one video relative to others
- **Data Graph** - used to display a graph of data linked using a Dartfish **Data Reader** or data captured from a data stream from devices such as radar, heartrate monitors, force platforms etc. **Data Reader** data is linked to the video and Dartfish TeamProData edition is required to both link data and view linked data. When a data stream is captured, the data is stored in the metadata (**Dartclip**) of the video and, while Dartfish TeamPro Data is needed to capture the data, all editions can be used to view it in the **Data Graph**.
- **Analysis Recorder** (Pro editions) - used to create a new video based on your audio commentary and on-screen actions. To understand this feature, imagine delivering feedback or instruction using video; the analysis recorder records everything that you say and do.

## 6.2 An analyzer project - the Storyboard

The **Storyboard** can contain multiple videos and analyses that constitute an **Analyzer Project**. Each item in the **Storyboard** corresponds to one analysis. For example, you could analyse swings of a students captured during a training session, one from the front, one from the side and one from the front compared to a reference swing, as illustrated below.



Each analysis may include drawings and audio commentary. All this is saved in your Analyzer Project along with the videos.

Your project can be:

- Re-opened later to modify/add analysis elements (e.g. add a fourth swing, modify a drawing,

etc.)

- Publish to different destinations (e-mail, CD, printer, internet) to be handled out to your student/athlete (see Publishing Analysis).

### 6.2.1 Loading clips

Clips can be loaded as multiple clips within a single analysis or as a new analysis.

#### To load a clips into an analysis

1. Select the **mode** to be used for the analysis (**Single screen**, **Split-screen** etc)
2. Click the **A, B, C or D** video display buttons to select a **video display** or to display the required number video displays in **Split-screen mode**.
3. Double click a video clip in the **Items List** or the **Tray** of the **Library** to load it into the first display then repeat for the other displays

 *You can also drag & drop a clip onto any video display. This offers greater flexibility over which video display is used. This method can also be used to replace a previously loaded clip.*

#### To add a new analysis (i.e. a new Storyboard item)

Drag & drop a video from the **Items List** or **Tray** onto a vacant position on the **Storyboard**.



#### To delete an analysis (i.e. delete a Storyboard item)

Right-click on the **Storyboard** item and select *Delete* from the **quick menu**.

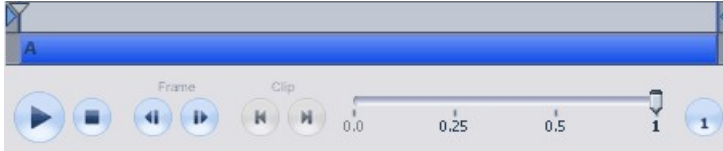


#### To clear the entire Storyboard

Start a new project (*File>New* from the menu bar) to clear all items from the *Storyboard*.

### 6.2.2 Playing clips

Once a clip is loaded you have the ability to control the playback (play/pause, stop, frame-by-frame, etc.). This can be done by using the playback controls buttons and the timeline underneath the video screen.



The functions of the buttons are the same as for the Player module except for Play next/previous clip and the Repeat mode which applies to items of the Storyboard rather than items of the Tray. Read the Video Playback section in the Getting familiar chapter to learn more.

### 6.2.3 Saving an analyzer project

Select *File menu > Save* (or *File>Save As...*) from the **Menu bar** to save a project. Analyzer projects can be identified by the following icon.



*💡 If a project is saved in a Monitored folder of your Library (see section Defining your library in the Library chapter), it will be displayed in the Items List.*

#### To open a saved project

- Double-click on the project in the Items List OR...
- Select *File>Open* from the Menu bar.

#### To start a new project

Select *File > New* from the **Menu Bar**.

*! Starting a new project empties the Storyboard. Be sure to save the previous project when prompted if this work will be required in future.*

## 6.3 Enhancing images

### Enlarging the video image (zoom)

Dartfish's **Analyzer** allows you to zoom in or out on an image to better see the details of a particular moment. There are several ways to zoom in/out:

- Use the **Maximize height of clip button** at the bottom of the **video display** (3rd button in the illustration below). When selected, the video is enlarged to occupy the available height of the

display (to do this the left and right edges of the video may be hidden).



- Use the **Display video fullscreen button** (right-most in above image). The video is displayed in full screen (press ESC on your keyboard to return to normal view).
- Click on the **Zoom Tool button**, position the mouse cursor over the part of the picture that you want to zoom on and left click (right click to zoom out).



- Click anywhere in the Analyzer's screen and use your mouse scroll-wheel. The image will zoom towards the location pointed by your mouse cursor.

## Re-aligning & repositioning video

Once the image has been zoomed in, you can move the zoom focus in two ways:

1. Click on the **Move tool button**



2. Click and drag the video image using the mouse.

## Zoom options

Clicking on the **Zoom Tool button** displays options at the top of the Analyzer's screen:



From left to right, the buttons give access to the following function:

- Reset Zoom - resets the zoom factor to 100%
- Zoom In - each click increases the zoom factor by 20%
- Zoom Out - each click decreases the zoom factor by 20%
- Zoom Factor - set the zoom factor by selecting it from a predefined list
- Quick Magnify - changes the mouse cursor to a magnifier to quickly point to details.

**!** *You can change the zoom factor inside the Quick magnify tool by using your wheel mouse. [shift] + wheel mouse will modify the radius of the magnifier.*

## Flip a clip horizontally or vertically

To get a new perspective on a clip, you can flip it horizontally or vertically. To do this, click the *Flip Horizontal* or *Flip Vertical* button.



The button appears as "pushed". You can flip the image horizontally and vertically at the same time.

## 6.4 Drawing on the video

Dartfish allows you to draw objects and add text on top of a clip's images. Use qualitative drawings (e.g. lines, circles, rectangles, etc.) to highlight details. Quantitative tools (angles, measurements, etc.) can be used to extract data from the video.

### The Drawing Toolbar

Use the following toolbar to draw and write text on the video.



**Drawing management tools** - to **select**, **show/hide**, **delete**, and **undo/redo** drawings.



**Video Drawing vs. Screen Drawing** - two modes to draw on clips.

1. In the Video Drawing mode, your drawings are associated with the selected clip.
2. Use the Screen Drawing mode to draw across the Analyzer's screen or add drawings which are independent of the video



**Drawing tools** - the various tools to draw on the video. Most of these tools are self-explained. Read the remaining of this section to learn about the more advanced tools.

The tiny black marking on the lower-right of a drawing tool indicates that other tools of the same type can be accessed by a mouse right-click, as illustrated below:



### 6.4.1 Adding and modifying drawings

#### To add a drawing

1. Select a drawing tool
2. Position the mouse cursor on the image at the point where you want to start drawing
3. Left click, hold and move the mouse to the end point
4. Release the mouse button

**!** *Although you are drawing on a single frame of video, the drawings will be displayed for the entire clip. Use the key position analysis (see [Analyzing key positions](#)) if you want to apply different drawings to different frames. It is also possible to fade drawings in and out so that they only appear*



for part of the clip (see [Fading drawings in and out](#)).

 Holding down the [shift] key "constrains" drawing, e.g. to draw a horizontal line, a square, a circle, a 90 degrees angle, etc...

By default, selecting a drawing tool lets you draw a single object. If you would like to draw the same object many times (e.g. multiple lines), select the currently selected tool a second time. A vertical gray mark appears on the tool and indicates that you are in a "repeat drawing" mode.



To leave this mode, click the selected tool a third time or select another one.

## To modify a drawing

1. Click the **Selection button** (top-left of the drawing toolbar).
2. Click on the object you wish to select. White **handles** appear on the object, as shown in the image below:



3. If you wish to select multiple objects, hold down the CTRL key as you select additional objects.
4. Once the object(s) is selected, you can:
  - Drag a **handle** to change the size or shape of the object.
  - Click and drag the selected object to another location.

## To delete drawings

- Use the Delete All button



- Select a drawing and press the [delete] key or use the Delete button

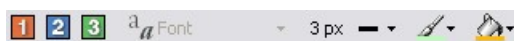


- Use the Undo/Redo buttons to go back to the previous state



### 6.4.2 Drawing properties

You can change the thickness, color, opacity, size and other properties of the drawings. The drawing properties bar is displayed at the top-right of the Analyzer screen





## To modify a property:

1. Click on the drawing to select it.
2. Click the button that corresponds to the property you want to modify.
3. Select the different value/color/font.

## Using drawing presets

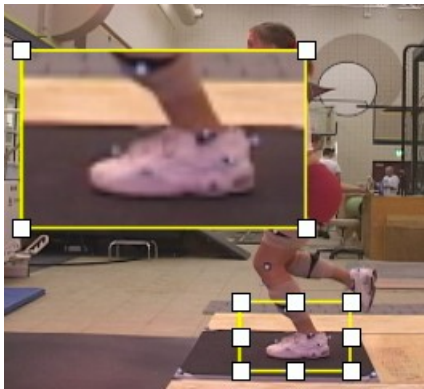
The **1, 2 and 3 buttons** correspond to properties presets. Left-click on these buttons to apply a preset.

To create or change a preset:

1. Draw an object
2. Modify its properties
3. Right-click one of the **1, 2 or 3 buttons**.

### 6.4.3 Clone rectangle

The Clone rectangle tool allows you to "clone" and magnify an area of the image. Play the video to visualize both the magnified area and the performance in its whole (picture-in-picture effect).



To use this tool, proceed as follows:

1. Select the Clone Rectangle drawing tool



2. Click, hold and move the mouse cursor to draw a rectangle around the area you want to clone.
3. Click and drag the cloned area to the location you want
4. Use the white handles to magnify the cloned area
5. Click anywhere in the image (except the drawing itself) to deselect the cloned area.

### 6.4.4 Picture

You can import a picture and overlay it on top of the video. You can use for example this function to insert your logo or to compare a key position to a reference image.



To add a picture

1. Select the Image drawing tool. The Open Image dialog opens.



2. Browse for the image on your disk and click on the Open button. The image overlays on top of the video screen.
3. Change the size of the picture by dragging the white handles. Hold down the SHIFT key while doing this to constrain the proportion of the image. You can also click and drag the image to a different location.

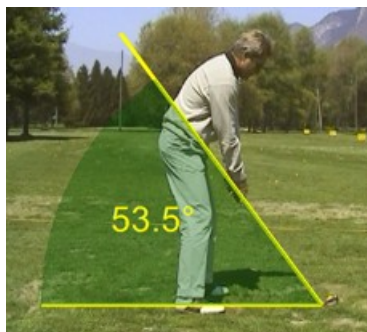
! If the image width is larger than 360 pixels, it will automatically be resized to this value.

💡 If you load an image in Screen Drawing mode (see [Drawing on the video](#)), it will always be overlayed at the same location in the video. Use this, for example, if you want your logo to be displayed always at the same location.

💡 Drag and drop an image from the Items List of the Dartfish Library as a quicker way of adding a drawing

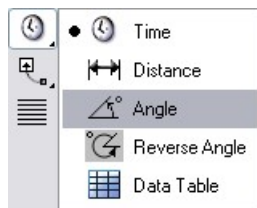
### 6.4.5 Measuring angles

The image below illustrates the **Angle tool**.



To add an angle:

1. Right-click on the **measurement tools group** and select **Angle** from the context menu.



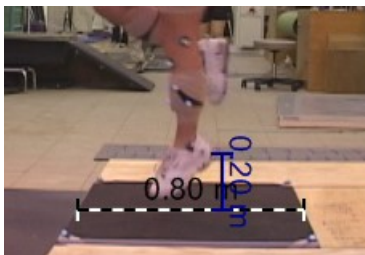
2. Position the cursor on the image exactly where you want the corner of the angle to be.
3. Left-click, hold and move the mouse cursor (in the image above, click on the club head and move horizontally). A line draws as you move the mouse.
4. When the line extends to where you want the angle to open, release the mouse button.
5. Move the cursor up or down to create the desired angle. The number of degrees of the angle is shown as you move the mouse.
6. Click the mouse when the angle is the desired width.

! You can modify the line thickness, colors and font (see [Drawings properties](#)).

💡 Hold down the [shift] key while drawing to constrain the angle to 0, 45, 90, ... degrees.

### 6.4.6 Measuring distances

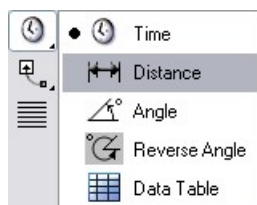
The image below illustrates the **Distance** tool.



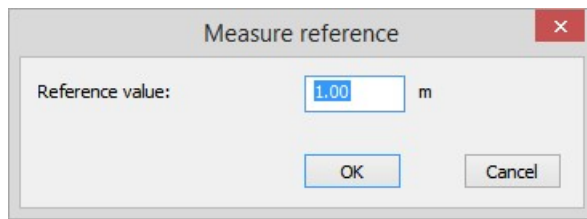
Distances are only precise in a plane perpendicular to the camera. You first have to calibrate this plane by defining a reference distance. To do this, put an object of known length at the position where the movement will be performed (the width of the mat in the above example).

To measure distances, proceed as follows:


1. Right-click on the **measurement tools group** and select **Distance** from the context menu.



2. Click, hold and move the mouse cursor to draw the **reference distance** (the one with the dashed line in the image above)
3. Right-click on the **reference distance** and select *Set as reference...* from the context menu. The following dialog opens



4. Enter the size of the reference object.
5. Select the **Distance tool** again and draw the distance (vertical line in the example above). It will be computed based on the line length and the reference value.

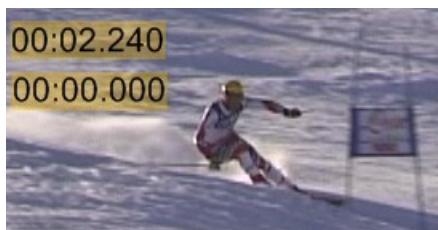
 *The measurement precision relies on many factors such as the distance between the camera and the performer, the camera zooming factor, the precision of the perpendicularity between the camera axes and the plane in which the movement is performed, etc... Try to be as precise as possible when setting the reference distance. For example, use a well defined and distinct marker on the floor and use zoom tools to enlarge the image when setting the reference distance.*

### 6.4.7 Measuring time

Dartfish allows you to use one or more timers

- to estimate the duration of a performance,
- to measure time in different sections of a performance/race,
- to estimate/compare different time/speeds.

The timer displays the time in minutes:seconds.milliseconds (mm:ss.000). Its precision is function of the number of frames/sec of the video i.e 0.02 seconds if the frame rate is 50 frames/sec



#### To add a stopwatch

1. Select the **Time drawing tool**



2. Click anywhere in the image to insert a timer. Use the **drawings properties** (see [Drawings properties](#)) to modify the color and font.

#### To reset a stopwatch

The timer displays the current position of the **playhead** at the moment it is inserted in the image.  
To set the time to 00:00.000:

1. Right-click on a stopwatch (that has already been placed in the image)
2. Select Set timecode to 00:00 in the context menu

## To start/stop timing

You can start and stop counting in a section of a performance/race. For example, you may want to compute the time from gate 1 to gate 7 in a giant slalom to compare performances in this particular section. To do this:

1. Position the **playhead** at the position you want to start counting
2. Set timecode to 00:00 (optional)
3. Right-click on a **timer** and select *Start counting*
4. Position the **playhead** to the end of the section
5. Right-click on the **timer** and select *Stop counting*

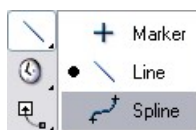
### 6.4.8 Tracking objects manually (Spline)

You can draw trajectories by manually tracking object in the video clip. For example, you could draw the swing plane as illustrated below. The yellow curve represents the up-swing and the orange one, the down-swing. Dartfish creates the trajectory by joining selected points while smoothing the curve in between. The trajectory redraws as the video plays (see image on the right).



To draw a curve, use the **Spline tool** and proceed as follows:

1. Right-click on the Line button and select **Spline** from the context menu.



2. Position the **playhead** at the beginning of the performance
3. Click on the object you want to track. A white square indicates the first point of the curve.
4. Use the CTRL + LEFT/RIGHT CURSOR keys to move the **playhead** forward a few frames
5. Repeat steps 2 and 3 as many times as needed.
6. Right-click and select *Finish* from the context menu to terminate the curve.
7. To modify the trajectory, select it and move any point you have defined. The curve modifies accordingly.

**!** *The trajectory draws as illustrated above only if it is deselected (white squares not visible). To do this, click anywhere in the image but on the curve itself.*

! The curve can be drawn on a single frame. In this case, no tracking takes place.

💡 The number of points you have to define varies according to the speed of the object. The faster the object, the more points you have to add to get a smooth curve.

### 6.4.9 Tracking objects automatically

Dartfish offers you a powerful function: **automatic tracking** (available in the TeamPro and ProSuite editions). The principle is the same as for the [manual tracking](#) (see previous topic) except that the computer automatically tracks and optionally draws the **trajectory** of an object(s). The **automatic tracking** function can be used with most of the drawing tools:

- e.g. with the **rectangle**, **oval**, **clone rectangle** to highlight the evolution of an object/performer throughout the video.
- e.g. with the **marker tool**, to automatically draw the trajectory of a well defined feature.



- with the **spline** tool (see [Tracking objects manually](#)) to visualize the evolution of the shape of an object/body over time. In this case, each point of the curve is tracked separately.



- with the **angle** (see [Measuring angles](#)) and distance (see [Measuring distances](#)) tools to measure the evolution of such data.



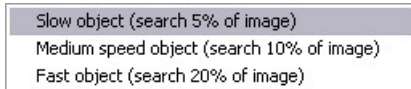
- with the **Data table** (see [Using data tables](#)) to automatically extract and store statistics from the image

💡 Tracking is a complex process; for Dartfish to successfully track objects they must remain clear and visible. You can help it by tracking clear features with a high contrast. Try to use markers as illustrated in the pictures above. Use your camera's focus and exposure features to avoid blurring of moving objects.



## To activate the automatic tracking

1. Position the **playhead** at the video position where you wish tracking to begin.
2. If this is not at the start of the video, you may also wish to [fade the drawing in](#) at this point if you don't want to see it before it starts to track
3. Select a **drawing tool** and draw on the video
4. Right-click on the drawn object and select *Tracking* in the context menu
5. Select the **object speed** from the context submenu (this defines how far from the last position Dartfish will search the video image for similarly colored/shaped objects).



6. Click the image to deselect the object

## Using the automatic tracking

To start tracking, simply play the video. Until you are confident that tracking is successful, we recommend proceeding frame by frame.

The drawing color changes to green indicating that Dartfish has started to track the object. At any moment, you can pause playing:

- If you observe that the tracking is "lost" (e.g. when the object gets occluded). In this case, manually reposition the drawing onto the tracked object and continue playing. Tracking remembers the adjustments you make.
- If the object disappears from the field of view or tracking should be stopped for any other reason. In this case, right-click on the drawing and select *Suspend tracking* from the context menu. Dartfish stops tracking from this position (the drawing color changes to red).

## To show the trajectory

Once you have activated automatic tracking (see above), right-click on the drawing and select *Show trajectory* from the context menu. The trajectory progressively draws as the video plays.

### 6.4.10 Fading drawings in and out

In many cases, drawings are valid only for a small portion of a movement. You can use the **Fade in/out** function to display a drawing only during such a portion. To do this, proceed as follows:

1. Position the **playhead** at the desired position.
2. Draw an object on the video
3. Step a few frames backward (using the CTRL + LEFT/RIGHT keys)
4. Right-click on the object and select *Fade in* from the context menu.
5. Select how quickly the drawing appears from the context submenu.



6. Step a few frames forward.
7. Repeat the steps 4. and 5. to set the **Fade out**.
8. Deselect the drawing and play the video from the beginning. The drawing will only show in the defined portion.

*! Use this function if you want to publish a new video that contains drawings that fade in/out. If you want to add drawings to a single frame of video, we recommend you use the key positions (see [Analyzing key positions](#)) which can be printed or published in an interactive Dartfish Mediabook.*

## 6.5 Using data tables

The **Data Table** drawing tool enables you to collect time-dependent data related to the action in your video. For example, at different time instances you can manually enter the distance an athlete has run so far, just as you would in an Excel spreadsheet. Then, the data table tool can compute (and display) automatically the average overall speed or the interval speed of the athlete. It is also possible to link another drawing tool such as an angle or a measuring tool to a column of a data table, to display and store the evolution of the corresponding quantity (angle/length) over time. In the following image you can see a data table containing heights inferred by a measurement drawing.



Timecode	Height
00:00.000	0.18
00:00.150	0.24
00:00.300	0.33
00:00.434	0.50
00:00.567	0.70
00:00.701	0.91
00:00.801	1.13

An advanced feature is the option to track an object in the video automatically and to display the corresponding positional data in a data table. Finally, you can **export** the collected data in CSV format for further processing and analysis in a spreadsheet such as Microsoft Excel.

### 6.5.1 Data table basics

This topic covers the techniques of creating and manipulating a **Data table**. Then, in subsequent topics we'll look at different examples. The **Data table** drawing tool is available in the **Analyzer** and **InTheAction** modules.

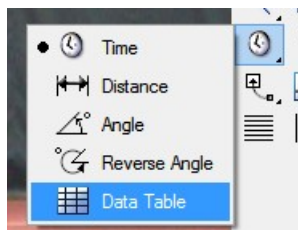
### Data table features





## To create a Data table

1. Right-click the measurement tools group of drawing tools in the **drawing toolbar** and select the **data table** drawing tool



2. Draw the **Data table** in the same way you would draw a **rectangle** on the video image: by positioning the mouse crosshair cursor at the top left position of the space that the **Data table** will occupy, then...
3. Click & drag downwards and to the right
4. As you drag the **Data table** will appear one column and row at a time. Release the mouse when the number of rows and columns meet your need.

*Set the font size **BEFORE** the table is created. If the font size is too large, the table will take a lot of space on the video image*

## To add a column

As the **Data table** is drawn, columns automatically appear in the order **Time**, **Data**, **Interval Speed**. But suppose you want two **data** columns, or you want **distance** but not **Interval speed**? The answer is to manually add the columns that you require:

1. Right-click on any column in the **Data table**
2. Select *Insert column* from the quick menu

### 3. Choose which type of column to insert:

- **Timecode** - a time stamp based on **video position**
- **Data** - numerical data derived from other drawings (for example, position and angle) or manually entered
- **Interval speed** - calculated from distance data
- **Average speed** - a rolling calculation of average speed from the first data point to the last
- **Interval length** - a calculation of distance between two data points
- **Interval duration** - a calculation of the time difference between two data points
- **Text** - a free text field for addition of labels or notes

## To remove a column

1. Right-click on any column in the **Data table**
2. Select *Column > Delete column* from the quick menu

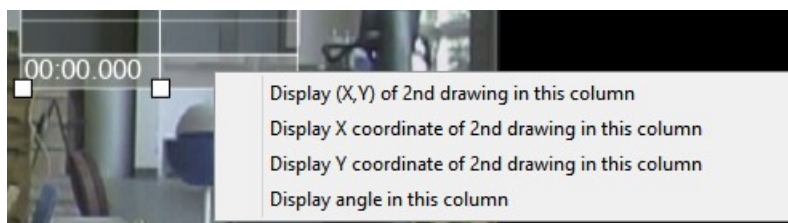
## To add and delete rows

It is not possible to add or delete rows

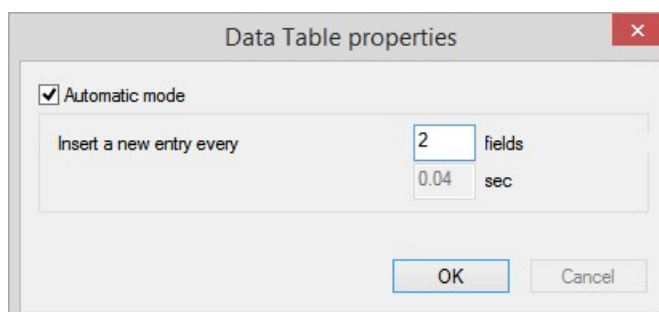
## Linking a Data table to a drawing

By linking a **drawing** to a **Data table**, data can be derived from it. For example, Link an **angle drawing** to record angle. Link to any drawing (for example **Marker** or **Spline**) to record position.

1. Click the **Data table** to select it
2. Hold down the CTRL key and click the **drawing** (sizing 'handles' indicate that both drawings are selected)
3. Right-click anywhere in a **data column** of the **Data table** and select which data will be recorded:



4. Now the **Data Table properties** are automatically displayed:



5. If **Automatic mode** is selected, enter a sampling rate expressed as **fields**. The actual time interval will depend on the frame rate of the video and whether it is interlaced. For guidance, the sampling interval is also displayed.
6. Click the **OK button** to continue

7. What you do next depends on whether you have chosen to gather data manually or automatically:
  - If using **Automatic mode**: Simply play the video. Data will be added to the table at each specified sampling interval
  - If not using Automatic mode: At each point where the data from the drawing is to be recorded, right-click the bottom row of the Data table and select Insert entry in Data Table from the quick menu

See the following topics for examples of using Data tables for more specific guidance

## Calibrating time

1. Position the **Playhead** at the video position which will be 'zero time'
2. Right-click the time in the bottom row of the Data table
3. Select the *Set Timecode to 00:00* option from the **quick menu**

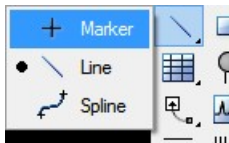
## Calibrating distance

Unless manually entering distances, a distance calibration must be made. See the topic [Measuring distances](#) to discover how to do this

## Calibrating position (setting an origin)

When linking a **data table** to a drawing, the x,y coordinates recorded will be based on an origin at the top left of the video image. If precise coordinates are required, an origin may be set as follows:

1. Add a **marker** drawing to the video at the chosen origin



2. Right-click the **marker** and select *Set as origin* from the quick menu
3. Choose the direction of the axes depending on your requirements and the direction of movement of the drawing(s) being used to find position

## To manually enter data to the table

1. Click in a cell in the bottom row of the table, then type a number
2. Press the ENTER key to add the data to the table
3. Data entered in this way can be edited by clicking on any cell containing the data

**!** *Only Data and Text columns may be edited in this way and only distance data can be added to a data column. Remember to use the same units set in the Dartfish Options Tools menu > Options > Analysis page > Measure Unit*

### 6.5.2 Record times

This first example using the simplest data table; recording only time. We go one step further and calculate the lap times between splits.

This is an applied example where some steps have been summarized. First read the topic [Data table basics](#)

Timecode	Interval duration	Lap
00:00.000	00:00.000	Lap 1
00:36.840	00:36.840	Lap 2
01:02.160	00:25.320	Lap 3
01:21.000	00:18.840	Lap 4
01:42.960	00:21.960	Lap 5
01:42.960	00:21.960	

## Prepare the table

1. Draw the **Data table**. Only one column, **Timecode**, is required
2. Right-click anywhere in this column and select *Insert column > Interval duration* from the quick menu

## Record the data

1. Position the **play head** at zero time. For example at the start of the race
2. Right-click the time appearing at the bottom left of the **Data table**
3. Select *Set timecode to 00:00* from the quick menu
4. Move the video to the first time to be recorded
5. Right-click the time code at the bottom left of the Data table and select *Insert entry in Data table*
6. Repeat for other split times

## Labeling splits

1. Right-click anywhere in the **Interval duration** column and select *Insert Column > Text*
2. Click the label at the top of the new **Text** column
3. Press BACKSPACE to remove the label and type 'Lap time'
4. Click in each cell of the Lap time column and type 'Lap 1', 'Lap2' etc

### 6.5.3 Record angle and distance from measurement tools

Measurements from angle and distance tools can be recorded directly into a Data table by linking the measurement drawing to the Data table

In this example, we will choose to manually choose which data to record when a cyclist's leg is in specific positions. We'll automatically track a knee angle but manually measure and record displacement of the cyclist's knee from a fixed point

This is an applied example where some steps have been summarized. First read the topic [Data table basics](#)

## Prepare the table

1. Draw the **Data table**. Two columns, the **Timecode** and **Data**, are required
2. Insert a second data column: Right-click anywhere in the **Data** column and select *Insert column > Data* from the quick menu
3. Click the heading of the first data column and press the BACKSPACE key to remove it. Type a new label 'knee angle'
4. Click the heading of the second data column and press the BACKSPACE key to remove it.

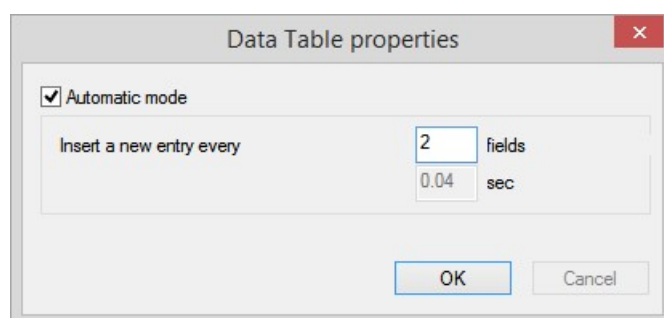
Type a new label 'knee displacement'

5. Draw an **angle drawing** and a calibrated **distance drawing** as shown below (see [Measuring angles](#) and [Measuring distances](#) topics)
6. Right click the **Angle drawing** and select *Tracking > Medium Speed Object* from the quick menu



## Link the drawings to the data table

1. Click the **Data table** to select it
2. Hold down the CTRL key and click the angle drawing
3. Right-click anywhere in the first data column (Knee angle) and select *Display angle in this column*
4. **Data Table properties:** deselect **Automatic mode**



5. Repeat steps 1-4 to link the **distance drawing** to the **Data table**

## Record the data

1. Position the **playhead** at the first position to be recorded
2. Adjust the size and position of the distance tool to make the desired measurement. There is no need to adjust the angle tool in this case as it is automatically tracking the movement
3. Right-click the bottom row of the Data table and select *Insert entry in Data table*
4. Repeat for other positions



### 6.5.4 Manually enter distance to calculate speed

In this example, you will learn how to calculate certain statistics by entering data manually. Imagine you want to analyze a 100m hurdles women's race by measuring the intermediate times of the winner at each hurdle, and thus be able to compute the individual interval speeds.

#### Create the Data table

1. Select a video clip with a hurdles race from the Items List (library) and drop it in the video display
2. Select the **Data table** drawing tool in the drawing toolbar.
3. Move the crosshair cursor on the video to where you want to have the upper-left corner of the **data table**. Now move the mouse while keeping the left mouse button pressed, just as if you wanted to draw a rectangle. Watch columns and rows being added and removed automatically as you drag the mouse around.
4. Note the number of the rows in the data region (for an explanation see below), that shows the number of data rows. Release the left mouse button when you see two columns (labelled "Timecode" and "Data") and five rows
5. The data table, composed of 5x2 cells (as illustrated below), is now created. You are now ready to enter data.

The data table is divided into three main regions, each covering its entire width:

- The first row is the title row containing an editable title for each column.
- Rows 2, 3 and 4 are data rows, which display the data that you will enter during your analysis session. Collectively, these three rows are called the data region.
- The fifth (and bottommost) row is the entry row. Usually you will enter your data here, from where it will be inserted in chronological order into the data region.

#### Enter data

You are now ready to enter data. To do so, proceed as follows:

1. Move the **playhead** to the exact frame where the runners jump out of the starting block. Watch the current **timecode** in the bottom left cell change as you do this. This will always be the timecode that belongs to the data you enter in the entry row.
2. Right-click on the **data table** and select *Set timecode to 00:00* to reset the timecode of the **data table**. The time of the start of the race will act as the reference time for our analysis.
3. Click on the bottom-right cell, that is, the cell belonging to the entry row and the column labelled "Data". You'll enter the edit mode of this cell: the cell is highlighted and a vertical cursor sign appears. Now you can type in numbers.
4. Type "0" to indicate the start of the race ("0" for "zero meters run so far"), then press ENTER. You'll leave the edit mode, and the contents of the entry row (the timecode and "0") are inserted into the list. The entry cell (where you entered "0") is cleared.
5. Move the **playhead** now to the next frame to where the runner crosses the first hurdle. The timecode in the bottom left cell now displays something like "00:02.400".
6. Click again on the bottom right cell. Type "13" since the first hurdle is 13 meters from the start.
7. Press ENTER to insert the new data as a second entry in the list.
8. Repeat steps 5 and 6 until you've added entries for all hurdles (each separated by 8.5 meters) and a last one for the finish line (100 meters).

**!** *The data region is scrollable - entries that are already in the list scroll up and disappear as you insert more entries. These entries are not lost. Use the scrollbar on the right side to make them visible again (drag the round yellow anchor on the scrollbar up and down).*

## Add computed columns

Suppose you now want to display the interval speed between two hurdles.

1. Right-click on the data table somewhere in the second column. The context menu appears.
2. Select *Insert column > Interval speed* from the context menu. A new column labelled "Interval speed" is inserted at the right end of the data table. Each new cell contains the speed of the corresponding interval.

You can also add more data columns to enter for other athletes. If you want to display the interval speed of the second data column, you can insert a second interval speed column the first one from the left displays the speed of the first data column, the second one displaying the speed of the second data column, and so on.

## Add comments to the entries

You can insert a text column to comment on certain events in the video.

1. Insert a **text** column using the procedure described above
2. If there are already some entries in the list (such as from the hurdles example), click directly in the text cell where you want to enter your comment. You'll enter the edit mode.
3. Type in your comment, and finish by pressing ENTER
4. Repeat steps 2 and 3 for comments on other entries
5. If you want to add a comment for a timecode that is not yet in the list, move the playhead to this timecode, and enter your text in the corresponding cell in the bottommost row. A new entry is inserted in chronological order in the list when you hit Enter.

## Update data in the list

Suppose you made a mistake while entering data in the hurdles example. There are two types of modifications:

- **Modification of manual data cells:** Let's assume that you entered 31 instead of 30 meters for the third hurdle. You can correct this mistake easily by clicking directly in the corresponding cell in the data region, editing the data and pressing ENTER to finish your correction. Note that computed cells (speed, etc.) that are affected by your modifications are immediately updated while you type.
- **Modification of the timecode:** Now let's assume that you typed the correct distance (30) for the third hurdle, but you made a mistake in the timecode. In this case, things get a little bit more complicated, since the data you want to change (the timecode) doesn't belong to a manual, but to a computed column. Follow these steps:
  1. Delete the incorrect entry from the list: right-click on a cell belonging to the incorrect entry, and select Delete entry from the context menu. The entry disappears.
  2. Move the timeline to the correct frame, where the athlete crosses the third hurdle. Click on the corresponding cell of the bottommost row and enter "30", followed by Enter. A new entry is inserted into the list in the correct chronological order. All computed cells are updated accordingly.

### 6.5.5 Estimate golf club speed

Suppose you want to analyze a video of a golfer by displaying the time-dependent speed of the club head in one column of a data table. Here you face the limitation that Dartfish can only make measurements in two dimensions so the speed of an object moving through three dimensions, such as a golf club, cannot be calculated exactly. It can be estimated though, and there will be moments - such as contact with the ball - where the club speed can be calculated more or less accurately.



## Create the Data table

1. Open a video of a golfer.
2. Create a **reference distance measurement** drawing along the golf club (see the topic [Measuring distances](#)). Give it a reference length of 0.95m, for example. Do this preferably in the ball-hitting frame.
3. Move the **playhead** to the first frame of the swing.
4. Create a **spline** drawing to manually track the club head throughout the swing. Its position over time will be recorded in a data column.
5. Create a **data table** with three columns (timecode, data, and interval speed).
6. Change the title of the data column to "Position".
7. Select the **data table** and the **spline** drawing by clicking them while holding down the CTRL key
8. Right-click in the "Position" column of the data table.
9. Select *Display (X,Y) of 2nd drawing* in this column from the quick menu
10. The Data table properties window appears: Leave the **Automatic mode** checkbox checked. Set the **Insert a new entry every ... fields** value to 1. This means that your data table will be working in automatic mode: it will insert a new entry in the list each time you leave a field. Click the **OK button** now. The current position (X,Y) of the cross is displayed in the corresponding entry cell of the entry row. Note that the units of (X,Y) are the same as the reference measure. The origin is in the upper left corner of the video.
11. Play the video. In the 3rd column you can see the evolution of the interval speed in m/sec.

### 6.5.6 Position tracked relative to an origin

This is a similar example to that of the golfer but this time uses automatic tracking to fill up your data table automatically. Consider a weightlifting example: this process can be automated to a very high degree by using the object tracking feature. For this, you will:

- Create a **circle** shape centered around the barbell bar, and set it to automatically follow the bar in the video.
- Set an origin at the initial position of the bar, which will serve as a reference point for the measurement of the vertical displacement of the bar (which is tracked automatically) during the entire video.
- Finally, create an **Data table** to record the vertical displacement of the bar for each frame, while the video is played. So you won't even need to step slowly through the video

Here's a more detailed procedure:

1. Load the a video clip showing a weight lifter from the side.
2. Create a reference **distance** drawing, perhaps using the diameter of the weight of a taped marker on the floor.
3. Move the timeline to the first relevant frame, perhaps as the lift begins
4. Create a **Marker** drawing (at the position of the barbell bar hole) on the floor just beneath the barbell bar. The cross will serve as the (static) reference point.
5. Right-click the marker drawing and choose the *Set as Origin* option from the quick menu then select appropriate origin x/y axis directions based whether the lifter is facing left or right.
6. Create a circle centered at the position of the barbell bar, sized about twice the bar diameter.
7. Right-click on the rectangle and select *Tracking > Medium speed object (search 10% of image)*. The rectangle will now track automatically the barbell bar for the rest of the video.
8. Each time you advance in the video by stepping through it or playing it, the rectangle will adjust its position in order to follow the bar.
9. Create a **data table** with 2 columns (timecode, data).

10. Change the title of the **data column** to "Height".
11. Select the **data table**, and the circle by clicking them while holding down the CTRL key.
12. Right-click in the "Height" column of the data table. A new context menu appears. Select *Display Y coordinate of second drawing in this column*
13. The properties window appears: Leave the **Automatic mode** checkbox checked. Set the Insert a **new entry every ... fields** value to 2 (or whatever interval you like).
14. Click **OK**. The current vertical distance between the rectangle and the cross is displayed in the data table. Note that the unit is the same as the reference measure.
15. Play the video. Watch how the rectangle follows the barbell bar, and entries are inserted automatically into the data table list. Note how the data region begins to scroll as soon as there are more entries than visible rows.
16. Pause the video when the athlete has finished lifting.
17. Right-click the tracked drawing and select *Suspend Tracking* from the quick menu.
18. Right-click the data table and select *Properties*, then deselect the **Automatic mode** option. These last two actions will prevent further data being added to the data table.

## Correct tracking errors

If the drawing should lose track of the bar at some point in the video, pause the video, and move back in time to the first erroneous frame. There you can adjust the drawing manually to the position it is supposed to have. Then right-click the data column and select *Column > Clear column downwards* to clear the erroneous entries in the data table. Play the video starting at the current position to continue.

If you're dealing with high speed objects and tracking problems remain, you could try to select *Tracking > Fast object (search 20% of image)* in step 7. You could also experiment with the size of the tracked drawing. If tracking continues to be a problem, perhaps due to motion blur in the video image, consider stepping through the video frame by frame and making position adjustments as required. It may ultimately be best to use a Spline drawing as in the golfer example.

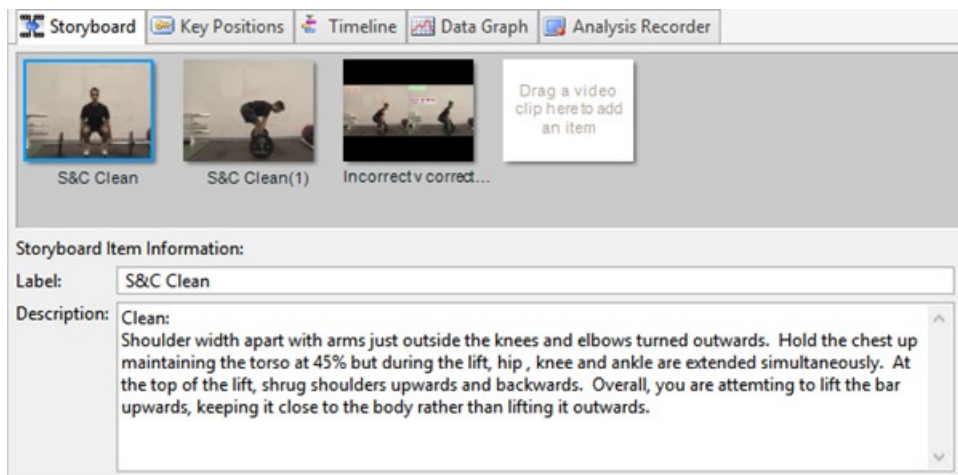
## 6.6 Adding written and audio comments

The Analyzer allows you to produce enriched multimedia content. It gives you the ability to combine your coaching expertise with images to generate powerful presentations (see Publish Analysis) that you can share with your athletes/students for use with their daily practice. You already learned how to add drawings on the video to highlight details or to extract statistics from the images (see [Drawing on the video](#)). In this section you will learn how to add verbal and written comments which can be used to analyze:

1. a performance in its whole (global comment). In this case, use the lower part of the **Storyboard** tab.
2. **key positions** of a performance (key position specific comment). In this case, use the lower part of the **Key positions** tab (see [Analyzing key positions](#)).

### 6.6.1 Written comments

To add written comments, simply enter your text in the **Description** box, as illustrated below:



This box is located on the lower-left of the **Analyzer** module (in the **Storyboard** or **Key positions** tabs).

### 6.6.2 Audio commentary

To add an audio commentary:

1. Select the audio recording device from the drop-down list of the Recording Device pane. This pane is located on the lower-right of the Analyzer module (in the Storyboard or Key positions tabs).



2. If needed, select the input. If you have plugged a microphone in your sound card, select "Microphone".
3. Click on the Record button it will begin to record your audio input.



4. Click on the **Stop button** when you are finished
5. To play back the recorded audio comment, use the **Play button**.

To remove an audio commentary

Recording another audio comment adds to the previous one. It does not overwrite it. Click the **Delete audio annotation** button to remove an audio comment or clear the old one to record a new one.

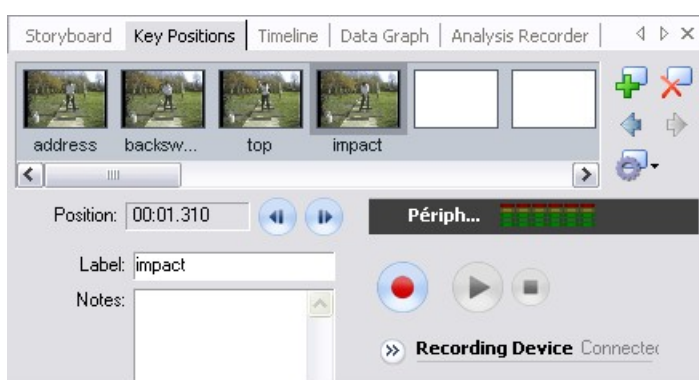


## 6.7 Analyzing key positions

**Key position** analysis allows you to break down a movement and to analyze its important moments by using **drawings, audio and written comments**. Key positions allow you to display specific moments quickly. You'll also have the ability to publish the key positions in two formats:

- The **Mediabook** - an interactive multimedia analysis that you can save to a CD-ROM, send via e-mail, or publish on the Internet (see Producing mediabooks).
- A printed report - the collection of key position images printed in different layouts (see Creating still images).

To use key positions analysis, select the corresponding tab in the lower part of the Analyzer.



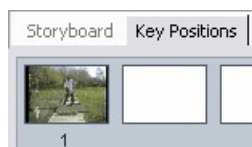
### 6.7.1 Adding key positions

To add a **key position**, proceed as follows:

1. Move the **Playhead** to the position you wish to highlight. Use the **Frame buttons** (or the CTRL + LEFT RIGHT keys) to refine the position.
2. Click on the **Add key position** button (green 'plus' icon)



3. A new key position appears with its default **label** underneath (see [Editing key positions](#) to discover how to edit labels)

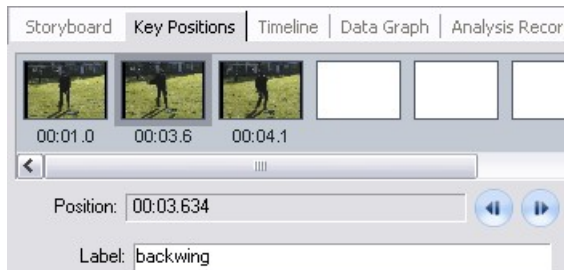


4. To add other key positions, repeat the steps above.

**!** *Key positions can be added in any order. Say you analyze a long jump, you can first create the key position of the landing followed by the one when the jumper hits the board.*

## 6.7.2 Editing key positions

To edit one key position, select it by clicking the corresponding thumbnail...



... and do one of the following operations:

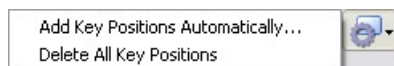
- rename the **label** - type the new label in the **Label box** (e.g. 'back swing' in the illustration above)
- change the **video position** - use the left and right arrows next to the **Position box**.




- change the order - key positions do not need to be listed in a chronological order. You can change the order by dragging **keyposition thumbnails**.
- **delete** - use the **Delete key position button** or right-click on a thumbnail and select *Delete* from the context menu



- You can delete all key positions by clicking on the **Display Key Positions Options button** and selecting *Delete All Key Positions*.



 *Try to make a consistent use of the labels. You will see in section [Synchronizing video clips](#) that clips can be easily synchronized by matching key positions with the same label. Read next section to learn how to edit the label.*

## 6.7.3 Analyzing a key position

To analyze a key position:

1. Select the **key position** by clicking on the corresponding thumbnail (or create a new one, see [Adding key positions](#)).



2. Add your analysis by using:

- **drawings** (see [Drawing on the video](#))
- **written comments** (see [Written comments](#))
- **audio comments** (see [Audio commentary](#))

! *Your analysis is automatically attached to the selected key position - no need to save it*

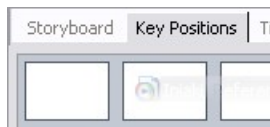
! *If you add a global drawing (when the Storyboard view is selected), all new key positions will "inherit" this drawing. The drawing now exist both in the video and the key position independently and changes in, or deletions from, one will not affect the other.*

## 6.7.4 Importing key positions

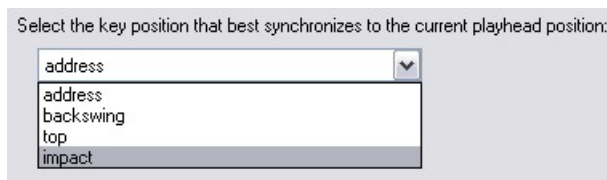
You can import an analysis that was performed on a clip and use it as a basis for a new one. Your library can thus contain a set of reference clips that you already have analysed. Select the one that could best be used to automatically create the key positions and import the existing annotations. Once imported, you'll only have to slightly adapt the video position of the key positions and edit the drawings/text.

To import key positions:

1. Load the clip to analyze.
2. Position the **playhead** at one of the **key positions** (e.g. at the impact of the golf club with the ball).
3. If needed, switch to the **Key Positions** page.
4. Find a "reference" clip in your library - one which already has **key positions**
5. Drag and drop the reference clip from the Library onto the **key positions** page of the clip to be analyzed



6. The **Insert Key Positions** dialog opens.
7. The list of **key positions** of the reference clip is contained in a drop-down list. Select the one that best synchronizes to the current playhead position (e.g. impact).

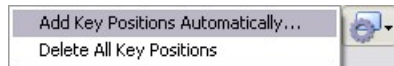


To import keypositions from other clips in the analysis

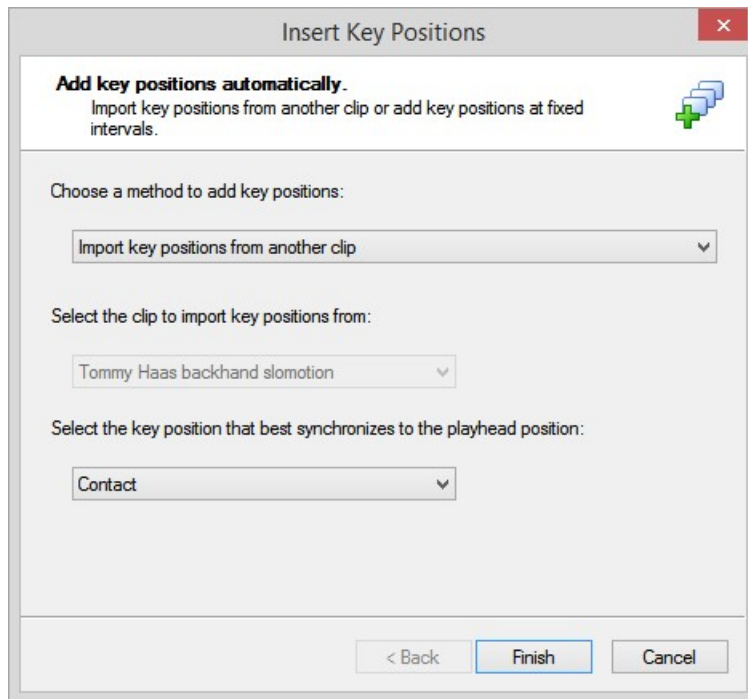
If keypositions are to be imported from another clip loaded into the **A,B,C or D video displays** of the current analysis (**Storyboard** item), this alternative method can be used:

1. In the clip to be analyzed, position the **playhead** at one of the **key positions** (e.g. at the impact of the golf club with the ball).

2. Select *Add Key Positions Automatically...* from the **key positions options**



3. In the **Insert Key Positions dialog**, select **Import key positions from another clip**.



4. If the current analysis contains more than two clips, select the clip to import key positions from
5. Select the **key position label** which best matches the current position in the clip being analyzed

### To edit key positions:

Importing key positions from another clip not only adds the key positions but also all comments and drawings. You may need to edit these and also the position in the video of each keyposition.

See the topics [Adding and modifying drawings](#) and [Editing key positions](#).

## 6.7.5 Adding key positions at a fixed interval

You can automatically create **key positions** at a fixed interval. To do this:

1. Position the **playhead** where the first **key position** will be added.
2. From the **Key Positions Options**, select *Add Key Positions Automatically...*



3. In the **Insert Key Positions dialog**, select **Add key positions at fixed intervals**, and set the interval (as a fraction of a second)



Choose a method to add key positions:

Add key positions at fixed intervals

Insert a key position every  seconds.

! The minimum interval is 0.1 sec.

## 6.8 Comparing performances

A performance can be analyzed by comparing it to another one, for example to see how an athlete evolves over time, or to a "reference" to highlight how a movement should be performed. You can also analyse a performance viewed from different angles at the same time.



Performances can be compared in **Split-screen** or in **Blend mode** (videos overlaid on top of each other).

### 6.8.1 Loading multiple clips

You can analyze clips individually or in groups of up to 4 clips at a time. The clip selection buttons - **A, B, C and D** - correspond to the multiple clips that you can load into the Analyzer. In other words, you can compare a performance (loaded in A) with up to 3 other performances in the following ways:

- separately - A vs. B, A vs. C or A vs. D (2-way split, or blend mode).



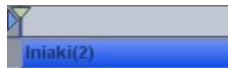
- simultaneously - A vs. B vs. C (3-way split) or A vs. B vs. C vs. D (4-way split).



To load a clip:

1. Click on one of the **selection buttons (A, B, C or D)**. The button appears to be pushed in.
2. Drag & drop (or double-click) the clip from the **Items List** (or the **Tray**) onto the Analyzer's video display. The clip's first frame is displayed, and its name appears in the timeline

underneath the screen.



3. To load additional clips, repeat step 2 and 3 above

## To change a clip (A, B, C or D)

Drag & drop the new clip from the **Items List** to the desired **A, B, C or D video display**.

**!** Double-clicking on a new clip from the library will not replace an existing clip but will create a new Storyboard item. Use the drag & drop method to change a clip.

### 6.8.2 Display modes

The display mode of each Storyboard item can be changed to Split-Screen or Blend to compare performances side-by-side or overlayed on top of each other. To change the display mode:

1. Select the storyboard item you wish to analyse in split-screen or in blend mode.
2. Activate the desired mode:

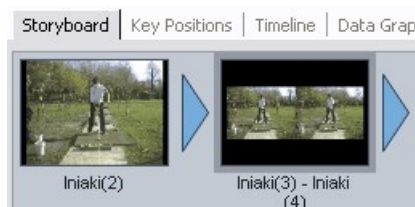


Split-Screen mode, or



Blend mode

3. The storyboard item display changes accordingly. In the illustration below, the second Storyboard item has been selected and the split-screen mode activated.



4. Select the clips to analyze by clicking the corresponding buttons - A, B, C or D. The buttons appear as "pushed". To de-select a clip, click on the corresponding button.

## To load or change a clip in split-screen or blend modes

- **Split-Screen mode:** drag & drop the new clip from the Items List onto the appropriate screen area (**A, B, C, or D**). If needed, click on the **A, B, C or D buttons** first.
- **Blend mode:**
  1. Click the corresponding **clip button - A, B, C or D**.
  2. Drag & drop the new clip to the selected **video display**.

### 6.8.3 Synchronizing video clips

To make the images in the different clips comparable, you need to synchronize their action so that you are comparing relatively similar action within the performances. You can synchronize video clips by using the key positions (see next section) or by using the timeline(s).

Moving the position of one video's timeline relative to the other can be used to move one video

without changing the position of the other, as described in the following methods:

## Method A

1. Load two clips in **split-screen** (see sections [Loading multiple clips](#) and [Display modes](#))
2. Click anywhere in the clip displayed on the left of the screen (most likely clip A). A blue timeline shows underneath the screen. Note that timelines are color-coded according to the display screen; blue corresponds to letter A.
3. Drag the **Playhead** to the position where the clip should be synchronized
4. Click the clip on the right of the screen (most likely clip B). A yellow timeline replaces the blue one.
5. Click and drag the yellow **timeline** (NOT the **playhead**) until the two clips are synchronized (e.g. when both clips are at the impact).
6. If more than two clips are being compared, repeat steps 2-5 for the Clip C and/or Clip D. These clips will be color-coded red and green according to the colors displayed on the clip selection buttons



7. To play the synchronized clips, click on the **Stop button** to move the **Playhead** to the beginning of the play range and click the **Play button**.

 Use the keyboard shortcuts **SHIFT + LEFT** or **SHIFT + RIGHT** to fine tune the synchronization. This moves the timeline one frame backward or forward.

## Method B

You can use the Timeline view to synchronize clips. Click on the corresponding tab to display this view.



The synchronization process is the same as described above except that you do not need to click a clip to select the blue or yellow timeline. You can directly click on a timeline to select it. This view also allows for quick re-synchronization. Simply move the playhead to a new position and adjust the timelines to re-synchronize at the new position.

### 6.8.4 Synchronizing at key positions


If you have added **key positions** to the clips (see [Adding key positions](#)), you can synchronize performances at every key position for which the labels match. For example, if you consistently use the label "impact" when the club hits the ball and "top" for the position that corresponds to the end of the back swing, it will be very simple to re-synchronize two clips at "impact" or at "top".


You can synchronize clips by matching **key positions** with the same **label**. To do this:

1. Load two clips in **split-screen**.

2. Switch to the **Key Positions** page. Say that both clips contain a key position with the label "impact" at the position where the club hits the ball. Labels must exactly match (see [Editing key positions](#) to find out how to edit key position labels).
3. Double-click on the key position "impact".

This method allows very fast re-synchronization at every matching key position.

 *If you add key positions to a clip by importing them from a reference clip (see [Importing key positions](#)), it will be very easy to synchronize both clips because labels are imported from the reference clip and so exactly match.*

 *If the clips contain multiple key positions, you can synchronize them at a particular position by a double click and navigate through the other key positions by a single-click and observe the relative position of the performers. For example, if you have a key position at every gate of a giant slalom it will be easy to see the distance gained or lost by a skier between each gate.*

### 6.8.5 Setting default synchronization

In the previous topics in this section you have learned that it is possible to synchronize clips at various positions. It is also possible to set a default synchronization position. This is a single Key Position at which clips will automatically be synchronized when the clips are loaded into Analyzer's split-screen mode.

This saves time resynchronizing clips that are repeatedly compared.

#### To set default synchronization

1. Add a **key position** at the chosen video position (see the topic [Adding key positions](#))
2. Right-click while pointing at the key position and select *Set as default synchronization* from the quick menu.
3. The default synchronization key position which shows the is marked with a yellow dot as shown below.





### 6.8.6 Analyzing in split-screen mode

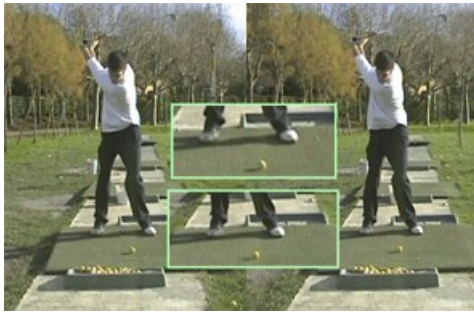
Analyzing in **split-screen** is very similar to analyzing in **single-screen**. However, there are minor differences that you should know about.

#### Drawings

Select the appropriate drawing mode (in the drawing toolbar)

-  **Video Drawing** - drawings will be applied to either **clip A, B, C or D**. Simply select a drawing tool and apply it on **A, B, C or D**.
-  **Screen Drawing** - drawings are applied onto the whole Analyzer screen.

This means that the drawings can go across the A, B, C or D boundaries. In the example below, the Clone Rectangle drawing tool and the Screen Drawing mode have been used.



## Zoom in/out

You can apply the **Zoom Tool** (see the topic [Enhancing images](#)) in any of the **A, B, C or D clips**. Simply click on the corresponding video first, before applying the Zoom

## Flip horizontal or vertical

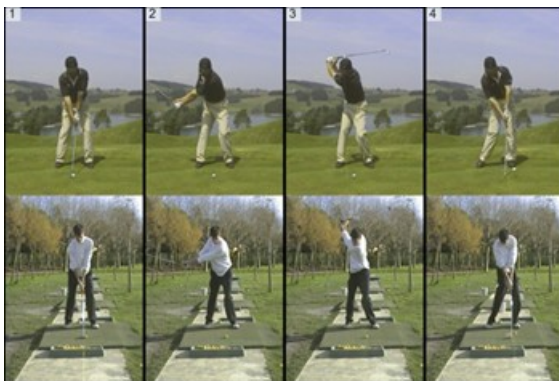
To use this function (see [Enhancing images](#)) as for Zoom, a video must first be selected before it can be flipped

 *In cases where it is not easy to click the video display to select a video (for example, in Blend mode) the A,B,C,D clip buttons can be clicked instead*

## 6.9 Key position mosaic

Analyzer's **Mosaic view** offers a method of displaying **Key Position** images on the **video display** screen. This offers the following benefits:

- Have an at-a-glance view of a performance key moments



- Analyse a performance in between key positions. Key Positions can be displayed beside the video image as it plays. In the example below the video is displayed in the middle of two key positions. Playing the video shows how the performer reached the key position on the right starting from the one on the left.



- Analyzer's drawing tools can be used to annotate and illustrate the Mosaic.

### 6.9.1 Activating the mosaic

Activate the **Mosaic** by clicking on the **Mosaic button** towards the top left of the **Analyzer** module.



Once activated, there are several Mosaic **layouts** to choose from. Click the **Next/previous Mosaic Layout button** to navigate between layouts.



The Mosaic mode is used in conjunction with the other Analyzer display modes; **Single/Split-screen** and **Blend** (see [display modes](#) in the Comparing performances topic). Different mosaic content will be displayed depending on which one of these is selected.

! *Not all Mosaic layouts include the video clip.*

! *If there are more key positions than can be displayed with the selected Mosaic layout, the key positions will display dynamically, this means that as the Playhead moves along the Timeline, the closest set of key positions to the current video position will be displayed.*

### 6.9.2 Drawing on the mosaic

The **Drawing tools** can be used to annotate the **Mosaic**, however it is important to note that although the **Video Drawing** tools may be used to draw on the video clip, only the **Screen Drawing** tools may be used to draw on the Key Position images. Drawings extending from the video to a key position or from one key position to another must also be made with the **Screen Drawing** tools.

To learn more about using drawing tools see [Drawing on the video](#) and [Analyzing in split-screen mode](#).

## Saving Mosaic Images

The **Mosaic layout** and any drawings that it contains can be saved as a still image using the

**Snapshot** button found immediately below the video display .

## 6.10 Next steps

The analysis contained in the **Storyboard** can be published in 3 formats:

1. The **Mediabook** - an interactive multimedia analysis that you can save to a CD-ROM, send via e-mail, or publish on the Internet
2. A printed report - the collection of key position **pictures** which can be printed in different layout
3. A new **movie**

Read the chapter Publishing analysis to learn more about publishing.

**StroMotion & Simulcam** are Dartfish's special effects allowing you to view movement in unique ways:

- Read the topic [SimulCam](#) to learn how to place two performers together in the same place and time.
- Read the topic [StroMotion](#) to learn how to brake down motion of a performer in a panoramic still image or a video clip.

InTheAction is a tool that is designed to make analysis possible during training. InTheAction shares Analyzer features such as split-screen and blended comparison of video and the ability to add drawings. Read the Chapter Live capture & instant replay during training to learn more about InTheAction.



# Chapter

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*Dartfish outputs -  
publishing & sharing*

## 7 Dartfish outputs - publishing & sharing

Analysis completed, it's now time to expand its value by passing it onto others who can continue to learn from it. This chapter examines what can be produced from Dartfish, how it can be distributed and by what methods or media.

### Outputs from Dartfish

It is worth considering the full range of possible outputs in order that you can decide the medium and method which best suit your needs

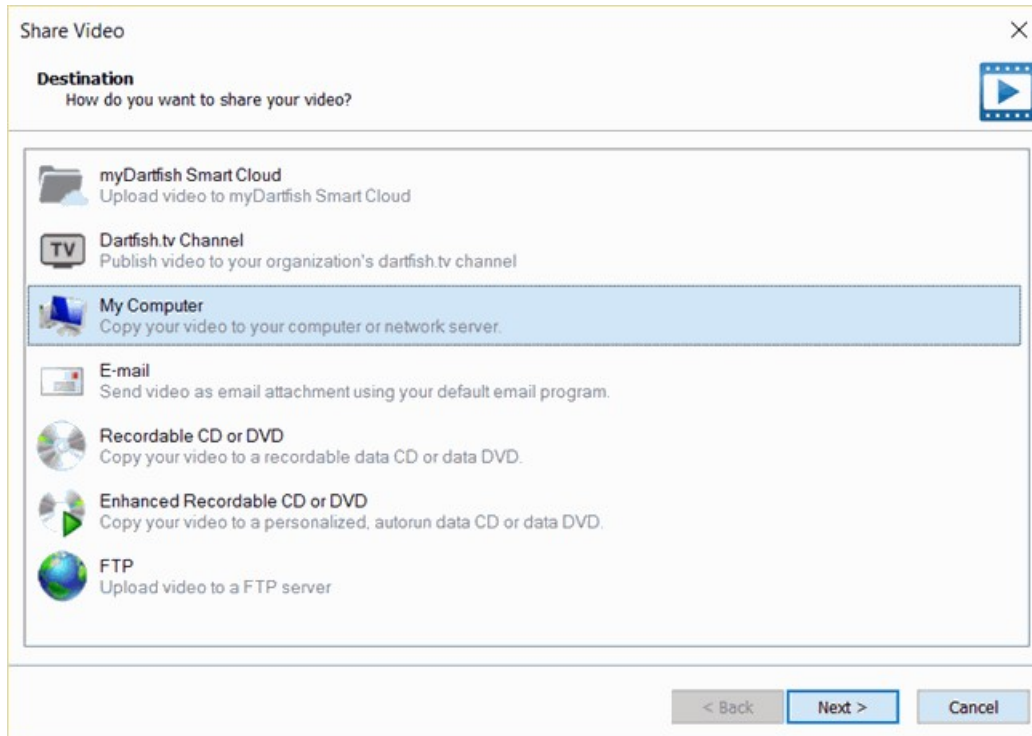
- The **Player (Save Movie)** function can create video clips trimmed from longer clips. It can also create still images (**snapshots**) based on the current frame of video.
- The **Analyzer** can also create **snapshots**. **Key positions** too can be turned into still images and printed or saved.  
The **Analyzer** also has a **Save Movie** function which is more advanced than the Player's; allowing you to render the contents of the storyboard as movie  
Your entire analysis can be packaged up into a Mediabook.  
The complete **Storyboard project** file can also be shared with other Dartfish users (the associated videos must also be sent)  
Users of the Pro edition also have an **Analysis Recorder**; this creates a movie showing screen and voice recording of all the actions you go through to explain your analysis.
- The **Mediabook** output from the **Analyzer** can be used to print its **key positions** as still images complete with notes and drawing annotations.
- **Stromotion** (Pro and TeamPro only) outputs a movie or a panoramic still image made from each frame of the movie and cloned objects superimposed.
- **SimulCam** (Pro and TeamPro only) creates a movie by overlaying two videos and matching the backgrounds.
- **Tagging** (TeamPro & ConnectPlus) users can output match video comprised of separate video files. Video clips can also be created from events but events can also be exported to the Analyzer **Storyboard** where the full range of Analyzer producing, publishing and sharing options becomes available. The events list itself can be exported and published either independently or with the video. The tagging player has the same **snapshot** tool as the **Player**.

#### *In this chapter*

- [Sharing and publishing destinations](#)
- [Sharing analysis using dartfish.tv](#)
- [Publish to dartfish.tv](#)
- [Sharing video files](#)
- [Producing MediaBooks](#)
- [Saving movies from the Analyzer](#)
- [Recording analysis](#)

## 7.1 Publishing and sharing destinations

Dartfish's sharing and publishing processes are guided by a 'wizard', the first step of which is to choose how and/or where the output will be shared. The complete set of options are shown below but will vary depending on the process and Dartfish edition used.



- **Smart Cloud** - myDartfish subscribers can upload to their cloud service on dartfish.tv. From here it can be shared with others (see [Sharing analysis using dartfish.tv](#))
- **Dartfish.tv Channel** - Organizations use **Channels** on Dartfish's video sharing website to distribute Dartfish content both publicly and privately via the internet. (see [Sharing analysis using dartfish.tv](#))
- **My Computer** - This allows you to copy videos from your library to other folders on your computer or to other drives such as memory sticks, network folders, external hard drives etc.
- **Email** - This option compresses video clips and attaches them to an email using your default email software. Dartfish is able to attach to email software like Outlook and Outlook Express. If you use web based email like Hotmail, GoogleMail etc then you should convert the videos you want to send (see Converting video clips) and attach them using the email software or website.



- **Recordable CD/DVD** - This choice of destination "burns" video files to recordable optical discs (CD-R, CD-RW or data DVD). Note that burning to DVD does not create DVDs that will play on a DVD player, merely discs that contain data.
- **Enhanced CD/DVD** - A second method of burning video clips to CD or DVD is to produce an Enhanced CD/DVD. This has the following advantages over normal optical disk burning



The resulting CD autoruns - the user simply has to insert it into their computer's CD drive.

User friendly interface which can be personalized with your own contact details (see image above).

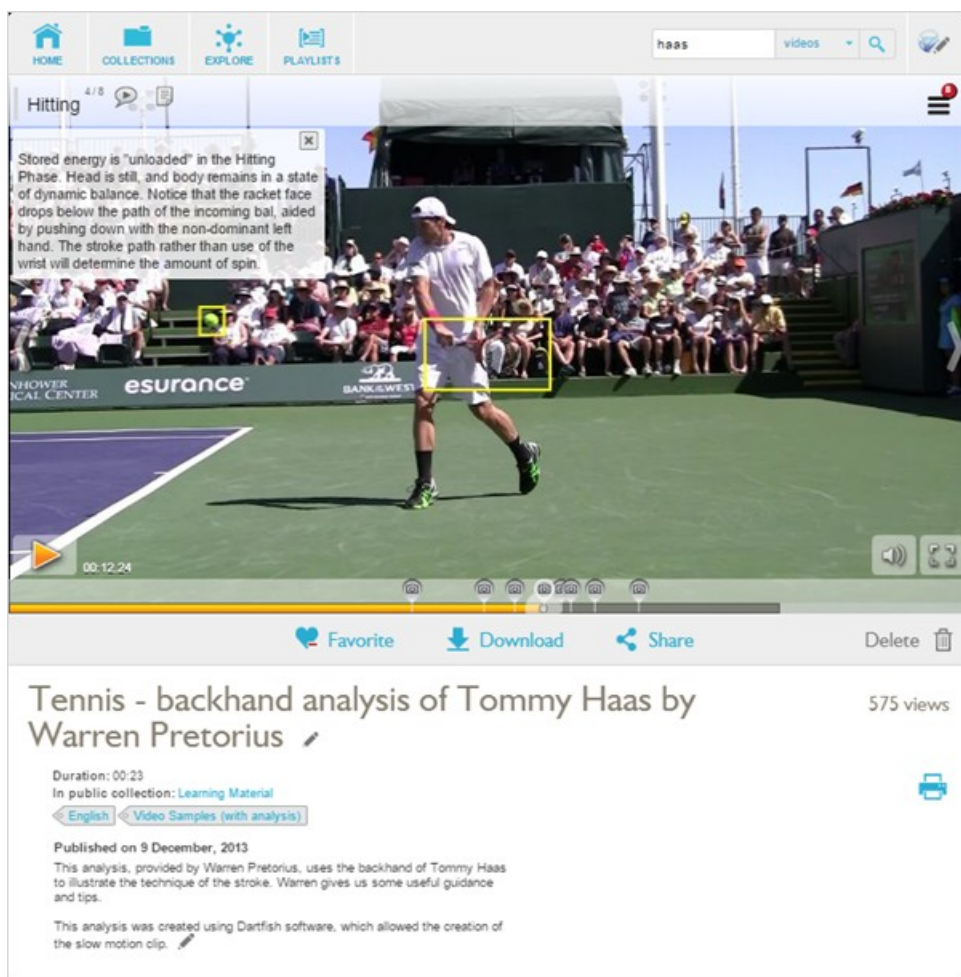
Comments can be included to describe the content of video clips.

- **FTP** - This sharing option is used to send files to an internet destination. To do so, you will need to create an FTP profile using the connection information for your FTP server. This information can be provided by your network administrator or the Internet service provider which hosts your website.

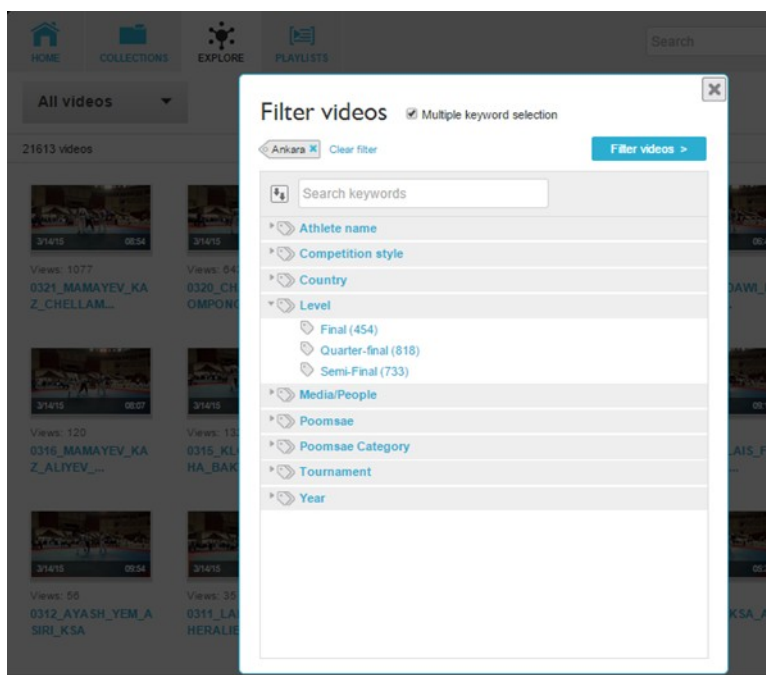
## 7.2 Sharing analysis using dartfish.tv

Perhaps the best option for distributing your video and analysis is **dartfish.tv** - Dartfish's online platform for sharing video clips, **Mediabooks** and **Tagging games and highlights**

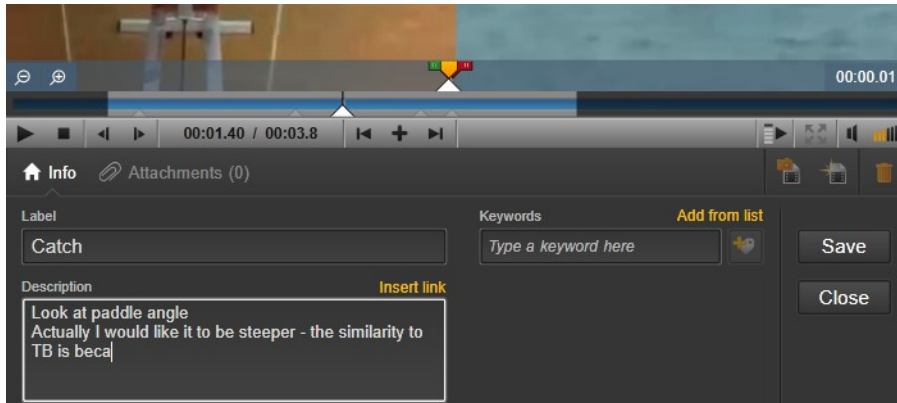
Analysis features such as **split screens** and **key positions** are retained after upload



Your content is searchable and filterable using the video description and keywords



and can be edited after upload.



It is even possible to attach other files such as spreadsheets, images or documents to the video content. There are many other features but as dartfish.tv is constantly improving, to try to list everything here would be pointless!

## myDartfish Smart Cloud or Dartfish.tv Channel?

There are two routes that you might take to publish on dartfish.tv - A **dartfish.tv Channel** or the **myDartfish Smart Cloud**

**Dartfish.tv channels** are designed for the needs of organizations and offer:

- Sophisticated access control including public access and pay to view access
- Access rights which allow control over a team of contributors to the channel
- Look & feel customization: add backgrounds and hotspots

**myDartfish** is intended for individual use and offers a range of tools and online services for video analysis. myDartfish Premium subscribers can upload to a Cloud on dartfish.tv, from where video can be shared. Content in the Cloud will also synchronize with the Dartfish Express App on your mobile devices.

## Learn more about dartfish.tv

See [www.dartfish.tv](http://www.dartfish.tv) to learn more about the possibilities of dartfish.tv channels and myDartfish

See the [tutorial](#) to learn more about how to set up or administrate a premium channel.

See the [knowledgebase](#) for answers to frequently asked questions about myDartfish and Dartfish Express

## 7.3 Publish to dartfish.tv

Upload to dartfish.tv in the following ways:

- Upload **videos** by clicking the **Share** button next to the **Tray**
- Upload **Storyboards** by clicking the **Mediabook** button on the right side of the Analyzer's Storyboard
- Upload **tagged videos** (editions with Tagging only) by clicking the **Publish** button at the top of the events list > *Publish game...*
- Upload tagged events as a **highlights** movie, also by clicking the **Publish** button at the top of the events list > *Publish highlights...*

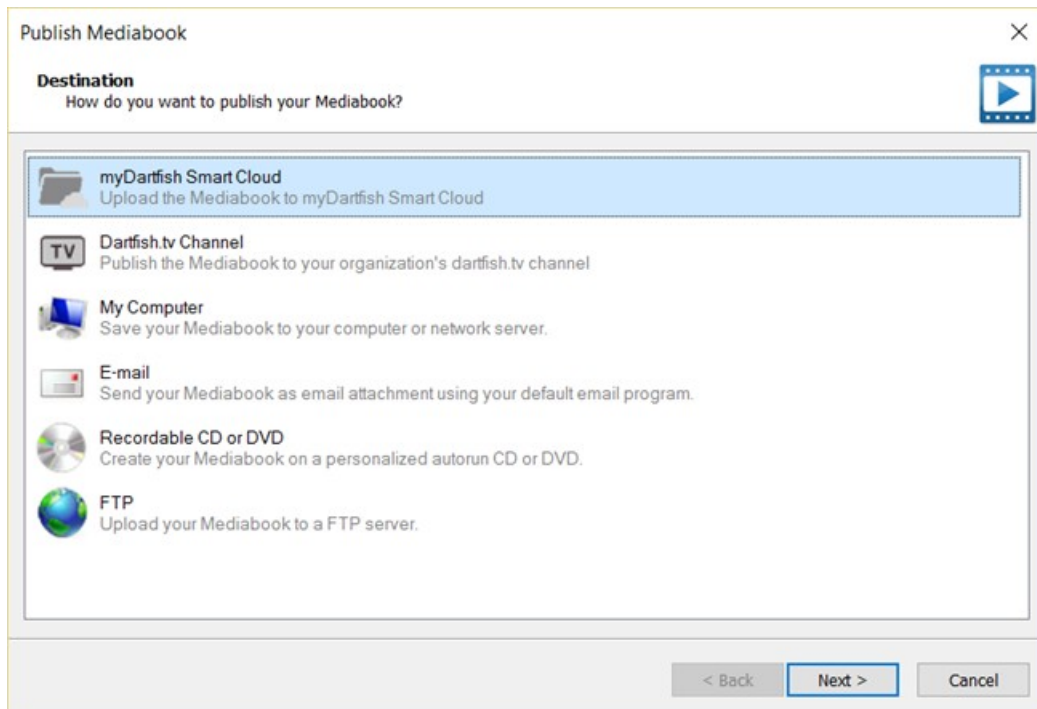
A wizard launches which guides you through the publishing steps. These steps are described



below:

## Sharing Destination

Select either **Cloud Collection** or **Dartfish.tv Channel** (see [Sharing analysis using dartfish.tv](#) to learn about these options)



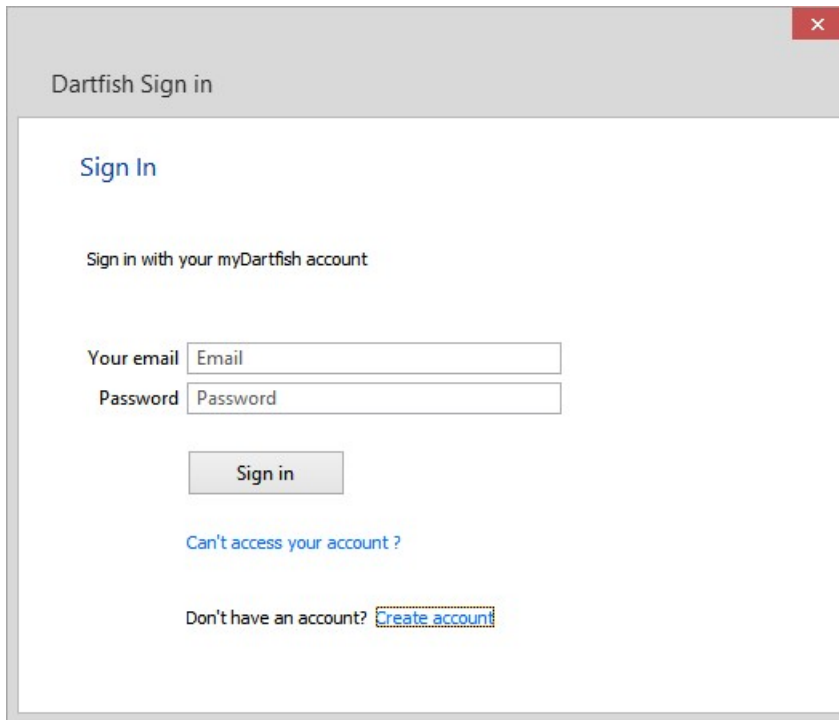
## Sign in

The sign-in requested is for your myDartfish account. This gives you access to all the dartfish.tv destinations - those provided by dartfish.tv channels subscriptions and your myDartfish Cloud.

This step is skipped if you are already signed-in to Dartfish Software.

If you don't have a myDartfish Account you may create one by clicking the **Create Account** link. You must subscribe to **myDartfish Premium** to be able to upload to dartfish.tv



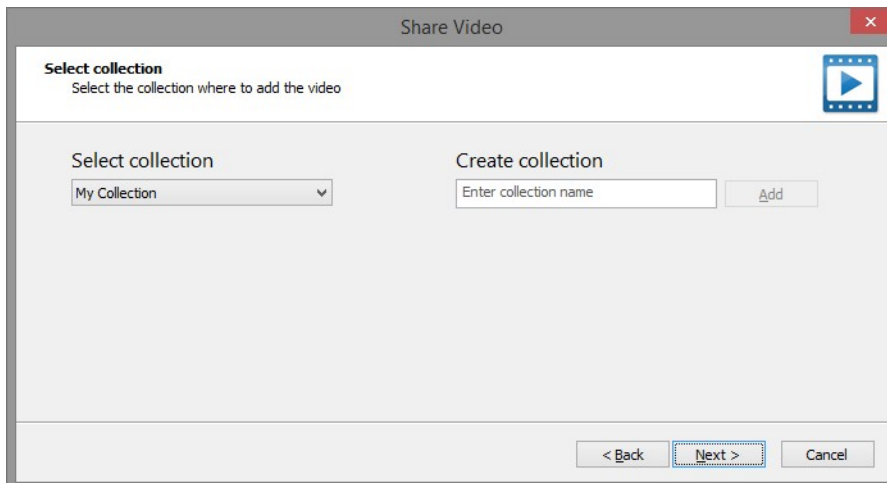


The screenshot shows a 'Dartfish Sign in' window. It has a title bar with a close button. The main content area is titled 'Sign In' and contains the text 'Sign in with your myDartfish account'. Below this are two input fields: 'Your email' with a placeholder 'Email' and 'Password' with a placeholder 'Password'. A 'Sign in' button is positioned below the password field. At the bottom, there are two links: 'Can't access your account ?' and 'Don't have an account? Create account'.

**!** To upload to a dartfish.tv channel, the channel admin must give upload rights. You can contact the admin of a dartfish.tv channel using a link on the home page of the channel

## Select upload destination (Cloud)

If uploading to a Cloud Collection, you will simply select the collection in this step.



The screenshot shows a 'Share Video' window with a title bar and a close button. The main content area is titled 'Select collection' and contains the text 'Select the collection where to add the video'. Below this are two sections: 'Select collection' with a dropdown menu showing 'My Collection' and 'Create collection' with an input field 'Enter collection name' and an 'Add' button. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'.

You may also create a new collection by typing a name for the collection then clicking the **Add** button.

## Select upload destination (channel)

- Select the channel (if you have access to more than one)
- Select a collection. If it is not obvious which collection should be used, contact your channel's administrator
- Channel administrators can create new collections. The different types are illustrated above. If unsure which type of collection to use, [consult the dartfish.tv tutorial](#).

**!** *The lists here show the channels and collections to which you have upload rights. If you cannot find what you are expecting it is most likely because you haven't been given upload rights or they have been removed by the channel admin or they have expired. Contact the channel admin by clicking the link on the home page of the channel.*

## Select items

Selecting which Storyboard items to be included in the Mediabook. "Check" those to be shared as shown below or click the Select All button:



In this step it is also possible to add description to individual items:

1. Click the thumbnail (not the check box)
2. Click the edit button
3. Type a label and description

💡 Add a description to videos, events and storyboard items before upload by right-clicking the item and selecting properties from the quick menu.

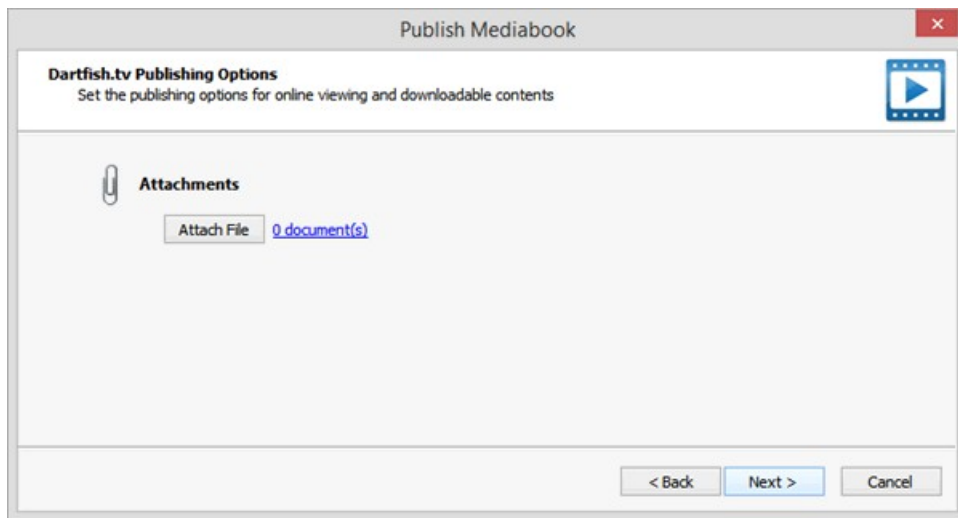
## Dartfish.tv categorization

In this step information is added which helps the intended audience find and understand the content.

- **Name:** Renames the item. The name assigned by Dartfish will be a combination of the file names of the videos. Enter something that will make more sense to your audience.
- **Description:** Adds a description to the video. The power of dartfish.tv lies in the possibilities to enrich video with your expert viewpoint. The first thing that the audience sees is the name and description so make sure it does a good job!  
In the case of multiple items being published, this comment adds an overall description.
- **Keywords:** Keywords can be searched and filtered and fundamental to how video is discovered by your audience.  
In this step, any keywords that have been added using your Dartfish library will be listed here. It is optional whether these are included with the upload. The admin of a premium channel can also suggest keywords that you should include or even make the use of certain keywords mandatory.

! When bulk publishing videos from the Tray to dartfish.tv, this step will be skipped. The only way to describe these videos is to do so in the previous step. The only way to add keywords is using the Library before upload or by using dartfish.tv's edit mode after publishing.

## Select Publishing Options.



- **Trim video:** Upload only the area of video between cue in/cue out points if they have been set (see [Trimming video clips](#)). If your video is trimmed to the relevant section, not only will it take less time to upload but it will also be more useful for your audience.
- **Attachments:** Any other file can be attached to your video

## Publishing

Video is first encoded according to your channel's encoding profile and then uploaded. After upload a link to the video is displayed and your video is ready to be viewed online.

**!** *Upload times to Dartfish.tv may be significantly reduced if videos are already encoded with a dartfish.tv encoding profile. Learn more about the dartfish.tv encoding profiles for your channel by downloading yours: Tools menu > Options > Encoding Profiles then click the download button. The encoding profile for your myDartfish.tv cloud is automatically downloaded when signing in to Dartfish.*

## 7.4 Sharing video files

To share video files:

1. Add the video file(s) to the **Tray** section of the Dartfish **library**.  
Whenever a video is created by Dartfish, it is added to the **Tray**. You can also load clips by drag-and-drop from the **Items List**. Remember that multiple files can be selected for loading by holding down the CTRL key while clicking on the files.
2. Once video clips are loaded, click the Tray's **Share** button.
3. This launches a wizard which guides you through the process of sharing the videos

### Video Sharing Wizard - Destination

Choose a destination for the video files. The different possibilities are explained in the [Publishing and sharing destinations](#) topic

### Video Sharing Wizard - Video selection

1. Selecting the sharing destination - Click on a destination then on the **Next** button (at the bottom of the window) to proceed.
2. Selecting which videos you wish to share. "Check" those to be shared as shown below or click the **Select All button**:



3. Choose the video settings (encoding profile) appropriate for the selected destination (see Video settings in the Getting familiar chapter).

Specific additional information may be entered according to the selected destination. Read the information displayed in the wizard to complete this information.

## Sharing Dartfish Assets with video

Dartfish creates a small '**Dartclip**' file for each video clip.



This contains information about **key positions**, **notes**, **cue in and out** settings etc - all the value added features that Dartfish brings to the video clip. The Sharing process also ensures that the **Dartclip** file is shared with the video file. If the receiver of the video clip is a Dartfish user and chooses to retain the **Dartclip** file they will benefit from all the additional information added to the video clip.

## 7.5 Producing MediaBooks

A **MediaBook** offers an alternative way to share analysis which doesn't require [dartfish.tv](http://dartfish.tv). It also packages video, **key positions**, **text and audio comments**, and **drawings** together. Share MediaBooks as stand alone files or by using CD, email or even by publishing them as pages on your website. A Mediabook offers an electronic output (as shown below) or a paper printout of key positions and keyposition annotations.



The image above shows a **MediaBook** displayed as a web page in an Internet browser. It contains the following features:

- **Analysis Selection:** More than one analysis can feature in a MediaBook. Each item in the Storyboard is included (read the Analyze Performance chapter to learn more about the Storyboard).
- **Video Player:** Video clips are saved in Macromedia Flash format which can be viewed on most Windows computers. One video is generated for each **Storyboard** item. The player controls allow clips to be played frame by frame and to play in a loop. For a larger image, it is also possible to play the clip full-screen using your Windows Media Player.
- **Key Positions Selection:** Click on a **Key positions** thumbnail to display the corresponding **key position**.
- The **key positions** of all the clips in the Analyzer at publish time are included in the MediaBook. Select "**A**", "**B**", "**C**" etc. to display the corresponding list for each clip.

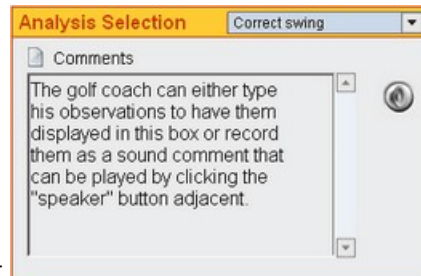
☒ Analysis   ☐ A   ☐ B

The "Analysis" key positions choice, as in the illustration above, varies according to the display mode selected at publish time:

1. **Single-screen mode:** image transformation (such as zoom or mirroring) and global drawings are reflected in the key positions.
  2. **Split-screen** (or Blend) mode: key positions are split-screen pictures of every key position for which the labels match. Video clips are automatically re-synchronized at every key position. If no labels match, no Analysis key positions are created.
- **Comments:** The Analyzer allows you to type or record comments for each item in the Storyboard and to do the same for each key position. These are included in the MediaBook.



this Analyzer comment...



...becomes this MediaBook comment

- Slideshow View: The Slideshow View displays the key positions as larger images and includes printing options for them.



- Personalization: The MediaBook can be personalized with your organization's logo or perhaps a photograph of yourself. This can also be a link to your website.

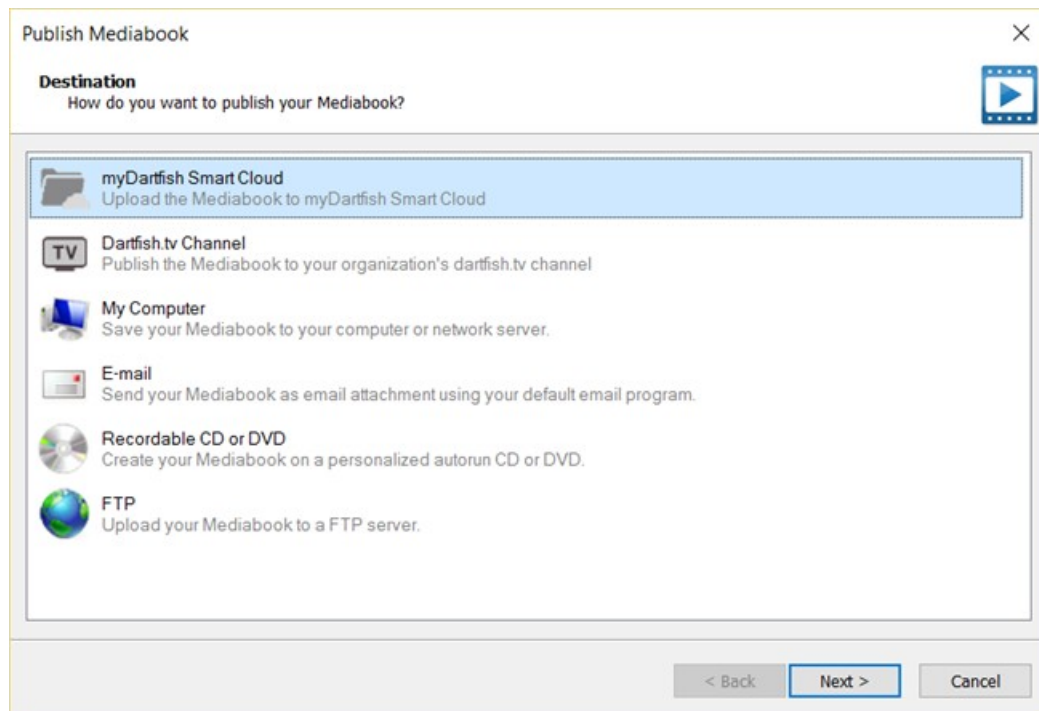
## 7.5.1 Step1 - Select destination

Start the creation of a **MediaBook** by clicking the button to the right of the **Analyzer storyboard**.



This displays the first step of the **MediaBook wizard** where the choice of publishing destinations is made. The choice of destinations varies according to the edition of software used but the full list of choices is shown below. These are described in the [Sharing video files](#) topic.





After making your choice of destination, click the **Next** button.

## 7.5.2 Step2 - Mediabook settings

The MediaBook settings step is used to:

- Assign a **File name**: This will be used to name the MediaBook file(s).
- Personalize the MediaBook: The MediaBook can optionally be personalized with your **logo** and **website address**. You will also want to include a **title** that will appear at the top of the MediaBook.
- **Add high quality fullscreen video**: It is possible to include an Windows Media video with the MediaBook; these will be played using Windows Media Player and not the MediaBook. This function may not be desirable if the size of the MediaBook is important, for example if being sent by email.
- Choose **File Options**: These choice of file option is only available if the MediaBook is being published to the "**My Computer**" option, otherwise the most appropriate option will be used according to the destination selected in the first step of the wizard.

If the MediaBook is saved **for use with Dartviewer**, all files are packaged together into a single file which can be read and displayed by the Dartviewer freeware software. Dartviewer is

automatically installed on all computers with Dartfish but for non-Dartfish users, Dartviewer can be included with the MediaBook or downloaded from the Dartfish website. This option is automatically used for CD/DVD and emailed MediaBooks.



If the MediaBook is saved **for use with an Internet browser**, an HTML file is created with the additional files required to create the page also added into a separate folder. This option is automatically used with MediaBooks for the internet.



### 7.5.3 Step3 - Video settings

**Settings for Mediabook video:**

Select the encoding profile:

Flash high quality

Description: High Quality Flash format for Mediabook publication.

**Settings for high quality fullscreen video:**

Select the encoding profile:


Windows Media for CD

Description: High quality Windows Media format recommended for best playback from CD or DVD.

[Edit the profiles](#)

Preview

This step allows you to select a Flash encoding profile for the MediaBook and, if the **include high-quality, fullscreen video option** was selected in the previous step, you can also select a Windows Media encoding profile for those videos.

 *Encoding profiles compress the original video files substantially from the original AVI video that is captured from your video camera. The amount of compression depends on the profile chosen. Click the Edit the profiles link to get information on the relative file sizes.*

## Preview

Step 3 of the wizard also allows you to preview the choices you have made in the previous steps, including your personalization's and the quality of compressed video files.

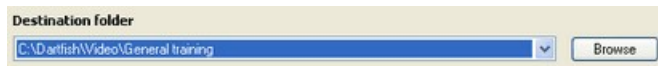
To see a preview, click the **Preview** button. The preview will be displayed in your Browser or in **Dartviewer** depending on the choices made.

### 7.5.4 Step4 - Publishing

The publishing step will depend on the destination.

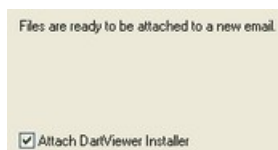
#### My Computer

Choose or browse for the file location where the **MediaBook** will be saved.

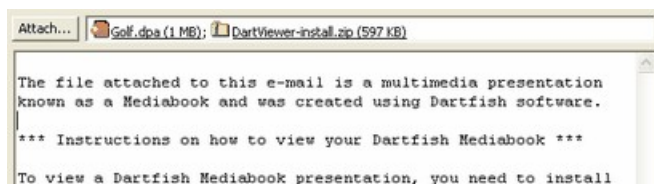


#### Email

There are no further choices. The files will be processed and a message displayed when this has completed.



You may choose to attach the **Dartviewer** freeware to the email if it is being sent to recipients who has not previously installed Dartviewer. They will receive instructions on how to install Dartviewer.



#### CD/DVD

Final information about the CD/DVD burner to be used and a disc label are provided. Clicking the **Next** button will "burn" the CD or DVD.

#### FTP

An FTP profile is selected in this step and, if necessary, a password is entered. Clicking the **Next** button will publish the **MediaBook** files to the selected FTP site so you should establish a connection to the internet before doing so. Click the **New** button to create a new FTP profile. Your network administrator or website host must provide you with this information.

## 7.6 Saving movies from the Analyzer

New movies can be produced featuring all the contents of the Analyzer **Storyboard**. The movie saved will reflect the content of that analysis including:

- Drawings
- Split screen or blended comparisons
- Cue in/cue out positions

Click the **Movie** button to turn the storyboard into a movie.



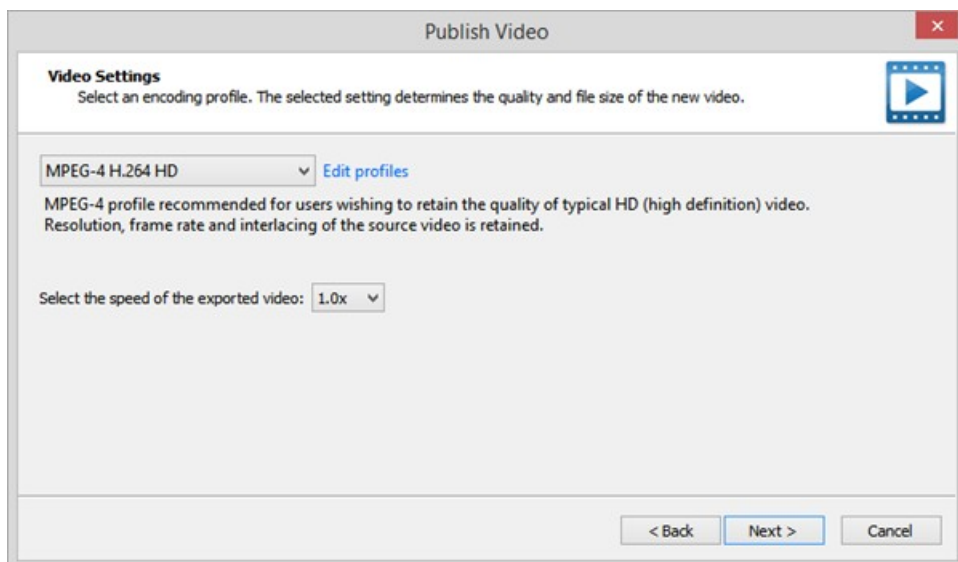
With this functionality, Dartfish is in effect video editing software in that it is being used to join separate clips together, however while it does not include transition effects or allow inclusion of still images, it is capable of creating movies with features that are not possible with other software such as:

- **Split screen** or **blended** comparisons
- Specialist **text captions** such as timers
- Specialised **drawings** such as **angles** and **data** display and also including drawing effects such as **fade in/fade out** and **tracking**

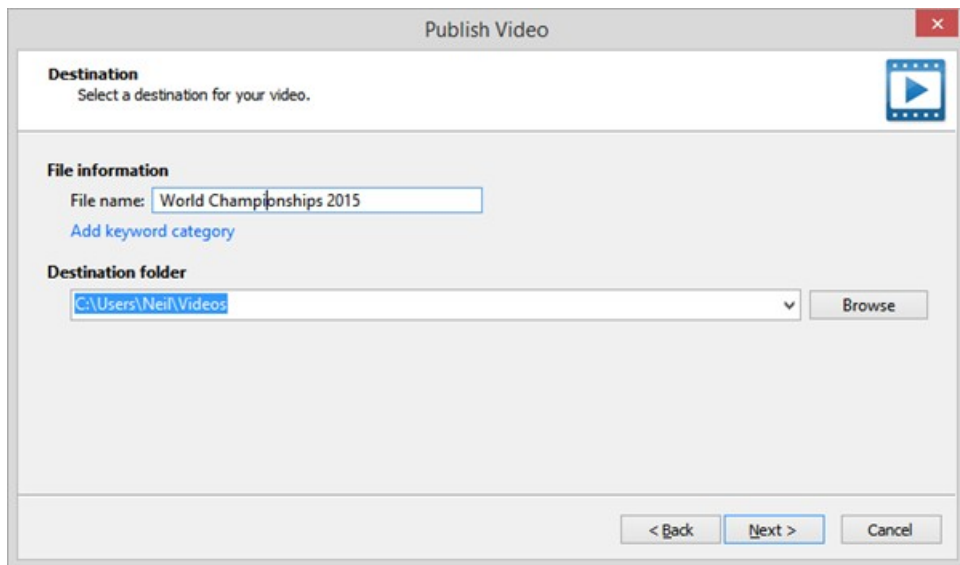
## Step1 - Video settings

In this step an **encoding profile** is chosen. Find out more about encoding profiles in the topic [Converting video](#)

Slow motion video may also be created by selecting a **speed for exported video** of 0.5 or 0.25



## Step 2 - File information



In this step, a **File name** and **Destination folder** are assigned to the new video clip.

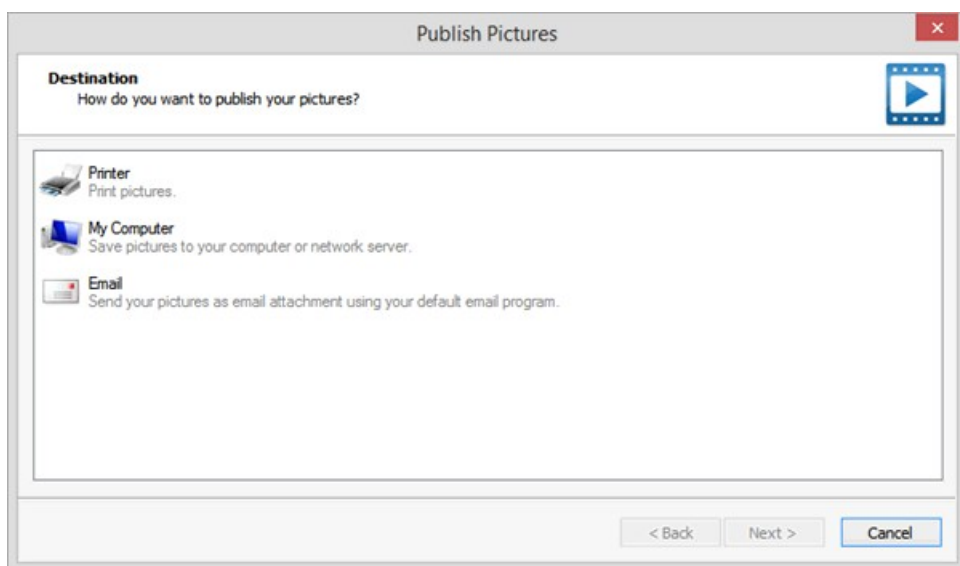
## 7.7 Creating still images

**Key positions** can be printed or saved as still images.

Click the **Pictures** button to the right hand side of the **Analyzer Storyboard** to publish **Key Positions** as still images.



You can publish pictures to the following destinations:

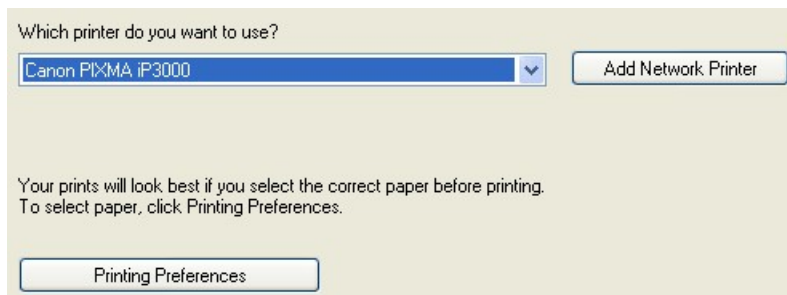


- **Printer.** Dartfish offers a choice of layout templates to print images. Some include the notes and title information.
- **My Computer.** Save images as image files to a location on your computer.
- **Email.** Images will be attached to a new email using your default email program.

Select a destination and click the **Next** button.

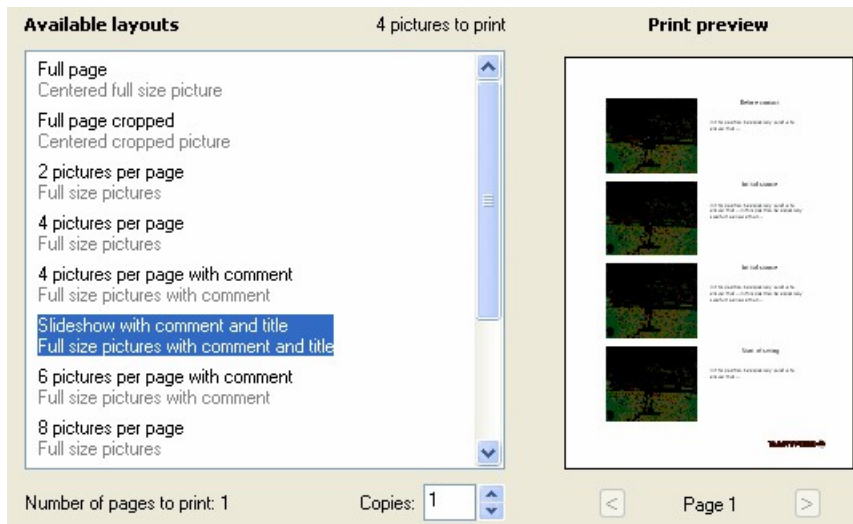
### 7.7.1 Printing Pictures

Two steps are required to print your pictures. In the first, the printer you wish to use will be selected. select



The **printing preferences** button opens the print settings button for the type of printer you use. The choices available depend on your printer and you should refer to your printer's documentation if further explanation is required. You will be able to use these preferences to choose a print quality and a paper type; these are especially important choices if photo-quality paper is being used.

Click the **Next** button to continue...



Before printing, choose from one of a number of **layouts**. The preview gives an indication of the layout but not the quality of the printed page. Note that both the **label** and **notes** information for each picture can be included on the page with some of these layouts.

Clicking the **Print** button will print the images according to the chosen layout.

### 7.7.2 Snapshot images

The **Snapshot** tool is used to create a still image from the current video display.

In the **Player** and **Tagging** modules look for this button:



In the **Analyzer** a smaller button is located immediately below the video display:



### Save to the Clipboard

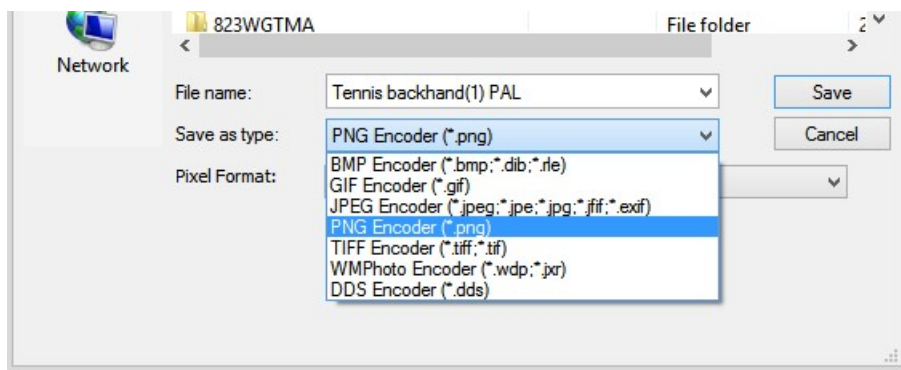
The **Snapshot** button can be used to copy an image to the **Windows Clipboard**, from where it can be pasted into any other application supporting copy/paste of images. For example, you could use this to insert an image onto an MS PowerPoint slide.

- In the Player or Tagging Modules: CLICK the button
- In the Analyzer: CTRL + CLICK

### Save an image file

- In the Player or Tagging Modules: CTRL + CLICK or RIGHT-CLICK
- In the Analyzer: CLICK

A **Save dialog** appears from where it is possible to choose the image file format:



## 7.8 Analysis recording

The other publish tools covered in this chapter provide various methods of sharing analysis with others. Of course, the actual process of using the Analyzer can itself be an invaluable feedback tool when its tools are used to illustrate and compare performance. This is the reasoning behind the **Analysis Recorder**; it is a method of making a real time recording of your use of the Analyzer and including your voice as a sound track to the resulting video.

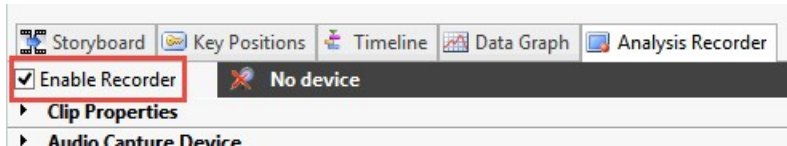
To appreciate the value of analysis recording, imagine sitting with an athlete and using the **Analyzer's** features to explain the latest skill he/she is attempting to master. If you imagine that you could film your use of the Analyzer and include a commentary of your coaching then you would be very close to the functionality of the **Analysis Recorder**.

The analysis recorder is only available in the Prosuite and Team Pro editions of Dartfish



### 7.8.1 Enabling the Analysis Recorder

Start by selecting the **Analysis Recorder** tab and selecting the **Enable Recorder** option.



This results in new controls, **Record** and **Pause Recording** appearing in the Analyzer's **video playback controls**.



### 7.8.2 Setting clip properties

Because, the Analysis Recorder creates a new video clip, a **file name** should be provided for it. If left blank, the file will be given the name "Untitled(x)".

Setting clip properties also allows you to create a form that will let you categorize the new video using Dartfish's **Keyword** video management system. The use and creation of the **Analysis Recorder's Clip Properties form** is identical to that used for all Dartfish's recording tools (see Video recorder in the Video Library chapter). A form such as that shown below is used to "label" the clip appropriately making it easy to find in the **Items List** by selecting any combination of the values entered

### 7.8.3 Other clip properties

In addition to **file name** and **category/keyword** for each clip you will also want to define the quality of the final video by choosing an appropriate **encoding profile** and the **file location** for the end result.


#### Encoding profile

The encoding profile selected defines how much the video will be compressed. Selecting an appropriate encoding profile is a trade off between the size of the resulting file and its image

quality, for example, you are unlikely to want to send extremely large files by email.



There are three profiles, high, medium and low quality, specifically created for the Analysis Recorder. The principal difference between these is in the number of frames per second.

 *If you find that the Analysis recorder losing audio or drops frames in its recordings, choose a lower quality encoding profile.*

## Capture Location

The capture location defines where the **Analysis recorder video** will be saved in the Windows folder system. Remember that this should be included Library's list of **monitored folders** if this file is to be visible when using the **Category/Value** video management system.

The links provided allow you to select a new capture location and to open that location.

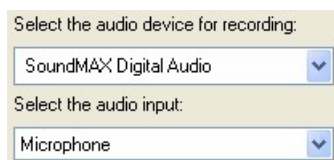


### 7.8.4 Setting recording device

In this case, the **recording device** is being used to record an audio commentary and NOT to capture new video from a camera. Select a sound recording device from the list.



If you select your computer's sound card from the list you will be offered a further choice of **audio inputs** that connect to the sound card. The link to "**Configure the device**" allows you to set recording levels for that device.



### 7.8.5 Using the Analysis Recorder

1. Start recording using the Record button.



2. Then, imagining that the athlete(s) you are analyzing are sitting next to you (perhaps they are),

use the Analyzer's replay controls, comparison and drawing tools to explain and illustrate your analysis while recording your comments and advice. Everything you do on the video screen and everything you say will be recorded as a new video clip.

3. If you need to pause recording to exclude anything that you don't want to include on the final recording, click the Pause button.
4. When your analysis is complete, remember to stop recording by clicking the Stop Recording button.



5. The resulting video clip be saved on your computer and will appear in the Tray ready to be played or shared.

## Preparing to use the analysis recorder

You should remember that lengthy analyses will create large video files. Here are some preparation ideas to help you make your presentation efficient and succinct:

- Open the video clips to be used in the analysis into the **Storyboard** or the **Tray**.
- **Trim** video clips to show the relevant part. You could also **zoom** and **flip** and **synchronize** them in advance as appropriate.
- Create **key positions** complete with drawings.

# Chapter

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*Unique ways to view  
sport - SimulCam &  
StroMotion*

## 8 Unique ways to view sport - SimulCam & StroMotion

With **SimulCam** and **StroMotion**, Dartfish offers uniquely creative ways of observing, analyzing and understanding sport.

Each creates images that can never be seen in real life; StroMotion allowing the athlete to leave a clone of him/herself behind as he moves; SimulCam allowing two athletes to virtually "compete" against each other when in reality their performances took place at different times.

You may have already seen these techniques in use because Dartfish provides this technology to television broadcast companies around the world. They use it to illustrate and give their audiences a better understanding of sport and now you can benefit in the same way:

- Perhaps SimulCam or StroMotion will be the only way that you can compare the tiny differences between competitors; the tenths of seconds separating competitive skiers for example, or subtle differences in a tennis serve.
- Perhaps the images will help teach technique to your development squad in a way that they will have never seen before.
- Or perhaps you will use the technology to inspire athletes by having them compete alongside the great names of your sport!

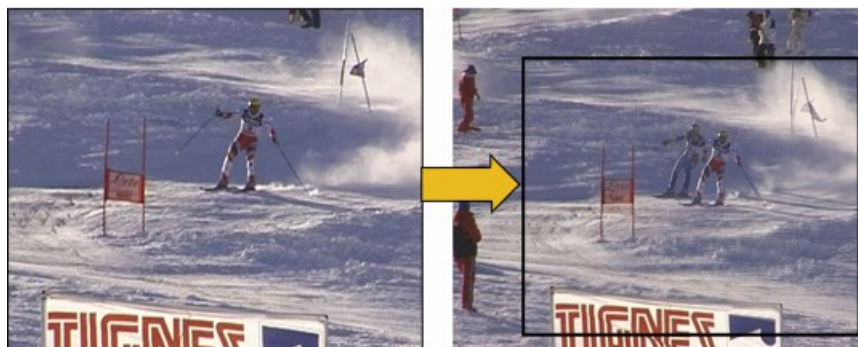
### *More about this*

- [Compare with SimulCam](#)
- [Dissect motion with StroMotion](#)

### 8.1 Compare with SimulCam

The **SimulCam** technology provides you with a unique analysis capability for comparing two athletes' performances blended onto a single background. This enables you to view and analyze often imperceptible differences between these performances, and discover precisely what made one performance stronger than the other.

To compare performances, **SimulCam** matches the backgrounds of two video images so that, even if the camcorder pans, zooms or tilts it continues to track the background features. Using this information, the two backgrounds can be blended into a single one.



In essence, **SimulCam** has a similar purpose to using the **Analyzer** module's **Basic blend view**, however the end result is vastly superior: **Basic blend** is unable to track the relative movements of the background features, making comparison near impossible if the camera zooms or pans during filming. **Basic blend** results in ghostly, semi-transparent figures whereas **SimulCam** creates a more realistic picture.

Required to use SimulCam:

- Camera on tripod
- Pan, tilt and zoom allowed during filming.
- Video clips can be recorded at different times but must be taken by a camera in exactly the same position.

#### **More about this**

- [Getting good SimulCam results](#)
- [Step 1 - clip selection and synchronization](#). Two video clips are loaded. To be comparable the two clips should then be synchronized.
- [Step 2 - camera movement calculation](#). Background features are matched and the amount of camera pan and zoom is calculated.
- [Step 3 - blending, preview and saving](#) the clips. You can also save the **SimulCam** project if you wish to make changes to any of these steps later.
- [Publishing new video clips](#)

### **8.1.1 Getting good SimulCam results**

Remember, the **SimulCam** technology matches backgrounds of two video clips; it will have difficulty doing this under the following conditions:

#### **Insufficient number of background objects**

For example; snow. Imagine trying to identify the same point on a white background from frame to frame. Your brain is still better than a computer's so "what the eyes cannot see, the computer cannot!".

Avoid this by not zooming too closely on the subject. Even on snow, shadows, rocks, slalom gates etc can still be used but only if enough of these distinguishable objects appear in each frame of video.

#### **Background is blurred**

Its the same problem, if background objects become blurred or out of focus, **SimulCam** is unable to calculate where they have moved to.

- Use a tripod or another solid object to mount the camera.
- Zoom and pan smoothly and slowly.

#### **Backgrounds are different**

**SimulCam** can only compare if the content of the background is similar in each video clip.

- Always film from the same position. If it helps you remember, mark the spot!
- It does not matter if a different zoom has been used for each clip - the backgrounds only have to contain similar objects filmed from the same direction. **SimulCam** will calculate the difference in zoom.

### **8.1.2 Step 1 - clip selection and synchronization**

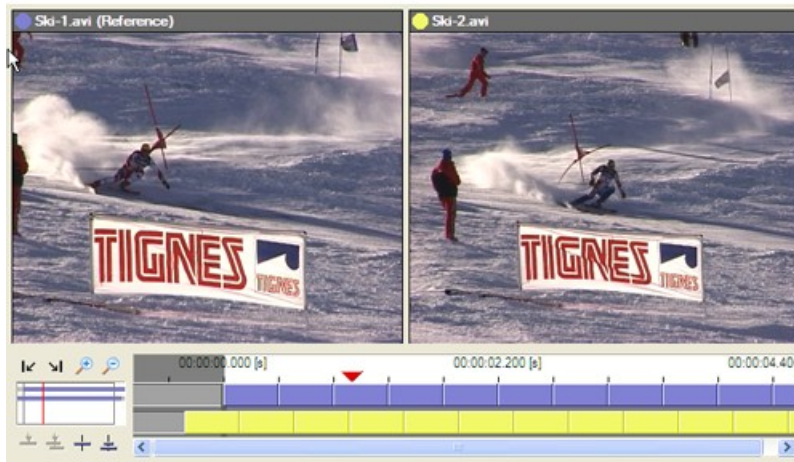
Step 1 of the SimulCam clip creation process consists of:

- Loading two video clips containing the performances to analyze.
- Synchronizing the clips for optimum comparison.

- Trimming the video by selecting appropriate cue in & out points.

## Loading video clips


**SimulCam** compares two clips. Drag & drop each clip you wish to compare from the **items list** on to SimulCam's left and right **video displays**.




At this point, you can exchange either clip for another clip by simply dragging and dropping a different clip from the **Items list** or **Tray**.


## Synchronising video clips

SimulCam has a set of easy-to-use tools to help you synchronize the two video clips. These tools are located at the bottom of the SimulCam window.

1. Click and drag the timeline cursor  until you see an easily identifiable moment in the first video clip. For example, find the instant where a long jumper's foot hits the board, when a skier passes a gate, when a golfer hits the ball etc.
2. Click and drag the yellow timeline (this represents the second clip) left or right until you see the same image in the second video clip.

 *Fine-tune the video frame selected using the left and right cursor movement keys of your keyboard - remember to click the timeline of the video that you wish to adjust first*

 *It is important that you choose a starting frame with clear static elements that appear in both backgrounds. This will help you align the backgrounds in the next step.*



 *A "perfect" synchronization does not always yield a perfect analysis. The overlap between both performers may be too high, hiding important details. In this case, try to add one or two frame shift between both video clips.*


 *If the video clips contain synchronization points, they are automatically synchronized when loaded.*



## Trimming the clips

This means selecting the portion of the video clips you want to analyze. This is done by setting cue in and cue out points.

1. Position the red cursor at the beginning of the portion and click on the Set In button (  ).
2. Position the cursor at the end of the portion and click on the Set Out button (  ).

 *It is worth taking time to trim the clip to the section of the video you wish to compare as this considerably reduces the time taken to produce the final result clip. Also, experienced SimulCam users will be able to avoid sections of video where SimulCam is not able to make comparisons.*

### 8.1.3 Step 2 - camera movement calculation

In this step, calculation of the camera movements is initiated. This is required by **SimulCam** to blend the two performances onto a single background. In this process, similar features in the backgrounds of the two video clips are manually aligned by one of two methods:

1. **Drag & zoom alignment** - Backgrounds are aligned by blending the first frame of each clip then zooming and dragging one frame above the other until backgrounds match.
2. **Matched alignment points** - Several matching static background features are marked with alignment points on the first frame of each clip.

#### Which method is best?

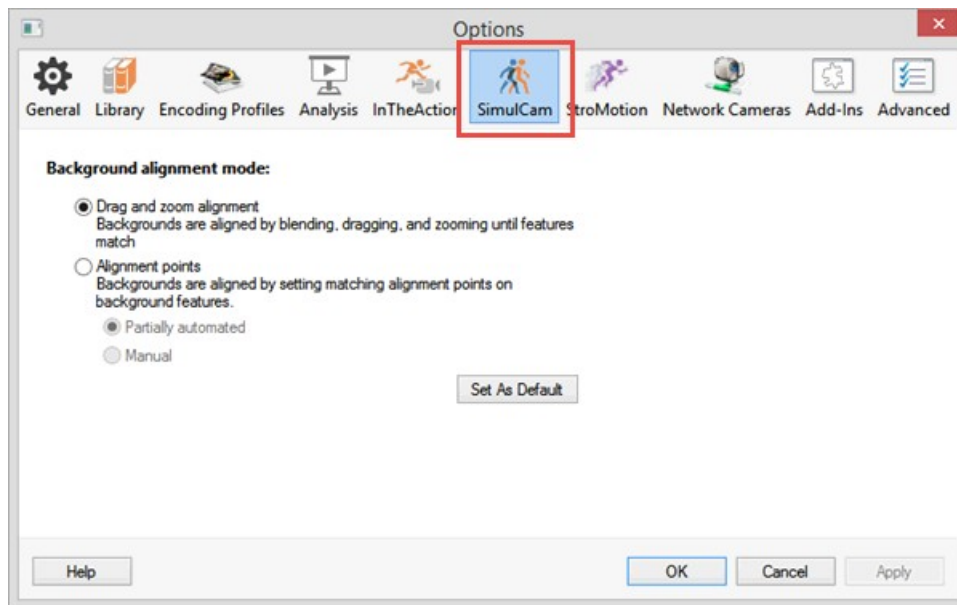
We recommend that you try both methods to decide which one is most efficient for you. By default, your software uses the Drag & zoom alignment method. Use the following notes as a guide.

- In general, manual alignment by the **Drag & zoom alignment** method is quicker.
- **Drag & zoom** alignment requires you to zoom using scroll function of your mouse or the [+] and [-] keys of your numeric keypad (refer to your laptop documentation). If neither of these are convenient for you then **Matched alignment points** might be a better choice.
- The **Matched alignment points** method is sometimes a better choice when the video images do not match well.

#### To select the calculation method

The calculation method can be changed at any time before or during **SimulCam**.

1. Select *Tools > Options* from the menu bar (or press F3).
2. Select the **SimulCam** topic



3. Select the **background alignment mode**. Note that you can **Set as default** your choice of calculation method.

#### 8.1.3.1 Drag & zoom alignment method

The **Drag & zoom alignment method** consists of dragging and resizing the image of the first video clip on top of the other clip until the two backgrounds match perfectly. Step 2 using Drag & zoom alignment looks like this:




Images from both videos are blended but the backgrounds still have to be aligned for each of the three pairs of images displayed on the left hand side of the module.

#### Adjusting Zoom

If the camera used different zoom while filming the two video images this can be compensated for by resizing the top video image.

1. Click the blended video images.
2. Adjust the size by using the mouse scroll function.

 *If your mouse has no scroll function or it does not operate zoom then use the [+] and [-] keys on the numeric key pad of your keyboard. Different laptops use different methods of activating and operating the numeric keypad; refer to your laptop's manual to find out.*

## Aligning backgrounds

When images are a similar size, they can be aligned - although you may have to align then zoom again to get a perfect match.

1. Click & drag anywhere on the blended video images, the top image will move over the image below it.
2. Focus on one or more objects in the background; the stands, objects on the field, posts, equipment, etc. and align those objects.

## Checking alignment

Check the alignment quality using the transparency cursor.



Drag the cursor to the left and to the right. If you feel that the background is moving, it means you need to keep aligning the two backgrounds.

**!** *If you still cannot align the background, after repeated zooming and alignment, this could mean that the camcorder tripod moved during your recording session. In this case, it is not possible to create SimulCam video clips. You still can compare performances but you will need to use the split screen functionality of the Analyzer module.*

## Repeat Alignment for the other pairs of images

The first pair of images show the background of the two different video clips. The alignment process needs to be repeated for the two remaining pairs of images. These pairs are used to calculate camera movement from one frame to the next in each clip so if movement is slight this will be much quicker than aligning the different video clips.

1. Click the second pair of images listed on the left hand side of the **SimulCam** module.
2. Align them.
3. Click the third pair of images listed on the left hand side of the **SimulCam** module.
4. Align them.
5. The end result of step two is illustrated below. Click the **Next button** to proceed.



### 8.1.3.2 Matched alignment points method

The **Matched alignment point method** is a process of placing markers on similar features in the background of both video clips. The **alignment point window** is illustrated below, note that each video is shown on a separate **video display** accessed by the tabs at the top.



### Selecting background alignment points.

In this method, at least two points are set on objects in the background of the first image and then set on the same objects on the second background. This is repeated for all three pairs of images listed on the left hand side of the SimulCam module. It is best to use obvious points of high contrast as illustrated in the following pictures:



Also it is essential that these background points are fixed objects: People or the top of the slalom gate in the above clip would not be good choices because they move!

## To define alignment points.

1. Click on the first clip's **title** above the video display. A frame of the first clip is displayed in the **video display**. (Ski 1 in the illustration below)



2. Click the left mouse button on a static background feature. The feature is marked as shown below.



3. Now click a second and perhaps a third object. They will be labeled similarly; you must set a minimum of two **alignment points** but defining more may improve the background alignment.
4. Click on the second clip's title above the **video display**. A frame of the second clip is displayed.
5. On the second clip, click the same background objects that you selected on the first clip in the same order so that the numbers match; the thumbnail on the left displays the previous selections and can act as a guide.
6. Click on **Visual Check** on the **process bar**. A combined image of both frames is displayed. The backgrounds should appear aligned.
7. If you need to delete a numbered **marker** because the elements are not in the second image or are not positioned correctly, right-click on the **marker** you wish to delete. Then left-click in the correct position and a **marker** with the same number appears again.
8. If the backgrounds do not match in the **Visual Check**, make sure that the alignment points are placed correctly and that point 1 matches point 1 in each image etc. If backgrounds still do not match then adding further points will improve accuracy.
9. Select the second pair of images from the thumbnails on the left of the **SimulCam module**. These images compare camera movement from one frame to the next in the same video clip. This time feature points are already set but you need to check they are positioned correctly. Use the techniques described in step 7 to remove and reposition feature points as required.
10. Repeat for the third pair of images.
11. When complete proceed to the next step by clicking on the **Next button**.

### 8.1.3.3 Adding new alignment frames (flags)

Both methods to complete **step 2** require that you match the backgrounds in the starting frame of your clips. However, if the backgrounds in this frame are too different, they do not include clear common background elements or the objects are blurred you will need to set a different start frame.

## To set a new start frame.



1. Go back to **step 1** by clicking the back button.

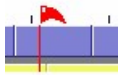
2. Set a new **cue in** at a start frame that is more appropriate.
3. Repeat **step 2**.

## Setting new alignment frames.

It is essential that the start frames match but additional frames can be set where backgrounds can be realigned. This might be necessary for clips that "jump" because of a change of camera angle, or because the images have become blurred during panning or the clip does not include part of the action in a particular frame.

New alignment frames are represented by **flags** in the timeline. Once you add a flag, you will be able to realign the backgrounds in that particular frame as described previously. To add a **flag**:

1. Go back to step 1 by clicking the back button.
2. Drag the current position indicator  along the timeline to the new alignment frame.
3. Click on the Add flag button . A new flag is added to the timeline. A red flag indicates that the background alignment still needs to be performed for this particular moment



4. Other icons allow you to jump to the next or previous flag and to delete a flag.



5. Repeat **step 2** for each flag added.

### 8.1.4 Step 3 - blending, preview and saving

Step 3 enables you to:

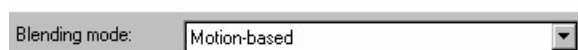
- Select the **blending mode**
- Start the **calculation** of the SimulCam clip and watch a **preview**
- Save the **SimulCam video clip**

## Blending mode

The **SimulCam** image quality may vary depending on the **blending** mode. You can choose from three modes and use the preview to experiment with what works best for your sport.

- **Motion-based**: In most cases, this is the best mode to use for generating a blend. It is based on the camera movement.
- **Color-based**: Use this mode when your clip features a lighter colored background than the performer. For example, snow, sand, concrete. Light colors are "pushed" into the background.
- **Constant**: This is the fastest blend calculation mode, however, the resulting quality is poorer than the other modes. Use this mode when you want to get a rapid result.

Use the drop-down list to select the blending mode



## Previewing your clip




It is not necessary to use the **preview** function but it will help you decide the best **blending mode** and whether additional **alignment** is needed.

To preview, click on the **Start preview** button. The **SimulCam** clip will be displayed in the **video display** as the calculation progresses. At any moment, you can decide to stop the calculation by pressing the **Stop preview** button. You can now experiment with different **blend modes** to compare which gives the best result.

If the **SimulCam** can be improved, go **Back** to the previous steps and redo **cue in**, **alignment**, **blend mode** etc.

This done, it may be that there is still a progressive misalignment of the backgrounds. If this happens, stop the preview and try one of the following.

1. Add an alignment flag to the frame where the background misalignment begins (see [Adding new alignment frames](#)).
2. Select a different first frame - as described in [Step 1 - clip selection and synchronization](#)

 *It is much quicker to preview using Constant Blending mode. When satisfied that alignment is correct switch blending mode to Motion-based or color-based for a better quality result.*

## Saving Simulcam results

There are two potential end results of a SimulCam project:

- the creation of a new video clip using the [Publish](#) process
- the SimulCam project itself.

To Save the SimulCam project, select the **File > Save...** option from the **menu bar**. Saving the project is not always necessary but may be useful if you wish to return to the project to make changes in the future. **SimulCam projects** appear in the **Items List** represented by the following icon:



## Starting a new SimulCam project

To initiate a new project select **File > New** from the **menu bar**.

### 8.1.5 Publishing new video clips

The publish process uses a **wizard** to guide you through creating new video clips resulting from SimulCam and Stromotion. It is used to:

- Save and name the video clip.
- Categorize the new clip using categories.

Initiate the Publish process by clicking the **Publish button** at the bottom right of each module.

## Choosing video settings

The first step is to select which **encoding profile** you wish to use for the clip. A range of **encoding profiles** exist to allow you to select an appropriate format for the eventual use and location for the video. For example, if the video clip is lengthy or needs to be sent by email, you may decide to use an encoding profile which compresses the result into a file of smaller size (see



Converting video in the Getting Familiar chapter to learn more about video settings).

After selecting a profile, click the **Next button** to continue.

## Assigning file name, destination and keywords

1. Type a **File name** for the video clip in the **File Name text box**. If this box is left blank the generic file name of "Untitled" will be applied.
2. Categorize clips while saving - If you use Dartfish's **Keyword** video management system (see Organizing your library in the Video Library chapter) then you can benefit from adding keywords to new video clips as they are saved. The method for doing this is to create a **form** listing a box for each category that you wish to use then selecting existing keywords from these categories or entering new ones. Click **Add a category link** to build the form. An example is shown below. The same method is used for categorizing captured video.

3. Choose a **Destination folder** - This is the physical location on the computer (drive and folder) where the new clip will be stored. Type the location or click the **Browse button** to search and select a folder
4. Click the Next button to continue

## Video creation

The final step automatically initiates the creation of the new video file according to the settings chosen in the **wizard's** previous steps. The time taken to render the new video will depend on the power of the computer and the size of the new file; progress of creation is indicated.

You will be notified when the publishing process is complete and, by default, the new video clip will be added to the **Tray**, allowing convenient access to replaying it in the **Player** or **Analyzer** modules.

### 8.1.6 Next steps

**SimulCam** offer unique analysis capabilities for comparing two athletes' performances blended onto a single background. You may also be interested in the following topics:

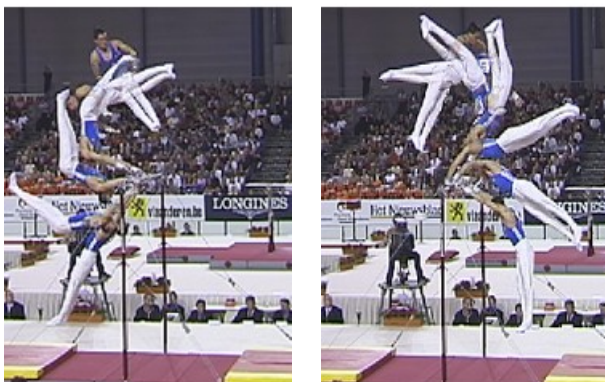
- Read the topic [StroMotion](#) for another Dartfish special effect enabling you to dissect motion of a performer in a panoramic still image or a video clip.
- The Analyzer module offers another way of highlighting key frames and uses them to bookmark these moments and turn them into still images (read the chapter about the Analyzer to learn more).
- Having created these unique images, you may want to share them by CD, email or internet (see Sharing video files in the Video Library chapter).

## 8.2 Dissect motion with StroMotion

Images produced by **StroMotion** give an athlete and coach unique insights to how an action develops. It produces a panoramic **still image** or a **video clip** that contains collections of frozen images, revealing how rapid technical changes are made.



To imagine how this might help you, think of times when it might be useful to show your athlete their position on one frame of video then show its consequences in another frame. How about educating your junior team about the correct sequence of actions to use? Sure you could print out some still pictures but **StroMotion** offers a juxtaposition of images which truly reveals how one action leads to the next.



**The process of creating a StroMotion clip involves 4 steps:**

- [Step 1 - Load & trim the video clip](#)
- [Step 2 - Camera movement computation](#)
- [Step 3 - Panorama reconstruction](#)
- [Step 4 - Draw clones & save results](#)

### 8.2.1 Step 1 - Load & trim the video clip

#### Loading the video clip

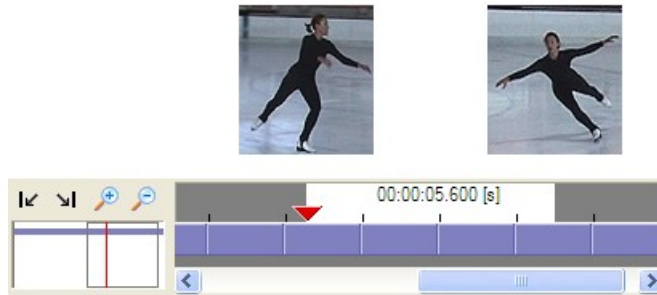
1. Open the clip of your choice from the **items list** or **tray**.

2. The chosen clip may be changed by simply loading a different clip.

### Trimming the clip (set cue in & out points)

The clip should be trimmed at the beginning and end of the movement that is to be turned into a StroMotion image.

1. Set the **Cue in** position by moving the **Playhead** (red triangle above the timeline) to a start position with clear background features. This will help you match background features in step 2.
2. Click the **Set Cue In button**, shown on the left side of the image below




3. Repeat for the **Cue out point** by moving the **playhead** to the end of the clip then clicking the **Cue out button**. The white section above the time line in the above image indicates the segment of video which will be used for the stromotion

Click the **Next** button at the bottom right of the **StroMotion module** to proceed to the next step.

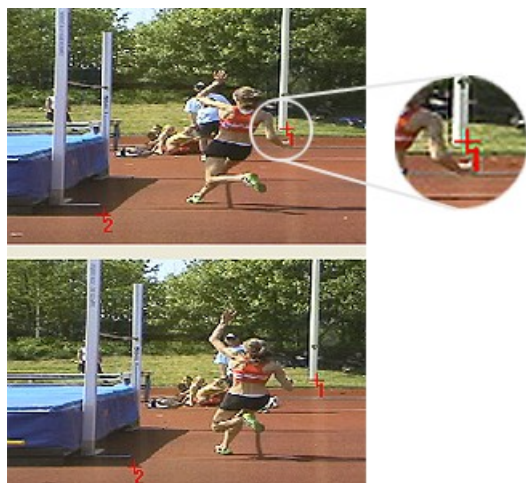
## 8.2.2 Step 2 - Camera movement computation

In step 2 camera movement is calculated. This is initiated by matching at least two background features in successive frames of the video clip by setting **alignment points**. **StroMotion** then computes the movement of the camera throughout the clip.

 *The points set as alignment points should be static, people are not a good choice of alignment point! They should also be obvious points in the background as StroMotion can't track the objects if they are blurred or similar in colour to the surrounding background.*

### To set alignment points

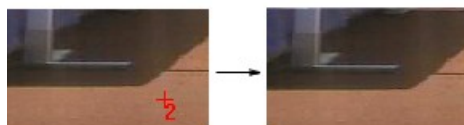
- Click the left mouse button while pointing at an object (a flag, center line, pole, goal, etc.) that is present on both frames
- The red **alignment marker** which appears is labeled with a number. The same marker will appear on both images.



## To adjust alignment points

In the image above the feature point labelled "2" is not marking the same place in both images. To correct this:

1. Right-click on the incorrectly positioned **alignment point** to delete it.



2. Then left-click the position where the **alignment point** should be.



3. Repeat this setting and adjusting operation until you have selected at least two **alignment points**

**!** You can check how well the alignment points match by clicking the Visual Check button. A window opens showing the athlete moving against a static background. If the background appears to move or shift, you should check your alignment points or add further points until the background is relatively stationary.

## Calculate camera movement

1. Click the **Start button**. Shading inside the timeline shows how much of the process is complete.
2. When the calculation is complete, you are ready to click the **Next button** to go to the next step.

*! The Show warping button allows you to check the result while the clip is being processed. If the background appears discontinuous as it is constructed, stop the computation and make further adjustments to the alignment points. This may also be caused by the tripod moving during filming.*

### 8.2.3 Step 3 - Panorama reconstruction

Usually no action is required in step 3 as the panorama reconstruction begins immediately.

1. If it doesn't start then click the **Start button**. As before, timeline shading will show progress.
2. Click the **Next button** to proceed to the next step.

### 8.2.4 Step 4 - Draw clones & save results

This step is where you select the parts of the image which will stay fixed on the subsequent frames of video and will appear as "clones" on the panorama image. To do this you will:

1. [Identify key frames](#) in the video clip where the performer or object is in a position of interest.
2. [Draw around the "clone" object](#) using a range of **clone drawing tools**.
3. Repeat the above for all key frames.
4. Save the [project](#), [result clip or panorama image](#)

#### 8.2.4.1 Identifying key frames

Your task here is to find frames of video showing the athlete (or another object) in a key position of interest. This is the moment of action that you wish to freeze.

You should already be familiar with how to use the timeline to move through a video clip. It is worth remembering to use keyboard shortcuts [ctrl] + [left/right] cursor keys that will play one frame at a time and fine-tune your selection (read the Getting Familiar chapter to learn more).

 *to insert clones at a fixed interval use the Jumpsize control illustrated below to define the size of the "jump" and move backward and forward through the clip by this interval.*



#### 8.2.4.2 Drawing clone objects

Having found a key frame of video - one in which an athlete or object is in a position of interest, that athlete or object now must be cloned. You are not restricted to cloning a single object, so select all objects of interest in each key frame.

The objects or athletes that you want to clone are drawn, selected and manipulated using the tools on the right of the StroMotion module.



**Select tool** - select clones or move selection.



**Rectangular clone tool** - clone creation tool.



**Freehand clone tool** - freehand clone creation.



**Delete selection** - deletes the performer/object selected by the select tool.



**Delete all** - deletes all performers/objects on this frame.



**Zoom in/out** - zooms in on the point on the image that is clicked (right click to zoom out).

## To create clones

Use the **Rectangular clone tool** or the **Freehand clone tool** tools to "draw" around the performer/object to be cloned.

To use the **Rectangular clone tool**

1. Click the **Rectangular clone tool button**.
2. Then point the mouse above and to the left of the object to be cloned.
3. Click & drag downwards and to the right until the selection box encompass the object while including as little background as possible.

To use the **Freehand clone tool**

1. Click the **Freehand clone tool button**
2. Click & drag around the object staying as close to the edge as possible.






*💡 If you miss part of an object during selection, don't delete the clone and start again, simply include the missed part as a new selection. More than one tool can be used and more than one selection can be made to create a clone as shown in the image below.*

## Which selection tool is best?

To answer that, remember that whichever tool you use, the selected area will stay fixed on the video image. If there is overlap between clones, the later clones will obscure the earlier ones.


- Use the freehand tool when there will be a lot of overlap between the clones. For example in a gymnastic rings routine or high jump.
- Use the rectangle tool when the clones will be spread out - the performer moves some distance between the key frames. For example in long jump.

## To edit clones

1. Select the clone to edit by using the Select tool . Click the tool then click the outline of the cloned area.
2. Selected clones can be deleted , moved by click & drag, or reshaped by dragging the "handles" at each edge or corner, see these illustrated below. All clones in a frame can be deleted using the  tool, it is not necessary to select clones first to use this.





💡 By zooming in on the image using the zoom tool  more careful selection is possible. Click the left mouse button to zoom in and the right mouse button to zoom out.

#### 8.2.4.3 Publishing StroMotion

Creating StroMotion results is done using a **Publishing wizard** almost identical to [that used by SimulCam](#). It is initiated by clicking the **Publish** button in the final step of **StroMotion**.

Publishing can produce a choice of two results described below. After selecting an output type and clicking the **Next button**, the remaining steps are described fully in the **SimulCam** chapter (see [Publishing new video clips](#) in the Simulcam chapter).

#### StroMotion still image

An image of all clones superimposed on the background. If a panning camera was used, clones are superimposed on a panoramic background image composed from each frame of video. An example of this is shown below.



Although images will appear in the **Items List**, no Dartfish modules are used to display them; if opened they will be opened using the default Windows image display/editing software on your computer.

#### StroMotion video

The original video has each **clone** appear and remain on the video image as the movement develops.

#### 8.2.4.4 Saving StroMotion

It is possible to save a **Stromotion project** if you wish to return to it to make adjustments or publish its results later. StroMotion projects are represented by the following icon in the **Items List**.



Save the settings used to create the project by selecting *File > Save as...* from the menu bar.



### 8.2.5 Next steps

StroMotion is one of Dartfish's special effects allowing you to view movement in unique ways. You may also be interested in the following topics:

- Read the topic [SimulCam](#) for another Dartfish special effect enabling you to place two performers together in the same place and time.
- The spline drawing tool (see chapter on [Analyzer](#)) is another way of tracking and illustrating movement.
- The Analyzer module offers another way of identifying [key positions](#) and uses them to bookmark these moments and turn them into still images.
- Having created these unique images, you may want to share them by CD, email or internet (see [Sharing video files](#) in the *Video Library* chapter).

# Chapter

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IX

## *Tagging Video*

## 9 Tagging Video

Traditionally, reviewing sporting performance on video is a linear process – you play the video and observe the action as it takes place. Of course the fast forward button saves time but finding and replaying important moments in the game or competition essentially remains linear – and slow.

Imagine how useful it would be to be able to mark and label these events on the video as it is recorded? You could later jump between these marks in any order you choose. You could review only the events of interest and choose to see related events: "Let me look at all the times our opposition scored" ceases to be a lengthy process of fast forward and play.

Dartfish's Tagging module doesn't physically mark a tape but instead brings digital video onto the computer and allows you to create a searchable index of the video content. Each event is tagged with not just one label but a set of keywords that really identify what is happening. This process not only lets you search and review these events but compiles match statistics: "Which shot does my opponent most often score with?" is not only a question that can be easily answered, but the relevant shots can be replayed and analyzed.



### A short history of tagging

If all this sounds familiar, that is because Dartfish Tagging is a combination of long-used tactical analysis methods:

- Notational analysis - the coach or analyst sits on the sideline with pen & paper ticking off or coding events as they take place in a game. Tagging does this using buttons which are clicked to code events.
- Video indexing - even before digital video, coaches attempted to make it easier to find useful moments in the video of the game by noting the time that they took place. This made it easier to fast forward to that point on the tape but it's easier still with Tagging; the events you code are listed in an index which can be searched and displayed non-sequentially.

### Is Tagging just for Team sports?

No. While other Dartfish modules are used for technical analysis of isolated events. Tagging is more about a tactical analysis of the game as a whole while being able to focus on specific moments of choice. It is therefore useful for any sport where these qualities are of interest: Team sports, racket sports, combat sports, skating/gymnastic routines etc.

#### *In this chapter*

- [What is Tagging?](#)
- [The Tagging Workspace](#)
- [Creating Tagging panels](#)
- [Tagging video](#)

- [Importing events](#)
- [Review & edit events](#)
- [Filtering and viewing statistics](#)
- [Producing & sharing tagging resources](#)

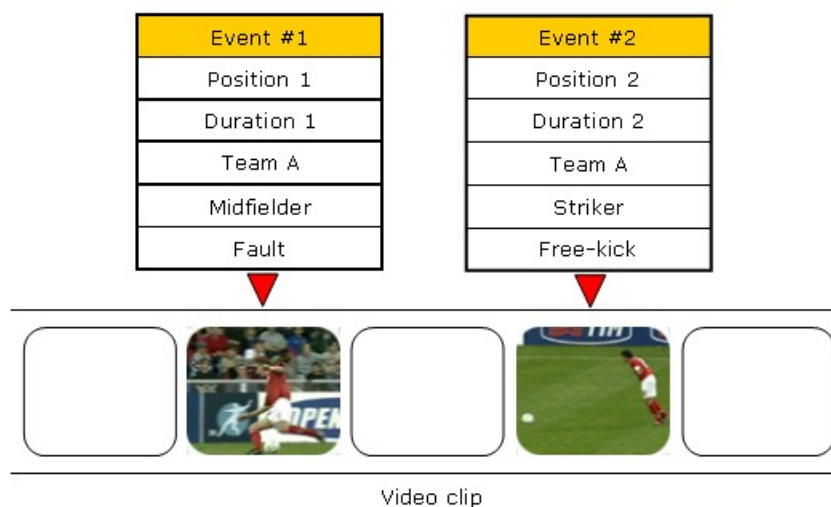
## 9.1 What is Tagging?

**Tagging** is the action of creating a video index, a list of **Events** that occur in the video. Consider for example a video that contains a soccer game; the video index could look like this:

Index	Position	Duration	Event Type	Player	Team
Event #1	23 s	7 s	Pass	Defender	Team A
Event #2	1 min 13s	7 s	Free kick	Striker	Team B
...	...	...	...	...	...

- The **Position** corresponds to the time in the video when the event occurred.
- The **Duration** is a portion of the video when the events take place.
- Event type, Pass and Team are **Categories**. Pass, Defender and Team A are the **keywords** in each **category**.

An event is fully defined by the **Position**, **Duration** and the **categories' Keywords**. It can be illustrated as follows:



Once you have created your index, you will be able to retrieve particular events. For example, you may want to retrieve events that match the following criteria:

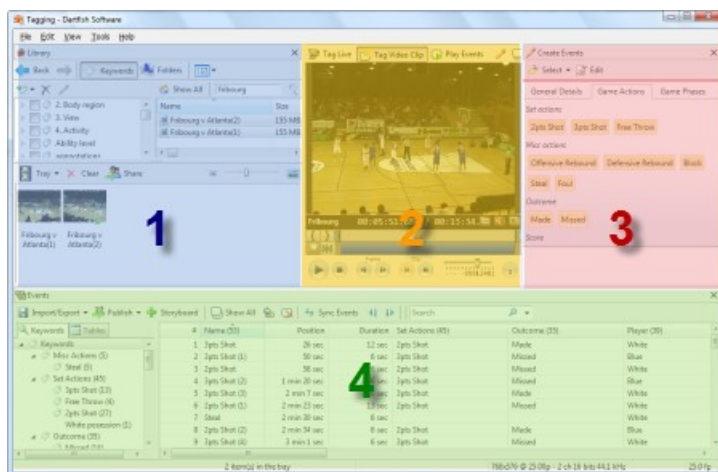
- Team = Team A, i.e. all events of Team A
- Event Type = Pass and Team = Team A, i.e. all the passes of Team A

It is important to be aware that the Tagging module doesn't just tag instantaneous events such as these examples, lengthy sections of video such as a team's ball possession can be tagged at the same time as the passes and free-kicks taking place during that possession.

## 9.2 The Tagging Workspace

To launch the **Tagging** module, click on the **Tagging button** in the **tool bar**, or select *Tools > Tagging* from the **menu bar**.

The module workspace is illustrated below:



It is composed of four different elements (clockwise from top left):

1. The **Library** (more precisely the Tray of the library), which opens a collection of video clips to be tagged or reviewed.
2. The **Video Panel**, which contains the video display and the different video controls which let you capture and replay video. This also has controls to display and hide the other panels and select the video source.
3. The **Tagging Panel**, which contains a set of buttons and other tools; some of which create a timestamp for each event and others which describe the event with values.
4. The **Events List**, which contains the list of **events**, i.e. your video index. It also has features related to the management of events; editing, searching and import/export functions.

These elements are described in more detail in the remainder of this section.

**!** When you launch the Tagging module for the first time, the workspace may not look like the one illustrated above. If any of the four elements are not visible they may be displayed by using the Views Bar buttons at the top right corner of the video panel (see [The Video Panel](#))

### 9.2.1 The Library

It is likely that your tagging analysis will be based on more than one file. Perhaps different periods of the game were recorded as separate video files or perhaps you are reviewing the video of an entire season. Dartfish offers you a simple way of working with as many video clips as you require.



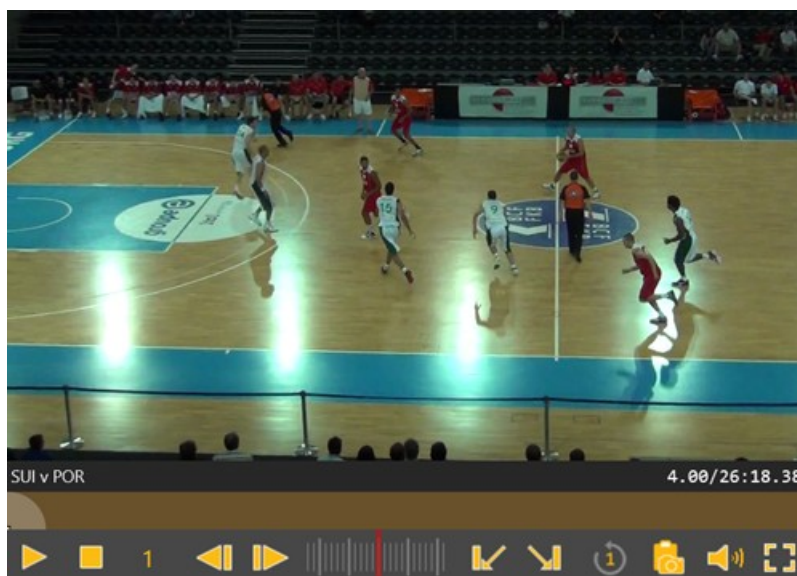
Loading all the clips you wish to analyze into the **Tray** section of the **library** allows you to:

- See **events** from all clips contained in the **Tray**; allowing the events of many videos to be analyzed together.
- Search for **events** from all video clips within the **Tray**.
- View or tag multiple video files as if they were a single clip.

When working with multiple clips, it is useful to know that the video clip highlighted with a green triangle is the one currently being played or tagged and that the **Player's** repeat options can be used to play each clip continuously as a single movie (See Video playback in the Getting Familiar with Dartfish chapter)

### 9.2.2 The Video Panel

The **Video panel** is illustrated below.



Mode bar

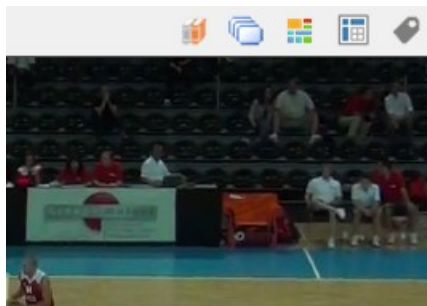


The **Mode Bar** at the top left of the video display enables you to choose between two tagging modes and a video player mode.






- **Tag Live mode** records a video stream, at the same time as allowing you to tag during capture. The screen and the different settings are identical to the **Video Recorder module** (see [Video Recorder: capture a video stream](#) in the Video Import chapter)
- **Tag Video Clip mode** allows you to play entire video files that exist on your hard disk. The clips can be tagged during playback
- The **Play Events mode** allows you to play back the selected events from the Events list


These last two modes use the video playback controls illustrated above. Read the section Video Playback of the Getting familiar with Dartfish chapter to learn about the different controls.

## Views bar



The Views bar is found at the top right of the video display. Its buttons show and hide the different parts of the Tagging module. The buttons' functionalities are:

-  show/hide the **Tagging Panel**
-  show/hide the **Events list**
-  show/hide the **Library**
-  show/hide the **Table**
-  show/hide the **Keyword filter**

 *Use the maximized workspace view (keyboard shortcut = F9 to simplify the screen layout then show or hide these features as you need them.*

### 9.2.3 The Tagging Panel

The Tagging Panel contains the tools to tag (or create the events index) of a video. It is also used to

- Access the **tagging panels** provided with Dartfish
- Open panels created by you or sent to you by others
- Create or edit new panels.




The screenshot shows the Dartfish tagging interface. At the top, there are tabs for 'Panels' (selected) and 'Edit'. Below the tabs are four sub-tabs: 'Game tagging' (selected), 'Team selection', 'Game info', and 'Presentations'. The main area is divided into several sections:

- Actions:** A grid of buttons for tagging actions: 'Aerial challenge lost [Z]', 'Aerial challenge won [X]', 'Foul [C]', 'Goal [V]', 'Shot on target [B]', 'Shot off target [N]', 'Tackle lost [M]', and 'Tackle won [L]'. There is also an 'Other highlight' button.
- Possession:** Buttons for 'Non attacking possession [Q]' and 'Attacking possession ...with shot'.
- Possession duration (touches):** A row of buttons for touch counts: '1', '2', '3', '4', '5', '6', '7', '8', '9', '10', and '>10'.
- Home Players:** A list of player names in buttons: 'Luke Mulholland', 'William Njamen', 'Joseph Prince', 'Andrew Konopelsky', 'James Goodwin', 'Jake Wright', 'Brian Ramsey', 'Joseph Prince-Wright', 'Per Engebretsen Faerden', 'Mark Wiltse', and 'Kareem Yearwood'.
- Match info:** A section with 'Match description' and 'Opposition/date' buttons, and two buttons for '1st Half' and '2nd half'.

## The Panels button

The **Panels button** is used to open tagging panels which you have created or those which you have been given. It also gives access to the built-in panels and to create new panels to meet your specific needs (see [Creating Tagging Panels](#)).

 *Tagging panels are saved as files just like Word documents or Excel spreadsheets. In other words, they exist independently of Dartfish software, they can be saved and organized using Windows file management, and can be attached to emails to be shared with others.*

## The Edit button

Opens the **tagging panel editor**. A **tagging panel** must already be open before the **edit button** can be used.

## The tagging panel

Although Dartfish tagging panels allow great flexibility and creativity in how they can be used, the tools on them principally have one of three functions:

1. **Event** tools - used to create events by time stamping the event and assigning it a descriptive value
2. **Keyword** tools - used to add additional keywords to events
3. **Grouping** tools - used to organize other tools into groups; either to improve the layout visually or ergonomically or to confer shared features on the group

Tagging panels can consist of one or more pages, accessed by **tabs**. **Buttons** and tools for use

at different times in the tagging process are placed on different pages to improve the ergonomics of the panel.




## 9.2.4 The Events List

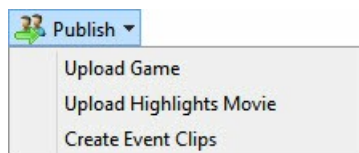
The **Events List** contains the list of all events for all video clips in the current **Tray**:

<div> <div>Import/Export</div> <div>Publish</div> <div>Storyboard</div> <div>Show All</div> <div>Filter events</div> </div>						
#	Name		Position	Duration	Action	Player
1	Non-attacking possession		17 sec	29 sec		
2	Tackle Lost		36 sec	5 sec	Tackle Lost	Ben Taylor
3	Tackle Lost		39 sec	5 sec	Tackle Lost	Guilherme Reis
4	Tackle Lost		40 sec	5 sec	Tackle Lost	Anteneh Lemm
5	Tackle Lost		41 sec	5 sec	Tackle Lost	George Davis IV
6	Foul		43 sec	10 sec	Foul	William Njamer
7	Tackle Lost		47 sec	5 sec	Tackle Lost	William Njamer
8	Aerial Challenge Lost		1 min 11 sec	3 sec	Aerial Challenge Lost	Jean Tshimpaka
9	Aerial challenge won		1 min 12 sec	3 sec	Aerial challenge won	Joseph Prince-V
10	Tackle Won		1 min 15 sec	5 sec	Tackle Won	Andrew Kinnou

**Events** are selected by clicking on the row containing them. The video **playhead** moves to the start of the event. Double-clicking an **event** both plays it and places Dartfish tagging in its **Play Events mode**.

Selected events may also be:

- Deleted using the **Delete button** 
- Analyzed in Dartfish's **Analyzer** module (**Storyboard button**) 
- Exported as .csv files using the **Import/Export button** 
- Published as new video clips that can be stored on your hard drive (e.g. to make a highlights movie using video editing software) or directly burned onto a CD or data DVD (e.g. to give to team players or coaches), or uploaded to your [dartfish.tv](http://dartfish.tv) channel using the **Publish Events button**.

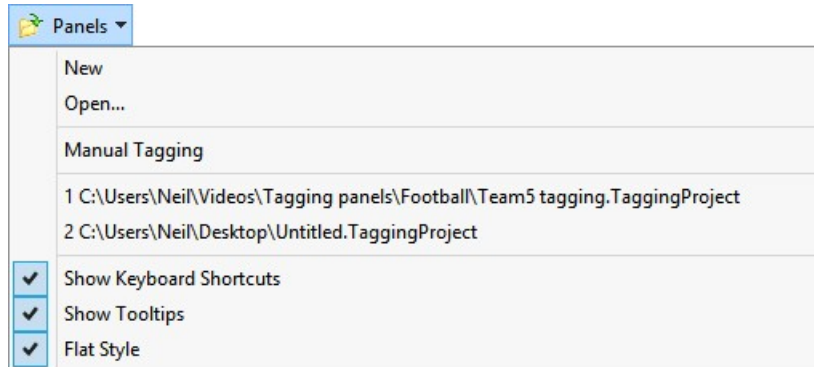


- Sorted by clicking on the **column heading** you wish to sort.
- Searched and filtered. See [Search to retrieve specific events](#) for more details.

## 9.3 Creating Tagging panels

To create a new **tagging panel**, proceed as follows:

1. Click on the **Panels button** and choose *New* from the context menu.



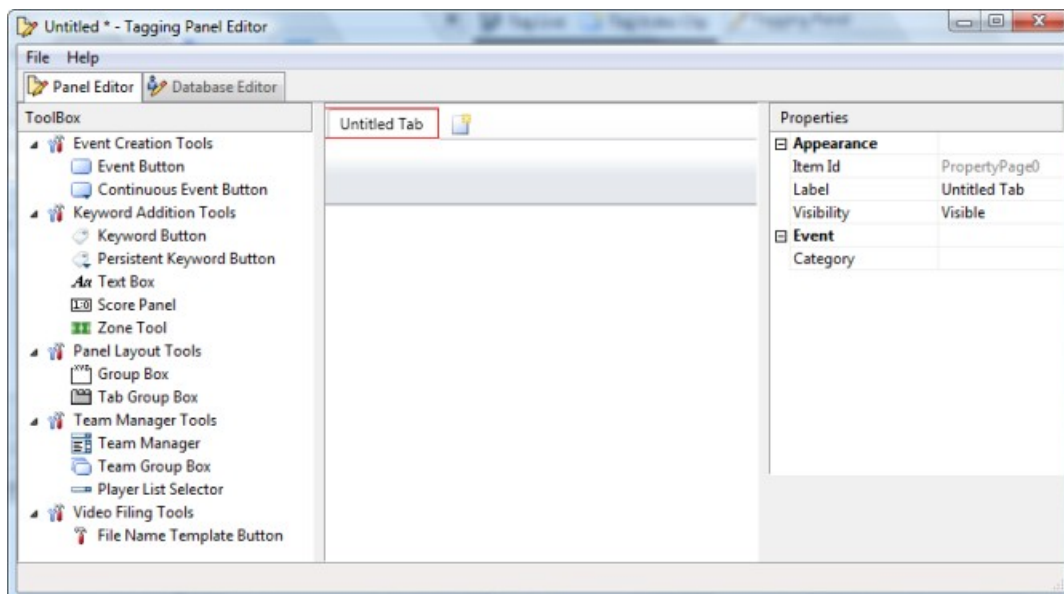
2. Click on the **New Panel icon**



3. Select from the list of new project types. Create a new **Blank Panel** if you wish to start with an empty panel OR base a new panel on one of the built-in tagging panels. This displays the **Tagging Editor window** as shown below

 *We recommend starting by using one of the Dartfish built-in tagging panels. Change labels and add/delete buttons as necessary for your sport.*

## The Tagging Panel Editor



The tagging panel editor has 3 sections, (left to right as displayed above):

1. The **ToolBox** contains buttons and other tools used to create and describe **events**. They are

- added to your tagging panel by drag and drop.
2. The **Tagging panel editor**. This is where the content and layout of a tagging panel is defined. A new blank tagging panel already contains a **tab group box** allowing you to create a multi-page panel if required.
  3. The **Properties** pane. Properties are used to define the appearance and actions of tagging panel tools

### 9.3.1 Adding/deleting/moving/copying tools

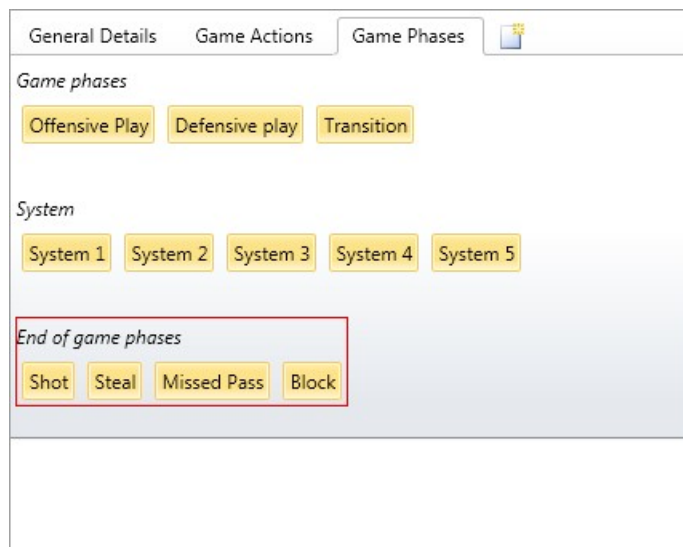
#### To add a tool to a tagging panel

Items are placed onto the **tagging panel editor** by dragging and dropping them from from the **Toolbox**.

*! New panels always have a tabbed group box with a single page, as show below. In order to place the tool on that page, it should be placed in the area denoted by the red line shown here:*



Adding subsequent items also requires care, in the image below, new tools should be placed on the gray shaded area if they are to appear on the same page as the other buttons.



*💡 If placed below the page then that tool will be visible from all pages.*

## To move an item

Drag and drop the item you want to move to the new position.

## To move a panel layout tool (group boxes etc)

1. Click within the panel layout tool (but not on any button or other tool)
2. A red outline surrounds your selection - use this to identify that you have the correct tool selected
3. Click and drag the panel layout tool to a new location


*! It is not possible to move a group box to between other group boxes. Instead it should be moved above or below the other group boxes which can then be shuffled further to achieve the desired position.*

## To delete an item

Right-click on the item and select *Delete* from the context menu.

## To copy an item

Drag and drop the item while holding down the CTRL key on the keyboard. Release the item before releasing the CTRL key.

 *Many tools will have similar properties so creating one button, defining its properties and then copying it can be a very efficient way of creating a tagging panel.*

### 9.3.2 Modifying properties



Items which have been added to the Tagging Editor have their appearance and function modified by changing properties in the Properties panel. There are two types of properties; properties which can take any value and properties which must take one or more fixed values. The methods for modifying these two types of property are described below:

A complete description of properties can be found in the topic [Properties list](#)



#### Modifying 'any' value properties.



1. Click on the tool. This will display the **properties** for that item.
2. Click and type in the second column of the **properties list** to add or modify values.

#### Modifying 'fixed' value properties.

1. Click on the tool. This will display the properties for that item.
2. Clicking in the second column of the properties list will allow you to select a value using the buttons that appear. It is not possible to type values. One of two types of button are used:
  -  - selects or creates **property** values from a dialog box e.g. shortcut key property
  -  - selects **property** values from a drop down list e.g. style property

In the example shown below these buttons are shown as they would appear in the properties

panel. Properties such as **Shortcut Key**, **Preroll** and **Trigger** are selected using . Properties such as **Style** are selected using , and properties such as **Category**, **Value** and **Label** are typed.

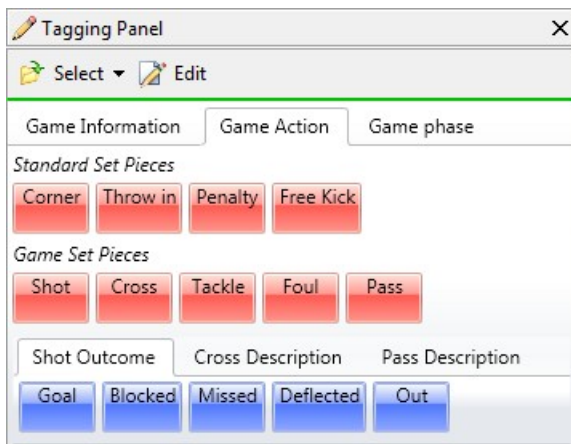
Event Properties	
<b>Appearance</b>	
Item Id	EventButton5
Label	Event
Tooltip	Create an event when the button is clicked.
Shortcut Key	
Image	
Style	Red 
<b>Event</b>	
Category	
Value	
Preroll	5 sec
Duration	10 sec
<b>Interaction</b>	
Reset Category	
Trigger	

The shortcut key is the key that should be pressed on the keyboard to trigger the action attached to the item.

 Double clicking the property heading in the column on the left is a shortcut to editing properties.

### 9.3.3 Planning a tagging panel

Example of a basic **Tagging Panel**:



### Which events do you want to tag in your sport?

Creating tagging panels requires a clear idea of what you want to tag and how you want to define the events' **durations** and the **keywords** which describe them.

One definition of an **event** could be "a segment of video". You need to decide what are the different types of video segments that you want to denote. Those events are likely to be key moments or highlights within the video.

Many events in your sport or activity are easy to define but perhaps others are less easy, consider this example:

In soccer, ball possession in the opponent's half is a key moment that might be tagged as an "attacking possession". That possession might end in an attempt to score. So do you want to tag two events (attacking possession and attempt) or one (attacking possession; outcome = attempt)?

There is no right or wrong answer to this; your decision will be based on what you want to review; tagging this as two events gives you the capacity to choose whether to review attempts separately from attacking possessions.

From this example it should also be clear that Dartfish allows you to tag events which coincide or overlap.

Which of these events have a fixed duration (e.g. actions) and which are of variable duration (e.g. game phases)?

Dartfish can create 2 types of event.

1. Those where the duration can be predicted so only require a single button click to create an event with fixed duration.
2. Those where the duration of is not predictable and is defined by clicking a button on and then off.

**!** *Regardless of how the event duration is defined, it is editable after creation.*

How will your events be categorized?

The **events list** is a table made up of rows and columns. Each row contains the **keywords** which describe the event and at the top of each column there is a heading which describes the **category** of information displayed in that column.

When categorizing events you may choose to simply list all events under a single heading such as 'Action' in the example below:

Position	Duration	Action
12 sec	29 sec	Non-attacking possession
32 sec	5 sec	Tackle Lost
34 sec	5 sec	Tackle Lost
35 sec	5 sec	Tackle Lost
37 sec	5 sec	Tackle Lost
43 sec	5 sec	Tackle Lost
44 sec	5 sec	Foul
1 min 7 sec	3 sec	Aerial Challenge Lost
1 min 7 sec	3 sec	Aerial challenge won
1 min 11 sec	5 sec	Tackle Won

Or you may decide that your events fall into different categories such as 'Set piece plays', 'Open play', 'Phases', 'Possessions' etc.

Placing all events into a single category keeps things simple, but using different categories offers flexibility when it comes to filtering the events list and creating statistics.

**!** *It is not possible to simultaneously create multiple variable duration events (i.e. those created using the continuous event tool) with the same category. If this is required, it is essential that different categories are used. For example, Team A might have possession but if there are to be different phases of play within that possession then these events should be categorized differently e.g. 'Phase' and 'Possession'.*



## How will you describe these events? Events are described by assigning keywords to them.

Creating an event automatically adds 3 keywords; the video **position**, the **duration** of the event plus one user-defined **keyword**. Further keywords can be added to more completely describe the event so you need to consider what additional categories of information are needed. For example: 'Player' and 'Outcome' might be categories of keywords need to fully describe an 'Attempt' event.

## What Keywords are required for all events?

It is very common that you will be tagging or reviewing the tags from more than one video file as described in the topic [The Library](#). In this case the same keyword should be added to all the events of each file to allow you to easily distinguish which events belong to which file.

For example, if you create 2 video files for the first and second half of the soccer game, it would be a good idea to have a category in your events list headed 'Game period', containing the keywords '1st Half' and '2nd Half' to allow you to distinguish between events which took place in the first video file and the second.

## Ready to start creating a tagging panel?

Having thought carefully about the questions above, you will have a list of **events** and a list of **keyword categories**. No doubt you have also have some ideas about the keywords which should go into each category. Now you are ready to turn those ideas into a **tagging panel**.


### 9.3.4 Panel layout tools

#### Group boxes

These tools organize the layout of a panel by grouping buttons together. So unless you have a very simple tagging panel, group boxes are likely to be the first tools that you will add to a new tagging panel. They have two functions:

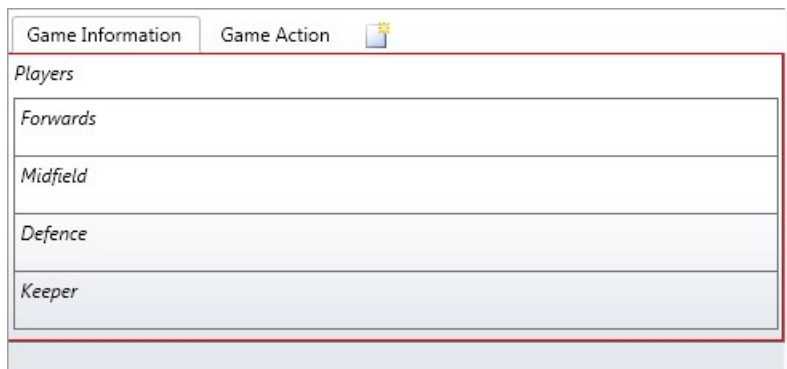
1. To organize the layout of buttons on a tagging panel.
2. To set the **category property** of many buttons simultaneously i.e. tools placed into a group box inherit their **category** from it.

This is an efficient way of ensuring the category property of buttons is not omitted or inconsistently applied. However it is possible to over-rule the inherited category simply by setting the property of the individual tools.

 *If you have already read the topic [Planning a tagging panel](#), you should have a good idea of what categories your events list requires. Start your new tagging panel by adding a group box for each category and set the category property of each to each one of your categories.*

#### Nesting group boxes

It is possible to place group boxes inside another group box. In the example below, group boxes have been used to organize the layout of players on a soccer pitch.



In this image, 'Players' is the selected **group box** and the red line indicates that it contains the other group boxes. Its **category property** is set to 'Players' therefore the other **group boxes** and any buttons placed in them inherit this.


## Tab group boxes

The pages of a **tab group box** each behave like a **group box**, the contents of which are only seen when the tab of that page is selected.



The advantages of a tabbed group box are:

- They are a very space efficient way of including many buttons on a tagging panel.
- Panels can be created to only show buttons which are relevant to the current event; simplifying the panel and guiding the user to appropriate tools.

 *Use the trigger property of a button to automatically select a tabbed group box page. Examples of this method to display relevant buttons as they are required can be seen in most of the built-in tagging panels.*

## Adding tabs to a tabbed group box

In the tagging panel editor, new pages are added to a tab group box by clicking the last tab showing the new page icon. The new page displays the label [...] until an alternative label property has been set.

## Panel layout tool properties

Property	Description
Label	The text which is displayed on the tab.
Visibility	The visibility property is a way of concealing tagging tools when the user is not required to use them directly. Other tools can be used to trigger the contents of a hidden group box even when not visible.
Orientation	Defines whether the contents of a group box are stacked vertically or placed horizontally within a group box.

Image	An image can be placed as a visual label for the group box. It will be resized to fit next to any text label
Category	The category of a layout tool sets the category of any other tool it contains. Inheritance can be over-ruled by setting the category of individual tools

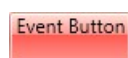
### 9.3.5 Event creation buttons

Event creation buttons are used to add events to the **Events List**. The action of these tools is to create an event described by:

- **Position** - the timestamp of the start of the event in the video clip
- **Duration** - how long the event last for
- **Keyword** - the event is described by a single user-defined keyword. The event can be more fully described using [Keyword addition tools](#) after the event is created
- **Name** - the filename that will be used if the event is exported as a video clip. This will be the based on the event keyword but can be modified.

#### Event buttons

The difference between **Event buttons** and **Continuous event buttons** is how they define the duration. **Event buttons** are used to create events with a fixed duration e.g. a tennis serve might take around 5 seconds to prepare, deliver then witness the outcome. A single click on this type of event button records the event.



#### Continuous event buttons

Continuous Event buttons are used to create events where the duration cannot be predicted, e.g. a whole point in a tennis game or an attacking phase in soccer. This button is clicked "on" and "off" as the event starts and ends.



**Continuous events** are also switched off by activating other continuous events with the same **category property**. For example, this allows you to define the change in possession from one team to another with a single click. This improves the ergonomics of tagging but it makes the categorization of continuous event buttons important: if two **continuous events** are to run concurrently then they must have different **categories**.

#### Important event creation tool properties

Property	Description
Label / keyword properties	These properties define the keyword to be recorded in the events list. Where the keyword property is not set, the label on the button will be used as the keyword. By setting these properties to different values, it is possible to tag a different keyword to the text displayed on the button.
Category property	Defines the column of the events list where the keyword will be added. Without a category property the button won't record its keyword.
Duration	For event buttons only; this is the fixed duration of the event
Preroll	Defines the number of seconds before the button click that will be included in the event.  For example when a shot is made, the button is clicked but you want to define the start of the event 10 seconds prior to this in order to see the action leading up to the shot.  An event button with a 10 second preroll and a 15 second duration would define an event starting 10 seconds before the button click and ending 5 seconds after.
Offset start	For continuous event buttons only; the equivalent of preroll.  A negative value defines the event start prior to the button click and a positive value defines the event start after the button click.
Offset end	For continuous event buttons only; defines the end of the event before or after the button click.

These are the essential event button properties. Other properties are described in the [Properties list](#) topic.

## Other event creation tools

The **team group box** tool and the **Zone tool** can be used to create events by setting their **Action property** = event. However, their default action is as keyword addition tools.

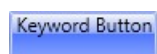
### 9.3.6 Keyword addition tools

Keyword addition tools are used to add keywords to an event. They do not create events. Keyword addition tools can be one of two types:

- **Keyword tools** - are used after an event has been created to add a keyword to that event only
- **Persistent keyword tools** - are activated before an event and add their keyword as the event is created. They remain active until deactivated and so can be used to add their keyword to many events.

## Keyword button

A **Keyword button** assigns an addition keyword value to the last tagged event (or to the selected event in the **Events List**).




## Persistent keyword button

The persistent keyword button applies its value to all events which are tagged while it is active ("pressed").

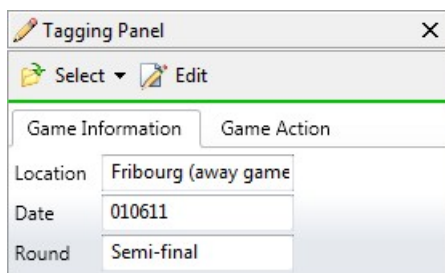
Persistent Keyword Button

For example, in tennis the name of the server could be assigned to a persistent value button. All events created while that button is active will be tagged with the server's name.

 *Persistent keywords can be very useful when the analysis consists of more than one video file. For example to allow you to differentiate between an event which takes place one minute into the "first half" and another which takes place one minute into the "second half". First and second half are the persistent value buttons in this example.*

## Text box

The **text box** tool is a **persistent keyword tool** that assigns a variable keyword based on text typed into the box. For example you might use this to include the name and date of the competition or information about the conditions, as illustrated below:



Tagging Panel

Select Edit

Game Information Game Action

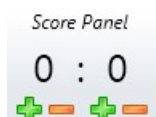
Location Fribourg (away game)

Date 010611

Round Semi-final

## Score panel

The **score panel** is a **persistent keyword tool** that lets you record the current score of the game.



## Zone tool

The **zone tool** is used to record where an event takes place based on where an image is clicked. The recorded **keyword** is the coordinates of the clicked position or a **keyword** for designated zones. The **zone tool** is further described in the [Zone tool](#) topic

## Important keyword addition tool properties

Property	Description
Label / keyword properties	These properties define the keyword to be recorded in the events list. Where the keyword property is not set, the label on the button will be used as the keyword. By setting these properties to different values, it is possible to tag a different keyword to the text displayed on the button.  In the case of the textbox tool, the keyword property can be used to define a default text box entry.
Category property	Defines the column of the events list where the keyword will be added. Without a category property the tool won't record its keyword.

These are the essential properties. Other properties are described in the [Properties list](#) topic.

## Other keyword addition tools

The **Team Manager**, **Team Group Box** and **Player List Selector** can also be used to add keywords to events. Their use is described in the topics [Team Manager tool](#) and [Team Group Box and Player List Selector](#)

### 9.3.7 The Zone Tool

The **zone tool** is used to record where an **event** takes place by clicking a position on an image instead of clicking a button. The keyword it adds can be either numerical coordinates or a user defined keyword or both. The default image is a soccer pitch but can be changed to any image.

## Preparing the Zone tool to record coordinates

1. Set the **Image** property: Any image can be used but it is not resized by Dartfish, so it should be created and edited at appropriate dimensions with image editing software before addition to the panel.
2. Define the grid: **Field height** and **field width** properties are used to define a grid e.g. a **field width** value of 3 would split a soccer pitch into three vertical sections or a **field width** = 100 would split an American football field into 1 yard sections.
3. Define the center of the grid: **Field center X** and **field center Y** properties are used to define the coordinates of the center of the grid. When the **zone tool** is clicked, zones to the left or above the central zone record a negative coordinate, zones below and to the right record a positive coordinate. If left at default settings, the origin will be at the top left corner of the image and the grid area at the top left will record the coordinates (1,1)

The image below shows the coordinates which are recorded when a zone tool with field height and width=3 and Field center X=2 and Y=2:

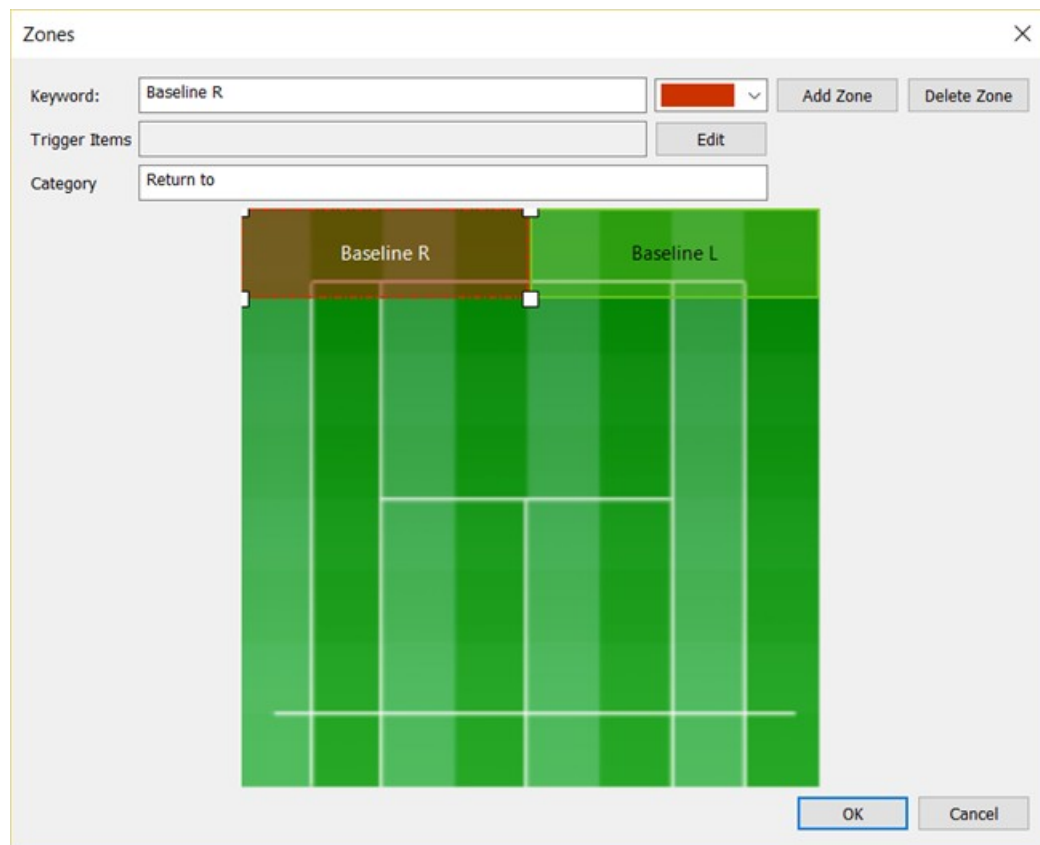


4. Set the category: as with all tagging tools, the zone tool requires a category in order to be able to record its keyword in the events list. The default category is 'Field position'

*! Each zone has equal dimensions. For sports with playing areas where the zones are not equal it will be necessary to create a zone tool image which distorts the zones to equal sizes. The grid is not shown. If it is required, it should be defined on the image itself using image editing software.*

## Preparing the Zone tool to record text keywords

1. Set the **Zones** property; a new window appears
2. Click the **Add Zone button**
3. Position the new Zone using drag & drop with the mouse
4. Drag the sizing handles in each corner of the zone to define the area
5. Define a **Keyword** property for the zone - this is what will be recorded in the events list when the zone is clicked
6. Define the **Category** property for the Zone. By default this will be the same as the category property for the Zone tool. It is possible to override this if a different category is to be used



7. Repeat for other zones

*! If zones overlap, the keyword of the topmost zone will be used*

## Recording both coordinates and text keywords



- When no text keyword zones are defined coordinates are recorded in the Events List in the column defined by the **Category** property.
- When text keyword zones are defined, coordinates are no longer recorded.
- To record both, set the **Coordinates Category** property. Doing so creates a new column in the Events List where coordinates are recorded.

## Event creation tool or keyword addition tool?

By default, the zone tool is a keyword addition tool. It can alternatively be used to create events. To do this set the **Action property** to 'Event' and define **Preroll** and **Duration** properties as for an event button.

### 9.3.8 Team Manager tool

If you have many players or several different teams to tag, you can use the **Team Manager** to manage a database of all teams and player names, then select only those players taking part in the game. The selected players can be represented on the panel by linking the following tools to it, using their **Team Manager Link property**:

- A **Team Group Box** tool - displays buttons representing each player selected in the Team Manager. See [Team Group Box](#) topic
- A **Player List Selector** - a team and up to ten players can be selected from lists produced by the Team Manager's database. Selections can be used as persistent keywords or linked to the keyword property of other tools. See [Player List Selector](#) topic.

## Preparing the Team Manager tool

Very little needs to be done with the **team manager** during tagging panel creation. Simply add it to your panel; teams and players will be added after closing the editor.

Setting the **category property** for the team manger is optional. If it is set then a keyword representing the selected team will be recorded when a player button is clicked.

## Team Manager databases


The teams and players that you add to a **Team Manager** tool are stored in a database file which is created automatically in the same folder and with the same name as the tagging panel. However, you may want to use a database previously created by you or another Dartfish user.

Use the **Database Editor tab** of the tagging panel editor to select the database file that you wish to use.

Each **tagging panel** can have only one **database** but have many **team managers** enabling selection from different teams and players.

## Adding teams and players

Teams and players are added outside the editor as described in the topic [Using the Team Manager](#)

 *To simplify the layout of a tagging panel it is usually best to put a team manager on a separate page of your tagging panel from the team group box and other tagging buttons. During tagging, most activities will not require frequent access to the team manager; perhaps only before the start of the game.*

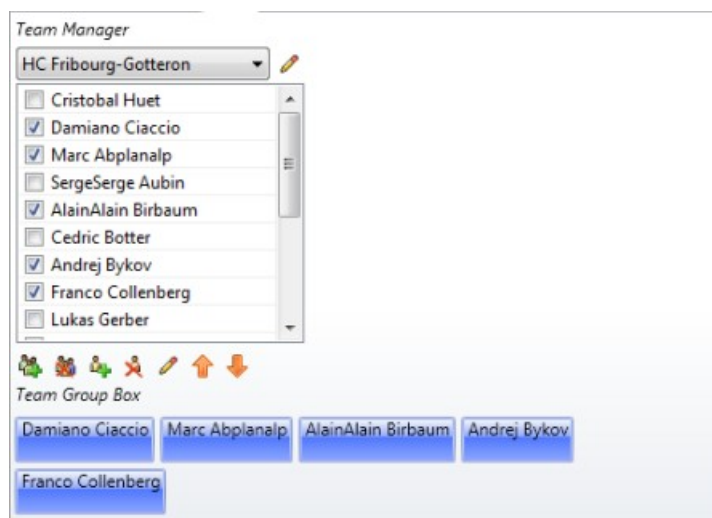
## Important Team manager properties

Property	Description
Label	Using a label helps to identify a team manger. This is useful when linking it to a team group box or when more than one team manger is being used.
Category property	The category property is not an essential property for a team manager. If used then a keyword representing the selected team will be added to the events list.

These are the main properties to consider. Other properties are described in the [Properties list](#) topic.

### 9.3.9 Team Group Box

A Team Group Box is a group box to which buttons are added by selecting players from a linked [Team Manager](#) as illustrated below. When there are many potential players which you may choose from, it enables you to display only the buttons required .



## Team group box buttons can add keywords or create events

Team group box buttons are **Keyword** buttons by default. Set the **Action property** to define whether the buttons function as **keyword buttons**, **persistent keyword buttons**, **event buttons** or **continuous event buttons**.

For example, a **persistent keyword button** might be used to tag the 'Server' to all the events created in a tennis game whereas **event** or **continuous event** buttons might be used to tag player possession in soccer.

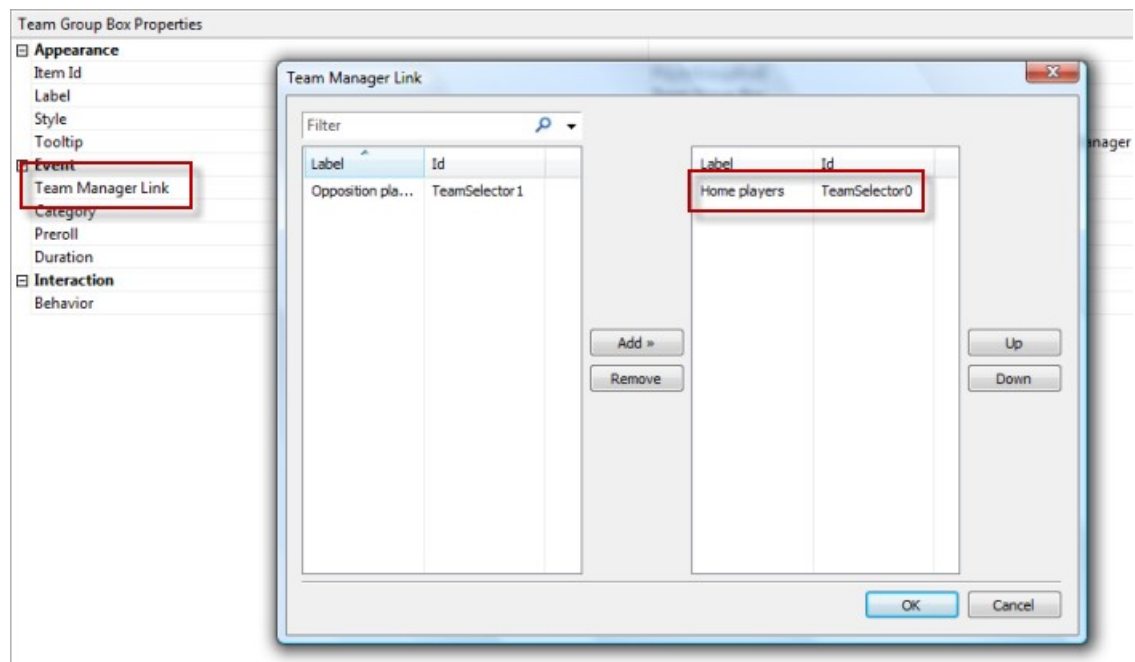
## Linking to a Team Manager

A Team Manager tool must be linked to a **Team Group Box** or a **Player List selector** tool which will display the selected player names. To do this, proceed as follows:

1. Select the **team group box** or **Player List Selector**.
2. Double click the **Team Manager Link property** to display the property editor window (as shown

below).

3. Select the **Team Manager** to be linked; it is identified by its label and Id.
4. Click the **Add button**. The Team manager on the right is that linked to the team group box.



**!** Buttons are not added to the Team Group Box in the tagging panel editor. They are added by selecting players from the Team Manager on the completed tagging panel. This allows players to be added or removed during the game.

## Important team group box properties

Property	Description
Team manager link	Establishes a link to a team manager and its database of teams and players.
Category property	Defines the column of the events list where the keyword will be added. Without a category property the tool won't record its keyword.
Action	Defines the button type used in a team group box. The default setting is keyword button but buttons can also be event buttons, continuous event buttons or persistent keyword buttons.
Duration/Preroll	If buttons are event buttons, duration and preroll properties should be set to define these features of the event. See the topic <a href="#">Event creation buttons</a> to learn more about these button types.

These are the essential properties. Other properties are described in the [Properties list](#) topic.

### 9.3.10 Player List Selector

A **Player List Selector** may be used for several outcomes:

- To add a selected player's name as a **persistent keyword** to events
- To add multiple player's names as a **persistent keyword** to events

- To add a player's name to the keyword recorded by another tool by referencing the **Player List Selector** from the **keyword property** of a button (see [Using variable keywords](#))

## Preparing a Player List Selector to record a player's name as a persistent keyword

Red contestant	GB Taekwondo	Ruebyn Richards
Blue contestant	Switzerland	Paco Cerletti

1. Set the **Category** property for the **Player List Selector** e.g. in the example above, the category "Red Contestant" might be used for the first Player List Selector.
2. Set the **Team Manager Link** property to link the **Player List Selector** to a **Team Manager** tool

## Preparing a Player List Selector to record multiple players' names as a persistent keyword

Suisse		
Players	Johann BERNOULLI	Max FRISCH
	Daniel BERNOULLI	Gottfried KELLER

1. Set the **Number of Keywords** property to the number of players required e.g. in the example above, the number of keywords = 5
2. Set the **Category property** for the Player List Selector e.g. in the example above, the category "Players" might be used
3. Set the **Team Manager Link** property to link the **Player List Selector** to a **Team Manager** tool (see the topic [Team Group Box](#) for more information on how to do this)

When the **Player List Selector** is used in this way, a single keyword is recorded, listing each player separated by a semicolon (;)


Player
Johann BERNOULLI;Max FRISCH;H. R. GIGER;Daniel BERNOULLI;Gottf...

## Preparing a Player List Selector to be referenced by another tool

The **Player List Selector** can also contribute the selected player(s) names to the **keyword** property of another tool, an **Event button** for example. In this case, the **Player List Selector** would be prepared as in either of the examples above BUT setting the category property is not required. To learn more about this, see the topic [Using variable keywords](#).

## Adding players to a Player List Selector

Players are added using the [Team Manager tool](#)

 *When you wish to define or describe the actions of a team of players, consider whether the **Team Group Box** may be a better choice of tool. It uses buttons rather than lists.*

## Important Player List Selector properties

Property	Description
Team manager link	Establishes a link to a team manager and its database of teams and players.
Category	Defines the column of the events list where the selected player will be added as a keyword
Number of keywords	Up to 10 players can be selected from one team
Sort Items	Defines whether players are listed alphabetically or in the order in which they appear in the Team manager


These are the essential properties. Other properties are described in the [Properties list](#) topic.

### 9.3.11 The Filename Template tool

The **Filename template** tool enables tagging panel creators to control the **file name** used to save recordings made when using live tagging. When the user clicks the button it sets the file name for the next video recording.

To use a filename template:

1. Add a **filename template tool** to the tagging panel
2. Set the **label property** to indicate the function of the button
3. Set the **File Name Template property** to the desired file name

 *The file name template property can be set to a variable value based on the selection from a Player List Selector tool. See the topic [Using variable keywords](#) to learn more.*

### 9.3.12 PTZ move button

This button is used by those who are using network cameras with pan-tilt-zoom (ptz) functionality. The PTZ move button is used to select preset camera positions.

To use a PTZ move button

1. Define position presets on your camera
2. Set the **PTZ preset name property** of the button to the PTZ preset to be used, as shown in the image below.

Group Box

Defence

Midfield

Attack


Goal mouth

SHORTCUT KEY	
Orientation	Vertical
Image	
Image Size	Fixed Size
Style	Default
<b>▣ Action</b>	
PTZ Preset Name	Defence
<b>▣ Interaction</b>	
Trigger	

Important team PTZ move button properties

Property	Description
Label	Information for the user to identify the button
PTZ preset name	Defines the camera preset which will be selected when the button is clicked. The values entered must correspond with those created on the camera

These are the essential properties. Other properties are described in the [Properties list](#) topic.

 *The trigger property can be used to activate other tools and vice versa e.g. when a 'corner' button is clicked on a soccer tagging panel it could trigger the 'goal mouth' PTZ move button.*

### 9.3.13 Properties list

By clicking on any item on the **tagging panel editor**, its **properties** are displayed in the **Properties pane**. The properties of each tagging panel element are used to alter their appearance and behavior.

Most tools have three crucial properties which you should set:

1. **Label** – the text that identifies what this tool does.
2. **Keyword** – the keyword that will be assigned to the event (same as label by default)
3. **Category** – the category to which the keyword will be assigned. Think of the **category** as being the **column heading** of the **Events List** in which **keywords** will appear. (see [Planning a tagging panel](#) for help to plan the categories that you need).

Properties which alter appearance:

Property	What it does...	Applies to...
<i>Label</i>	Sets the text that is displayed on the item	All
<i>Tooltip</i>	The tooltip is the explanatory text that appears when the mouse cursor is pointed at a button. Use this to explain the function of each button.	All event creation and keyword addition tools
<i>Image</i>	An image can be displayed on a tool to help identify the event or value that it represents.  As the Zone tool is based on clicking an image, this property is essential.	Buttons, group boxes, zone tool
<i>Orientation</i>	For a button this defines whether the image is displayed above or to the side of the label.  For a group box this controls whether buttons are laid out vertically or horizontally.	Buttons, group boxes
<i>Style</i>	Sets the color of a button	Buttons
<i>Label size</i>	Makes the text on the button bigger or smaller to improve readability, reduce space or to make buttons bigger for touch screen tagging	All tools with a label property
<i>Label style</i>	Makes the text on the button bold to improve visual ergonomics or to make buttons bigger for touch screen tagging	All tools with a label property

<i>Show label</i>	Defines whether the label is visible or not	Buttons
<i>Margin</i>	Defines whether additional space is added between labels and the edge of buttons. Remove the margin to make buttons require less space	Buttons
<i>Image size</i>	There are two possibilities: the image is a fixed size limited by the size of the button or it is the size of the original image	Buttons, group boxes
<i>Button size</i>	Used to define whether all buttons have variable width based on the label size, or the same width, based on the widest label	Group boxes
<i>Visibility</i>	Defines whether a group box and its content are visible. This may be used to hide tools which will be triggered automatically by other buttons. Or, simply to suppress the display of buttons rather than deletion when not required	Group boxes

### Properties which affect behavior:

<i>Category</i>	The category property defines the events list column into which a tagging tool's keyword will be placed.  Each tool inherits its category property from the group box in which it is placed. It is therefore an efficient way to categorize buttons of the same category by placing them in the same group box. Override the inherited category by setting the category property for individual tools.	All
<i>Keyword</i>	Defines the keyword which will be used to describe the event in the events list. For buttons, the keyword will automatically set to the same value as the label property, however it is possible to record a different keyword if desired. For example, the label might be an abbreviation of the keyword.	All event creation and keyword addition tools
<i>Preroll</i>	Defines the time before an event creation tool is clicked that will be included in the event. Preroll ensures that you don't miss the start of the action.	All event creation tools
<i>Duration</i>	Duration is the duration of the event that will be tagged when this button is clicked. This time includes any preroll that has been set. If the event is not of fixed duration then a <i>continuous event</i> button should be used to manually mark the beginning and end of an event.	All fixed duration event creation tools
<i>Offset Start</i>	Offset Start - the amount of video before or after a <i>continuous event</i> button being clicked on that will be included in the event. This ensures that you don't miss the start of the action. If a negative number is used, the start of the event is set before the tool is triggered, if positive it will be afterwards	Continuous Event Buttons
<i>Offset End</i>	Offset End - the amount of video before or after a <i>continuous event</i> button being clicked off that will be excluded at the end of an event. If a negative number is used, the end of the event is set before the tool is	Continuous Event Buttons



	triggered, if positive it will be afterwards	
<i>Target</i>	Defines where the keyword typed into a text box will be applied:  Event category - the keyword is added to the events list  Video clip category - the keyword is added to video clips captured with live tagging and appears in the Dartfish library	Text box
<i>Event color</i>	Color codes events. Color coding is used to help distinguish events from each other in the events list and also on dartfish.tv after publishing games or highlights movies	Event buttons
<i>Action</i>	Defines the button type of a team group box.  The default is for a team group box to contain keyword buttons but this property can be used to select any button type.	Team group box
<i>Description</i>	Used to automate the addition of a description to the description field of the events list. The description field is used to annotate events with free text description and is particularly intended to add information to events being published to dartfish.tv	Buttons
<i>Team Manager Link</i>	Used to link a Team Group Box to a Team Manager tool.	Team group box, Player list selector
<i>Number of keywords</i>	Used by the Player list selector to define how many players can be selected	Player list selector
<i>Field width, field height, field center X, field center Y</i>	Used by the zone tool to define the layout and coordinate map of the zone grid.  See <a href="#">The Zone Tool</a>	Zone tool
<i>PTZ preset name</i>	Used by the PTZ Move button to identify the IP camera preset to activate	PTZ move button

### Properties used to automate tagging (see [Automating tagging](#) )

<i>Item Id</i>	A unique identifier for each tool. It is used to identify tools in macro scripts and when setting trigger properties	All
<i>Shortcut Key</i>	Rather than clicking buttons on a tagging panel, using the keyboard Shortcut Key property for event or value buttons can be much more efficient. Note that these shortcuts are displayed in parentheses in each button	All event and value tools
<i>Reset Category</i>	Tools with a reset category property can be used to deactivate other continuous event or persistent value tools. When this tool is clicked, all other buttons using the category specified are reset.	All buttons
<i>Trigger</i>	The trigger property is a list of one or more tools that can be activated when this button is clicked.	All buttons
<i>Visibility</i>	This property is used to hide a group box and all its	Group boxes

	contents. Used when the action of the hidden tools will be defined by the tagging panel creator and shouldn't be modified by the user or when it will be triggered by other buttons.	
Game Time	Used to control a Game Timer. See <a href="#">Using the Game Timer</a>	All buttons

 *Clicking on a property title in the properties panel displays a description of that property. Double clicking on the property title allows you to change that property.*

### 9.3.14 Automating tagging

Large tagging panels with many buttons present two problems to the user:

1. Many mouse clicks might be required to record an **event**, making it hard to keep up with a fast moving game
2. It becomes more difficult to locate the buttons you want to use.

This topic explains properties and features which assist with these problems

#### Reset Category property

Tools with a **reset category property** can be used to deactivate other **continuous event** or **persistent keyword buttons**. When the tool is clicked, all other buttons with the specified **category** are reset.

This behavior is equivalent to that of **continuous event buttons** (see the topic [Event creation buttons](#)) which automatically deactivate all other **continuous event buttons** sharing the same **category**, except that the **reset category property** can deactivate buttons from any other category that you specify.

*! Be careful with spelling and use of spaces - the reset category you specify must match the category of the tools that you wish to reset. However the case used is unimportant.*

#### Trigger property

The **trigger property** is used to activate or deactivate other tools. This property specifically identifies which tools will be triggered by selecting them from a list.

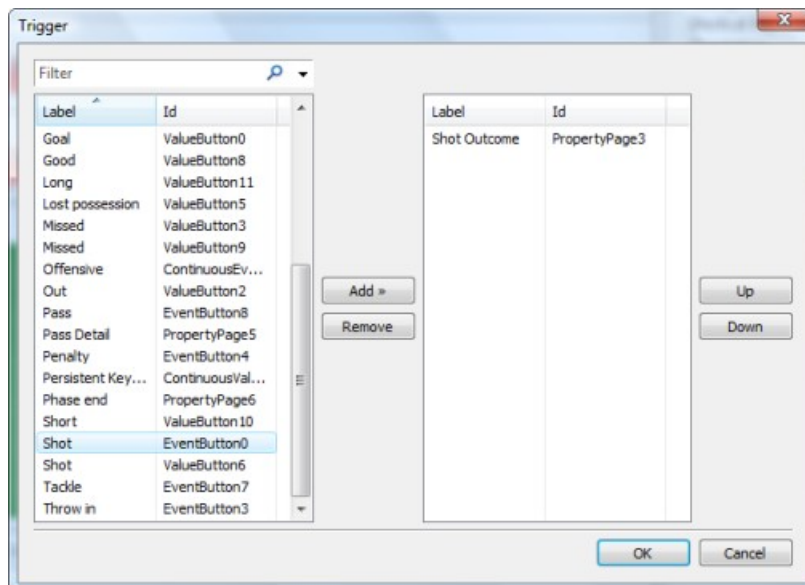
Examples of the use of the **trigger property** can be seen in some of Dartfish's built-in tagging panels where clicking an event button triggers a page of a **tab group box** revealing **keyword buttons** associated with that event.

For example, when a scoring event is tagged the **trigger property** could be used to activate the **tab group box** which contains a **score tool**.

To set a trigger property:

1. Select the tool which will trigger other tools.
2. In the **properties panel**, double-click the property heading **Trigger**
3. In the trigger dialog (see below) select the tool(s) which will be triggered. Tools are identified by both their label and Id; be careful to select the correct tool in the case where more than one tool has the same label

4. Click the Add button
5. Repeat as often as required to create a list of tools which will be triggered
6. Use the Up and Down buttons to specify the order in which tools will be triggered

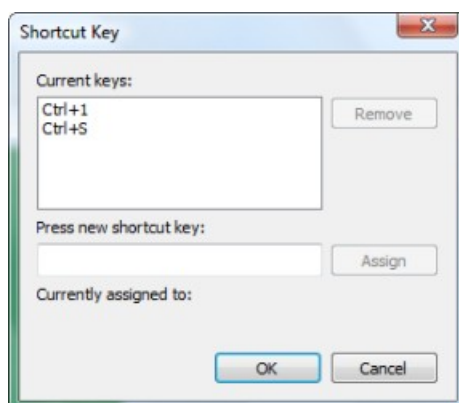


## Shortcut key property

Shortcut keys are used to **trigger** buttons without having to use a mouse. This can be useful because once you know which keys to press tagging can be much quicker.

To set a shortcut key:

1. In the properties panel, double-click the property heading **Shortcut key**
2. Type a key, or combination of keys, on the keyboard
3. Click the **Assign** button. This must be done before clicking **OK**



**!** As you can see [here](#); more than one shortcut key can be assigned; and any combination of keys can be used e.g. 'S' might be used for a home team shot and 'ctrl+S' might be used for an opposition shot.

### 9.3.15 Using variable keywords

A simple macro can be used to generate a variable keyword or category for a tagging tool.

#### Syntax

**\$(Item\_Id.property[#])**

Example: \$(teamlistselector0.keyword1)

- **Item\_Id** is a unique identification which can be found in the first row of the **properties list** of any tool. Here, it can only refer to a **Player List selector**
- **Property** can be either "keyword" or "category". When **keyword** is used, the player selected from the **Player list selector** is the variable keyword generated. When **category** is used, the team is the variable keyword generated
- **#** is a number from 1 to 10 which represents which of up to 10 keywords it is possible to select from a **Player List selector**. This is optional, if omitted it is assumed to be 1 and refers to the first keyword.
- Text and macros can be combined together to create the desired result, as shown in the examples below

#### Limitations

- Only **keyword** and **category** properties can be set with a macro. The exception to this is the **Filename Template Button** which can also have its **Filename template property** set.
- Only a **Player List Selector** can be the source and only its **category** or **keyword** can be referenced.

### Example 1 - Personalized event buttons

In the following example, a macro is used to personalize the keyword property of the event buttons:

Tagging buttons

Player actions

Team Dartfish player

Pro players

Pascal Binggeli

Opposition player

Pro players

Serge Ayer

Winners and Errors

Team Dartfish Winner

Team Dartfish Error

Opposition winner

Opposition error

#	Position	Duration	Player actions
1	5 min 39 sec	10 sec	Winner Pascal Binggeli
2	10 min 55 sec	10 sec	Error Pascal Binggeli

The macro used to record these keywords in the above events list is, for example:

Keyword = Winner \$(TeamListSelector0.Keyword)

Result = Winner Pascal Binggeli

### Example 2 - Filename Template tool

Continuing the example above, if a **filename template tool** (see the topic [The Filename Template](#)

[tool](#)) has the following macro for its **Filename template property**:

keyword = Semi-final \$(TeamListSelector1.Keyword) versus \$(TeamListSelector0.Keyword)

result = Semi-final Serge Ayer versus Pascal Bingelli


### 9.3.16 Recording time of day

Events are time stamped with video position. You may also wish to record the time of day with an event. This can be done by including a simple macro script in the **Keyword property** of a button

#### Syntax

##### \$(WallClock)

For example, the Keyword property 'Goal \$(WallClock)' would record a keyword such as 'Goal 15:32:25'.

 *If, in the above example, you wished 'Goal' and '15:32:25' to be recorded as separate keywords, two buttons would be required; perhaps an Event button with keyword 'Goal' and a Keyword button with keyword \$(WallClock). In order to reduce the number of clicks required, the Event button should trigger the Keyword button.*


### 9.3.17 Recording game time

Events are time stamped with video position. You may also wish to record the match or game time. This is the time . This can be done by including a simple macro script in the **Keyword property** of a button

#### Syntax

##### \$(GameTime)

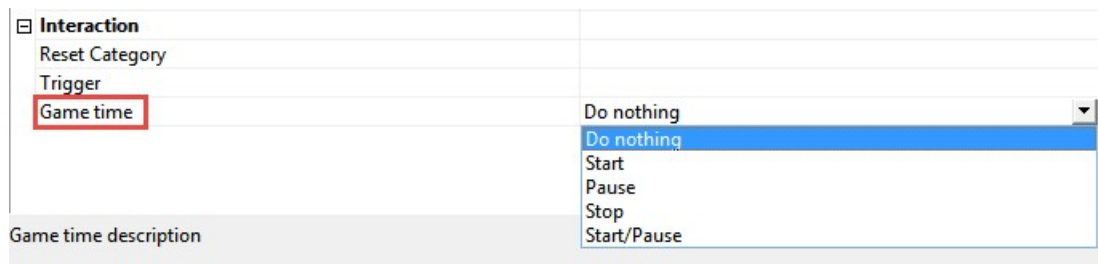
For example, the Keyword property 'Goal \$(GameTime)' would record a keyword such as 'Goal 15:32:25'.

 *If, in the above example, you wished 'Goal' and '15:32:25' to be recorded as separate keywords, two buttons would be required; perhaps an Event button with keyword 'Goal' and a Keyword button with keyword \$(GameTime). In order to reduce the number of clicks required, the Event button should trigger the Keyword button.*

## Game Timer

To effectively use the \$(GameTime) script you must also display and use the **Game Timer** to set the current game time, allow for breaks in play etc (see the topic [Using the Game Timer](#))

In addition to the Game Timer's controls, it may also be controlled using **Event** or **keyword buttons** on the tagging panel by setting their **Game Time property**. Use the button to execute one of the actions shown below:



### 9.3.18 Saving Tagging Panels

To save your tagging panel:

Select **File > Save** (or **File > Save As...**) from the **menu bar** of the **Tagging Panel Editor** window.

*! It can be seen from this process that tagging panels are saved as files, stored independently of Dartfish software and the video file(s) being tagged. Therefore the important factor in choosing a file name and location for a tagging panel is simply that the user knows where to locate it.*

### Distributing tagging panels

Because a **panel** is saved as a file it can be easily distributed to other tagging users, however the following items should also be distributed if they have been used in a panel:

1. The **tagging database** - if a team manager tool has been used a database file will have been created with the same name and in the same location as your tagging panel. It will have the following icon:



2. **Image files** - any images included on your tagging panel are referenced as external files

## 9.4 Tagging video

In essence, the basic tagging process is simple; you see an event, you click an **event button** then you click **keyword buttons** to add further details. The features that you might find on a tagging panel are described in this section (see [Using tagging panels](#))

Tagging can be applied in the following ways:

- [Tag Live](#) - use this mode if you want to tag the action directly from a video stream, either as it happens or from a tape recording (play back mode). In either case you will be tagging and capturing video to your hard drive simultaneously.
- [Tag Video Clip](#) - use this method if the video clip is already on your computer. In this case, your task is to playback the video clip, locate an event and tag.
- **Mixed tagging** - you do not always have time to fully and accurately define events as they happen, or you may miss events. In this case, you are able to combine Tag live and Tag Video Clip by playing back the video clip and editing/adding events after the game.

The result is a list of **Events** (displayed in the **Events List**, see [The Events List](#)) which can be played individually or in sequence.

Events can also be created by importing them from "character separated value" (CSV) files created by other applications, e.g. sport specific statistical tools or the Dartfish Note App for smartphones and tablets (see [Importing events](#) ).

### 9.4.1 Using tagging panels

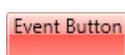
#### Opening panels

Access to tagging panels is described in the topic [The Tagging Panel](#).

#### Tagging tool and feature summary

Below is a summary of tagging tools that may be found on a tagging panel. However, Dartfish tagging panels are highly variable and versatile, if the use of the tagging panel you use is not obvious it may be necessary to ask for instruction from its creator.

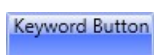
**Event button** - clicked once to create an **event** with a fixed **duration**. Default color red.



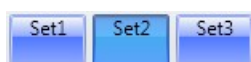
**Continuous event button** - appearance identical to **event buttons** but when clicked, it remains activated until clicked a second time. Used to tag events of unknown **duration** such as possession or phases of play.



**Keyword button** - keyword buttons add **keywords** to **events**. They are not used to create events. Default color blue.



**Persistent keyword button** - appearance identical to **keyword buttons** but when clicked, it remains activated until clicked a second time. Used to add a **keyword** to many events. Must be activated before events are created and remains active until clicked a second time.



**Text box** - a **persistent keyword tool** which adds of a variable keyword to events as they are created.

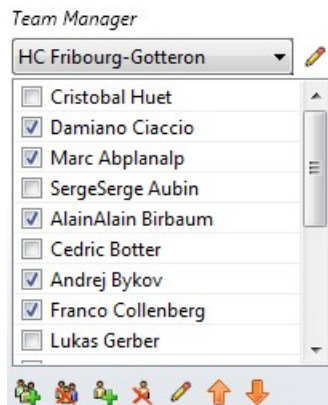
Match description	French open 2012 fin
Player	Andy Murray
Opponent	Roger Federer

**Score panels** - a persistent keyword tool which adds the current score to events as they are created.





**Team manager** - Displays a variable set of tagging buttons in a **Team Group Box** or a set of teams and players in a **Player List Selector** according to which team and players are selected. Has buttons to enable addition of teams and players.

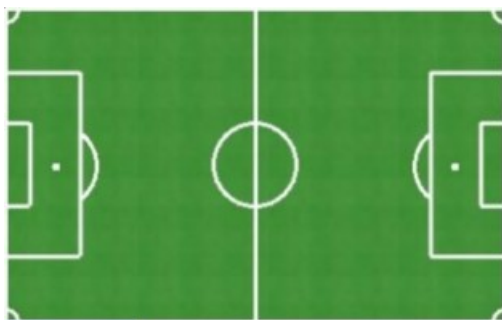


**Player List Selector** - adds a **persistent keyword** based on the player selected.



**Tab group box** - used to simplify the layout of a panel by grouping related buttons together. Click the tab to see the buttons; often selection of a tab is automated by the action of another button.

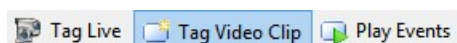
**Zone tool** - records the coordinates of where the image is clicked. Can be either used for event creation or keyword addition.



**File name template tool** - used to set the filename of recordings made during live tagging.

## 9.4.2 Tag Video Clip mode

Use this mode to tag video files already existing in the **library** - it has been imported from the camcorder or other storage media. Tag video clip mode is selected by clicking the button at the top left of the video display.



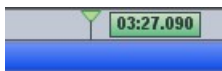
Tagging a video clip principally consists of these steps:

1. Loading all the video clips to be tagged into the **Tray** (see the topic [The Library](#) in the Tagging workspace section)
2. Selecting **Tag Video Clip** mode
3. Finding the relevant **position** on the video clip (see below).
4. Tagging an event in the video clip by clicking on an **event button** on the **tagging panel**.
5. Adding further **keywords** to that event by clicking on **keyword buttons**.

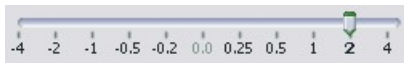
## Finding the relevant position

Compared with [Live tagging](#) where events must be created in real time and in order, tagging a video clip allows the user greater flexibility. There are many ways to quickly navigate the video clip find the positions where events take place:

- Drag the **playhead** to quickly position the video clip. Watch the time information next to the playhead as you drag it. It can help you position the video if you approximately know when an event took place.




- Use the **speed control** to fast-forward and/or fast-rewind the video. To do this, set the speed to values greater than 1 (or -1 for fast-rewind) and play the video. Whenever you see an event, either click on an **event button** or **pause** the video first, and then select the appropriate buttons to tag the event.



- Position the **playhead** to a previously tagged event and continue tagging from there. The way to do this depends on the tagging mode being used:

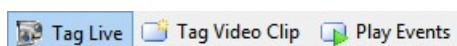
In **Tag Video Clip mode**, click the event once to move the playhead to the start of that event

In **Play Events mode**, double click the event then switch back to **Tag Video Clip mode** to continue tagging. The playhead remains at the position of the selected tagged event.

 *When the action is too fast to tag as the video plays, the video can be quickly paused by tapping the space bar on the keyboard. Now add tags before tapping the space bar a second time to resume playback.*

### 9.4.3 Tag Live mode



**Tag live mode** allows you to tag while recording video from a live video stream. This allows tagging to take place during the game and be ready for analysis immediately afterward. **Tag live mode** is selected by clicking the button at the top left of the video display (see [The Video Panel](#)).




## The Tag live interface

The interface is identical to the **Video Recorder** interface: Read the section [Video Recorder: capture a video stream](#) in the Importing video files chapter to learn how to use it.

## Tag live process

1.  Click the **Record button**. The video clip starts being captured to your hard disk. The live feed is displayed in the **Video display**. In tag live mode it is not possible to tag without first starting to record.
2. Tag an event by clicking an **event button** on the **tagging panel**.
3. Add further **keywords** to that event by clicking on **keyword buttons**.
4.  Click **Stop Recording** at the end of the game. A new clip is saved on your hard drive and a thumbnail appears in the **Tray**.

 *It takes practice before you are able to accurately tag all events as they happen. Start simply by tagging "important" events without adding too many additional values. Read the section [Review & edit events](#) to see how you can edit and/or add events after they have taken place.*

### 9.4.4 Time shifted recording and Live Delay

**Time shifted recording** allows you to review earlier parts of the recording while continuing to record. This is possible when the video source provides a DV, HDV, M2TS, MP4 or H.264 video stream.

#### To use Time Shifted Recording

When recording in [Tag Live mode](#), you may:

- Click the **time line** to move the **playhead** to that point of the recording
- Select an **event** from the events list to view it
- You may also use the replay controls to navigate the recording e.g. by using the jog wheel.

#### Ending Time Shifted Recording

To return to 'live' view of the video feed from the camera, click the **Live button**



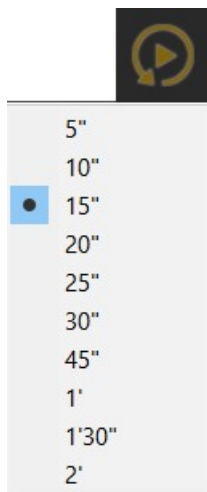
#### Live Delay

Live delay is a special instance of Time Shifted Recording initiated by clicking the Live delay button:



This moves the Playhead to a pre-defined position before the end of the recording. Tagging with Live Delay allows you to watch the live action, make decisions on how best to tag it, then tag the delayed video when it appears on your PC screen some seconds later.

Configure the required amount of delay by right-clicking the Live Delay button and choosing a delay interval:



### 9.4.5 Videoless tagging with Note Pro

The **Note Pro module** is available with the TeamPro editions of Dartfish and it provides an alternative tagging method which does not require the presence of video. Instead of time-stamping events by a position in a video, a timer is used.

Note Pro creates a **Notebook** file, the events from which can be imported into a video file using the **Tagging module** OR can be opened in Note Pro to view content and create frequency tables.

In providing videoless tagging, Note Pro fulfills a similar role to the **Dartfish Note** mobile app but with the benefit of the more sophisticated tagging panels of Dartfish.

#### Opening panels

Your first step is to create or open a tagging panel. Access to tagging panels is described in the topic [The Tagging Panel](#). Creation of a tagging panel is described in the topic [Creating Tagging panels](#)

#### Defining Notebook properties

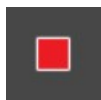
Properties such as **file name** and where the Notebook will be located are defined before recording starts, using the Properties panel. See [Setting file properties](#) and [Selecting a recording location](#).

#### Recording events:

Now you are ready to start recording using the following buttons



Starts the timer. Choose when to start carefully. Particularly if intending to import the Notebook into a video, you should start recording at a moment which will be easily identifiable on the video recording



Stops the timer



Resumes the timer

The timer must be running in order to use the tagging panel to create events. As you do so, events will appear in the Events List. How to tag is described in the topic [Using tagging panels](#)

## Saving the recording

The Notebook is automatically saved according to the file properties defined before recording is started.



*One Notebook should be made per video file. Otherwise synchronization of events and video is difficult.*

## Distributing Notebooks

Notebooks are saved as files on your PC and these files can be distributed for use by other Dartfish users.

A nice alternative to email or memory stick is to upload to dartfish.tv. To do this click the Share Game button:



## Clearing the events list/Starting a new recording

Click the **New Game** button:

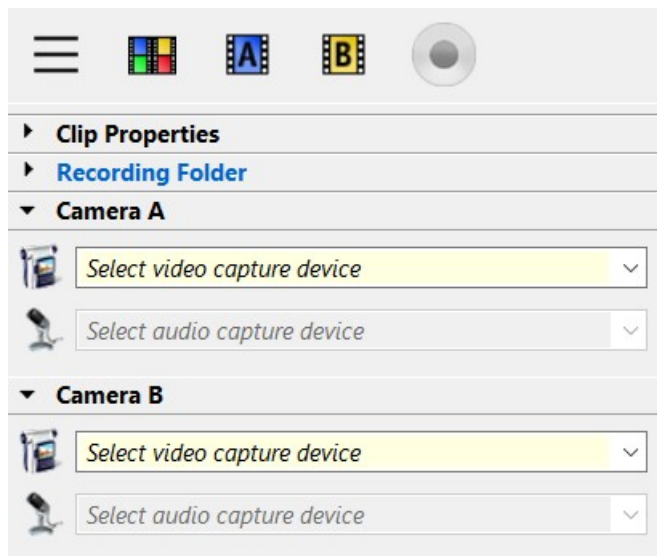



### 9.4.6 Dual camera recording

This feature is only available in the **Video Replay edition** of Dartfish. With this edition, it is possible to record, and tag video from two cameras simultaneously.

#### To select and use two camera inputs



1. Select [Tag Live mode](#)
2. Select the two camera inputs from drop-down lists in the settings section below the video display:





3. Click the **record** button  to simultaneously record both video streams (learn more in the topics [Tag Live mode](#) and [Video Recorder: capture a video stream](#))

## To select which input is displayed

The video display will initially show the input from the first camera (**Camera A**)

- Click the  button to show the input from **camera B**
- Click the **Split screen** button  to show the input from both cameras

 Depending on the time taken by your computer to process the video from each camera, there may be an observable lag between the video displays from each camera. Generally this will be too short to be of concern for many tagging activities. However, if timing is more critical, we suggest switching on both video sources simultaneously. Dual camera recording does not have a way to synchronize the inputs.

 When live tagging, events are added to Video A's events list. When recording is stopped, events are copied from Video A to Video B. Thereafter the events belong to each video independently so editing the event in one video does not edit it in the other.


### 9.4.7 Using the Team Manager

#### Adding teams and players

Adding players and teams to the Team Manager is not completed in the tagging panel Editor but after the tagging panel has been created and saved. Buttons at the bottom of the Team Manager allow you to (left to right) add/remove teams and players from the team manager.



You may want to create more than one team if you tag several teams or squads but at least one

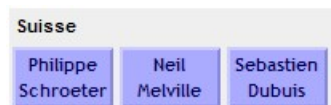
team must be created before adding players. After adding teams and players, their properties (such as team/player name) may be altered by clicking the  button next to the item to be edited.

## Selecting players

Players are selected/deselected by 'ticking' the box next to their name. If the box is ticked, a button representing the player will appear in the team group box linked to this player manager control.



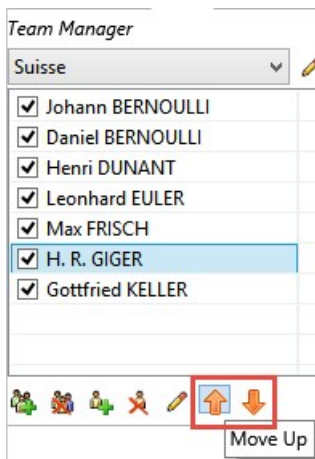
Philippe has been ticked, so...



... a button representing him appears in the team group box

## Order of players

Buttons below the **Team Manager** control the order in which players are listed.



The order that players are listed in the **Team Manager** also defines the order that they will appear in the **Team Group Box** and is also the default order for player lists in the **Player List Selector**.

## Using other Player Database files

When a tagging panel containing a **Team Manager** tool is first saved, a **database** with the same name but the extension '.taggingdb' is created. You can find it in Windows File Explorer, represented by the following icon:



The database is then automatically updated as each team or player is added. Distributing your database for others to use, it is easily done by distributing this file. Other users can then use the



file are follows:

1. Open the **tagging panel** in the **Tagging Panel Editor** window
2. Select the tab **Database Editor** at the top of the editor window
3. Click the **Open button** and browse for the tagging database file

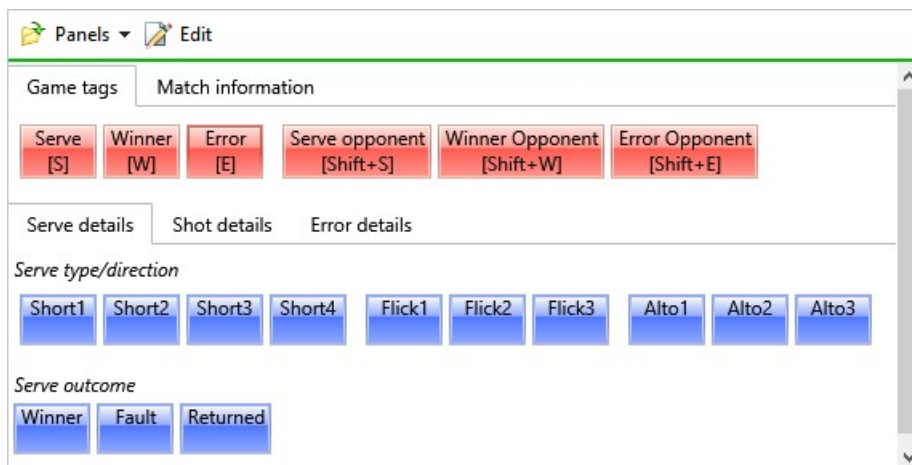
### 9.4.8 Using keyboard shortcuts

Using the keyboard to activate tagging tools can be much more efficient than using the mouse. Buttons which have a **keyboard shortcut** display it below the label; it is used simply by pressing the keys indicated.



### Activating panels to use keyboard shortcuts

Keyboard shortcuts only work when the tagging panel is active. Look for a green line at the top of the panel and if the line is red, click anywhere on the panel to activate it.



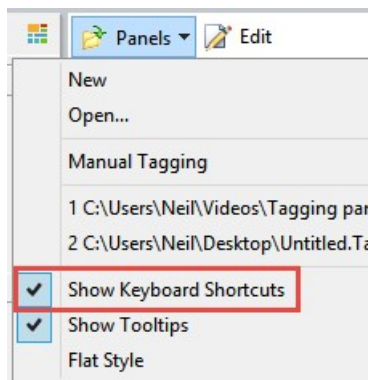
Be particularly careful when starting and stopping recording or using the **Play/Pause** controls - clicking anywhere outside the panel will cause that line to turn red again and keyboard shortcuts will not work. The restriction of use of keyboard shortcuts to when the tagging panel has focus allows the use of keyboard shortcuts which might have other functionality in Windows or Dartfish Software.

Score panels can also have keyboard shortcuts but they are not displayed - use the editor to discover whether the score can be updated with a keyboard shortcut or seek advice from the tagging panel's creator.

### Hiding shortcut keys from buttons

After memorizing shortcut keys it may be advantageous to remove the display of the shortcut from the buttons label. To do this:

1. Click the **Panels button** at the top of the **tagging panel**
2. Click the option *Show Keyboard Shortcuts* to deselect it
3. Repeat these steps to show shortcuts again



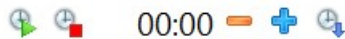
### 9.4.9 Using the Game Timer

The game timer functions as a match clock. Start it at the beginning of the game, pause it during breaks in play and stop at the end.

It is used in conjunction with a tagging tool where the **Keyword property** contains a [\\$\(GameTime\) macro string](#). For example, a "Shot" button might record the game time when the shot took place.

#### Displaying the Game Timer



1. Click the **Panels** button at the top of the tagging panel
2. Select *Show game timer* from the menu
3. The **Game Timer** is displayed in the tagging panel toolbar:



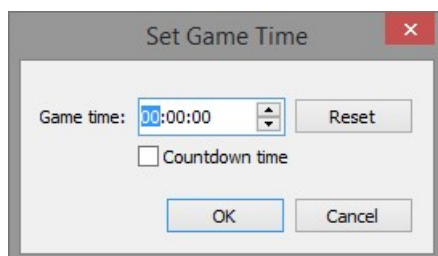
#### Using the Game Timer

The game timer is a simple stop clock with **Start**, **Pause** and **Stop** capabilities.

However, it does have features which allow adjustments to the time:

- Click the  and  buttons to increase or decrease the time by one second per click (for example, if you are late to pause the timer during a stoppage in play)
- Set a specific time by clicking the **Set** button.

The **Set Game Time** dialog allows you to set the clock to a time of your choosing



#### Using a countdown timer

You can also use the Game Timer to show the amount of time remaining in a game or period. To

do this:

1. Click the **Set** button
2. Set the **game time** to the total duration of the game or period
3. Select the **Countdown time** check box (see above image)

## Limitations

As the Game Timer is a simple stop clock it does have some imitations, particularly when used with the [Tag Video Clip mode](#) when the optimal method of tagging may be non linear and not in real time. Also be aware of the following:

- No adjustment for **Preroll**. Whatever is on the clock when a button is clicked is what gets recorded.
- No link to video time. If the video **position** is edited, game time values are not adjusted. The [methods used to adjust position and duration](#) cannot be used to edit game time.

### 9.4.10 Manual tagging

Manual tagging divides a video clip into a series of sequential **segments** where adding a new **segment** defines the end of the previous one. Each **segment** is described by a **label**, **description** and **keywords** which are manually entered as required.

**Events** can be added to **segments**. Their duration is defined by the point at which they are added until the end of the segment. They inherit all of their segment's **keywords** as well as being further described by their own **keywords**.

## Typical uses

1. Manual tagging is a simplified form of tagging where it is not necessary to create a tagging panel and keywords can simply be added as required.
2. Segments are useful for dividing a video into sections. Their label, description and keywords are especially useful when they are exported as video clips or the tagged video is uploaded to dartfish.tv.
3. Segments can also be considered as a way of tagging events in the same way that a text box adds a persistent keyword to events on a button-based tagging panel.

To understand its intended use it may help to know its origins, it was created for The City of Lausanne to distribute video of council meetings on dartfish.tv. The segments are of each session and events are used to identify minuted details. Their dartfish.tv channel uses the keywords and descriptions applied by manual tagging to enable citizens to search for discussions. However, Manual Tagging has applications as a tagging tool for many other situations.

## Creating Segments

1. Click the tagging panel's **Panels button** and choose *Manual Tagging* from the menu
2. Click the **New Segment tab** of the tagging panel
3. Enter a **label** and a **description**. This information is used to describe the Segment when published to dartfish.tv
4. Segments are defined by adding **categories** and **keywords** to the table. One segment can be defined by many keywords.
5. When the segment is fully described, click the **Add button** to create an event in the **Events list**.
6. Repeat steps 3-5 to add further segments. Each one added alters the previous segment's duration so that each segment ends as the next begins.

## Creating Events

1. Click the **New Event** tab of the manual tagging panel
2. Enter a **label** and a **description**. This information is used to describe the event when published to dartfish.tv
3. Events are defined by adding **categories** and **keywords**.
4. When the **Event** is fully described, click the **Add button** to create it in the **Events list**.
5. When a new segment is added, the durations of all the events from the previous segment are set.

## 9.5 Importing events

You can create events by importing them from files produced by other software provided that the data contains a column of time-stamps representing the **position** of each **event**. This will be useful to the following groups:

- Those using the Dartfish tagging Apps for Apple and Android mobile devices. These apps allow you to create events using a tagging panel similar to a Dartfish panel, and then import the results into a tagging events list.
- Those that already use data logging software which creates statistics but does not relate the event to video or allow visual analysis. If this software can create a CSV file then the results can be imported into Dartfish.
- It is also possible to use data exported from certain other tagging software. At time of writing these include products from Opta and Sportstec and in each case the exported data is either not in a .csv format or the layout or data is not optimal for use with Dartfish. To use this data a product specific add-in must be installed as described in the topic [Importing events using add-ins](#)

### 9.5.1 Importing dartfish.tv Notebooks

This import method is used to import events from tagged videos and Notebooks on dartfish.tv. Notebooks are produced by the Note Pro module or Dartfish Note mobile app, which is a hand held tagging panel, very similar to the Dartfish tagging panel, but can be used without video and therefore simplifies the equipment required for tagging live. Learn more about Dartfish Note in its [knowledgebase](#).

### To import events

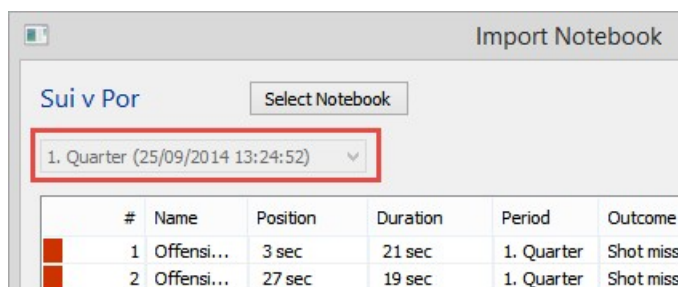
1. Pause the video or set the **cue in** to an easily distinguishable moment in the video. Doing so will simplify the synchronization of data and video. This can be one of the following possibilities:
  - The moment representing zero time on your imported data (when you started the Dartfish Note timer). **Pause** the video or set the **cue in** at that point.
  - An easily identifiable tagged **event**. If the event timestamp was added using a preroll, position the playhead at the start of the event rather than when the button was clicked
2. Click the **Import/Export button** located in the **Events list toolbar** and select *Import Notebook...* from the menu.



3. Sign in to dartfish.tv. Access to Notebooks and the ability to download them requires special access rights. See the Dartfish.tv [knowledgebase](#) for more details on this

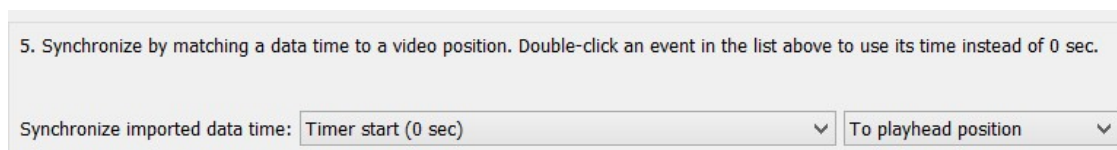
4. Select the channel from which you wish to access the video or Notebook
5. Click on the thumbnail of the video or Notebook from which you wish to import events (documents can be searched by filename or keyword). Then click the **Select button**
6. Choose which Period's events to import.

Dartfish Note has the ability to record multiple period's events for a game. For example, the first and second half of a soccer game can be recorded in a single Notebook. If you video recorded the game as one recording then you can import the events from all periods. If you stopped recording at the end of each period, you must choose which period's events to import for the videos files for each period.



This Notebook has one period therefore the selection is unavailable

7. Select how the imported data is to be synchronized with video. The method depends on the choices made in step 1 and are described in the topic [Synchronizing imported events](#).

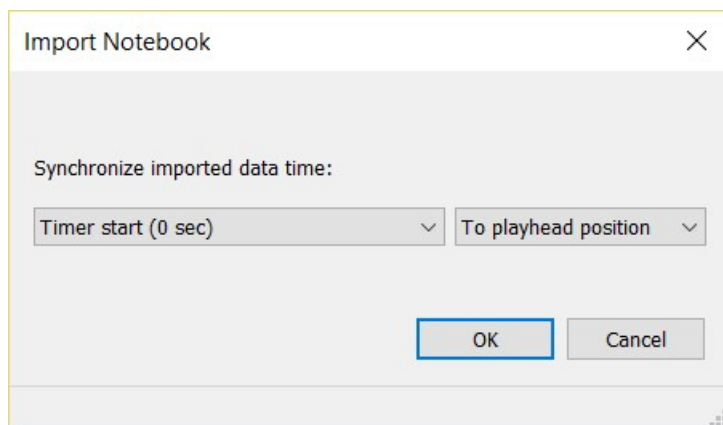


## 9.5.2 Importing Notebook files

In addition to importing Notebooks from dartfish.tv, it is also possible to import events from Notebook files in the Library or on disk.

One way to do this is to use the method described in the topic [Importing events from files](#) however the more convenient way is to open the Notebook directly from the library as follows:

1. Position the video **playhead** at the position where the Note Pro timer was started
2. Find the Notebook in the **Library**
3. Double-click the file to open it. The synchronization dialog appears:



4. Click the **OK button** to confirm the default synchronization option
5. The Notebook's events are imported and displayed in the **Events List**

### 9.5.3 Importing events from files

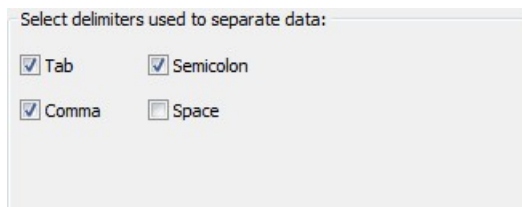
This import method is used to import from a wide variety of software tools which can create a character separated value (CSV) output. This includes the Dartfish Easytag app which has been superseded by Dartfish Note but is still available from the App Store and Google Play. This method is also used to import Notebooks created by the Note Pro module.

#### To import events

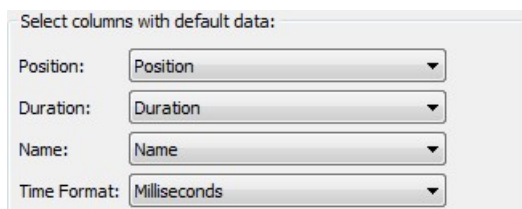
1. Pause the video or set the **cue in** to an easily distinguishable moment in the video. Doing so will simplify the synchronization of data and video. This can be one of the following possibilities:
  - The moment representing zero time on your imported data. For example, if you started your Dartfish Easytag timer at the start of the game, **pause** the video or set the **cue in** at that point.
  - An easily identifiable tagged **event**. If the event timestamp was added using a preroll, position the playhead at the start of the event rather than when the button was clicked
2. Click the **Import/Export button** located in the **Events list toolbar** and select *Import Events...* from the menu.



3. Locate and open the .csv file. The **Import Events wizard** then opens.
4. Choose the **delimiters** which separate each column of data in the imported file. If unsure, experiment with the various choices remembering that more than one delimiter might be used. The data preview will reveal when your data is successfully separated into columns.



5. Select which column heading in your data corresponds to the event time stamp or **Position**. Optionally, columns representing the **duration** and **name** categories can also be selected if the data contains them.



6. Select the **Time Format** used in the imported data. The preview shows the original data in brackets next to the time interpreted by Dartfish according to the selected time format: If the format is not correct, the times shown in the position and duration columns will all be "0" or appear very obviously wrong.

**!** EasyTag time format is hh:mm:ss.ms and is automatically selected



- Decide which **categories** and **events** to import by ticking or unticking the headings at the top of each column and side of each event.

Select the columns to be imported as category for the events. Select All Unselect All

<input checked="" type="checkbox"/>	#	Name	Position	Duration	<input checked="" type="checkbox"/>	Direction	
<input checked="" type="checkbox"/>	1	NET	0 sec (440)	5 sec (5000)			
<input checked="" type="checkbox"/>	2	NET (1)	7 sec (6600)	5 sec (5000)			Double fault
<input checked="" type="checkbox"/>	3	LONG	32 sec (32000)	5 sec (5000)			
<input checked="" type="checkbox"/>	4	BACKHAND	39 sec (38800)	7 sec (7000)			
<input checked="" type="checkbox"/>	5	Brychta	43 sec (43160)	6 sec (6000)	Team 1	CROSS COURT	UNFORCED E
<input checked="" type="checkbox"/>	6	BODY	1 min 12 sec (...)	7 sec (7000)			
<input checked="" type="checkbox"/>	7	Jayant Mistry	1 min 20 sec (...)	6 sec (6000)	Team 1	DOWN THE LL...	WINNER

- Select how the imported data is to be synchronized with video. The method depends on the choices made in step 1 and are described in the topic [Synchronizing imported events](#).

5. Synchronize by matching a data time to a video position. Double-click an event in the list above to use its time instead of 0 sec.

Synchronize imported data time: Timer start (0 sec) To playhead position

## Quick Import

Quick Import is a tool allowing you to quickly repeat an import using exactly the same settings as previous imports. To use Quick Import, proceed as follows:

- Set the **Playhead** or **Cue-in marker** as described in step 1 above.
- Select *Quick Import...* from the **Import/Export** menu located in the **Events list toolbar**.



- Locate and open the .csv file.
- The data is imported.

**!** If Quick Import is used when no previous imports have been made then the full Import Events options will be displayed

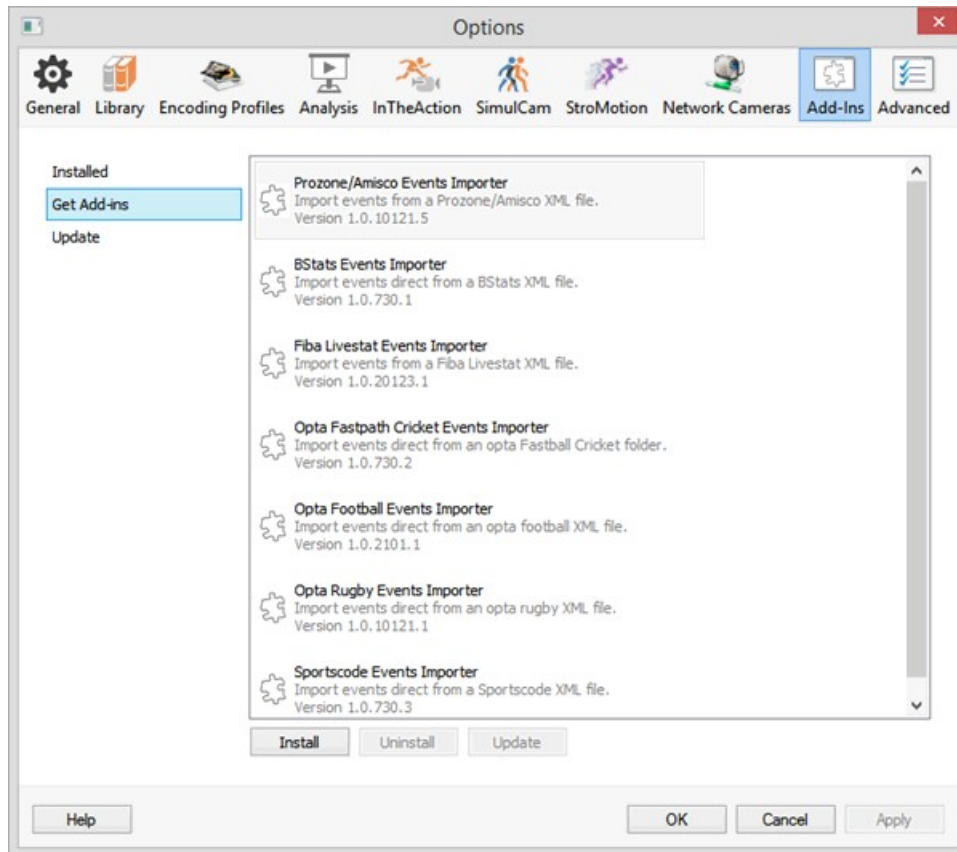
### 9.5.4 Importing events using add-ins

Although Dartfish can import .csv data into its events list (see [Importing events](#)) the data exported from some sources is not always optimal for use with Dartfish. For certain products, **add-ins** are available which process the data during import.

## Installing add-ins

- From the **menu bar**, select *Tools > Options*
- Select the **Add-ins** section





3. Select the **Get Add-ins** option
4. Choose an add-in from the list of those available
5. Click the **Install** button

*! Dartfish may add or remove add-ins. The list shown above is only representative*

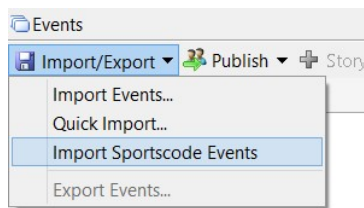
## Importing events using an add-in

First you will export a data file from the third party software. Refer to its documentation to discover how to do this. Some software may offer multiple outputs, in this case, refer to the Dartfish *Options* to discover which file type is supported



Now use Dartfish as follows:

1. **Pause** the video or **set the cue in** to an easily distinguishable moment in the video. Doing so will simplify the synchronization of data and video. This can be one of the following possibilities:
  - The moment representing zero time on your imported data.
  - An easily identifiable tagged event. If the event timestamp was added using a preroll, position the playhead at the start of the event rather than when the button was clicked
2. Click the **Import/Export** button located in the Events list toolbar and select *Import [.....] Events*



3. Locate and open the data file. The **Import Events wizard** then opens.
4. The correct **delimiters**, default data and **time format** will be automatically selected, but you may wish to choose which **categories** and **events** to import by ticking or unticking the headings at the top of each column and side of each event.

Select the columns to be imported as category for the events. Select All Unselect All

<input checked="" type="checkbox"/> #	Name	Position	Duration	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Direction	>>
<input checked="" type="checkbox"/> 1	NET	0 sec (440)	5 sec (5000)			
<input checked="" type="checkbox"/> 2	NET (1)	7 sec (6600)	5 sec (5000)			Double fault
<input checked="" type="checkbox"/> 3	LONG	32 sec (32000)	5 sec (5000)			
<input checked="" type="checkbox"/> 4	BACKHAND	39 sec (38800)	7 sec (7000)			
<input checked="" type="checkbox"/> 5	Brychta	43 sec (43160)	6 sec (6000)	Team 1	CROSS COURT	UNFORCED E
<input checked="" type="checkbox"/> 6	BODY	1 min 12 sec (...)	7 sec (7000)			
<input checked="" type="checkbox"/> 7	Jayant Mistry	1 min 20 sec (...)	6 sec (6000)	Team 1	DOWN THE LI...	WINNER

5. Select how the imported data is to be synchronized with video. The method depends on the choices made in step 1 and are described in the topic [Synchronizing imported events](#).

5. Synchronize by matching a data time to a video position. Double-click an event in the list above to use its time instead of 0 sec.

Synchronize imported data time: Timer start (0 sec) To playhead position


### 9.5.5 Synchronizing imported events

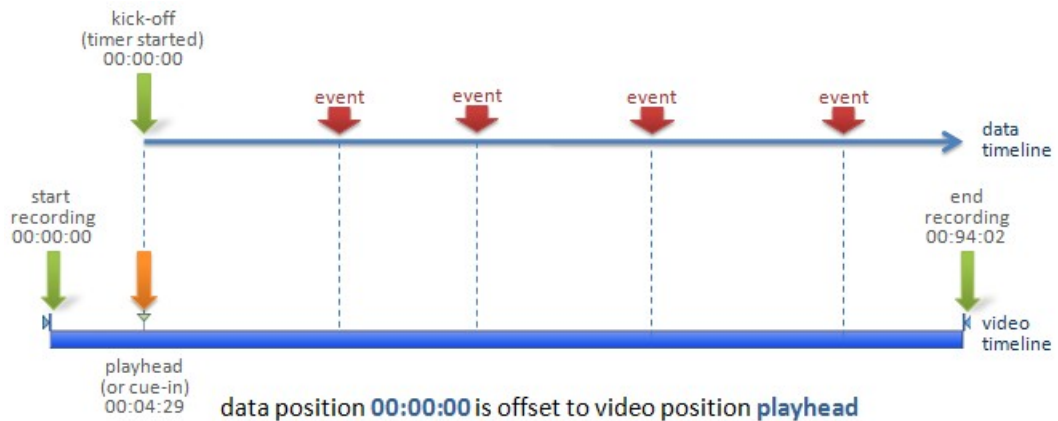
Unless video recording was started at time 00:00:00 of the imported data, it will be necessary to synchronize data with the video.

This is done by matching a time in the imported data to a **position** in the video denoted by one of the following: the start of the video clip, the **Playhead** position or the **Cue-in** marker position. Consider the following common examples:

#### Synchronizing using the data's zero time

The simplest case to synchronize is when the timer of data logging software is started at an easily identifiable moment that will appear in the video. For example, the kick-off in a soccer game (as illustrated below).

 *If you need to start the timer before kick-off or where there is no easily identifiable moment before the first tag, you can raise a hand in front of the camcorder as the timer is started.*



To synchronize data in this case:

1. Before import set the **Playhead** (or **Cue-in** marker) to the video position where the timer started.
2. During import leave the data position at 0 sec and select which video position that corresponds to.

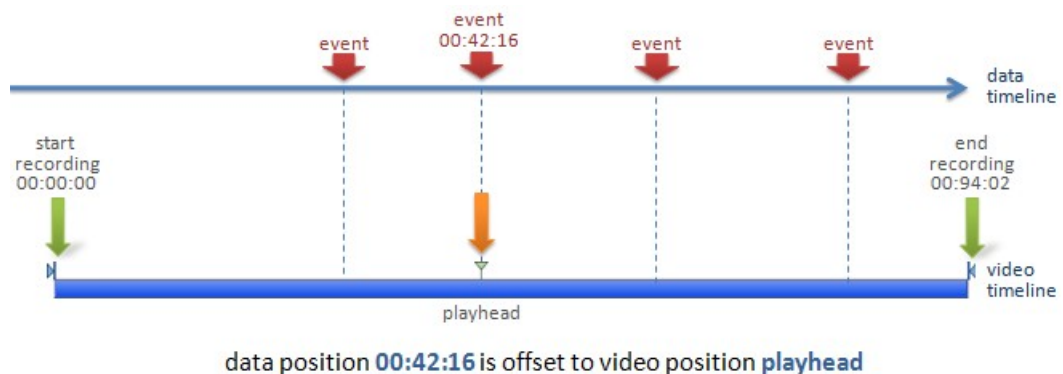
5. Synchronize by matching a data time to a video position. Double-click an event in the list above to use its time instead of 0 sec.

Synchronize imported data time:



## Synchronizing using an event position

In the case that time zero for the imported data is unknown or otherwise not possible to identify on the video, you can synchronize the position of an event with a video position as illustrated here:



To synchronize data in this case:

1. Before import set the **Playhead** to the start of the event that you will use for synchronization.
2. During import find the same event in the data preview and double-click it to select it
3. The data synchronisation position is set to the time of the selected event

5. Synchronize by matching a data time to a video position. Double-click an event in the list above to use its time instead of 0 sec.

Synchronize imported data time:



## Synchronizing events after import

Synchronizing events, or adjusting synchronization, after import can offer more versatility than synchronizing during import. For example, it is possible to give a different offset to different types of event.


How to adjust position and duration of events is described in the topic [Editing event timings](#)

*! Synchronizing modifies the time stamp for all events. It is therefore important that the time coding on your data remains comparable throughout the video clip. This means that if you pause the Easytag or data logger timer during time-outs you also have to simultaneously pause video recording or vice versa. If you record the game as multiple video files you will have to import the events of each file as separate imports. For convenience it is best to record both video and the timing of events continuously and for as long as reasonably possible during the game.*

## 9.6 Review & edit events

**Play Events** mode is used to review and edit tagged events. To use **play events** mode you click the **Play Events button** on the mode bar above the video display.



If it is not already displayed you also need to open the **Events List** by clicking the **Events List button**  on the **views bar** above the video display.

### 9.6.1 Selecting events from the Events List

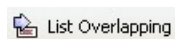
#### Selecting and playing events

- Single click selects the clip - can be used in either **Play Events** or **Tag Video Clip** modes
- Double click selects and plays the clip and switches to **Play Events** mode

#### Sorting events

Events may be sorted by clicking any of the **category headings** at the top of each column of the events list

#### List Overlapping



Remember that events can overlap. For example, in soccer a shot at goal event will overlap with a goalkeeping event. This button displays events that overlap with the currently selected event.

#### Selecting multiple events

By selecting more than one event you can indicate which events in your events list you want to play, edit or delete. Selecting several events is possible by the following methods:

- Select several isolated events – hold down the control CTRL key on the keyboard and click each event in turn.
- Select a group of sequential events – click the first event in the group then hold down the SHIFT key and select the last event in the group.
- Select all events – click any event and then use the keyboard shortcut CTRL + A

### 9.6.2 Editing keywords

An event's keyword information can be added to or changed in 2 ways:

- Method 1: Use the **tagging panel** – when an event is selected in the **events list**, its keywords may be changed using the tagging panel's keyword addition tools.
- Method 2: Click the right mouse button while pointing at the keyword to be changed and choosing *Edit* from the quick menu. A new keyword may be typed or selected from a list.



💡 *Selections of multiple events can be edited simultaneously using either of these methods*

### 9.6.3 Editing event timings

#### To edit position and duration using the time line

The following method allows you to make modifications by selecting a start and finish point for the event in reference to the video.

1. Activate the **Maximize play range** function, found to the left of the **Timeline** to zoom in on the event.



2. Click on an **event** in the **Events list**. The event corresponds to the play range; the pale blue area between the **Cue In** and **Cue Out** point.




3. Drag the **Cue In** and **Cue Out** markers (the blue triangles in the image above) to modify the event's **position** and **duration**.

! *Maximize Play Range view immediately readjusts making it appear that nothing has changed but note the new position or duration displayed in the Events list.*

#### To edit position and duration using the events list

1. Select the **events** to be modified.

2. Click the right mouse button while pointing at the **duration** of one of the selected events and then choosing *Edit* from the quick menu.
3. Edit the existing time or type a new one.
4. Press the ENTER key to confirm the change

 *It is not necessary to enter a new duration in the full time format displayed. Simply entering the value '10' would set the duration to 10 seconds.*

## To adjust timings using the events list

The video **position** of a single event can be modified as described above but when timing of position or duration require adjustment it is possible to add or subtract time in the following way:

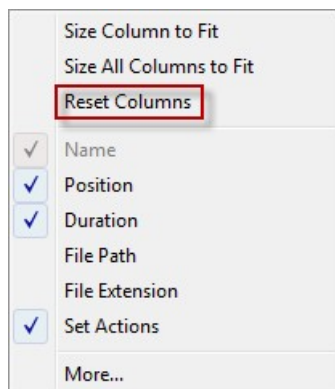
1. Select and edit events as described previously
2. Key a + or - in front of the new value depending on whether time is to be added or subtracted  
For example, entering +5 would add 5 seconds to the selected times; entering -1:30 would remove 1 minute 30 seconds; and entering +1:25:00 would add one hour and twenty-five minutes.

 *If unsure about how to apply the correct time format, simply edit the existing value and place a + or - in front.*

### 9.6.4 Hiding unused categories

The **Events List** continues to display **categories** used by previous tagging projects even if they are not used by the current tagging session. The categories may be removed from the events list as follows:

1. Right-click any column heading, and
2. Choosing *Reset columns* from the quick menu that appears.



### 9.6.5 Reviewing events and video during live tagging

When using **Tag Live mode** it is possible to replay video while continuing to record. This will allow you to:

- Tag events that were missed and edit incorrectly tagged events
- Review the action to make informed coaching decisions during the game



## To review video

1. Click and drag the **Playhead** to the position on the **time line** you wish to review.
2. The recorded video plays from this point but the **video display** controls can be used to control playback frame-by-frame etc

## To review an event

1. Click the **event** in the **Events List** to select it
2. The **Playhead** jumps to the start position of the **event** on the **Timeline**

*! It is not possible to enter Play Events mode while continuing to record*

## Returning to viewing live

The Live tagging video display controls has a Live button which returns the playhead to the end of the timeline i.e. the live view



*! It is only possible to use time shifted recording when the video source provides a DV, HDV, M2TS, MP4 or H.264 video stream*

## 9.7 Filtering and viewing statistics

Tagging will typically result in a long list of events. Locating particular events or analyzing their frequency using the events list alone would be a difficult task. There are three methods for searching for events:

### Table filter

The **table** creates frequency and duration summaries by cross-referencing keyword categories. This can be used both to filter and to generate statistics. The **table** is described in the [following topic](#).

### Simple filter

Events						
<div> <span>Import/Export</span> <span>Publish</span> <span>Storyboard</span> <span>Show All</span> <div>Filter events</div> </div>						
#	Name		Position	Duration	Player	Team
1	Tackle Lost		36 sec	5 sec	Ben Taylor	Team4
2	Tackle Lost		39 sec	5 sec	Guilherme Reis	Team4
3	Tackle Lost		40 sec	5 sec	Anteneh Lemma	Team4

The **events list toolbar** has a simple filtering tool which displays events based on an inputted value.



## Keyword filter

1. Click a **keyword** from the list. The **events list** immediately displays events matching the selection.
2. Select additional keywords by holding down the CTRL key as keywords are clicked. When keywords within the same category are selected they behave as an AND search but when selected from different categories an OR search is the result.

Search keywords			
📁	<b>Action</b>	79	
🔍	Tackle Won	20	25%
🔍	Aerial Challenge Los	16	20%
🔍	Tackle Lost	16	20%
🔍	Aerial challenge won	15	18%
🔍	Foul	7	8%
🔍	Shots off goal	3	3%
🔍	Shots on goal	2	2%
📁	<b>Player</b>	79	
🔍	Jean Tshipaka	12	15%
🔍	William Njamen	9	11%
🔍	Andrew Konopelsky	7	8%
🔍	Luke Mullohand	7	8%
🔍	Per Engebretsen	6	7%
🔍	Sean Flatley	6	7%
🔍	James Goodwin	5	6%
🔍	Brian Ramsey	4	5%
🔍	George Davis IV	3	3%
🔍	Guilherme Reis	3	3%
🔍	Thomas Mclean	3	3%
🔍	Aly Hassan	2	2%
🔍	Anteneh Lemma	2	2%
🔍	Ben Taylor	2	2%

The results of the **simple filter** and the **keyword filter** combine.

Search keywords

>>

Import/Export Publish + Storyboard Show All njamen

Action	Duration	Action	Player	Team	
Tackle Won	20	12 sec	Shots off goal	William Njamen	Team5
Aerial Challenge Lost	16	12 sec	Shots on goal	William Njamen	Team4
Tackle Lost	16				
Aerial challenge won	15				
Foul	7				
Shots off goal	3				
Shots on goal	2				
Player	79				
Jean Tchikompake	12				

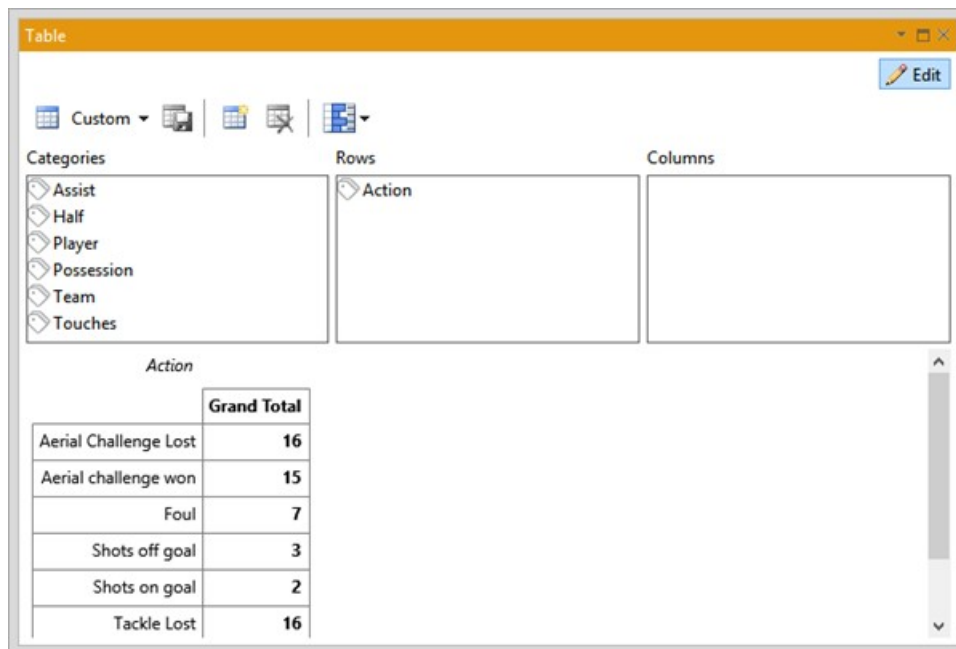
### 9.7.1 The table search

**Tables** derive statistics from **events** and also allow filtering for the events relating to those statistics. The default location for the **Tables** panel is to the left side of the **Events list**, docked with the **Keywords panel**.

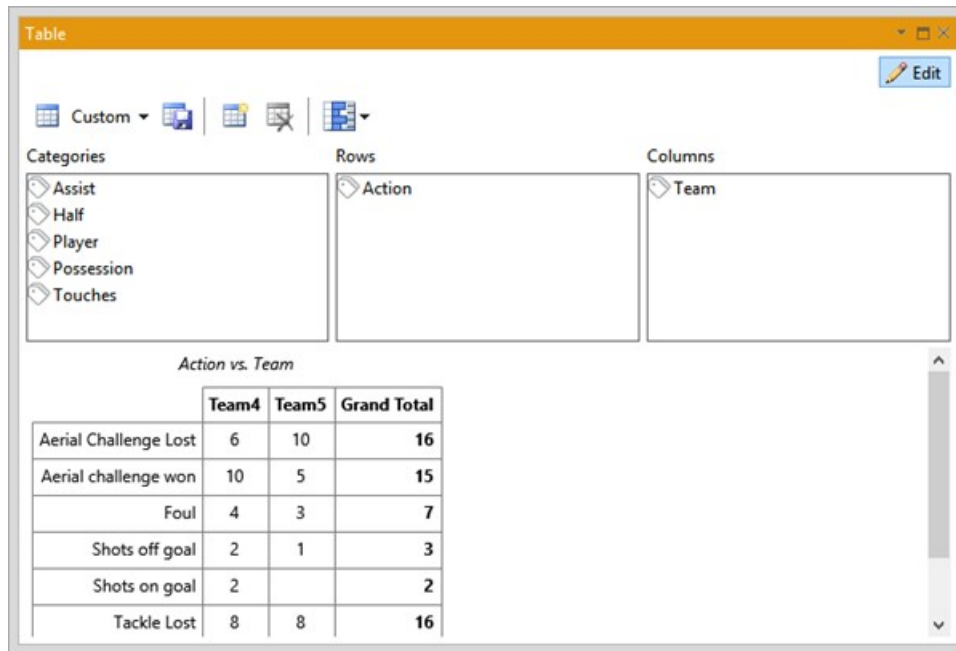
#### Creating a table

**Tables** are constructed using the **categories** of **keywords** featured in the **Events List**. To create a table:

1. Click the **Edit button** (Shown top right of the tables panel in the image below)
2. Drag and drop a **category** from the **Categories list** on the left into the **Rows** area: A list of corresponding keywords and frequencies of events using them is displayed:



3. Drag another **category** from the **Categories list** into the **Columns** area: A cross-referenced list of frequencies for each of the keywords in each category is displayed:



Table

Custom [Icons]

Categories: Assist, Half, Player, Possession, Touches

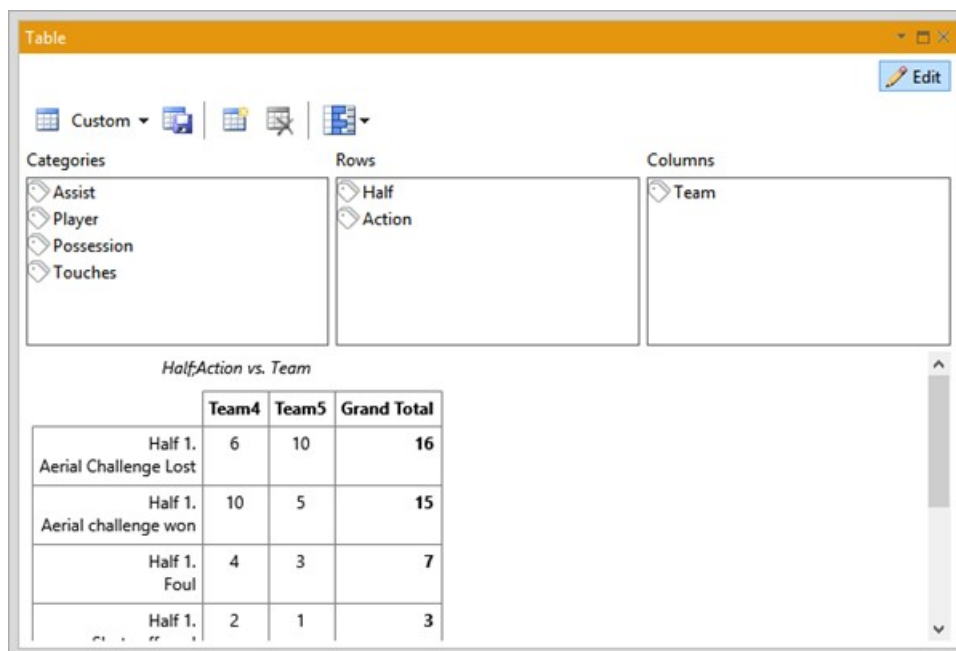
Rows: Action

Columns: Team

Action vs. Team

	Team4	Team5	Grand Total
Aerial Challenge Lost	6	10	16
Aerial challenge won	10	5	15
Foul	4	3	7
Shots off goal	2	1	3
Shots on goal	2		2
Tackle Lost	8	8	16

4. Additional **categories** can be added to either **Rows** or **Columns** areas to create groupings of keywords



Table

Custom [Icons]

Categories: Assist, Player, Possession, Touches


Rows: Half, Action

Columns: Team

HalfAction vs. Team

	Team4	Team5	Grand Total
Half 1. Aerial Challenge Lost	6	10	16
Half 1. Aerial challenge won	10	5	15
Half 1. Foul	4	3	7
Half 1. Shots off goal	2	1	3

5. Click the **Edit** button to hide the editor and maximize the use of space to display the table

 Large tables may not be easily viewed in the default tagging layout. For example, it may be better to dock the table panel with the events list or even make it 'float' over the application. You may wish to review the topic [Repositioning panels](#) in the Getting Familiar with Dartfish chapter.

## Removing a category from a table

Categories can be removed from the **Rows** and **Columns** areas by:

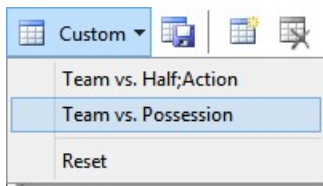
- Double-clicking them
- Drag & drop to the **Categories** area

## Saving a table

Click the **Save button** to save a table layout



Previously saved tables can be recalled by clicking the **Custom button**



## Displaying multiple tables simultaneously

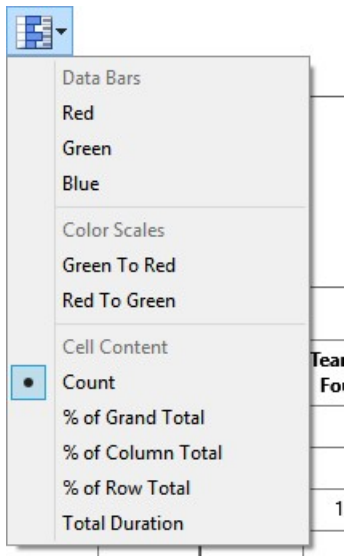
1. Click the *New Table* button



2. Construct the new table as previously

## Changing the displayed data and formatting the table

By default, tables display frequency statistics. However you can also represent data as a **percentage** of frequency or of total **duration**. Data may also be represented visually in various ways. All of these choices can be made using the **Format Cells menu**:



## Filtering using a table search

Clicking any number or heading of the table filters the events list to match your selection

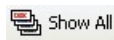
## Using table data in other applications

Data can be easily reused in other applications e.g. a match report or presentation. To do this:

1. Right click a **table**
2. Choose your copy method of choice from the quick menu (as CSV data or as an image)
3. Paste the data or image into the other application

### 9.7.2 Undo searches

Searches reduce the event list to displaying only search results. To see all events, click the **Show all** button above the **events list**.



## 9.8 Producing & sharing tagging resources

Having tagged a video you may want to share that work with others. It is easily possible to share:

- Game video complete with tags
- Individual events - as separate video clips or as a compiled highlights video.
- The events list - can be exported as a .CSV file
- The tagging panel - tagging panels are saved as files. To give others access to your tagging panel, simply give them the file. They use the Create Events pane to open the tagging panel.

Dartfish offers the possibility to publish to a range of outputs including CD/data DVD and online to your own FTP site or to Dartfish TV; our own media sharing platform (see [www.dartfish.tv](http://www.dartfish.tv)). To get a more comprehensive view of publishing from Dartfish see the Dartfish outputs - publishing & sharing chapter.

### 9.8.1 Sharing game video

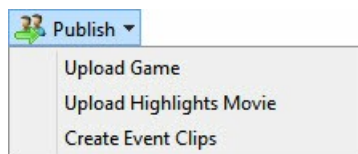
There are two possibilities depending on whether you want to share video with or without its tagged events or

1. **Share** video clips from the **Tray**. This method also shares the **.dartclip file** for each clip. The **dartclip** contains **events list** data so this is the best method to share video with other Dartfish users. Of course you can also **Share** match video with non-Dartfish users but if you want them to see tagged events it would be better to use the method below. Learn more about sharing video clips from the **Tray** and all the possible output destinations in the Publishing and Sharing chapter.
2. **Publish** from the **Events List** - send video and events to your **myDartfish Smart Cloud** or your organisation's **dartfish.tv channel**. This option is perhaps the more versatile as you can choose whether or not to include events with the upload and, if the game was recorded as multiple videos, the publish process will render all files as a single dartfish.tv document.



## To publish game video to dartfish.tv

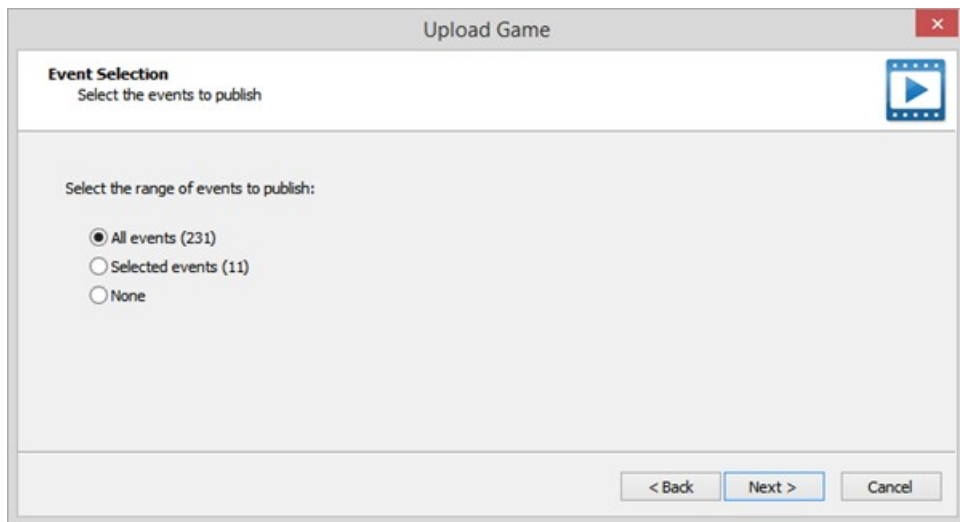
1. Load game video(s) into the Tray.
2. Filter for and/or select the events to be published with the game video (optional).
3. Click the **Publish button** on the **Events List** toolbar.



4. Select *Upload game...* The **Publishing Wizard** opens.
5. The subsequent steps of the Wizard are similar to those of other dartfish.tv publishing processes (see [Upload to dartfish.tv](#) in the Dartfish outputs - publishing & sharing chapter). with an additional step for event selection:

## Event selection

The **Publish Game wizard** includes an **Event selection** step which controls which, if any events are included with the published game.



The options are:

- **All events:** all events currently displayed in the **Events List**. If a search or filter has been applied, **All Events** refers to the contents of the filtered list.
- **Selected events:** Only events which have been selected by you. This allows you to be more selective about which events are included in the upload
- **None:** You don't wish those who will view the game video to be able to see the tagged events

## To use tagged video downloads from dartfish.tv (dartfish users)


Dartfish users can use tagged video from dartfish.tv. To do this see the topic [Download from dartfish.tv](#) in the Importing Video Files chapter.

## To use tagged video downloads from dartfish.tv (non-dartfish users)

Those who do not have Dartfish software can still benefit from tagged video offline using the **Dartfish Express App**.

Simply tap the **Download** button when viewing a tagged video from a mobile device. The video will automatically open in the App and events can be filtered and played.

Learn more about Dartfish Express in its [knowledgebase](#)

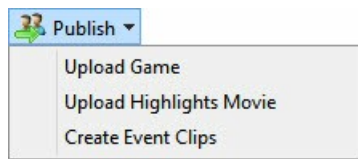
 *When Live tagging, choose to encode video using the dartfish.tv encoding profile (see [Using an encoding profile](#) in the Importing video files chapter). Both the originally high quality recording and the encoded one will be tagged and the publishing time for the game will be substantially reduced*

## 9.8.2 Creating highlights movies

### To publish a highlights movie on dartfish.tv

1. Load game video(s) into the Tray.
2. Filter for and/or select the events to be used to create the highlights movie (optional).
3. Click the **Publish button** on the **Events List** toolbar.

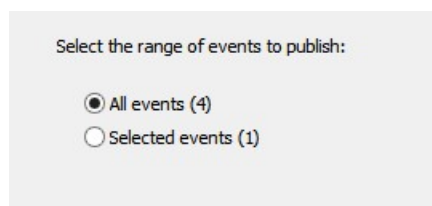




4. Select *Upload Highlights Movie...* The **Publishing Wizard** opens.
5. The subsequent steps of the Wizard are similar to those of other dartfish.tv publishing processes (see [Upload to dartfish.tv](#) in the Dartfish outputs - publishing & sharing chapter). with an additional step for event selection:

## Event selection

The **Publish Highlights Movie wizard** includes an **Event selection** step which controls which events will be used to form the **highlights movie**



The options are:

- **All events:** all events currently displayed in the **Events List**. If a search or filter has been applied, **All Events** refers to the contents of the filtered list.
- **Selected events:** Only **events** which have been selected by you. This allows you to be more selective about which events are included in the **highlights movie**

## Other ways to create highlights movies

Although publishing to dartfish.tv takes a lot of the hard work out of creating and distributing a highlights movie, there are other possibilities

- The **Analyzer's Storyboard**: If you have sent selected events to the **Storyboard** you can save that selection as a movie. The movie will include any of the video drawings and measurements that you add to the video in the Analyzer (see [Storyboard](#) topic)
- The **Analysis Recorder** (Pro Editions only): Another way to use the **Storyboard** is to record voiceover and drawings in an **analysis recording** (See [Recording analysis](#) in the Dartfish outputs - publishing & sharing chapter)
- Video editing software: if you want fancy transition effects, motivational soundtracks and all the bells and whistles of video editing software, you can turn events into video clips and then drag those files straight on the storyboard of your preferred software (see [Exporting events](#) topic)

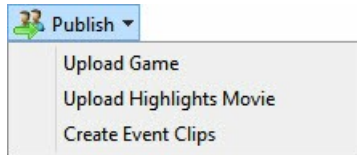
### 9.8.3 Turning events into video clips

Events in the **events list** continue to be a part of the original video. It is possible to extract these video segments and turn them into video clips. You may wish to do this to be able to compare events in the **Analyzer**; because you wish to create a [highlights movie](#) using third party software; or because only the event clips, and not the game video, are of interest.

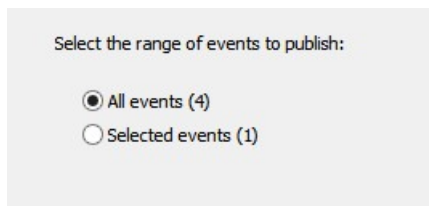
## To publish events as new files

1. Load game video(s) into the Tray.

2. Filter for and/or select the events to be exported
3. Click the **Publish** button on the **Events List** toolbar.

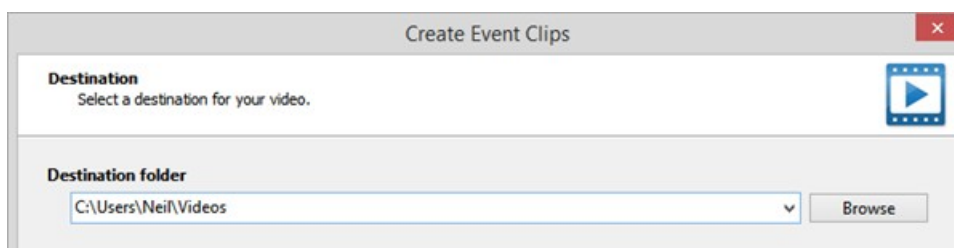


4. Select *Create Event Clips*. A **Wizard** opens.
5. Wizard step 1 - Destination: Choose where files will be created, on a drive/folder on your computer or burned directly to an optical disk. Then click the Next button
6. Wizard step 2 - Event selection



7. The options are:
  - **All events:** all events currently displayed in the Events List. If a search or filter has been applied, **All Events** refers to the contents of the filtered list.
  - **Selected events:** Only events which have been selected by you.
8. Wizard step 3 - Video settings: Choose an encoding profile for the new video clips. To learn more about video encoding see in the Getting Familiar chapter
- 9.
10. Wizard step 3 - **Destination**

In this step the **Destination folder** for the clips is chosen. Click the **Browse** button to change the folder



**File naming** options can also be chosen:

**File naming**

Choose how video clips will be named by selecting details from the list below.  
Click Move Up or Move Down to arrange the order.

<input type="checkbox"/> Clip name	<input type="button" value="Move Up"/> <input type="button" value="Move Down"/> <input type="button" value="Add Keyword"/> <input type="button" value="Remove Keyword"/> <input type="button" value="Reset"/>
<input type="checkbox"/> Event name	
<input checked="" type="checkbox"/> Player	
<input checked="" type="checkbox"/> Action	
<input checked="" type="checkbox"/> Event position	
<input type="checkbox"/> Event duration	

Separator:

Preview:  
Player-Action-00-00-15.000.avi

- The default setting uses only **Event name**. Clips will be named according to the value appearing in the **Name** column of the **Events List**
- Tick other boxes to add other details such as the **Event position** (time in video)
- Click the **Add Keyword** button to add other categories of information from the **Events List**
- Click the **Move Up** and **Move Down** buttons to define the order of the information as it will appear in the file name

In the example above an event featuring a 'Shot' by 'Pele' would be named 'Pele-Shot-54:32.000'

Click the **Next** button to proceed to the next step where the event clips will be created.

#### 9.8.4 Adding descriptions to events

The description property of events is a free text (rather than keyword) description of an event. It is useful for several reasons, among which are:

- The information will be useful to viewers after events published to **dartfish.tv** or exported to the **Storyboard**
- The information become part of the properties of video clips created from events and will therefore be visible when these clips are added to the **Storyboard**, turned into **Enhanced Optical Disks** or published to **dartfish.tv**

#### Adding description using event properties

1. Right-click an **event** in the **Events List**
2. Select *Properties* from the quick menu
3. Type or edit in the **Description** section of the **General** tab

#### Using The events list description field

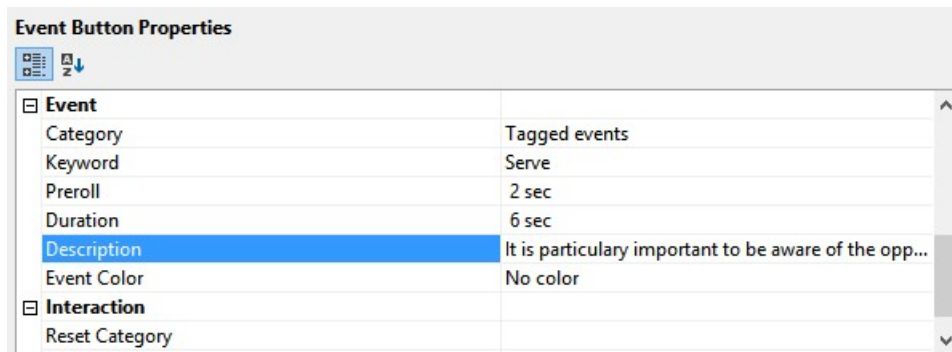
1. Right-click any of the **column headings** of the **Events List**
2. Select the *Description* option from the quick menu
3. There will now be a new column of the **Events List** with the heading 'Description'
4. Edit the description by right clicking the **Description field** for an **event** and selecting the *Edit...*

option from the quick menu

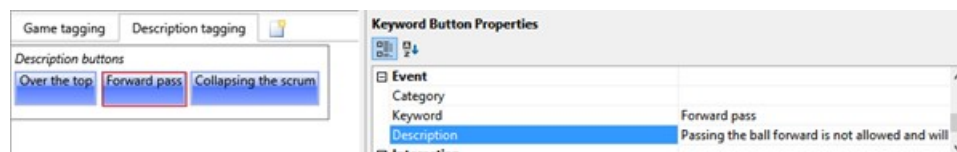
## Using keyword buttons

**Event** and **Keyword** buttons can be used to automate the addition of a **description** to an event.

When building a **tagging panel** (see [Creating Tagging panels](#)), set the **Description** property of the button to the desired text:



- The **Description** property may be set on a button which will also record a **keyword** - perhaps in this case the description explains some technical jargon or some common errors?
- **Keyword** buttons may be added to a panel, specifically to add a **description** to an event. In this case, setting the **category** property is optional:



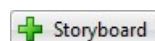
### 9.8.5 Storyboard

Selected events can be viewed in the **Analyzer** module and analyzed as any other **Storyboard** item. In many ways the Analyzer's **Storyboard** is the best presentation and publishing tool for the following reasons:

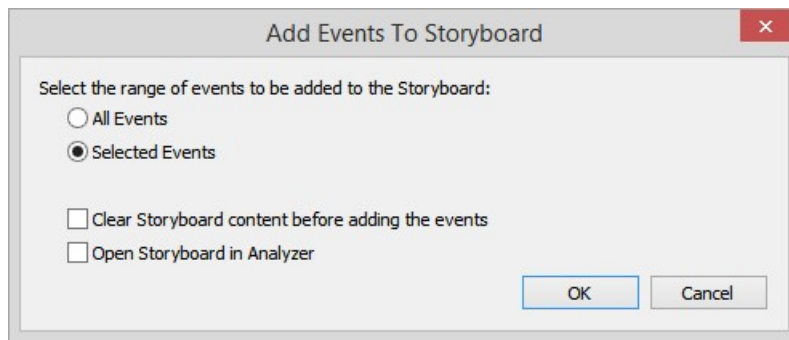
- Analyzer zoom and drawing tools can be used to help illustrate and explain.
- The **Storyboard** can be presented using the remote control in the same way as the **events list**. But with the advantage that a selection of many events from different searches can be compiled in the **storyboard**.
- The **Analyzer** offers additional outputs such as the **Mediabook** and **Analysis Recorder**.

To add events to the Storyboard:


1. Select **events** in the **Events list** and click the **Storyboard** button.



2. Select the range of events to be exported.



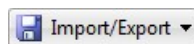
Each selected event creates a new **Storyboard** item. The process of selection and adding events can be repeated until the **Storyboard** contains all the events to be presented. See An analyzer project - the Storyboard in the Analyze performance chapter to learn more.

 Remember that a storyboard's contents can be saved to allow recall at a later date. You might save one Storyboard presentation for the players and another for the coaches

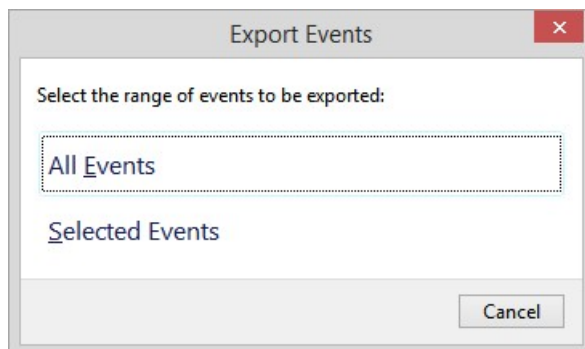
### 9.8.6 Exporting events

The Import/Export tool allows you to export data from the Events List as a CSV file. To do this:


1. Select events in the **Events list**
2. Click the **Import/Export button** and select the *Export Events...* option



3. Select the range of events to be exported - all events or only those which have been selected:



Your selection is exported to a CSV file which can be opened in spreadsheets and databases to analyze statistics and create graphs. You can also use such files as backup copy of your tagging work. Such a file can be imported later and re-synchronized to the video (see [Importing events](#)).

 A quicker way to get data from the Events List is to select the events you want then copy & paste the data into spreadsheet, presentation or document

# Chapter

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*Displaying metadata  
from external devices*

## 10 Displaying metadata from external devices

Dartfish's **Analyzer** and **InTheAction** modules support the display of data from other software applications. For example, timing devices, heartrate monitors or power measurement devices that use sensors linked to software can use Dartfish's **Metadata toolkit** to send the processed data to Dartfish Software. Such metadata adds to the interpretation of video images by relating them to the effort of the performer.

Throughout this tutorial, the term "metadata" will refer to data (in a broad sense) generated by entities external to Dartfish Software and captured by Dartfish Software while capturing a video clip. Examples of such metadata are heart rate, speed, etc.

It is assumed here that you are already familiar with the use of InTheAction (see [Live capture & instant replay during training](#)) and the Analyzer (see [Analyzing Performance](#)).

To display metadata on Dartfish video images need to:

- Activate **advanced options** supporting metadata capture and display.
- Use the **InTheAction** module to capture metadata streams while capturing related video images.
- Link **drawings** superimposed on video displays to metadata values.
- Use the **Analyzer** module to replay previously captured video with related metadata.

This topic covers how to do this and additionally how **Overlay Templates** can be used to make the display of metadata. You will also learn how to display metadata values graphically next to video images.

### 10.1 Support for metadata in Dartfish Software

#### Dartfish metadata toolkit

For data from external software and devices to be displayed in Dartfish it is obviously not as straightforward as connecting the device - a software bridge is required to interpret and record data in real time. With appropriate programming skills you may create your own bridge with the help of the Dartfish Metadata Toolkit document. Contact Dartfish Customer Care to obtain a copy

#### Metadata support in Dartfish software

Metadata can be captured and displayed. These tasks are performed using 2 modules:

- **InTheAction module**, for capturing video clips and metadata synchronously.
- **Analyzer** module, for displaying metadata and performing some analysis.

Apart from these 2 modules, there is no support for metadata. For example, it is not possible to display metadata with the **Player**. In these 2 modules, the metadata features are enabled by advanced settings that are available in the **Options** dialog (Advanced Options).

#### Data manager

The **Data manager** is not a tool for recording metadata with video but rather can be used to link data files from external applications to video. Learn more about it in the chapter [Dartfish Readers](#)

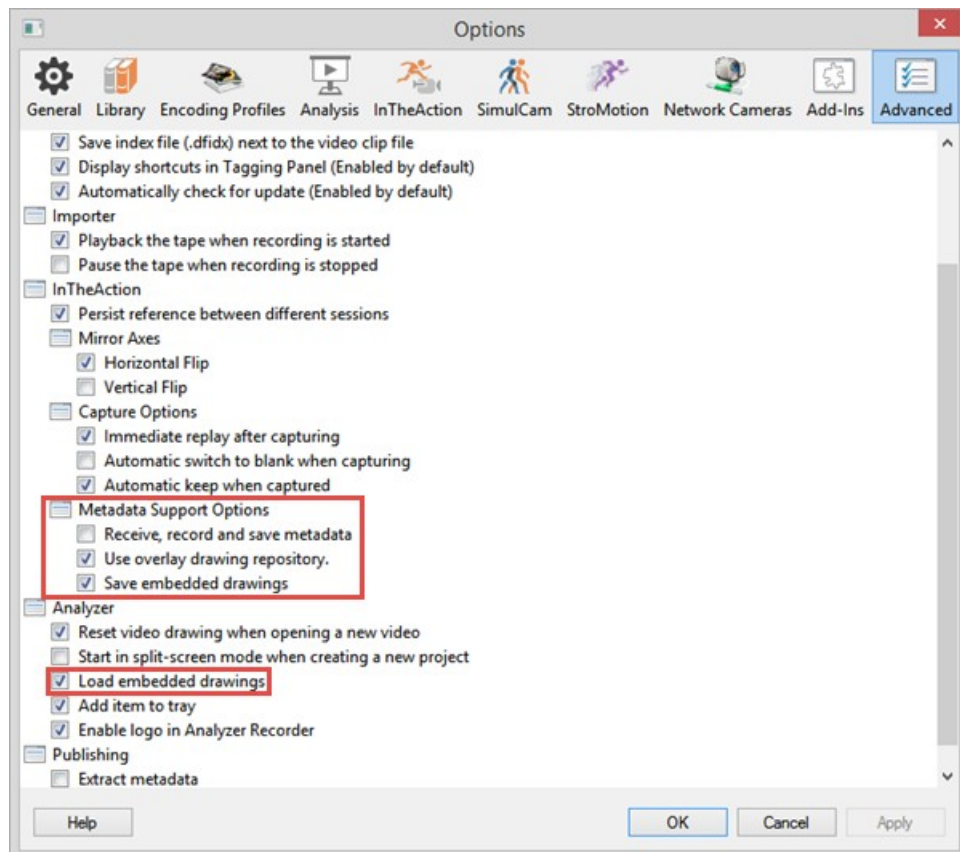


## 10.2 Setting Advanced Options

To use (capture and display) metadata in Dartfish Software, advanced options can be enabled

1. Select *Tools > Options* from the menu bar
2. Select the Advanced section

The figure below depicts the different options as they are displayed in the "**Options**" dialog (they have been highlighted in the picture):



### Analyzer advanced options

- **Load embedded drawings** - this option allows the analyzer to load the drawings (if any) that have been saved with a video clip during its capture. If this option is disabled, the Analyzer will only load the video (and possibly the metadata if the "Display metadata viewer..." option is enabled). In order to save drawings with a video clip, the advanced option "Save currently selected overlay drawing with the video clip" must have been enabled in the InTheAction (ITA Advanced Options) prior to saving the clip.

### InTheAction advanced options

- **Receive, record, and save metadata** - this option enables the InTheAction module to receive, record, and save metadata with the video clip.
- **Save embedded drawings** – when enabled, the drawing that is currently displayed in **Live** or **Replay** mode is saved with the video clip at the end of the capture when the user saves the video clip. The drawing can later be automatically loaded and displayed in the **Analyzer** (if the "Load embedded drawings" option is enabled).
- **Use overlay drawing repository** – the **Drawing repository** stores up to nine different

collections of clip drawings (see specific section later in this document). When this option is enabled, the overlays are used for managing the drawings in the InTheAction module. This option also displays additional tools on the InTheAction left toolbar.

## 10.3 Capturing & displaying Metadata with the InTheAction

The InTheAction module is used for recording **Metadata** (it is not possible to use the **Importer** module to record Metadata). The **Receive, record and save metadata advanced option must be enabled** (*Tools menu > Options > Advanced section*).

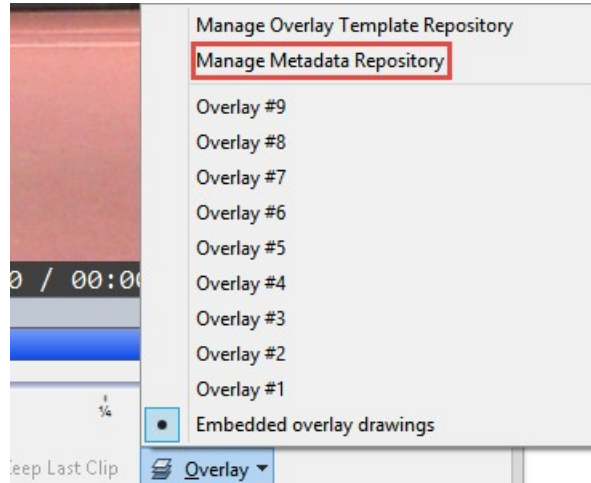
When receiving external data, the **InTheAction** module automatically creates a **data source** stream for each received **data stream**. These data source streams are created automatically as the data is received. This has the following important consequence: no data source streams are available until Dartfish Software has received some data.

The current values of the metadata streams can be displayed in **InTheAction's Live mode** (see [Displaying Metadata in Live Mode](#)). Even if the metadata is not displayed on the video in Live mode, the metadata streams are nevertheless recorded with the captured video clip but only if the advanced options for recording the metadata have been enabled for the InTheAction module (ITA Advanced Options).

### 10.3.1 Checking that Metadata is received

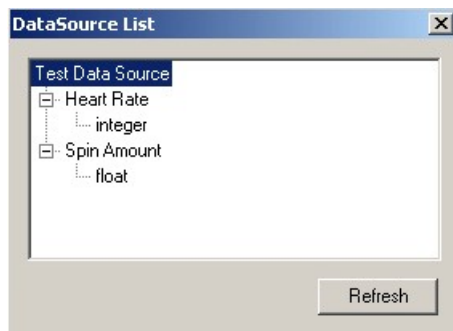
The list of **data source streams** and their properties can be displayed in **InTheAction**.

1. Select Manage metadata repository from the Overlay menu found beneath the video display:



**!** if this menu is not displayed it must be enabled in the advanced options (see [InTheAction Advanced Options](#)).

2. The following data source list dialog is displayed showing the different data sources and their metadata streams.

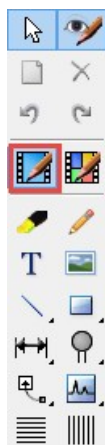


- The content of this dialog content is not automatically refreshed. When this dialog is left opened and new metadata streams are detected by Dartfish Software, you must click the **Refresh** button to update the dialog list view (or close the dialog and reopen it).
- In this example, two data source streams have been received: "Heart Rate" and "Spin Amount". The "Heart Rate" data stream has integer values (e.g. 123, 150). The "Spin Amount" data stream has float values (e.g. 12.34, 0.34E-2).
- All data source streams that are displayed in the DataSource List dialog are recorded with the video clip. Currently, it is not possible to select which data source stream will be recorded with the video.
- If no data source streams are displayed this indicates that the Dartfish Software has not received any data yet.
- The list of received metadata streams is not saved when quitting Dartfish Software.

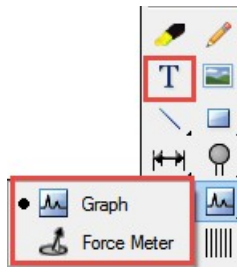
### 10.3.2 Displaying Metadata in Live Mode

Metadata stream values in the InTheAction module are displayed with **overlay** drawings that are drawn on the video image.

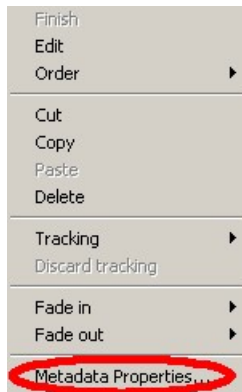
1. First check that data source streams have been detected (as explained in [Checking that Metadata are received](#)).
2. Switch the InTheAction module to Live mode.
3. Select the Video drawing setting (usually this is the default setting):



4. Depending on the type of data contained by the data source stream, you must select the appropriate drawing tool. For integer values, select the **Text drawing tool**. For float values, select the **Text or Graph drawing tools**. For vectors with origin (Vector6) data type, select the **Force Meter drawing tool**:

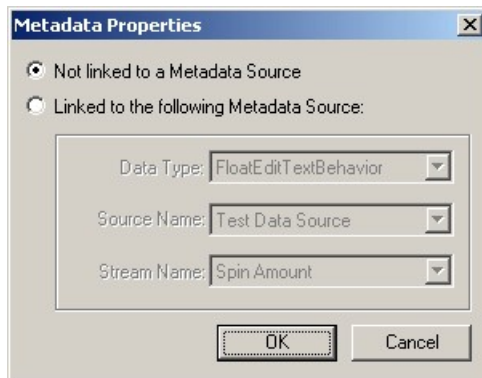


5. Draw on the video using one of the drawing shapes selected in the previous step.
6. Select the drawing and right-click on it to display a popup menu.
7. Select the menu item *Metadata Properties...* as below:

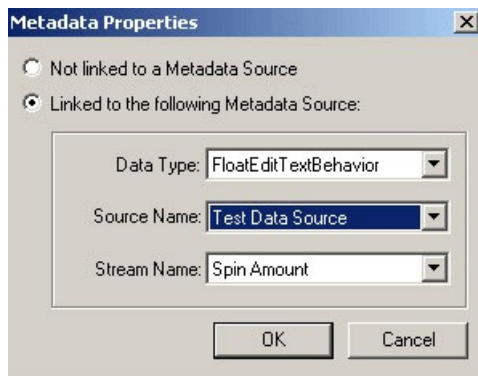


If this menu item is grayed, no data source streams are available or no compatible data source streams are available.

8. The following dialog is then displayed:



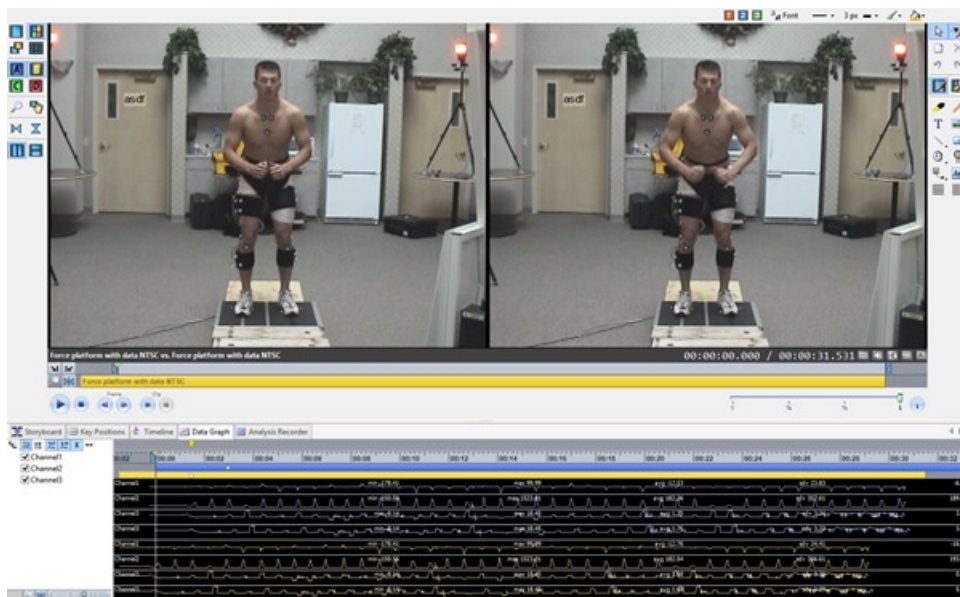
9. To assign a data source stream to the current drawing, click on **Linked to the following Metadata source** option and select the targeted data source stream using the 3 list boxes.  
If the **Linked to the following metadata source** option is disabled (grayed) then it is not possible to assign a data source stream to the drawing (there are no compatible data source streams currently available).



10. The drawing shape displays the value of the linked metadata stream. For example, a **Text drawing** displays a value and a **graph drawing** displays a graph.

## 10.4 Using Metadata in the Analyzer

The **Analyzer** module is used for observing and comparing stored video clips and their recorded **metadata**. When a clip is opened in the **Analyzer**, any recorded metadata can be displayed in the **Data graph panel** at the bottom of the module



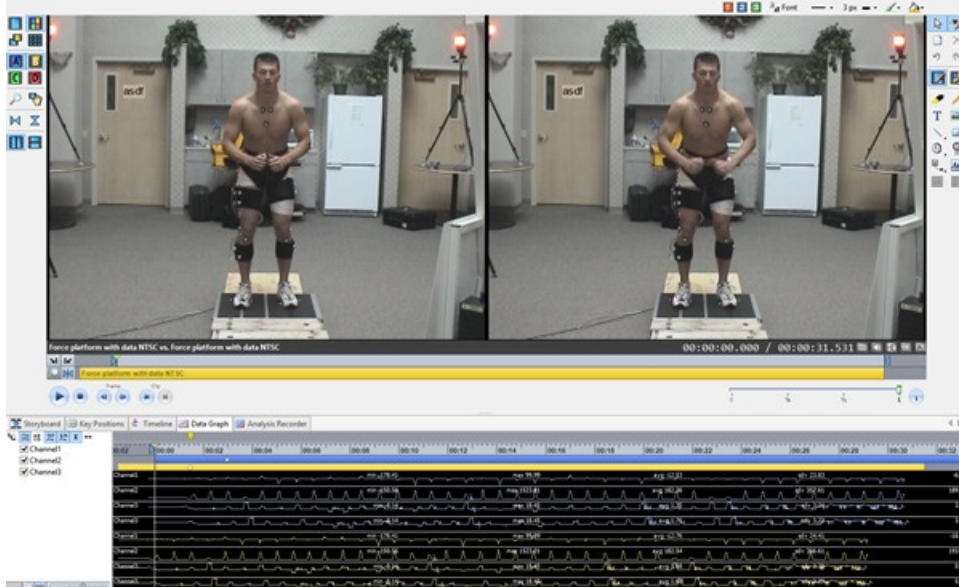
When multiple clips containing metadata are opened, the metadata corresponding to each clip is displayed in the graphic view. Each graph is color-coded with the corresponding color of each clip's timeline. For example, the yellow graph corresponds to the yellow clip in the timeline.

A video's graph is synchronized with its **timeline**. For example, in the **Data graph** above, shifting the yellow timeline to the left will also move the yellow graph.








### 10.4.1 Using the Data graph

Metadata stream values can be displayed in the **Analyzer** module as a graph synchronized with the timeline. To use the **Data graph**, simply open a video clip in the analyzer. Any metadata previously captured with the **InTheAction** module is displayed.



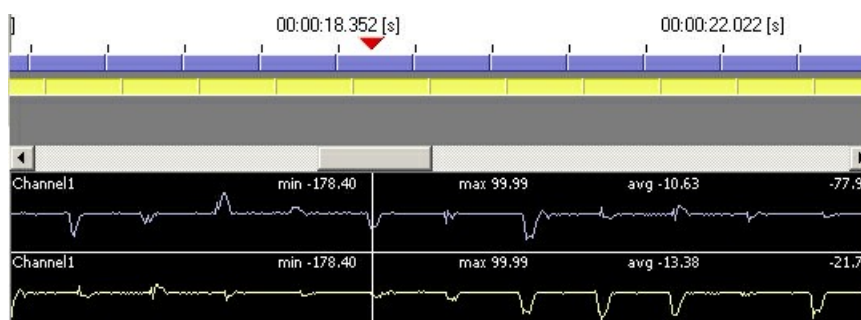
The graph is fully synchronized with the timeline. So, if one of the clip is moved on the left by dragging its timeline on the left (by click and dragging the yellow timeline), the corresponding graph is also moved accordingly. The graph is also zoomed in and out as the timeline is zoomed in and out.


The different buttons in the graph toolbar alter the way the graph is displayed.

- The  button displays simple statistics such as min, max and average values. The **Cue In** and **Cue Out** points act as delimiters for these calculations.
- The  button displays the data value corresponding to the value at the cursor position in the timeline on the top right corner of the graph.
- The  button displays the name of the currently displayed metadata stream in the top left corner of the graph
- The  button toggles between single or multiple clip display. When multiple clips are simultaneously opened in the Analyzer, the graph can display the metadata from a single clip or from multiple clips. In this latter case, the each clip's metadata curve is the color of the corresponding clip's timeline. . For example, the data curve corresponding to the clip that has the yellow timeline is displayed in yellow. In single clip mode, the user can switch between the different graphs for each clip by selecting the clip in the Analyzer (usually done by clicking directly on the targeted clip video).
- The  button switches between "superimposed" or "separate" mode when multiple clip curves are displayed. This feature is only useful when graphs from several clips are simultaneously displayed. In the "superimposed" mode, the graphs of the different clips are superimposed on each other.



In the "separate" mode, the graphs are displayed as separate graphs, each in its own display area.



- The  button toggles between the "all clip" and "single clip" data stream browse mode. These 2 modes alter the way data source streams are selected in the tree view to the left of the graph.

## 10.4.2 Displaying Metadata on the Video

Proceed as previously explained in the topic [Displaying Metadata in Live Mode](#)

## 10.5 Using the Overlay template repository

This feature is a source for different collections of drawings that can be displayed on video clips. In the context of metadata capture it can be used to store and recall different sets of drawings, removing the need to redraw for each recording. Strictly speaking, the library is not linked to any **metadata** features but it can be used to memorize the position of drawings that can be later linked to metadata streams.

The **Overlay template repository** has the following features:

- Define sets of drawings that are saved (persisted) between each session in Dartfish Software. The next time the user launches Dartfish all the drawings in the library are immediately available as soon as the InTheAction module is enabled.
- Switch between the different collections of drawings - an overlay can be directly selected from a list. It is also possible to map a keyboard shortcut key for switching between the different groups of drawings.
- Manage the different groups of drawings by creating or deleting them.
- Contains up to 9 different **templates**.

To learn more about using the **Overlay template repository**, see [Using drawings in InTheAction](#) in the Live capture & instant replay during training chapter



# Chapter

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XI

*Dartfish Readers*

## 11 Dartfish Readers

**Data Readers** are used to link a video file to a **data source** file. Once linked, you'll be able to synchronize the **data streams** and video in the **Analyzer** and to view both simultaneously using the **Data Graph**. Drawing tools can be used to display data on the video image.

In earlier versions of Dartfish, the readers were available as add-in software to Dartfish Pro editions. For version 6.1 and later readers will form part of the TeamPro Data edition of Dartfish.

There are two Data Readers available:

### ■ CSV Reader

Used to link video to character separated value (CSV) files. CSV files are commonly produced or can be exported from a wide range of devices.

This reader can read many text file formats provided the following conditions are met:

1. The data can be separated (parsed) into columns which are delimited by a text character (tab, comma, semi colon, space etc)
2. The resulting table has no more than one row of column headers.

Where condition 2 is not met, it is usually possible to open, parse and edit a text file in a spreadsheet program such as Microsoft Excel. By this method data can be rearranged and extra headings removed. The edited data should be saved as a .csv file rather than a spreadsheet file.

**Source name:** This Reader names the source by the file name of the CSV file. Optionally you can input a source name of your choice.

**Data streams:** The CSV Reader parses character separated data into columns, each of which represents a different data stream. You are able to select which of these columns you wish to link to Dartfish.

[See linking CSV data](#)

### ■ SRM Reader

Used to link video to .srm files created by SRM power cranks and training system. This includes a Powermeter and a Powercontrol to record biodata held in SRM files (\*.srm). Thanks to this system, cyclists can record the power, the heart rate, the cadence, the speed and other data deriving from them.

**Source name:** This *Reader* names the source by the initials of the person set in the Powermeter and the date of the training.

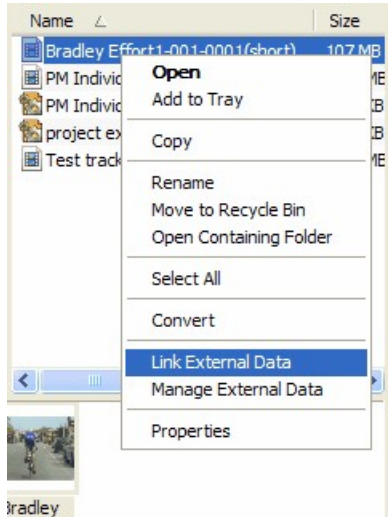
**Data streams:** Five streams are fed:

- Power developed on the crank in [watts] 💡
- Cadence of the crank [rpm] ⚙️
- Speed of the cycle [km/h] 🚴
- Heart rate of the athlete [bpm] ❤️
- Time of the day at which the training session happened [hh:mm:ss.xxxx]

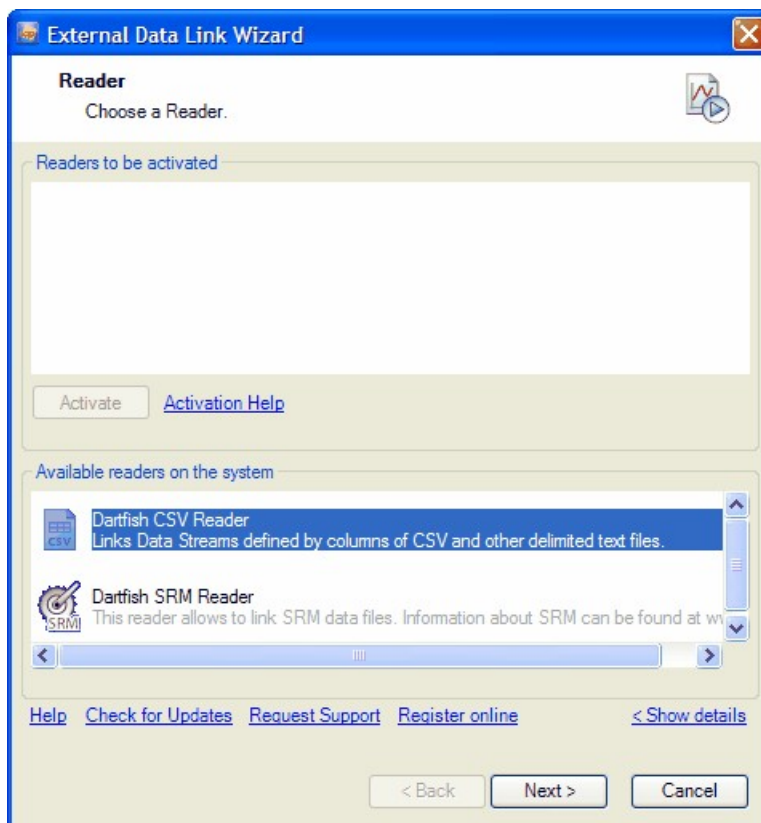
[See linking SRM data](#)

## 11.1 Linking CSV Data

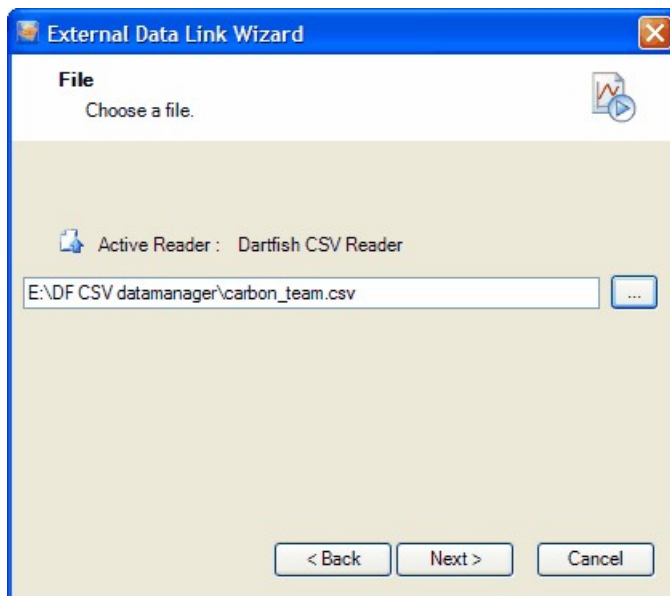
You can create links between one video clip and more than one data source. To establish a link, right-click a video file in the **Tray** or in the **Items List** and select *Link External Data* from the context menu.



A **Wizard** first prompts you select a **Reader** from a list of installed **readers**.

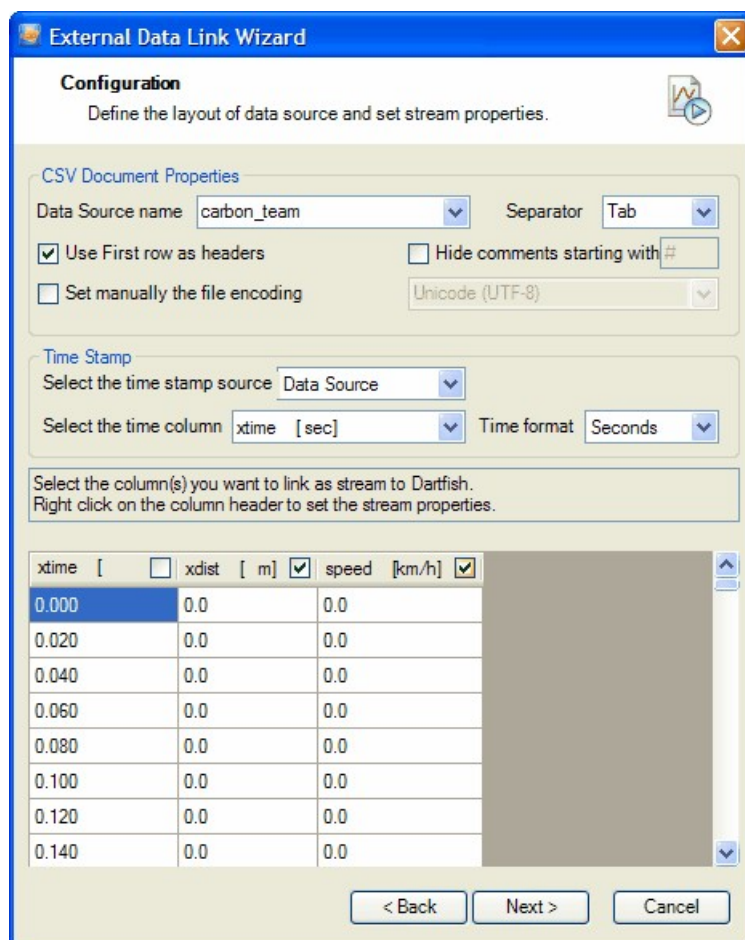


In the second step you will browse for the **data file**.



A standard **Open File...** window pops up. Search for the **Data Source file** in your hard drive and click **Open**.

In the next step you parse the **Data Source** and define how the **Data Streams** are linked.



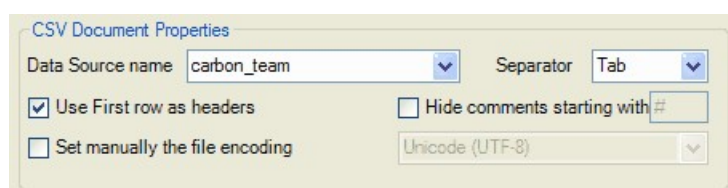
*The information required here is explained in the following topics:*

- [CSV document properties](#)
- [Time Stamp](#)
- [Selecting columns as Data Streams](#)

After completing this step, the data source is linked and either additional data sources can be linked or you can proceed to [viewing and displaying the data](#) with the video.

### 11.1.1 CSV document properties

In the configuration step of the wizard you will define the parameters of the **Data Source** and set which columns are to be linked as **Data streams**. The first part of the configuration step defines the properties of the Data Source



#### Data Source name

This is the name used to identify the **Data Source** when using linked data in Dartfish or managing Data Sources etc. By default the file name of the Data Source File is used but you can enter your own name or select a name which combines the file name with the current date.

#### Separator

It is essential that your data is successfully parsed before continuing. To do this, select the character used to delimit the columns of your **Data Source**. A range of commonly used separator characters is offered but it is also possible to type any character or combinations of multiple characters. If you are not sure which character has been used, experiment by selecting different characters; when successful you will see your data divided into separate columns as shown below:

xtime [	<input type="checkbox"/> xdist [ m]	<input type="checkbox"/> speed [km/h]
0.000	0.0	0.0
0.020	0.0	0.0
0.040	0.0	0.0
0.060	0.0	0.0
0.080	0.0	0.0
0.100	0.0	0.0

#### Use first row as headers

Where data has a header row you must tick this option to prevent the headers being treated as data. If your *Data Source* has more than one row of headers you must delete or merge the extra rows. You can do this by editing the file with text editor software or a spreadsheet such as Microsoft Excel.

#### Hide comments starting with

The Data Source may contain text comments. Often these are marked by a specific delimiter. Exclude such comments by typing the delimiter character used.

## Manually set the file encoding

Dartfish automatically selects the file encoding used but if necessary you can manually choose from a selection of text encoding types.

### 11.1.2 Time Stamp

The CSV reader must be able to relate each piece of data in a **Data Stream** to a position in the video. There may be a column of time stamp data in the **Data Source** but where this is not the case, a time stamp can be added at a fixed interval.

#### Using data from the Data Source as the time stamp

Time Stamp  
 Select the time stamp source: Data Source  
 Select the time column: xtime [sec]  
 Time format: Seconds

1. Select the option "Data Source" from the Select the time stamp source list box.
2. From the Select the time column list box, select the column from the Data Source that contains time values.
3. Select the Time Format or units used. It is essential that the reader understands how to interpret time stamp data. For example, if the time stamp is "100" does this represent 100 seconds or 100 milliseconds?

#### Using Interval or Frequency as the time stamp

Time Stamp  
 Select the time stamp source: Interval  
 Enter the interval in seconds: 5

The reader can create a time stamp at a fixed **interval** (seconds or fractions of a second) or at a fixed **frequency** (Hertz). This is useful if time stamps do not exist in the data source or are not in a time format recognisable by the reader. To use **Interval** or **Frequency** time stamp sources, **Data Stream** samples must be at regular, fixed intervals.

### 11.1.3 Selecting columns as Data Streams

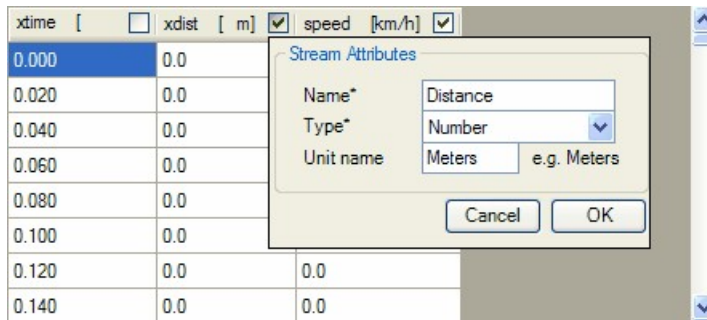
The **Data Source** may contain many columns of data that you will not wish to link to video. You must indicate those that you want to link by selecting them as shown below:

xtime [	<input type="checkbox"/>	Distance	<input checked="" type="checkbox"/>	speed [km/h]	<input checked="" type="checkbox"/>
0.000		0.0		0.0	
0.020		0.0		0.0	
0.040		0.0		0.0	

Distance and speed are the selected streams

## Stream attributes

When you select a column, you will be prompted to set **attributes** for the **data stream**.

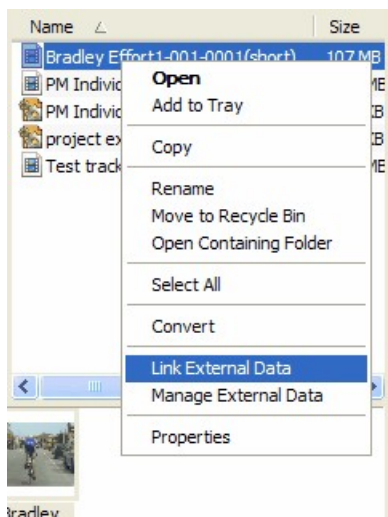


- **Name** - This is the name used to identify the **Data Stream** when using linked data in Dartfish. By default the column heading from the data source is used but it can be changed to a value of your choice. In the example above "xdist [ m]" will be replaced by "Distance". It is particularly important to set a name property for the **Data Stream** when no meaningful header is present in the Data Source
- **Type** - Select either **Number** or **Text**. By selecting "Text", numbers will be treated as text and Dartfish will not attempt to plot them on the **Data Graph**.
- **Unit name** - This is a descriptor of the values of data in this data stream. It is displayed in the video clip **Properties** or in the **External Data Manager**.

! After setting these attributes they can be changed by right-clicking the column heading.

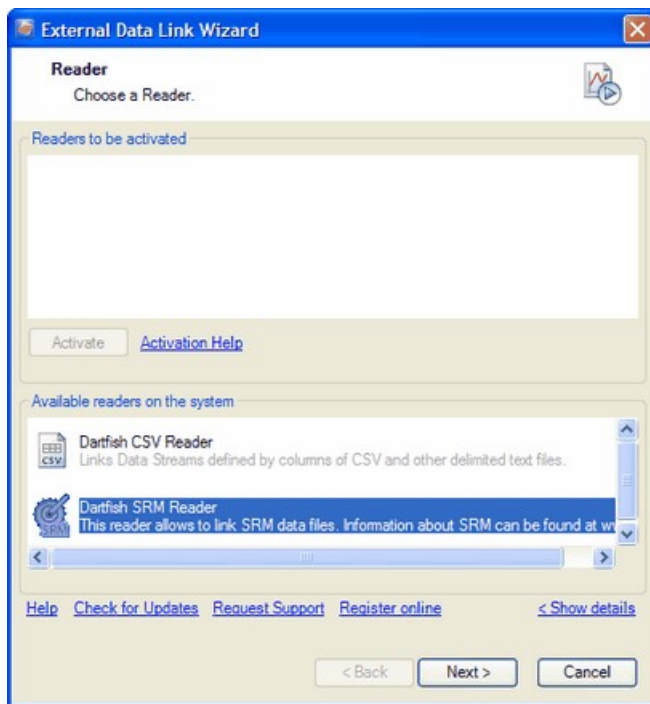
## 11.2 Linking SRM Data

You can create links between one video clip and more than one **data source**. To establish a link, right-click a video file in the **Tray** or in the **Items List** and select *Link External Data* from the context menu.

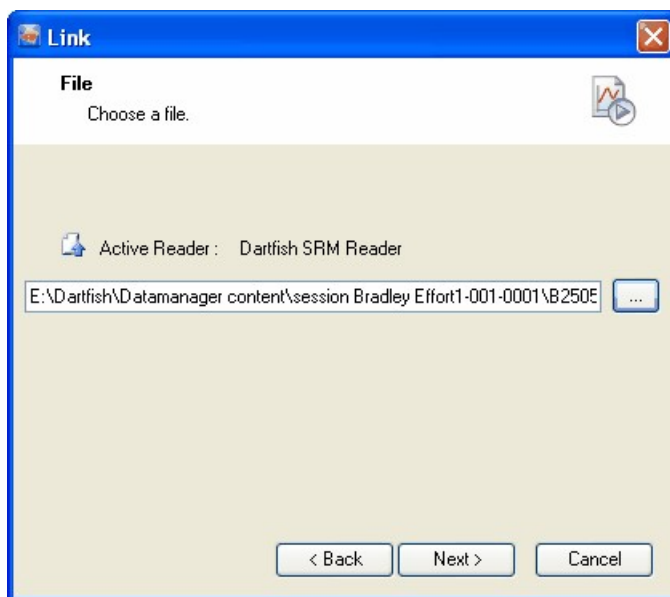


A **Wizard** first prompts you select the **SRM Reader** from a list of installed readers.





In the second step you will browse for the **data file**.



A standard **Open File...** window pops up. Search for the **data file** in your hard drive and click **Open**.

Before completing the **Wizard** you have the option to link other files to act as **Data Sources** for this video.

## Displaying data

After completing this step, the **data source** is linked and either additional **data sources** can be linked or you can proceed to [viewing and displaying the data](#) with the video.

## 11.3 Managing links

To manage links between video files and **Data Sources**, right click the video file in the **Library**. Select *Manage the data streams...* from the context menu.

### Removing the link

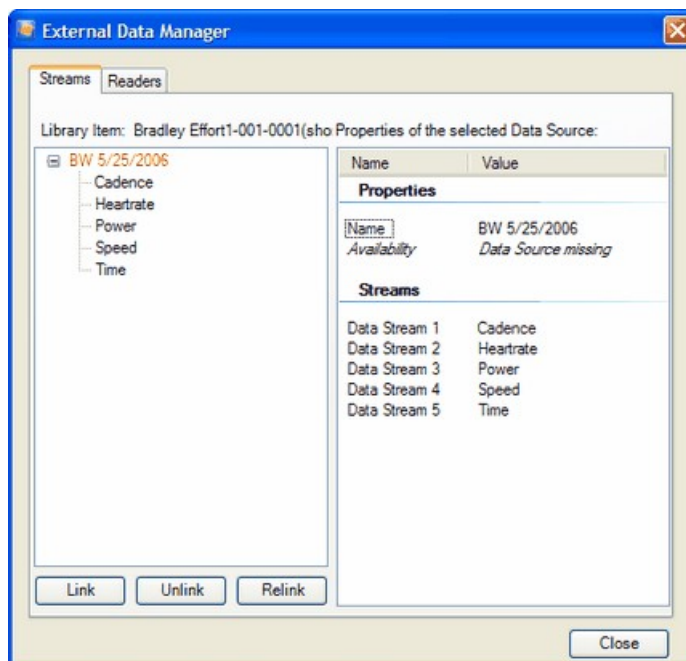
You can remove the link between the **data source(s)** and the video file. To do this, select the **data source** and click on the **Unlink button**.

It is not possible to remove a single stream of a data source.

### Broken links

A link can be broken when the external **data source** file has changed location on the disk or has been renamed. It also happens when the video clip is shared and opened on a different computer. As a result, the data cannot be displayed in the **Analyzer** any longer. To check for broken links:

1. Right-click the video file.
2. Select *Manage the data streams* from the context menu.
3. Select the **data source** and its **properties** are visible on the right hand panel. If the link is broken the **Availability** property will read 'Data Source Missing'.



4. To correct a broken link, click the **Relink** button then browse for the new location of the data source. [Synchronization](#) of data and video is retained provided that the **Dartclip** metadata file has also been moved to the new location of the video file (see [Sharing Data](#) for further information about **Dartclip** files).

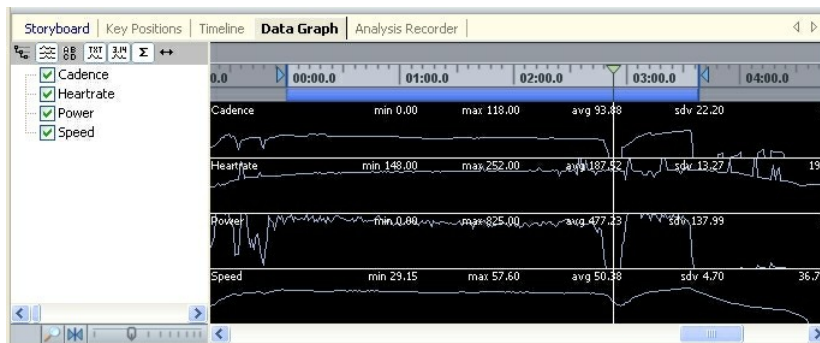
## 11.4 Viewing data


Dartfish's **Analyzer** Module is capable of displaying **Data Stream** data in 2 ways:

### The data graph

The **Data Graph panel** is found in the lower part of the **Analyzer** by selecting the **Data Graph tab**. Each numerical **data stream** is represented as a different curve.

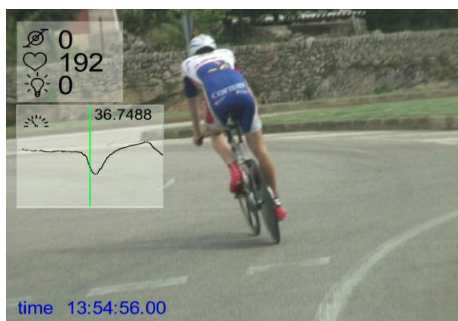
The **data graph** is also used to synchronize linked data with video.



 *The Data Graph and Graph drawings can only display integer and floating point numbers. For example, times in the format hh:mm:ss etc will be treated as text and cannot be displayed. If you wish to graph times (e.g. split times) then you must first edit the Data Source to represent times as numbers.*

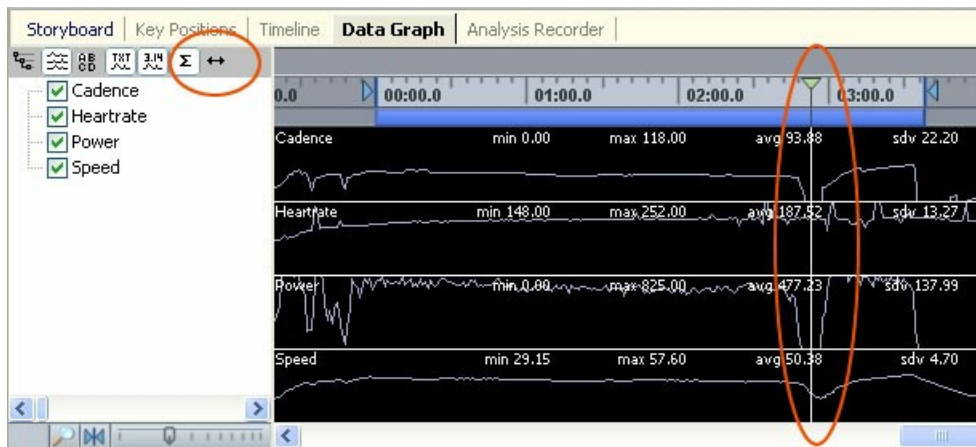
## Drawing on video

Text drawings, graph drawings and other specialist data drawings can be linked to data streams such that values can be displayed on the video image. Numerical data can be displayed with the Text and the Graph drawing tools, while text can only be displayed with the Text drawing tool. Below is an example of what it might look like.



### 11.4.1 Synchronization

You can quickly **synchronize** the **data streams** and the video in the **Data Graph** pane of the **Analyzer**, as illustrated below:



To synchronize, proceed as follows:

1. Move to an appropriate position in the video clip.
2. Activate the synchronization mode by clicking on the **Resynch button**
3. Align the streams to the playhead (green arrow in the illustration) by click & drag of the streams to the left or to right.
4. Click a second time on the **Resynch button** once done.

*To synchronize precisely, you should position the video to a distinct instant where you might expect to see an obvious change in the data graph e.g. when the athlete starts pedaling. This can be easily matched, for example, to the cadence stream (see illustration above).*

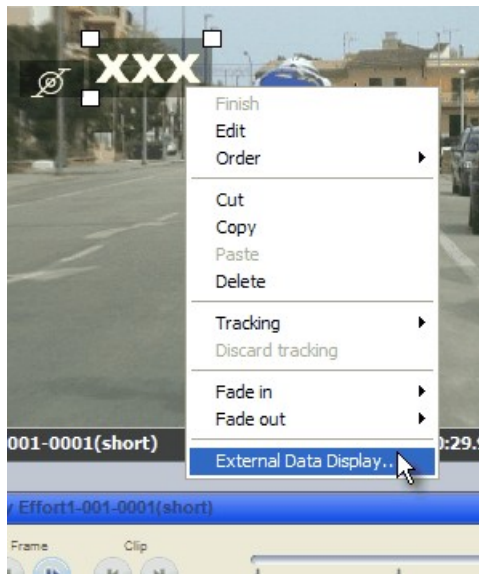
### 11.4.2 Drawings

The data can be directly overlayed on the video image in the *Analyzer*. This is done by linking drawings to data from a *Data Stream*. The following is a representative but not comprehensive list of drawing tools that can be linked to data. Different devices will produce data which can be best represented by different types of drawing:

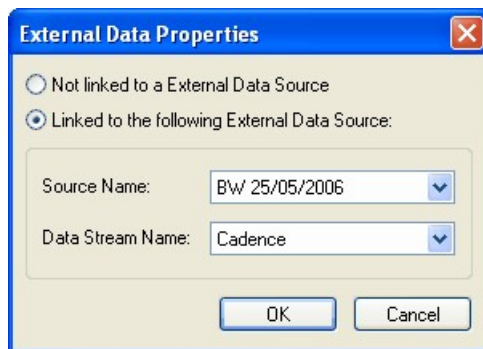
- **Text tool:** Use to display any value from a Data Stream. Using the Dartfish symbol font, the text tool can also be used to display data specific icons to label values (see below).
- **Graph tool:** Use to represent numerical data as a graph.
- **Force Meter:** Use to represent the magnitude and direction of a force (typically for devices producing this type of data).

To link a drawing to a data stream (example using Text drawing):

1. Use the Text drawing tool to create a small text drawing. The text you type to create the drawing is not important e.g. "xxx". Be sure to finish editing the text before proceeding to the next step; to do this click on the video display outside the drawing.
2. Right-click on the drawing to display the context menu.



3. Select the *External Data Display...* option.
4. Select the **Data Source** and **Data Stream** then click the **OK** button.



5. The text box now displays the value of the selected **data stream**.

**!** Don't forget to [synchronise](#) to make sure the displayed values have proper meaning.

## Displaying Dartfish explanatory symbols

The Dartfish **Readers** provide the **Dartfish Symbol font** which you can use with the **Text** tool of the **Analyzer** or **In the Action** modules. Using this you can substitute long names with self-descriptive symbols. See the Table 1 for the key mapping.

Key	Symbol (character)	Description
S or s		Speed
P or p		Power
C or c		Cadence (pedals)
H or h		Heart rate

! *The Dartfish Symbol font is automatically installed with Dartfish software.*

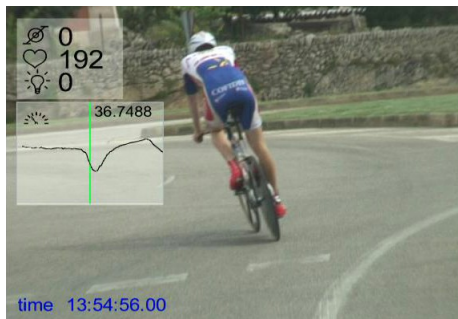
## 11.5 Sharing linked data

In order for others to see linked data you have two options:

- You can [publish a movie](#) from the Analyzer. This will include drawings that have been added to the video clip - including those displaying **Data Streams**.
- You can [share the video file and the Data Source](#) with other Dartfish users. Although the recipient will need to re-establish the link using their own **reader**, synchronization is retained.

### 11.5.1 Publishing video

You can publish the video with overlayed data from the **Analyzer** (see [Saving movies from the Analyzer](#) to learn how to do this) as illustrated below:

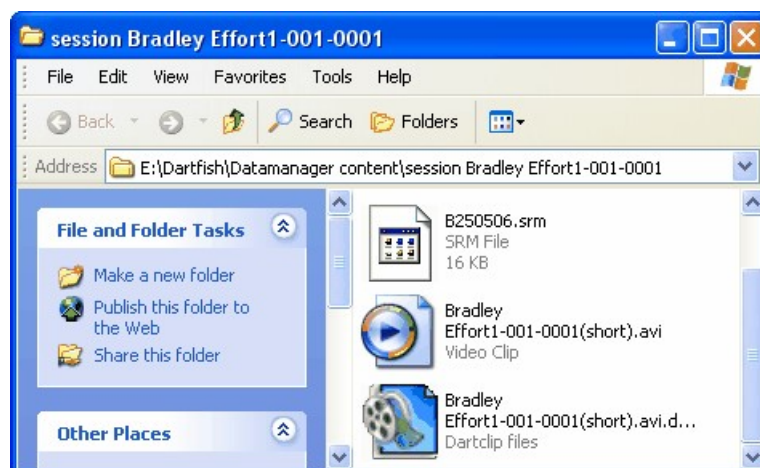


In this case, the result is a video that can be shared in your team. It does not require Dartfish to play it.

### 11.5.2 Sharing data

The Dartfish Readers do not embed data in the video file (i.e. in the .dartclip file associated with the video clip). They create a "live" link between the data and video files. Therefore if you wish to share video and linked data with other Dartfish users the following are required:

- The recipient must have a Dartfish Software edition which includes the reader
- You must provide the video clip, the **Data Source** file and (optionally) the **Dartclip** file as shown below.



The recipient establishes a link using the **Relink** function described in [Managing links](#).

**!** *Dartclip files store all additions made to video by Dartfish. These include details of external data links and synchronisation. If the Dartclip file has not been shared then the recipient must create a new link between the video clip and Data Source.*



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