

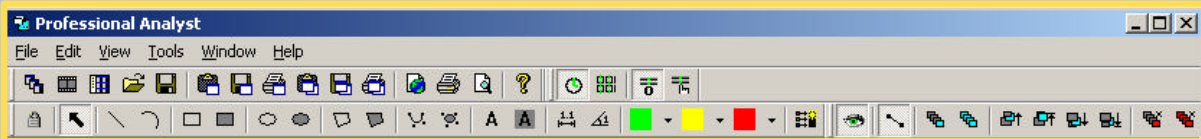
PROANALYST REFERENCE GUIDE

A Quick Summary of Commands, Features and User Interactions

The screenshot displays the Professional Analyst software interface. The main window shows a video frame with motion tracking points and lines. The interface includes a menu bar, toolbars, and several panels. Five red circles with numbers 1 through 5 are overlaid on the interface to highlight specific features:

- 1**: Points to the main menu bar (File, Edit, View, Tools, Window, Help).
- 2**: Points to the 'WebPrintScreen' panel on the left, which displays a small video frame and a graph.
- 3**: Points to the 'Workspace View' panel on the right, which shows a hierarchical tree of projects and video sources.
- 4**: Points to the 'Video Timeline' panel at the bottom, which displays a sequence of video frames with a red waveform overlay.
- 5**: Points to the 'Motion Tracking' panel in the center, which shows a video frame with motion tracking points and lines.

1 Toolbars



Main Toolbar



- New Project**
- New Video Timeline**
- New Video Explore**
- Open** – an existing project or video
- Save** – the active document
- Copy Active Window to Clipboard**
- Save Active Window to File** – as a bitmap file
- Print Active Window**
- Copy Application Window to Clipboard**
- Save Application Window to File** – as a bitmap file
- Print Application Window**
- Generate HTML Report** – for the active video
- Print Report** – for the active video
- Print Report Preview** – for the active video
- About** – Display information about this application.

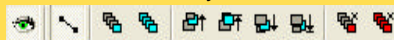
Synchronized Play Controls Toolbar



This toolbar controls how multiple videos will be played when they have been synchronized.

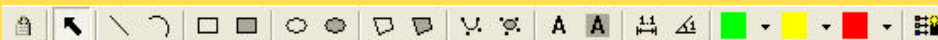
- Sync Play Time Aligned** – Synchronized videos are aligned to the same time during playback.
- Sync Play Frame Aligned** – Synchronized videos are aligned to the same frame number.
- Sync Align to Zero Frame** – Align all synchronized videos according to their zero frames.
- Sync Align to Frame When Sync Pressed** – Align selected videos to the current frame when the 'S' checkbox was selected. This allows videos to be synchronized to arbitrary frames in each video.

Annotation Visibility Toolbar



- Show Annotations** – for the active video
- Show Drag Handles**
- Show in Current Frame**
- Show in All Frames**
- Bring to Front**
- Send Backward**
- Send to Back**
- Delete Annotations in Current Frame**
- Bring Forward**
- Delete All Annotations** – on all frames for the active video.

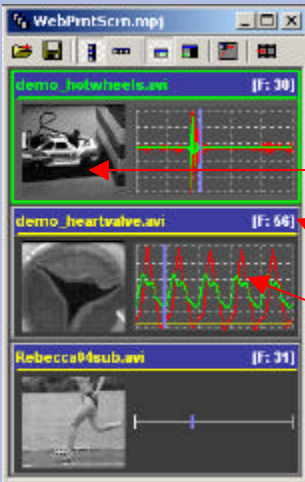
Annotation Toolbar



- Lock Annotations** – Prevent further modification.
- Select Annotations** – Mouse clicks will select and drag any existing annotations.
- Draw Line**
- Draw Arc**
- Draw Rectangle**
- Draw Filled Rectangle**
- Draw Ellipse**
- Draw Filled Ellipse**
- Draw Polygon**
- Draw Filled Polygon**
- Draw Spline**
- Draw Filled Spline**
- Draw Text**
- Draw Filled Text**
- Draw Length Dimension** – Dimension will be shown in the units of prior calibration. Default: dimension is shown in pixels.
- Draw Angle Dimension** – Angle is defined by the next three mouse clicks.
- Foreground Color**
- Background Color**
- Text Color**
- Default Settings** – Colors, line styles, and font styles for all new annotations. To modify the settings of an existing annotation, double-click on the annotation.

2 Project Window

Projects are an easy way to manage multiple measurements (video and data) and the additional calibration, analysis, and processing files that are associated with each one. They also provide an interactive thumbnail view of the video and data files for easy viewing.



Video Thumbnail

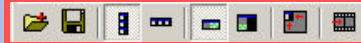
Double-click on the thumbnail image to launch a Video Window.

Frame Number

Graph/Timeline Thumbnail –

Navigate mini timeline by dragging the blue line along the graph/timeline

Project Toolbar



Add Videos

Save Active Document

Align (Videos) Vertical

Align (Videos) Horizontal

Compact View – Display only the video image and the data graph.

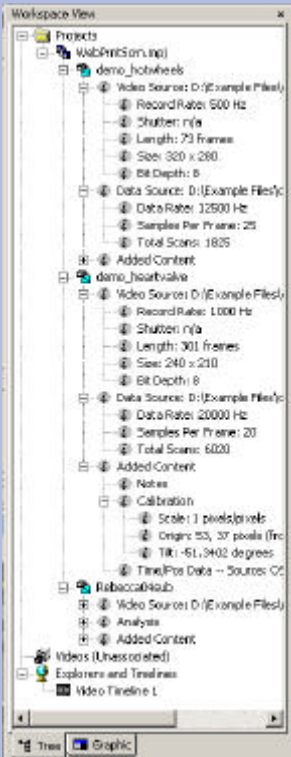
Normal View – Display video, data, play controls, and information panel

Fit Window to Contents

Create Timeline(s)

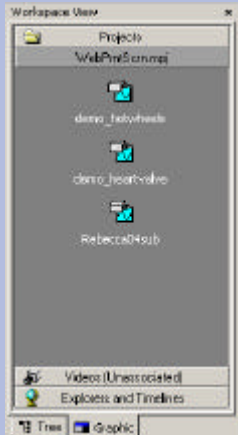
3 Workspace View

Contains a listing of all the open projects, videos, explorers and timelines. Use right-clicks to Minimize, Maximize, Restore, and Close windows.



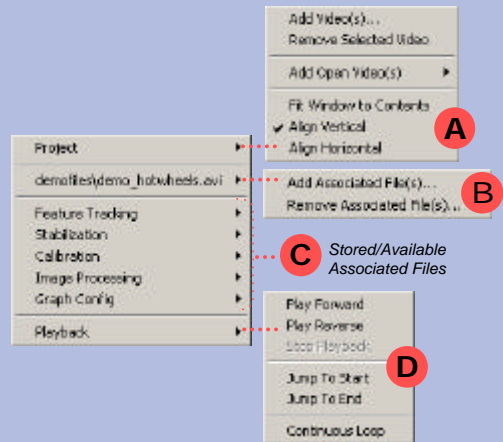
Three folders: *Projects*, *Unassociated Videos*, and *Explorers and Timelines*. Videos associated with projects will be listed under *Project*. Videos not associated with any open projects are listed under the *Video (Unassociated)* tree.

In **Tree View** (left), click on the + and - at the root of each tree to expand and collapse each sub-tree. In **Graphic View** (below), click on the icon bar to expand and collapse directory.



Project Window Right-Click Options

Right-click on individual Video or Graph/Timeline Thumbnails to reveal the following options.



A Project Options – Select the action to apply to the active project.

B Add/Remove Associated Files – Add/Remove Associated Files to/from this project.

C Stored/Available Associated Files – Launch any stored/available Associated Files (e.g. analyses, processes and other actions) for this project.

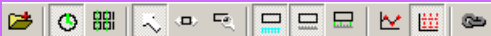
D Thumbnail Playback Options – Scan the videos for important content.













4 Video Timeline

Timelines provide convenient techniques to synchronize and visualize multiple videos, data, graphs and data. Timelines are used to align events, find subtle events and observe data patterns.



Timeline View Tools



-  **Add Video** – to the Timeline window.
-  **Sync Play Time Aligned** – Vertical line on the screen will intersect each linked strip at the same time.
-  **Sync Play Frame Aligned** – Vertical line on the screen will intersect each linked strip at the same frame number.
-  **Selection** – Highlight frames in green. Use for zooming in on a set of frames of interest. Dragging the mouse over the frames of interest and then hit **Enter** to zoom in.
-  **Pan**
-  **Zoom**
-  **Show Time Line**
-  **Show Frame Ticks**
-  **Show Comment Markers** – Indicates where user comments have been added. Hold mouse to display any particular comment.
-  **Show Data Markers** – Display analyses and data points.
-  **Show/Hide Data Grid Lines**
-  **Link All Strips** – Synchronize all events on a time/frame basis for zooming, panning, and/or playing.

Timeline Title Bar Tools

The title bar contains the source of the displayed strip and a set of controls on the right side:



Timeline Right-Click Options



Right-click on any individual Timeline to reveal the options, features, and actions available.

5 Measurement Window

Most actions to videos are performed in Measurement Windows, including image processing, measurements, analyses, calculations, annotations and displays. Double-click on any video thumbnail in the Project to launch a Measurement Window.

Main Window

Main Window. Display videos, data, graphs and more.

Video/Graph Main Toolbar

Sets viewing options

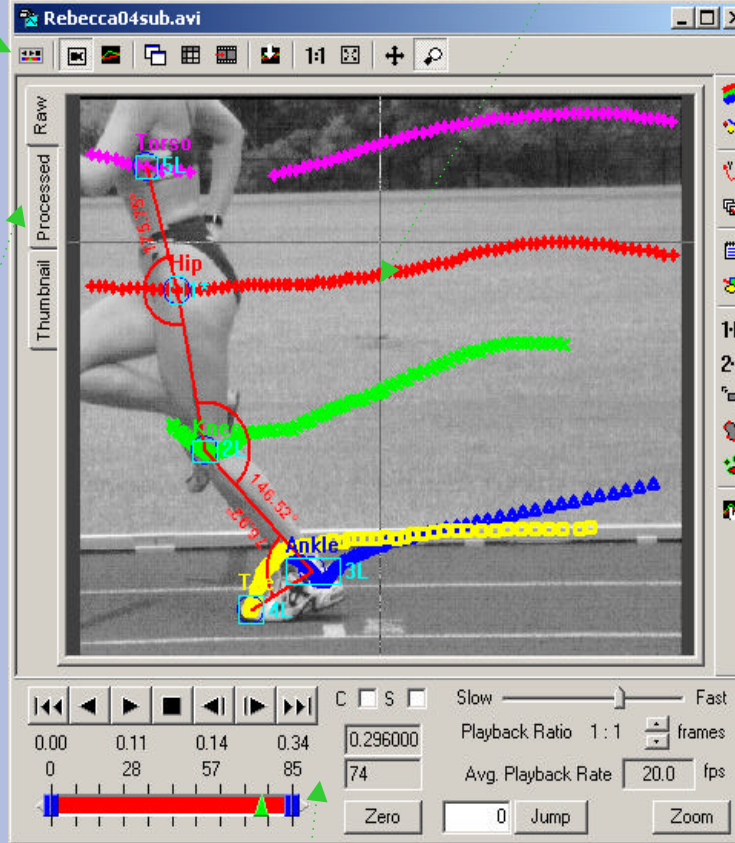


- Toggle Play Controls** – Toggle between the Normal, Compact, and Hide play control modes. The default style for the play controls can be set in the Program Options.
- Show/Hide Video**
- Show/Hide Graph**
- New Window** – for this event to compare video, graphs and frames.
- Show Calculations**
- Create Timeline**
- Refresh Graph**
- View Actual Size**
- Fit In Window**
- Pan Mode**
- Zoom Mode**

Video View Tabs

Different ways to view the video.

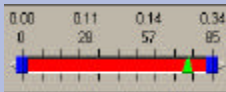
- **Raw** – The image displayed is always the original unaltered image directly from the video source.
- **Processed** – View includes all image processing (i.e. Image LUT and Image Processing Filters).
- **Thumbnail** – Show a thumbnail summary of the entire video. Use right-click context menu or shortcut keys **A**, **Z**, **S**, **X** and **P** to adjust time interval, size and processed view.



Play Controls



Play Controls – Rewind, reverse, forward, stop, step backward, step forward, fast forward



Slide Bar – Move to a specific time. Active area is in red, range brackets in blue and the current position a green triangle.

Continuous (C) – Loop the video playback.

Synchronize (S) – Click to synchronize this video to all other selected synchronized windows for playback.

0.296000 **Current Time**

74 **Current Frame**

Set Zero Frame (Zero) – Set the current frame of the video to become *Frame 0* and the current datum to become *Datum 0*.

Set Playback Rate

Playback Ratio 1:1 frames **Playback Ratio** – Set number of frames to skip during playback.








Jump to Frame (Jump) – to a specific frame number.

Create Zoom Window (Zoom) – Click on the **Zoom** button and then click and drag a rectangle over the area of interest in the video. A new zoom window will appear.

Analysis Modules/Tools


All the actions to the video and data are listed in this column.

From top: image processing, calibration, filtering, annotations, notes, analyses, graphing. Click on each icon to expose the Control Panel.

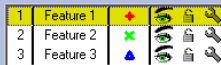
-  **Image LUT** – Image controls such as brightness, contrast, and gamma.
-  **Image Processing Filters** – Powerful image manipulation using sequential filter operations (i.e. smoothing, sharpening, threshold, and despeckling).
-  **Image Calibration** – Calibrates an image :
 - Scales the recorded video image to real-world dimensions
 - Rotates the image to remove any unwanted tilt
 - Establishes an origin (0,0) and X,Y coordinate plane
-  **Display Layers** – Controls what is displayed on the video image.
-  **Notes** – Records/Edits notes to individual video frames, graphs or videos.
-  **Annotations** – Add graphical annotations on the video image, show real-time angles and distances on the image.
-  **Line (1-D) Tracking** – Automatically track any feature along a one-dimensional (1-D) line contained in your video files.





Graph the visibility, area under line, and circle fit. The wrench provides access to algorithm settings.



-  **Feature (2-D) Tracking** – Automatically track distinct features and determine frame-by-frame motion characteristics (e.g. position, velocity, etc.), with respect to the plane of the image.

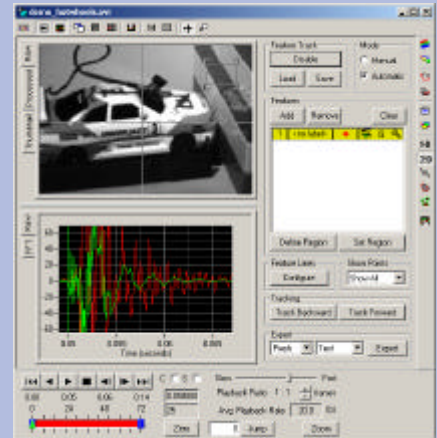
Features can be named and uniquely displayed. The wrench provides access to algorithm settings.



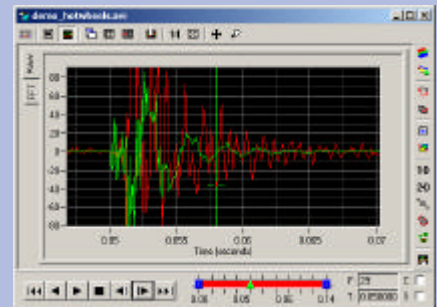
-  **Stabilization** – Remove unwanted bounce or hand-held jitter prior to analysis.
-  **Contour Tracking** – Track the contour of an object in the video such as an airbag. Computes the area and shape on a frame-by-frame basis.
-  **Particle Tracking** – Automatically detect and characterize particles in images. Measures frequency, size, location and shape.
-  **Configure Graph** – Configure the graph, including analyses and data sources. Display FFT and add many types of filters to the data.

Views of the Measurement Window

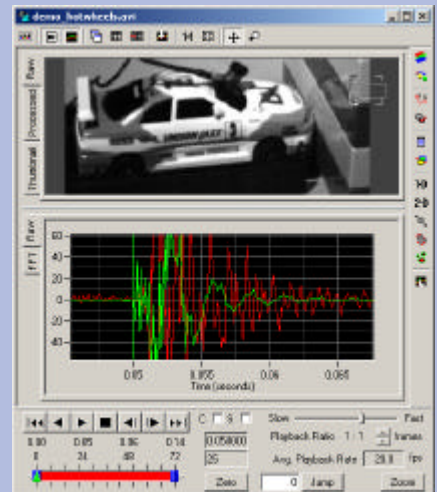
Sample screens/views of the same video file.



Video and Graph with Play Controls and Control Panel



Graph only (includes FFT) and abridged Play Controls



Thumbnail View with Control Panel

Video and Graph with Play Controls