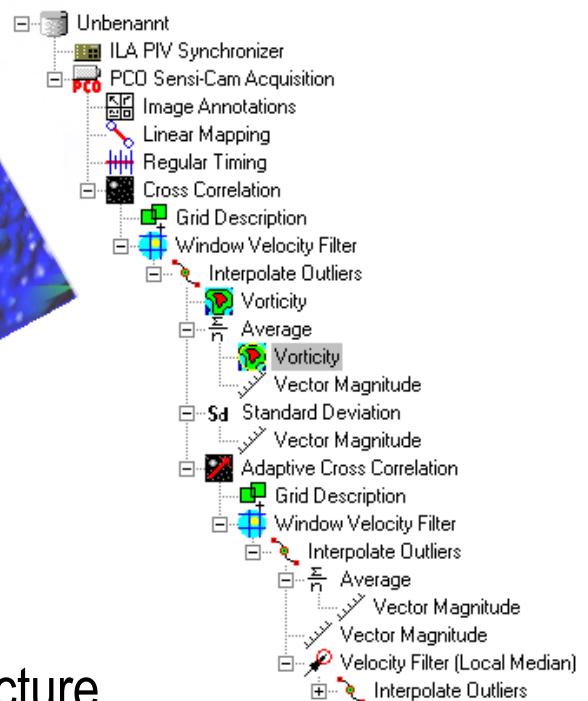
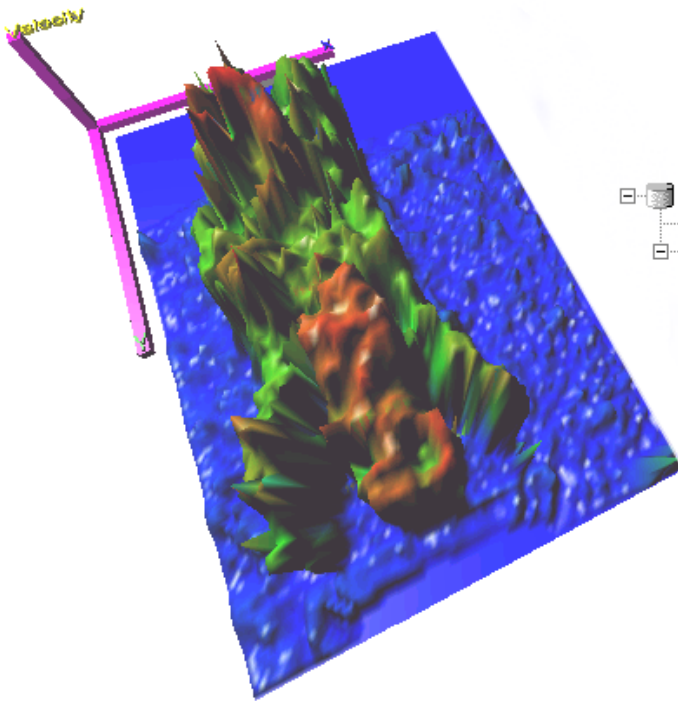


# PIV Software

VidPIV from OL Imaging

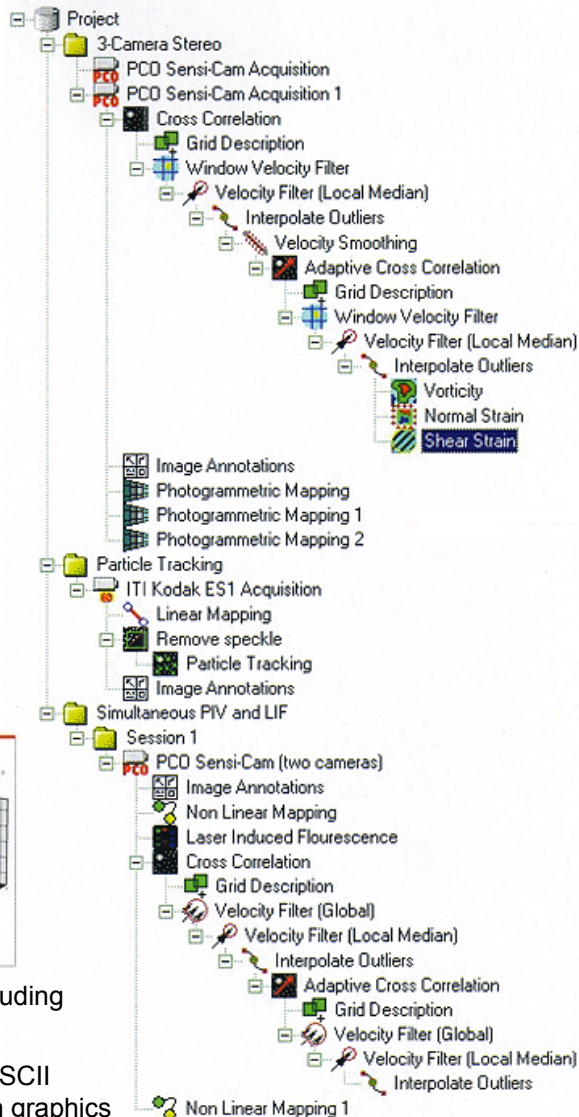


- Unique modular structure
- Total user control / configuration
- Integrates with existing hardware
- Buy only the features you need
- Write your own additions

# Evolution by Design

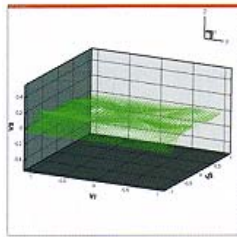
PIV is a fast-evolving flow diagnostic technique, driven forward by the continuing development of new algorithms and advances in image acquisition and processing hardware. For this reason, PIV users need **flexible and generic software tools** that anticipate evolutions of the technique while providing state-of-the-art performance and functionalities. This is VidPIV.

VidPIV is a **unique and powerful** toolset for PIV and more generally for image based and point measurement techniques. It incorporates every aspect of the measurement process: hardware control, image acquisition and storage, on-line analysis, off-line and batch analysis and visualization are all integrated within a unified environment.



## Import / Export

VidPIV supports an extensive array of important features. Images stored as raster disk files can be imported into a VidPIV project either as a single image or double image sequences. A wide range of file types is supported both for import and export: **TIF, GIF, JPG, BMP, PCX, B16** and others.



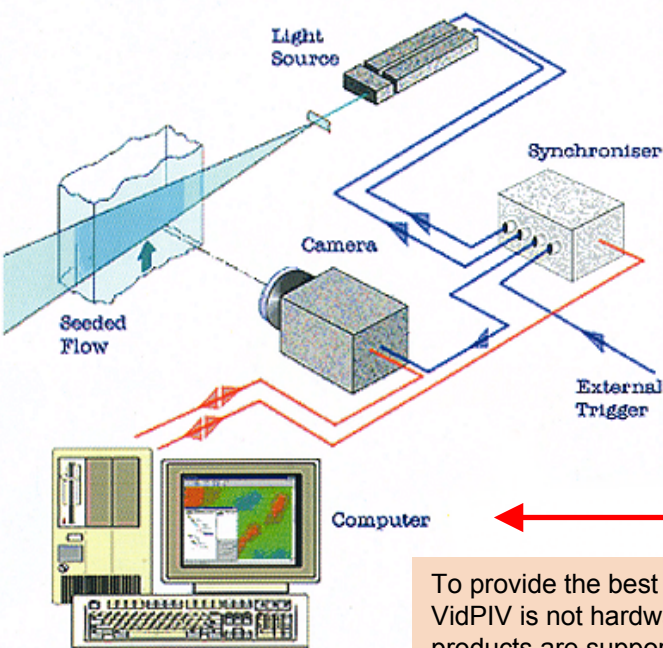
The comprehensive data export facilities apply to all **data types**, including **images, 2-D, 3-D, vector data and scalar data**:

- Quantitative data of all types may be exported in either binary or ASCII formats including formatted output for TECPLOT and other common graphics packages,
- Visualizations of images, vectormaps, scalar maps, mappings, annotations supported within the display window may be exported to the Clipboard or in one of the file formats listed above.

## Mappings

We recognised early the importance of mappings to correct anything from small alignment errors to gross image distortion, and navigate in your images in real units. VidPIV uses mappings extensively and with rigour to provide reliable accurate and flexible **conversion between image coordinates and "real-world" coordinates**

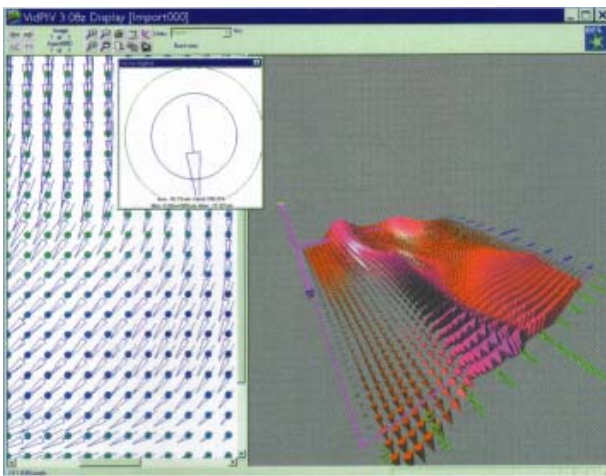
- Simple linear mappings providing rapid scaling of image data to imperial (US) or SI (Metric) units
- Non linear mappings that describe complex image distortion typical when using wide angle lenses, viewing through air/ glass/ water interfaces and camera perspectives other than normal to the measurement plane
- Pattern matching functionality helps detect calibration points from images to sub-pixel accuracy.



## Flexible System Configuration

To provide the best answer to the diversity of PIV applications and requirements, VidPIV is not hardware specific. A whole range of camera, synchroniser and laser products are supported in standard and custom system configurations, and new hardware support modules can be efficiently added as necessary.

## Display



The display window is a powerful and simple visual interface used to display live camera output, real-time/ on-line measurements and interactive features for the generation of mappings and annotations. It features comprehensive graphical capabilities for all the data types that may be preserved within a project, including display, export, print and quantitative preview. Combined 2D and 3D visualisation of vector and scalar field information can be easily created with a unique 3D viewer facility.



## 3D-Stereo Support

- Supports a choice of stereo configurations: standard 2-camera arrangement with or without Scheimpflug tilt
- Support for stereo configurations with more than 2 cameras for improved accuracy
- Versatile perspective and photogrammetric mappings
- Most general choice of calibration procedure
- Advanced help tools for calibration grid and mapping generation

## On-line Processing

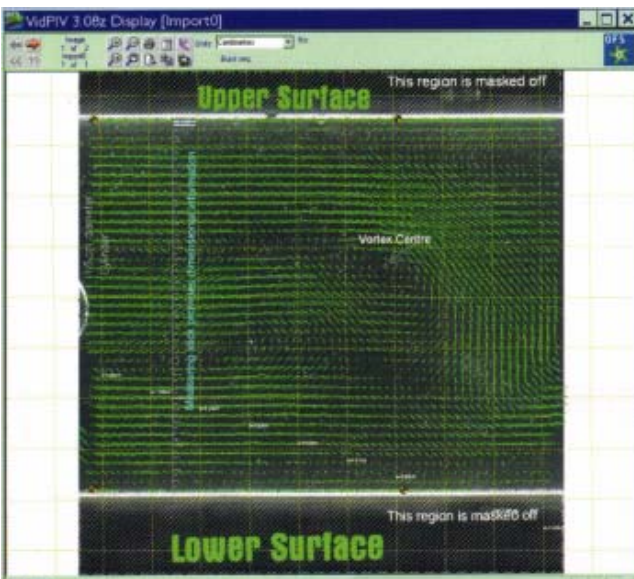
- Simultaneous display of vector and background display of scalar quantities
- "Real-time" vector map display
  - Allows on-line optimisation of the experimental measurement parameters

## Software Development Kit

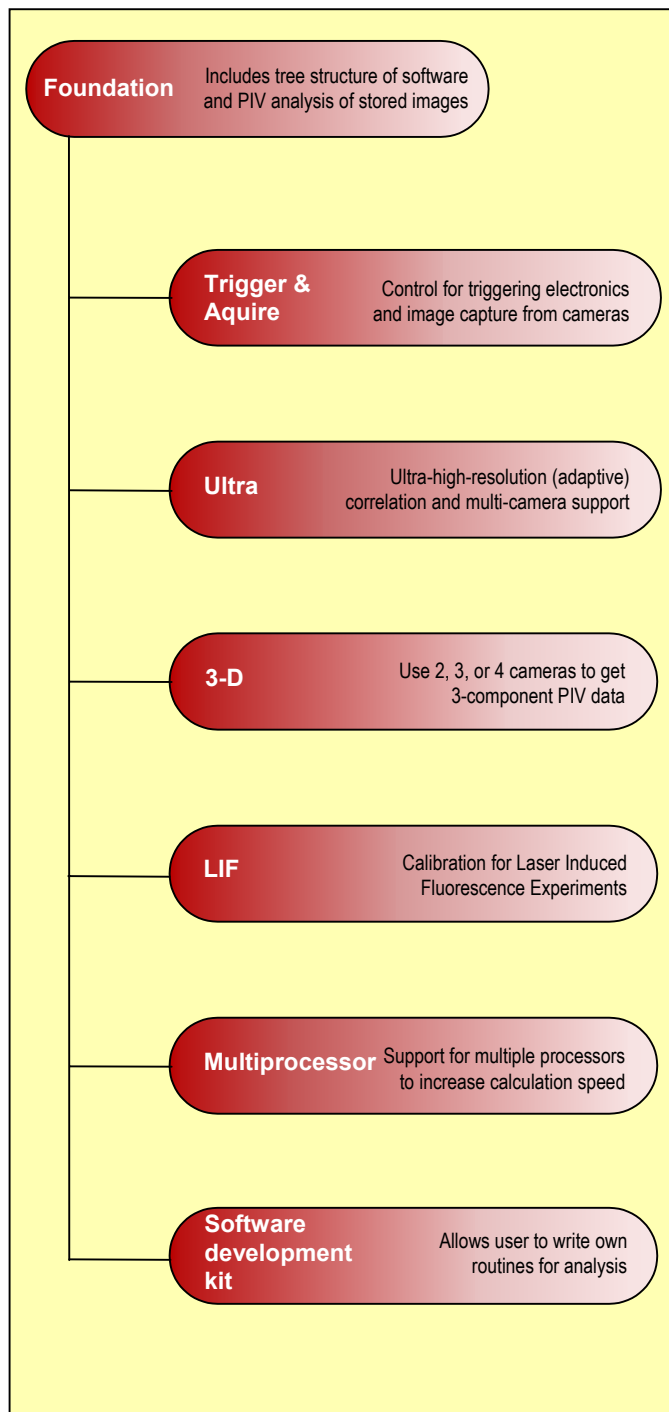
One of the fundamental and unique features at the core of VidPIV is the software development kit (SDK). The uniquely modular structure of VidPIV offers complete freedom and flexibility in the way in which processing operations can be applied to data. This modularity also makes it simple to add new functions using the SDK. Continuing developments in the PIV technique can be implemented quickly as they appear. For PIV developers themselves the SDK provides comprehensive tools to prototype and implement their own algorithms in standard C or C++.

## Annotations

- In many measurement situations such as turbomachinery it is necessary to annotate images and data derived from images to show flow boundaries, obstacles in the flow and even features within the flow field. VidPIV supports a full range of editable annotation features including exclusion masks that indicate
- areas where there is no flow information,
  - text for highlighting features,
  - specialised annotations for extracting variable dimensional information from images and derived data



	Specifications
Visual structure	<ul style="list-style-type: none"> <li>Visual tree structure contains all information about an experiment (e.g. data source, analysis and filtering options)</li> <li>Icon-based representation for all hardware and software functions</li> <li>Immediate visualisation of data at all points on tree (e.g. view images, vectors, correlation, filter mechanisms)</li> <li>Drag &amp; drop of processing functions / sequences</li> </ul>
File Structure	All information stored in single project files, including images
Formats imported	BMP, GIF, JPG, PCX, TIF, DXF, Encapsulated Postscript
Formats exported	BMP, JPG, FORMATTED ASCII (FOR TECPLOT, EXCEL)
Correlation types	Dual (cross-correlation) / single-image (autocorrelation) / Adaptive cross-correlation (ultra resolution) / adaptive particle tracking
Correlation viewer	Allows the user to view in a 3D window correlation peaks anywhere on an image, and check visually the validity and quality of these peaks.
Image Operations	Exclude / contrast adjustment / false color / annotate / show real-world grids / drop calibrated measuring stick into image
Vector Filtering	Global, Local, Signal to noise
Interpolation	Interpolation and smoothing supported
Scaling	Linear / Non-linear scaling of velocity and position also allows correction of image distortion / SI (metric) or Imperial (US) units
Statistics	Average (mean) / RMS vector / Standard deviation / Variance
Scalars	Overlay / 3D view / Animate any of : Vorticity / Shear / Signal to noise ratio / Curl / Vector magnitude / x-, y-, z- components
Vector Display	Overlay of vectors on images / Optional output to Tecplot
3-D viewpoint	3-D vector field visualization and scalar magnitude – view from any perspective with real-time adjustment ("fly-by" effect)
Cameras supported	Roper (Kodak) ES 1.0 / Roper (Kodak) ES 4 / PCO Sencicam / Roper (Kodak) Motionscope / Kodak or Photron Ultima 40k / Vosskuhler HCC 1000 / Roper Motion Meter / Roper Fastcam / Phantom 4 & 5 / most own-model cameras from other PIV manufacturers / others on request
Min PC Spec	Windows NT 4 (all features supported) / Windows 2000 (analysis only) / Windows 2000 Japanese (analysis only) 128 MB RAM; 1 GB hard disk; Pentium 350 MHz; 8 MB Graphics card with Open GL support



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