VisionPro® has been set free. Now you can get the world’s top vision software with its robust tool library—no matter what camera or frame grabber you use—even nontraditional sources such as 3D profilers, thermal cameras and X-ray imagers. That means all applications benefit from this broad-based, industrial-grade tool set from Cognex.

- Proven in more than 700,000 installations worldwide, the VisionPro tool library spans all vision needs … from geometric object location and inspection to identification and measurement.
- Combined with flexible and powerful PC-based development, VisionPro makes it faster than ever to create and deploy solutions for the most challenging machine vision applications.
- VisionPro is fully compatible with Microsoft® Windows® 7 in five languages and also supports Microsoft 64-bit operating systems to meet the demands of larger cameras and greater pixel depth. VisionPro software’s framework enables users to switch seamlessly between 32-bit and 64-bit operating systems.

Our customers get more than software when they purchase VisionPro. They get a company focused exclusively on machine vision, with the most comprehensive application experience. Add direct, high-quality worldwide service and support, and it’s easy to see why Cognex is the machine vision company that industry relies on.

VisionPro software’s capabilities set it apart:

- Drag-and-drop linking between tools enables quick communication of values, results, and images
- Intelligent software fixtures position tools dynamically, simplifying tool setup
- Reusable tool groups and user-definable tools shorten development time
- Designed to harness maximum power provided by modern multicore machines
- Supports typical Microsoft® operating systems including Windows® 7 in 32 and 64 bit

Fast and Flexible Application Development

VisionPro offers something for everyone—drag and drop, scripting, or programming—VisionPro seamlessly supports all modes of development. VisionPro QuickBuild™ lets you configure acquisition, select, and optimize vision tools, and make pass/fail decision… all without programming.

OR... develop managed applications with C++, C# or VB.NET. VisionPro has a .NET programming interface which allows programmatic access to all tools using high-level object oriented languages for very efficient development of customized vision solutions. Use QuickBuild to easily load and execute jobs or opt to manually configure your tools by code.
Solutions for All Applications

Semiconductor and Electronics
- High precision alignment
- Board, wafer, and die inspection
- Metrology
- Lead frame inspection
- LED and LCD functional testing

Automotive
- Robot guidance
- Part traceability
- Gauging critical dimensions
- Presence of weld nuts, springs, and fasteners
- Bead tracking for sealants
- Racking and de-racking

Food and Beverage
- Verify date and lot codes
- Picking and packaging
- Label inspection
- Presence of caps, labels, and tamper seals
- Whole package inspection
- Verifying bag closure

Solar
- Silicon crystal, wafer, and cell inspection
- High precision alignment
- Color cell sorting
- Coating inspection
- Panel assembly verification
- Screen print registration

Pharmaceutical
- Verify date and lot codes
- Label inspection
- Whole package inspection
- Sort by color
- Read 1-D and 2-D barcodes
- Verify presence of tamper seals

Robot Guidance and Part Location
- Part location for automated palletizing
- Locate, identify, and inspect components
- Pick & place on conveyors
- Robotic inspection
- Guide assembly
Whether you need vision for inspection or for robotic guidance, VisionPro stands apart from others by offering the industry’s most proven, reliable tools. These tools, found only in the Cognex vision tool library, have made VisionPro the industry’s benchmark for vision performance.

**PatMax**
The critical tool for object location is PatMax, the patented software tool for part location. PatMax is the industry’s gold standard for part and feature location, providing accuracy and repeatability under the most challenging conditions.

**PatFlex**
PatFlex locates objects despite surface perspective or distortion, enabling the use of tools on complex surfaces.

**PatInspect**
With one-step part location and defect detection using patented algorithms, PatInspect reliably detects flaws even on the edges of parts where other techniques have trouble giving reliable results.

**PatMax Synthetic**
PatMax Synthetic automates model training using CAD data or our unique Model Maker.

**PatInspect™ Area**
PatInspect Area provides high-accuracy inspection, statistical training and normalization techniques to compensate for lighting variations.

**PatMax XLC**
PatMax XLC finds barely visible patterns in images, reducing the need for expensive lighting and optical systems.

**PatMax SA**
PatMax SA provides accurate results for partial-match alignment when the entire pattern is not present in the image, reducing false rejects.
## Color Tools

**Locate, sort, extract match, identify, and monitor color images**

<table>
<thead>
<tr>
<th>Tool</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SearchMax™</strong></td>
<td>The ultimate tool to find color samples allowing translation, rotation, scale and skew.</td>
</tr>
<tr>
<td><strong>Color Extractor</strong></td>
<td>Simple color definition for complex color scenes. High-speed color extraction for food and packaging.</td>
</tr>
<tr>
<td><strong>Composite</strong></td>
<td>Accurately discriminates between subtle Color Match color variations.</td>
</tr>
<tr>
<td><strong>Color Match</strong></td>
<td>High-speed identification and sorting of colored parts.</td>
</tr>
<tr>
<td><strong>Color Segmentation</strong></td>
<td>Creates a greyscale image from selected colors, enabling other tools to be applied.</td>
</tr>
</tbody>
</table>

## Identification and Verification

**Achieve optimum ID reading and character verification**

<table>
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<tr>
<th>Tool</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>IDMax™</strong></td>
<td>Reads even the most degraded data matrix codes, delivering consistent high read rates needed for part traceability.</td>
</tr>
<tr>
<td><strong>Industrial Code</strong></td>
<td>Reads multiple symbologies—without being told how many or which standard—even when codes are randomly positioned and rotated.</td>
</tr>
<tr>
<td><strong>2D Symbol</strong></td>
<td>Verifies the quality of 2D symbols Verification using AS 9132.</td>
</tr>
<tr>
<td><strong>OCR + OCV</strong></td>
<td>High-speed character reading and verification, even when the print is extremely distorted, using both image-based and printer font-based training.</td>
</tr>
</tbody>
</table>

## 3D

VisionPro 3D delivers accurate, real-time, three-dimensional position information to automate challenging assembly verification, logistics, and robot applications.
Essential Tools, combined with Power Tools, provide the most comprehensive set of industrial-grade vision tools, optimized to deliver high-speed performance in all applications.

**Essential Vision Tools**

- **Find Geometry**
  
  Find lines and circles

- **Best Fit Geometry**
  
  Create best fit lines and circles

- **Measure Geometry**
  
  Measure distances, angles, and intersections

- **Create Geometry**
  
  Construct reference geometry

- **Blob Analysis**
  
  Measure area, size, shape, other geometric properties

- **Checkerboard Calibration**
  
  Correct for non-linear, optical, and perspective distortion

- **Calibration**
  
  Calibrate camera pixels to real-world units

- **Caliper**
  
  Measure sub-pixel location of edges

- **CNLSearch**
  
  Locate an object using normalized correlation

- **Fixturing**
  
  Position tools dynamically, based on location tool results

- **Sobel Edge Detection**
  
  Detect edge location, intensity and direction

- **Polar Unwrap**
  
  “Unwrap” an annular region into a rectangular image

- **Image Averaging**
  
  Create images based on the average of previous images

- **Grayscale Morphology**
  
  Erode, dilate, open, and close

- **Gaussian Filter**
  
  Smooth or sample images

- **Image Add/Subtract**
  
  Add or subtract pixels in two images

- **Histogram Analysis**
  
  Count pixels by gray value

- **Copy Region**
  
  Copy multiple images into a single image

- **Affine Transform**
  
  Rotate, scale, or translate an image

- **Pixel Mapping**
  
  Re-assign the gray value of pixels based on a lookup table

- **NxM Filters**
  
  Convolve, median, erode, dilate, with any filter size

- **Multiply/Divide**
  
  Multiply pixel gray values by a constant

- **Image Sharpness**
  
  Determine the focus of an acquired image

- **Image Convert**
  
  Transform color images for analysis with other tools
Total Hardware Independence

Now you can get the world’s top vision software—no matter which camera, frame grabber, or direct-connect digital standard you use.

Support for all image capture needs

Broad Camera Support
VisionPro captures images from hundreds of industrial cameras, covering the complete range of video formats and acquisition requirements. Strategic Cognex relationships with major camera suppliers enable early support of new cameras and technology. VisionPro provides open camera support, as well as configuration and diagnostic tools. This enables customers to configure, analyze, and modify cameras for numerous acquisition platforms.

Acquisition Independence
VisionPro software provides pre-configured, tightly integrated acquisition from both Cognex hardware and direct-connect digital cameras. For images from any other source, such as microscopes or 3rd-party frame grabbers, VisionPro provides a flexible acquisition architecture. This allows customers and vision partners to develop custom interfaces for any programmable image source.

Direct-Connect Technology
FireWire® and GigE Vision® acquisition provide a broad range of digital cameras with attractive features and high performance. Direct-connect technology takes advantage of the latest PC architectures to provide reliable image acquisition without a traditional frame grabber.

Frame Grabber
Both Camera Link® and analog frame grabbers can be used with VisionPro. This provides fail-safe image capture with image buffers, advanced error detection, and dedicated multi-channel hardware.

Acquisition Alliance
Cognex maintains strategic relationships with major camera suppliers through our Acquisition Alliance program. Through the Acquisition Alliance, Cognex establishes cooperative sales and marketing efforts and strong technical relationships, leading to rapid integration of new cameras with VisionPro. Cognex supports hundreds of industrial cameras and video formats covering the complete range of acquisition requirements typically used in machine vision.