

## Excellence Centers Around CBYON®

# **CBYON technology rewrites the future of image guided minimally invasive surgery after 12 years of research and commitment**

CBYON core business is Image Guided Surgery. Our entire Research & Development effort is focused on ensuring a continuous flow of new products and upgrades that will continue to set the standards for Surgical Navigation. The current

CBYON development team consists of over two-dozen surgical navigation and medical imaging specialists, one third of whom hold a doctorate degree in the field.

# CBYON Simplicity

In order to maintain simplicity while providing advanced functionality, the CBYON platform consists of Application-Specific Modules, such as neuro-biopsy, spinal endoscopy, and sinus modules. A “Module” is a fully functional navigation system designed for seamless integration of surgical tools, imaging protocols, and adaptive workflow user interfaces tailored for a given procedure.

## ***Customized Instrument Tracking Kit:***

Each module is accompanied by simple-to-use, customized adaptors that allow for precise tracking and seamless integration of all the surgical tools associated with a given procedure.

## *Application Specific Imaging Protocols:*

An integral part of a Module is its associated surgical protocol, consisting of application-specific preset 3-D filters and editing tools that allow the user to segment out volumetric structures easily and quickly.

## *Adaptive Workflow User Interface:*

CBYON has created a simple user interface based on procedural workflow. Clear, straightforward menus walk the surgeon through the entire procedure, from registration to navigation in a logical, step-by-step manner with a single task per screen.



# Exposure Beyond Incision

**By dynamically matching transparent 3-D images of patient scan data to intraoperative surface views, CBYON patented technologies expose subsurface critical structures**

*Perspective Volumetric Navigation*

Provides dynamically updated 3-D views from any arbitrary perspective, including the surgical tool's-eye view

## *Dynamic Data Filtering*

Displays or removes anatomical structures to interactively evaluate surgical instrument trajectories prior to incision

*Image Enhanced Endoscopy*

Dynamically matches perspective volume rendered images to endoscopic views, revealing subsurface critical structures



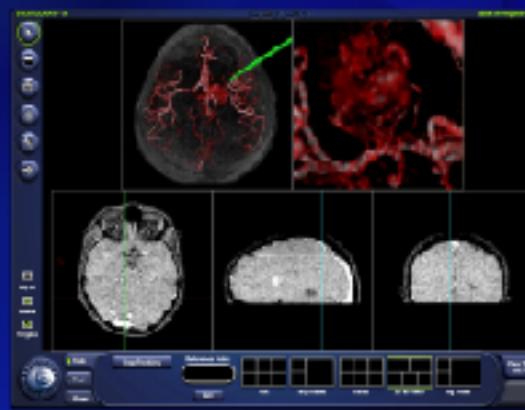
CBYON Solutions

- **Fast and Easy OR Setup**
  - **One-Click Automated Registration**
  - **Universal Instrument Tracking Kit**
  - **Multiple Instrument Tracking**
  - **Endoscopic Nerve & Vascular Detection**
  - **Volumetric Microscope Integration**

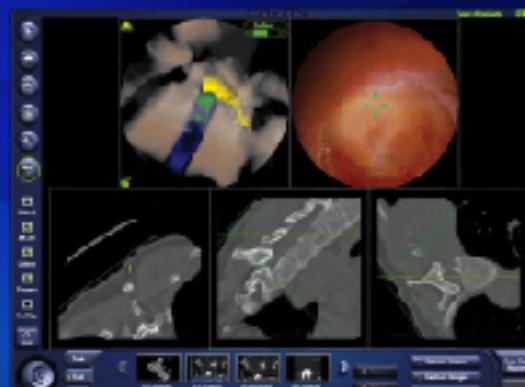
# Transparent Anatomical Structures Make Minimally Invasive Surgery Easy



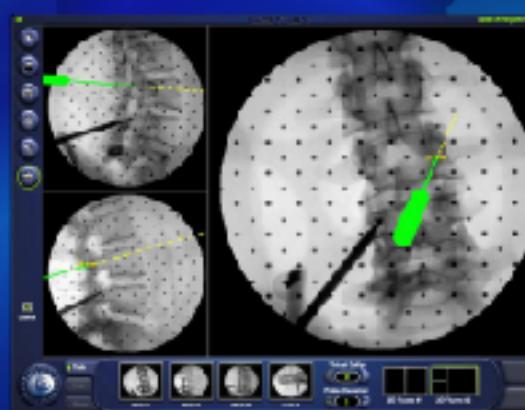
CBYON focuses on providing clinical relevance to its advanced visualization software by creating procedure-specific surgical navigation modules in collaboration with leading institutions worldwide



3-D intraoperative navigation of vascular structures



Nerve root detection via Image Enhanced Endoscopy



Spinal instrumentation guidance under 2-D fluoroscopy

## CBYON Solutions

- Frameless Stereotactic Biopsy Integration
- Intraoperative Fluoroscopic Navigation
- Volumetric Microscope Integration
- Endoscopic Nerve Root & Vascular Detection
- Shunt and K-Wire Guide Integration
- Multiple Instrument Tracking

CBYON

True Perspective from the Hand of the Master

[www.med-surgical.com](http://www.med-surgical.com)

## Excellence Centers Around CBYON®

CBYON technology rewrites the future of image guided minimally invasive surgery after 12 years of research and commitment

CBYON core business is Image Guided Surgery. Our entire Research & Development effort is focused on ensuring a continuous flow of new products and upgrades that will continue to set the standards for Surgical Navigation. The current CBYON development team consists of over two-dozen surgical navigation and medical imaging specialists, one third of whom hold a doctorate degree in the field.

## CBYON Simplicity

In order to maintain simplicity while providing advanced functionality, the CBYON platform consists of Application-Specific Modules, such as neuro-biopsy, spinal endoscopy, and sinus modules. A "Module" is a fully functional navigation system designed for seamless integration of surgical tools, imaging protocols, and adaptive workflow user interfaces tailored for a given procedure.

**Customized Instrument Tracking Kit:**  
Each module is accompanied by simple-to-use, customized adaptors that allow for precise tracking and seamless integration of all the surgical tools associated with a given procedure.

**Application Specific Imaging Protocols:**  
An integral part of a Module is its associated surgical protocol, consisting of application-specific preset 3-D filters and editing tools that allow the user to segment out volumetric structures easily and quickly.

**Adaptive Workflow User Interface:**  
CBYON has created a simple user interface based on procedural workflow. Clear, straightforward menus walk the surgeon through the entire procedure, from registration to navigation in a logical, step-by-step manner with a single task per screen.



**Exposure Beyond Incision**

By dynamically matching transparent 3-D images of patient scan data to intraoperative surface views, CBYON patented technologies expose subsurface critical structures

**Perspective Volumetric Navigation**  
Provides dynamically updated 3-D views from any arbitrary perspective, including the surgical tool's-eye view

**Dynamic Data Filtering**  
Displays or removes anatomical structures to interactively evaluate surgical instrument trajectories prior to incision

**Image Enhanced Endoscopy**  
Dynamically matches perspective volume rendered images to endoscopic views, revealing subsurface critical structures

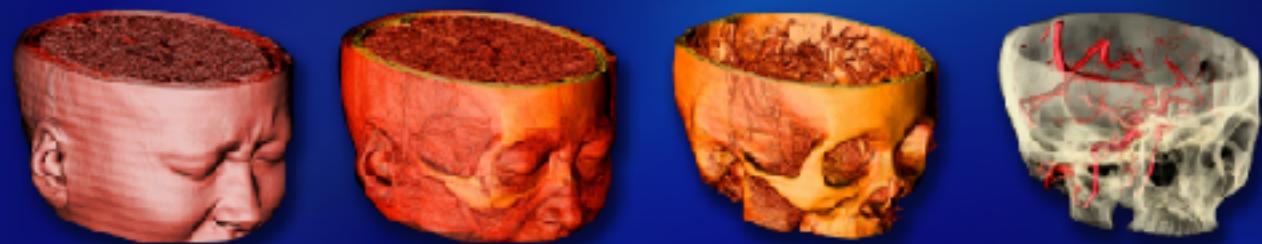
*"The superior CBYON surgical navigation system allows us to operate in areas of the brain that we were unable to access before, enabling us to take a quantum leap in the kind of surgery we do."*

Gary Steinberg, MD, PhD  
Chairman, Stanford University Neurosurgery

*"The unique CBYON volumetric visualization technology shows me what other systems can not -- it "sees-beyond" surface anatomy and supports safe and effective surgery."*

J. Patrick Johnson, MD  
Director, Cedars Sinai Institute for Spinal Disorders

# Transparent Anatomical Structures Make Minimally Invasive Surgery Easy



CBYON focuses on providing clinical relevance to its advanced visualization software by creating procedure-specific surgical navigation modules in collaboration with leading institutions worldwide

## One, Two, Navigate

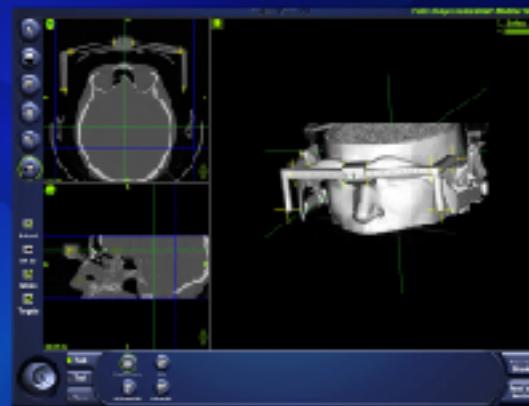
Fully automated registration with innovative headframe allows for system setup in less than two minutes



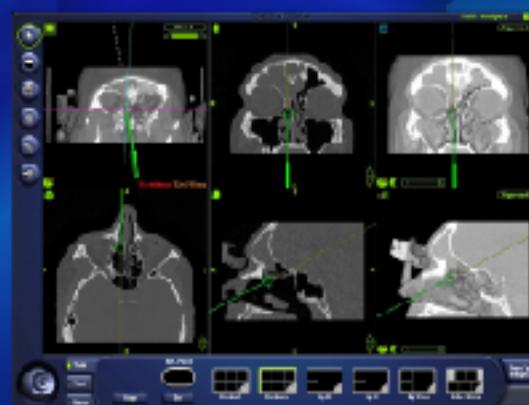
One step automated calibration allows for precise fusion of endoscopic video with preoperative volumetric CT data



STEP 1: Select Patient



STEP 2: One-click Registration



STEP 3: Navigate

**C BYON**

True Perspective from the Hand of the Master

[www.med-surgical.com](http://www.med-surgical.com)

Med-Surgical Services, Inc. 465 E. Evelyn Avenue Sunnyvale, CA 94086  
Phone: 408.617.2000 or 408.617.2001 Toll Free: 877.819.1900 Fax: 408.617.2002  
Copyright ©2008 Med-Surgical Services, Inc.