InSight

- **Add Light Field Imaging Capabilities To Your Microscope**
- **Single Shot / Real Time Three-Dimensional Microscopy**
- **Extended Depth of Field Parallax View Digital Refocusing**

Applications

3D functional imaging of neuronal activity

High-speed volumetric imaging of weak fluorescent specimens

In-vivo imaging of C. elegans, Drosophila and zebrafish

High-speed Ca^{2+} imaging

Fluorescence and brightfield microscopy

Live Imaging of cellular dynamics in three dimensions

Trajectory monitoring of microscopic objects

Instant 3D recording of dynamic events or moving specimens

One-Shot Volumetric Microscopy Imaging

**High Resolution Light-Field Imaging Based
On Smart PhaseView Processing Engines**
(patent pending)

PhaseView®
THE SIMPLEST WAY TO 3D

InSight

Beyond Microscopy Imaging Boundaries

Most of 3D microscopy techniques rely on time consuming methods by scanning the depth of a sample; leading to severe limitations for optically sensitive samples and good understanding of bio samples dynamics. **InSight** integrates a scanless method for a single shot 3D acquisition, preserving samples from photo toxicity or photo bleaching and ensures optimal temporal resolution to record 3D dynamic events.

Optimal Temporal Resolution With One Shot 3D Acquisition

The image depth of field can be very shallow at high magnifications and numerical apertures. When examining an entire specimen, it often requires to move the stage up and down for focussing on particular image plane; **InSight** greatly extends the depth of field for whole sample imaging in one shot and offers pst acquisition digital refocusing.

Extended Depth Of Field And Digital Refocusing

Microscope objects are seen in orthographic projection from a single direction leading to mis-interpretation of superimposed features in comparison to stereo microscopy. **InSight3D** allows viewpoint changes with perspective shift when examining large specimens.

*Parallax View For Removing Partial Occlusion*

Principle

Instead of scanning systems inherently limited by the time for scanning a desired volume, **InSight** relies on a scanless method based on high resolution light-field imaging integrating PhaseView novel acquisition and software engines.

PhaseView Light-field imaging stores spatial and angular information in a 4D description without typical trade-off of common lenslet array method.

The new approach combines a digitally controlled tunable lens and a microlens array. The 4D collected data is then processed by PhaseView ray tracing software technology which allows high sampling of the angular information while keeping the spatial resolution at its optimum.

PhaseView®
THE SIMPLEST WAY TO 3D
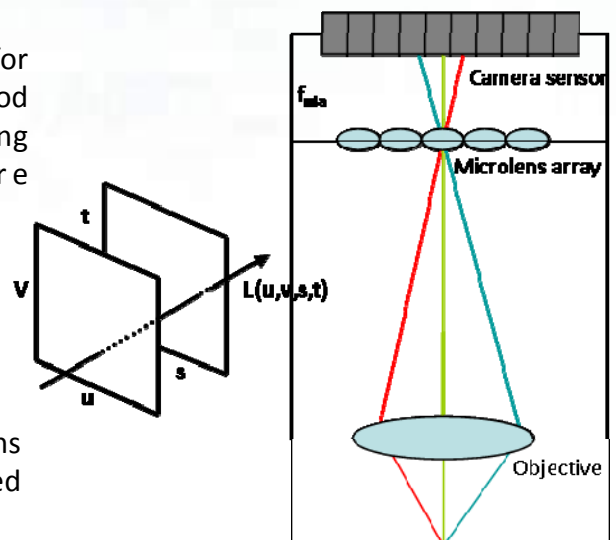
InSight

## Flexible Imaging With Scientific Cameras

Two InSight models are available, both allows fast scanning and scanless 3D acquisition modes. **InSight LFM is** an Add-On to any microscope, compatible with large format cameras. **InSight LFC** comes with an embedded high sensitivity sCMOS camera offering unrivaled flexibility for a wide range of imaging applications, providing large field of view, high quantum efficiency, low noise readout and fast frame rate.

QtImage Digital Imaging Software Included

QtImage touch screen user interface lets you zoom, tap, drag and scroll right on screen only using your fingers.

QtImage provides all features to meet the most demanding needs in life sciences research and biotech industries including:

One Shot 3D Acquisition. Z-stacking. Digital Refocusing. Time Lapse. Deconvolution. Multi Focus Image. Parallax View.
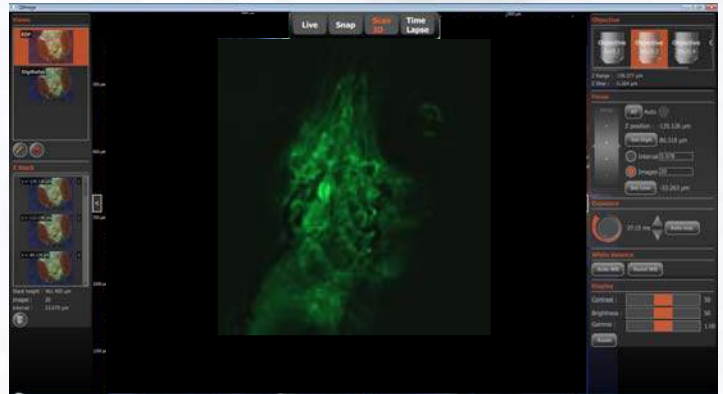
Microscopy Automation

Software Development Kit
The **NeoScan** SDK comprise a set of APIs written in C. The supported Operating Systems are Windows Vista, Windows 7, Windows 8.

InSight specifications

InSight LFM (add-on for any microscope)

Camera compatibility (camera not included)	Format >=1" (see compatibility list)
Microscope Interface	Video Port 1X C-mount adapter
Physical Dimensions (mm), Weight (g)	InSight Head: 245(H) 56(W) 80(D), 470 g Control Unit: 40(H) 160(W) 150(D) , 150 g

InSight LFC (with embedded camera)

Camera	Scientific CMOS 13.31 mm x 13.31 mm
Sensor specs	2048 x 2048 6.5 µm x 6.5 µm
Full well capacity	30 000 electrons
Dynamic range	33000:1
Frame rate (full resolution)	Frame rate (full resolution)

Scanless Mode (Light Field)
Z range and Z resolution are objective dependant
Z Range = 100 x Objective Depth of Field
Z Resolution = Z Range / 10

Scanning Mode
Z range and Z step are objective dependant
Z Range = 16mm / $(G\_Obj)^2$
Z Step = Z Range / 2000