LANIKA SOLUTIONS

FEI™

Open Inventor ImageViz

2D & 3D image processing and analysis Software Development Toolkit (SDK)

Specifically designed for application developers, the Open Inventor® ImageViz software development toolkit (SDK) allows easy integration of advanced 2D and 3D image processing and analysis capabilities into imaging software applications – in medical and life sciences, industrial inspection, materials science, and geosciences.

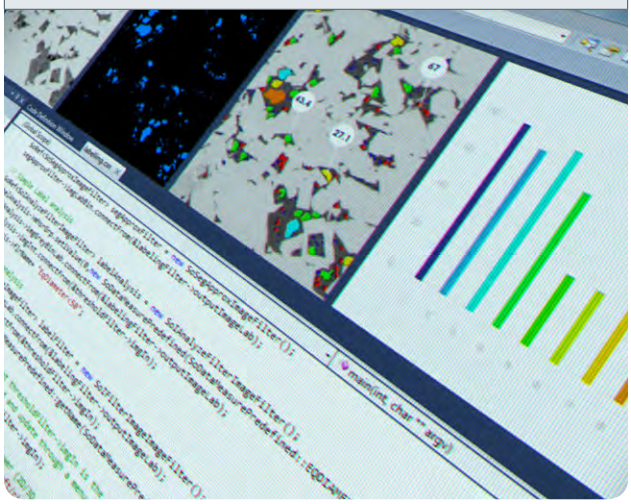
Open Inventor ImageViz SDK provides an extensive collection of high-performance parallelized 2D/3D image processing and analysis operators to implement application workflows, including:

- Pre-processing: 2D/3D image cleaning and enhancement
- Segmentation: identification of objects, phases, defects, and regions of interest
- Analysis: data quantification and numerical results

Process a wide range of image data, including 2D and 3D, grayscale and color, various bit-depth images, very large images, data from X-ray tomography, electron and optical microscopy, MRI, or any other image acquisition systems.

Implement automated image processing and analysis workflows and provide software users with faster, more accurate, and more complete insight into their data.

KEY BENEFITS
Professional 2D/3D image processing and analysis SDK
High-performance parallelized algorithms
Easy-to-use object-oriented API
Clearly documented algorithms for faster software development
Based on proven technology developed for 25 years
Cross-platform, multi-language
Integrated with a world-class 2D/3D visualization SDK



* ImageViz is an extension of the Open Inventor 3D software development toolkit.

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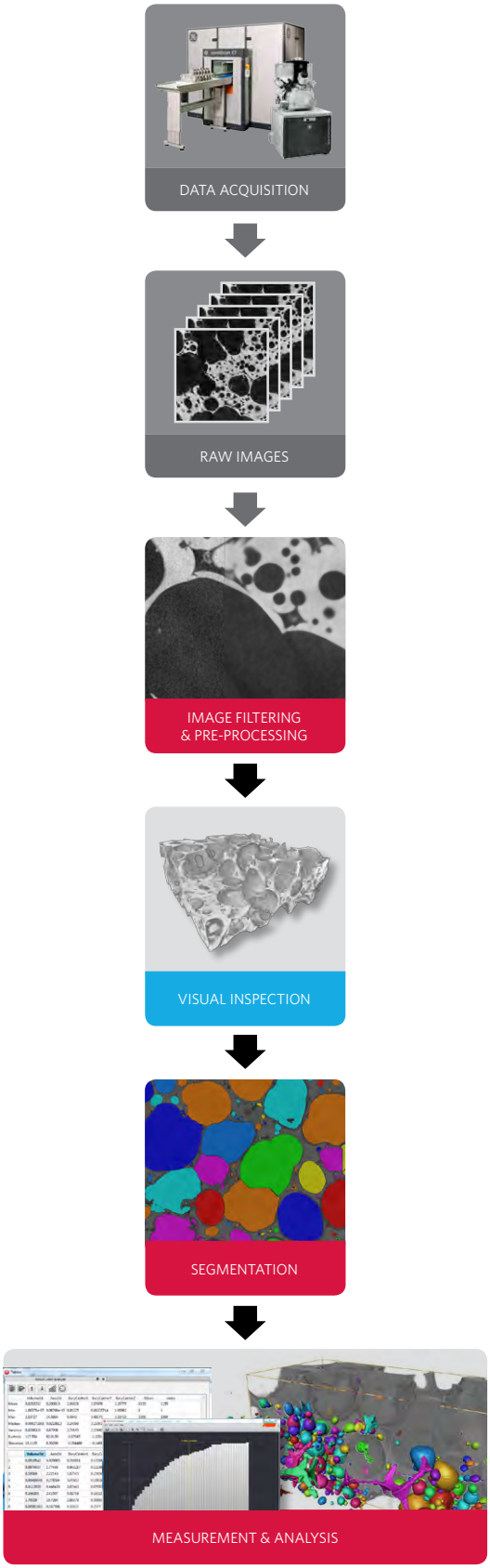
Key Features

ImageViz provides more than 300 image processing and analysis functions, including image enhancement, edge detection, arithmetic operators, global and individual measurements, and more. Combined with the Open Inventor 3D SDK, developers can build applications that handle the complete 2D/3D image processing, visualization, and analysis workflow for any image acquisition system.

Note: The below list of functions is not exhaustive. Check the detailed functions on OPEN-INVENTOR.COM.

FUNCTION CATEGORY	DESCRIPTION & EXAMPLES
Import and export	
	Images generated by a wide range of image acquisition devices Many data types, including floating-point and signed and unsigned 8-bit, 16-bit, and 32-bit integers
Image editing	
	Creation, conversion, cut, paste, pattern image or random image generation Color display conversion, anti-aliasing
Image pre-processing	
Image enhancement	Noise reduction, smoothing, sharpening
Light correction	Normalization, shading correction, background subtraction
Image processing	
Local transforms	First order statistics, local histogram equalization
Mathematical morphology operators	Erosion, dilation, various kind of structuring elements
Separating and filling objects	Opening, closing, hole filling, object separation
Frequency domain	Direct and inverse Fast Fourier Transform
Distance maps	Chamfer, chessboard, geodesic distance maps
Skeletonization	Skeleton, pruning, point detector
Segmentation	
Binarization	Automatic, predefined or adaptive thresholding
Labeling	Object and region labeling, label expansion, label grouping
Watershed	Ridge line and basin detection
Image registration	
Pattern recognition	Correlation
Geometric transforms	Image rotation, translation, rescaling
Image quantification	
Global and individual measurements	Feature measurement by image or by object: · Metrics (counts, volumes, areas, perimeters, orientations, etc.) · Shape factors (circularity, aspect ratio, elongation, rugosity, etc.) · Moment of inertia analysis · Intensity statistics
Object filtering	Object removal or labeling based on measurement features
Morphometry	Morphometric structural parameters according to ASBMR standard

Workflow example



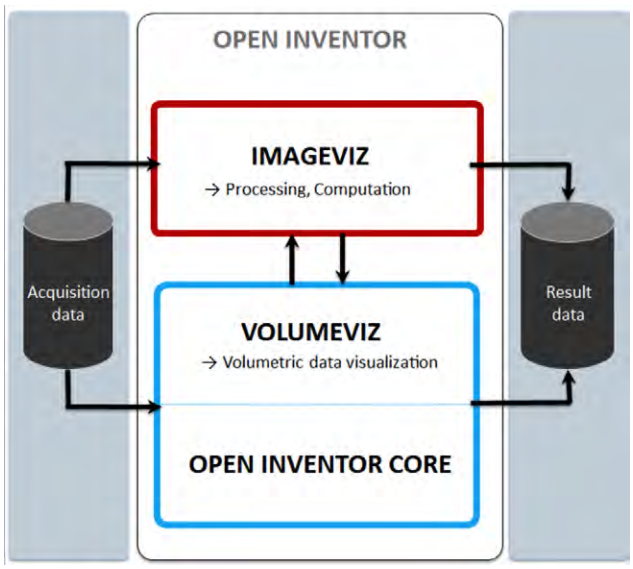
Automated image processing and analysis.

ImageViz allows developers to easily create automated image processing and analysis workflows in software applications. Create sequences of operators, including filtering, pattern recognition, segmentation, and other advanced image analysis tools. Efficiently implement custom image processing and analysis solutions and measurements.

Large image processing.

- 32- and 64-bit library
- Parallelized algorithms
- Up to 32-bit encoding (for labeling many objects)

ImageViz integration with Open Inventor



ImageViz is tightly integrated into the Open Inventor SDK and its standard concept of engines, nodes, and fields. Open Inventor data objects can be connected as input to ImageViz processing engines. Moreover, any ImageViz engine's output can be connected to Open Inventor or VolumeViz, allowing easy integration into existing applications.

ImageViz

VolumeViz (for 3D)
Open Inventor Core (for 2D)

Power your software development with Open Inventor®

Deliver state-of-the-art 3D. Open Inventor provides the power and functionality of OpenGL at an object-oriented level. The easy-to-use API, extensible architecture, and large set of advanced components provide software developers with a high-level platform for rapid prototyping and development of advanced 3D graphics applications.

Open Inventor extensions add specialized capabilities for the interactive visualization of very large (out-of-core) volume data, efficient support for several-hundred-million cell 3D models, distributed rendering, and 3D graphics output.

Build robust foundations. Open Inventor is proven to be the safe choice for the long term and the most flexible tool to transfer evolving technology and unique innovations to your solutions.

Extensions of the API and new class modules are carefully designed to introduce powerful new capabilities for your application in the most simple, transparent, and consistent way, protecting your investment and anticipating needs that you may not even foresee. Last, the interoperability and extensibility ensure your complete freedom to best adapt the toolkit to your specific needs.

Rely on strong support and innovation. Dedicated to serving our customers, FEI Visualization Sciences Group brings more than 25 years' experience in 3D visualization. Our support team pays particular attention to constraints of professional developers, working closely with R&D for best phasing with your development schedule.

Our Professional Services team is available to increase your efficiency through training, consultancy and custom development covering the whole life cycle of your project: from software and hardware requirements, prototyping, migration assistance, to system deployment, and even cooperative R&D.

Open Inventor is available for Windows®, OS X®, Linux
Languages: C++, .NET, Java™.

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