

# All-in-focus.

## First time. Every time.



**ZEISS Visioner 1**

[zeiss.com/visioner1](https://zeiss.com/visioner1)



Seeing beyond

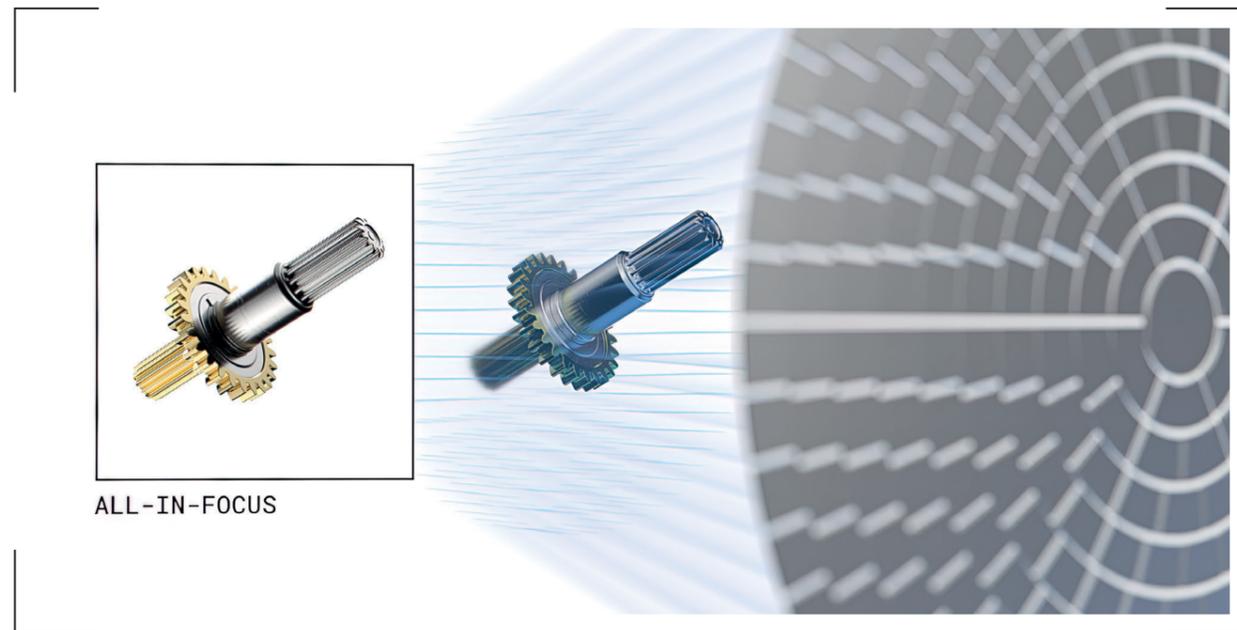
# All-in-focus. First time. Every time.



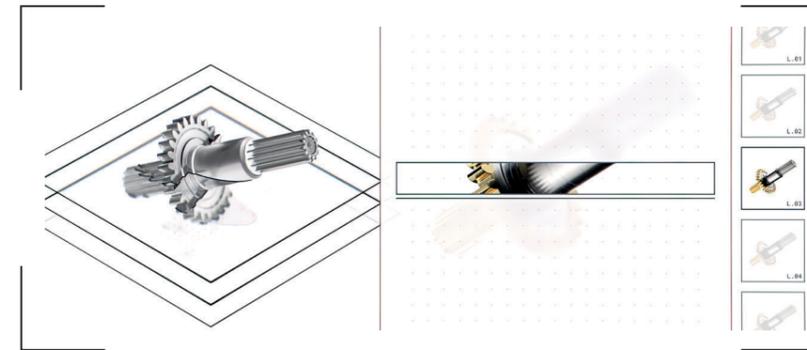
Visioner 1 is an innovative digital microscope featuring MALS™ Technology for shop floor quality control and quality assurance applications and for the first time ever enabling real-time all-in-focus visualization.

## Real-time Extended Depth of Field (EDoF)

ZEISS Visioner 1 enables the user to see the sample completely in focus in real-time, without the need to Z-stack and post process a series of images. Allowing up to 50x more usable extended depth of field and height differences of up to 69 mm. This is achieved utilizing MALS™ technology and drives the Visioner 1 to deliver real-time all-in-focus imaging – first time, every time.



# No Z-stacking. No downtime. Instant all-in-focus.



Extended Depth of Field (EDoF) is a process where multiple images through the focal plane are combined to create one in focus image however with digital microscopy systems, this can be time consuming and complex.

## Partial Focus

Inspected by classic microscope

## All-in-focus

Inspected by ZEISS Visioner 1



Imaging Sensor Circuit Board inspected by classic microscope



Imaging Sensor Circuit Board inspected by ZEISS Visioner 1



Light Bulb Filament inspected by classic microscope



Light Bulb Filament inspected by ZEISS Visioner 1



Needle inspected by classic microscope



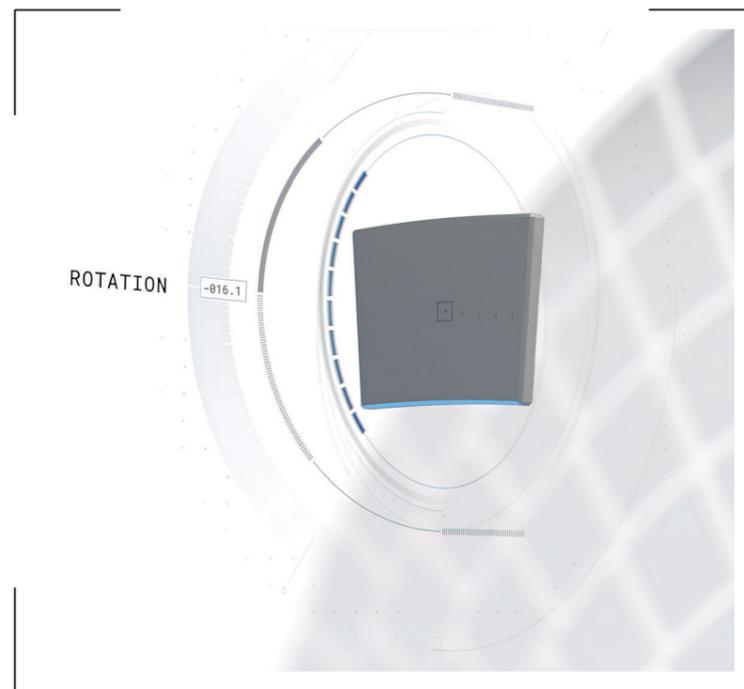
Needle inspected by ZEISS Visioner 1

MALS™ allows all-in-focus optical inspection height differences up to 69 mm.

# Unique Micro-mirror Array Lens System (MALS™) technology

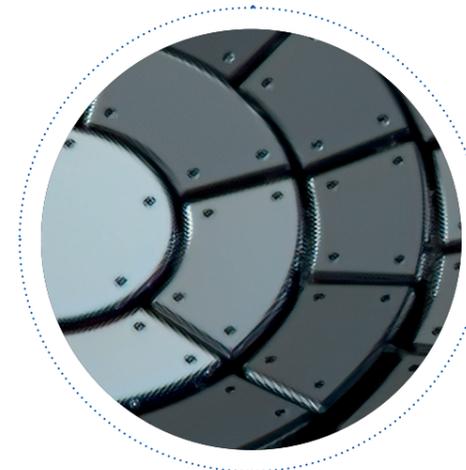
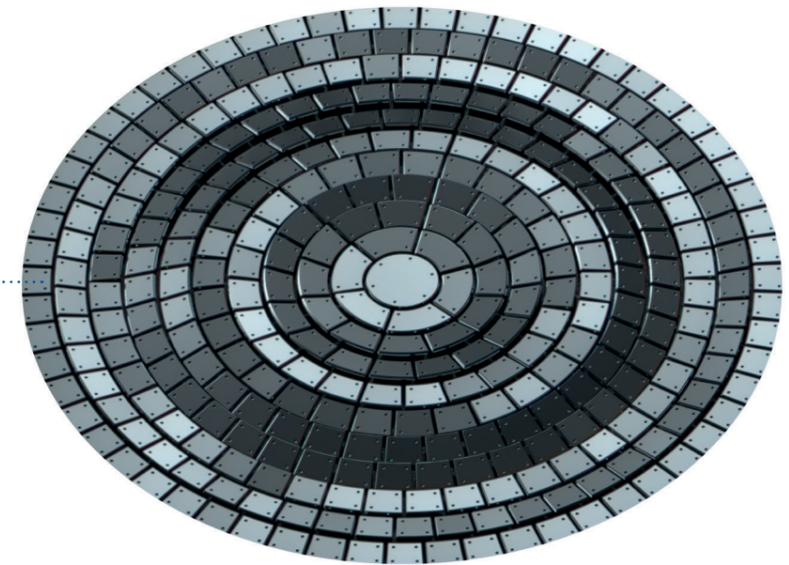
MALS™ allows optical inspection for height differences of up to 69 mm to be in focus, without the need for Z-stacking or re-focusing. Using a Micro-mirror Array Lens System (MALS™) enables us to generate “virtual” lenses with distinctly different curvatures, thus focus planes. This is achieved by changing the orientation of each individual micro-mirror in an orchestrated way.

## Reshaping the rules of optics



Reshaping the curvature of this “virtual” lens at speed enables ultra-fast focusing and real-time all-in focus imaging and documentation.

# ZEISS Visioner 1 Driven by MALS™ technology



- ✓ Up to **50x more** usable extended depth of field.
- ✓ Allows for height differences of up to **69 mm**.
- ✓ Reflective **micro-mirror** array with curvatures (variable) arranged in a flat plane.
- ✓ Each micro-mirror is **100 x 100 µm**.
- ✓ Each micro-mirror **rotates & translates** to form the optical surfaces with variable curvatures.
- ✓ **No need** for Z-stacking or refocusing.

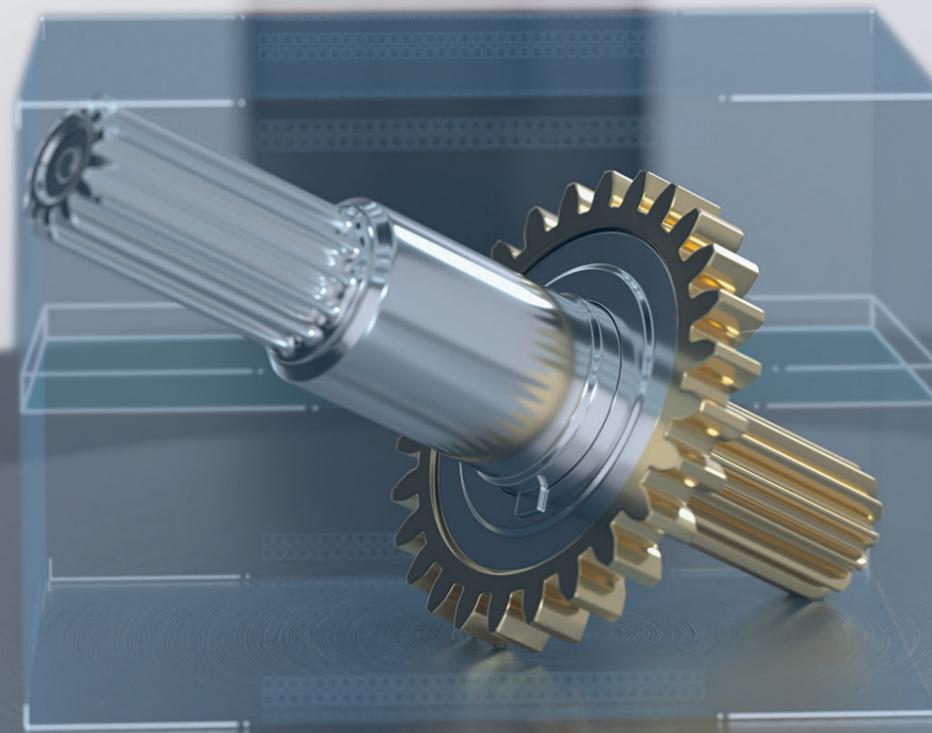
# What is MALS™ and why is it so unique?

## Benefits of MALS™ useable working volume

With such a large, usable working volume for the respective fields of view, the Visioner 1 allows samples to be manipulated, rotated, and angled to enable the user to inspect the whole sample, without the need to constantly refocus, increasing throughput and efficiency. This also allows for much larger 3D surface variations, while retaining a fully focused image.

In focus working volume of Visioner 1 with 0.35 x objective

In focus working volume of traditional systems with equivalent field of view\*

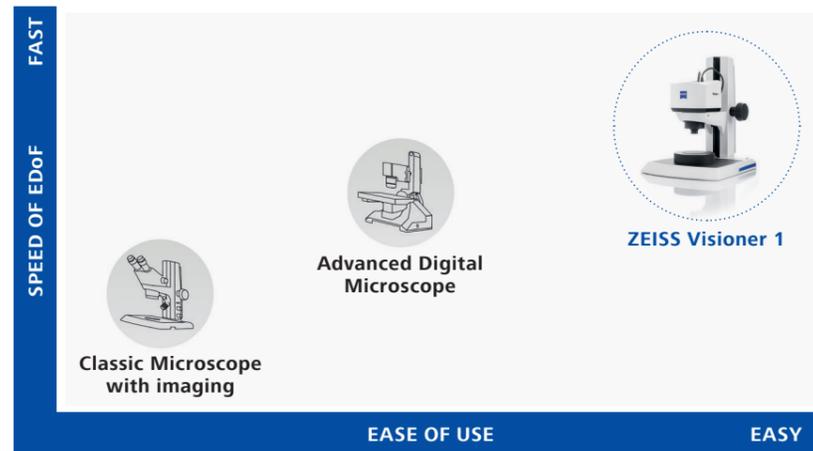


\*For illustrative purposes only – not to scale

# Fastest 3D visualization and documentation with ZEISS ZEN core

## Improve Productivity

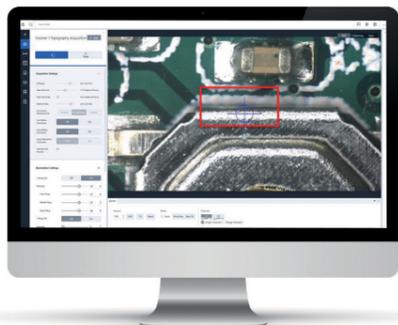
Visioner 1 not only simplifies the imaging and documentation task, but the real-time EDoF enables you to inspect your component faster, delivering a higher throughput.



You can directly document your inspection task which is extremely relevant for regulated industries like medical, aerospace, automotive, with the ability to follow GxP.

## Easy 2-step Documentation

**Step 1**  
Target the desired area in the field of view.



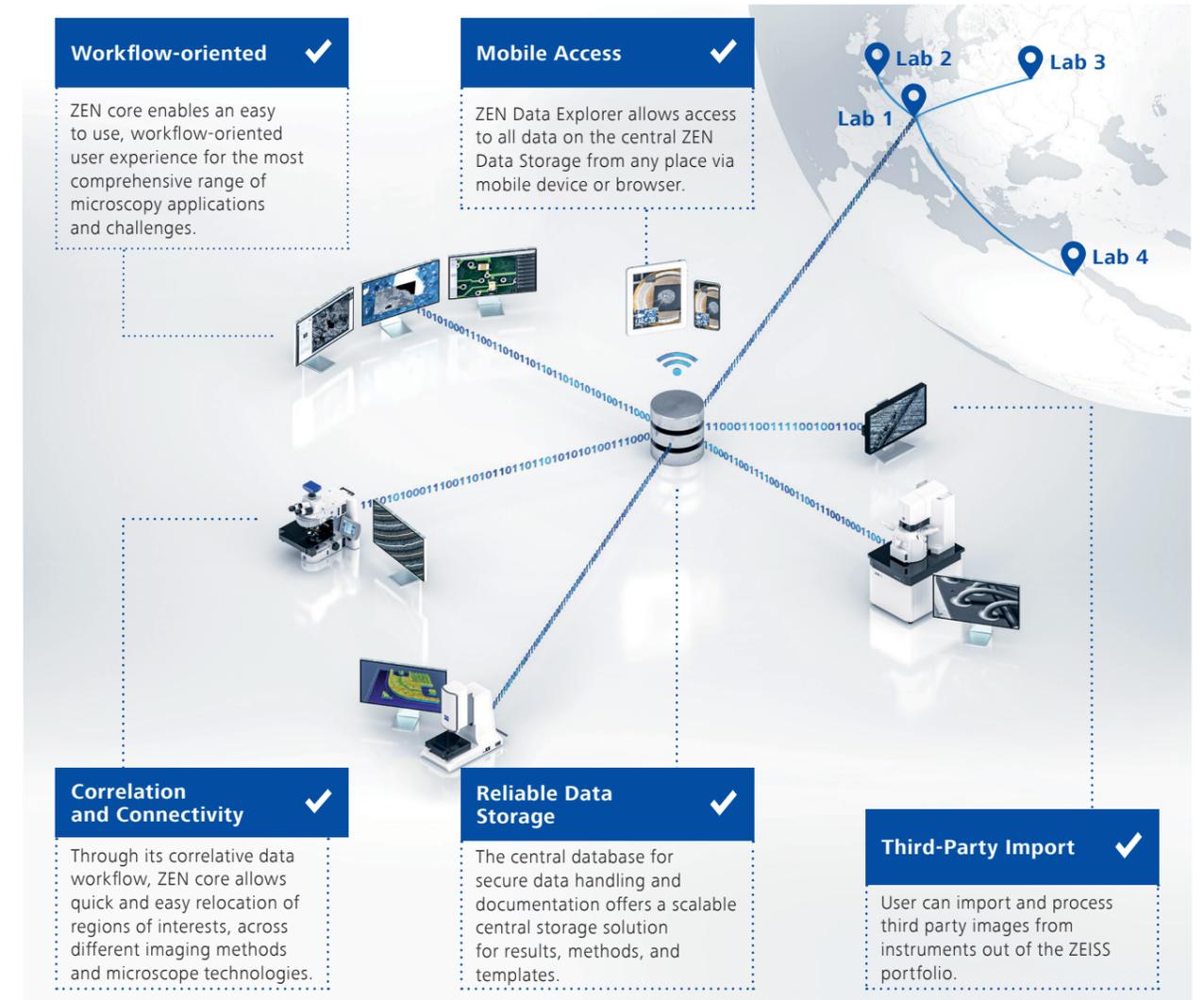
**Step 2**  
Trigger your hands-free foot switch.



# ZEISS ZEN core

## Advanced full connectivity with the most comprehensive software suite

Facilitate knowledge sharing and problem solving across different locations around the world. ZEISS ZEN core enables the correlation of results, imaging and analytics, allowing you to put the data into context, while the integrated GxP module ensures traceability in regulated industries.



# Ergonomic operation

## An extension of your senses

Using the fully digital ZEISS Visioner 1 enables you to set-up your systems once and then focus exclusively on your inspection and documentation task. Remove the fatigue of the eyepieces and work more efficiently by using your hands for your inspection task instead of continuously readjusting the microscope. As everything is displayed in real-time, all-in-focus on a single screen the inspection task feels most natural, like an extension of your senses.



# Illumination & Specs

## Key factors for optical inspection

Next to depth of focus, **resolution** and **illumination** remain key for optical inspection tasks. Therefore a range of magnification and illumination are available.



## Illumination Modes

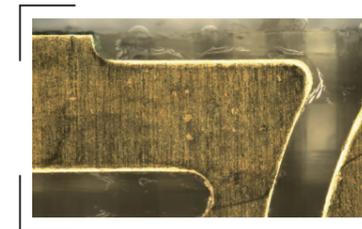
### 1. Co-axial LED epi-illumination



Co-axial illumination

### 2. LED ring illuminator with 3 rings and 8 segments

Optional: LED ring illuminator with 1 ring (optimized for 2.5x magnification)

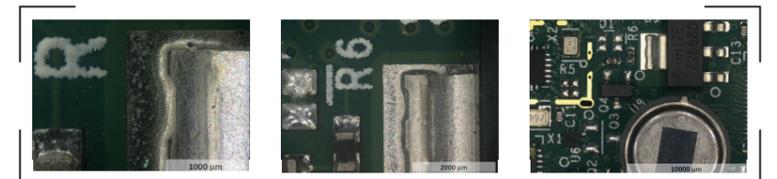


Ring Light illumination



Ring Light illumination with glare removal (details on the edges now visible)

## Magnification



Magnification	2.5	1.3	0.35
Field of View (max.)	2.8 X 2.1 mm	5.4 X 4.0 mm	20.1 X 15.1 mm
Min. Working Distance (optics)	16 mm	43 mm	119 mm
Resolution (max.)	128 Lp/mm	64 Lp/mm	16 Lp/mm
Extended Depth of Focus (max.)	1.8 mm	6.4 mm	69.0 mm

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