

# TKH Group – Capital Markets Day

17 November 2021



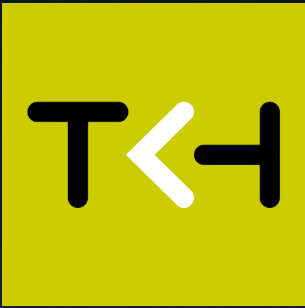
# IMPORTANT INFORMATION – DISCLAIMER

## Cautionary note regarding forward looking statements

Statements included in this presentation release that are not historical facts (including any statements concerning investment objectives, other plans and objectives of management for future operations or economic performance, or assumptions or forecasts related thereto) are forward-looking statements. These statements are only predictions and are not guarantees. Actual events or the results of our operations could differ materially from those expressed or implied in the forward-looking statements. Forward-looking statements are typically identified by the use of terms such as "may", "will", "should", "expect", "could", "intend", "plan", "anticipate", "estimate", "believe", "continue", "predict", "potential" or the negative of such terms and other comparable terminology.

The forward-looking statements are based upon our current expectations, plans, estimates, assumptions and beliefs that involve numerous risks and uncertainties. Assumptions relating to the foregoing involve judgments with respect to, among other things, future economic, competitive and market conditions and future business decisions, all of which are difficult or impossible to predict accurately and many of which are beyond our control. Although we believe that the expectations reflected in such forward-looking statements are based on reasonable assumptions, our actual results and performance could differ materially from those set forth in the forward-looking statements.





# Deep dive – Vision Technology

## Smart Vision Systems

Mark Radford (CEO LMI Technologies)



# Key messages

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**Market leading (3D) and established top positions (2D) in rapidly growing markets**

**Unique integrated Vision technology systems and outstanding specialized knowledge that drive competitive advantages**

**Ongoing innovation to strengthen position and outperform market growth rates**

**One-stop-shop for customers with leading knowledge, global footprint and excellent service & support**

# Smart Vision technology segments

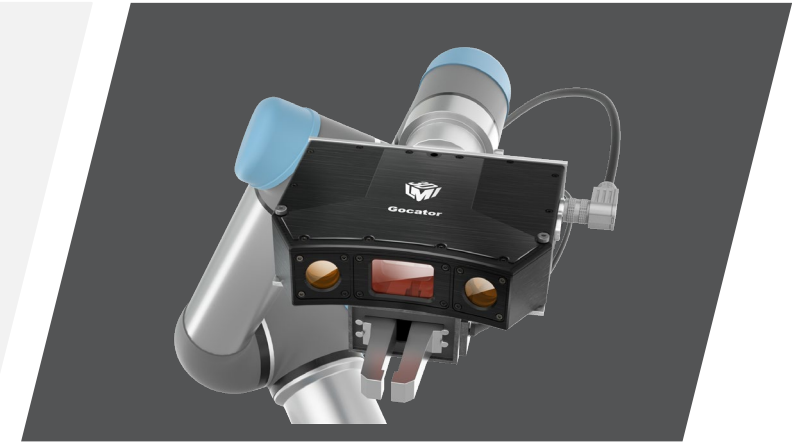
## 2D Security Vision



## 2D Machine Vision

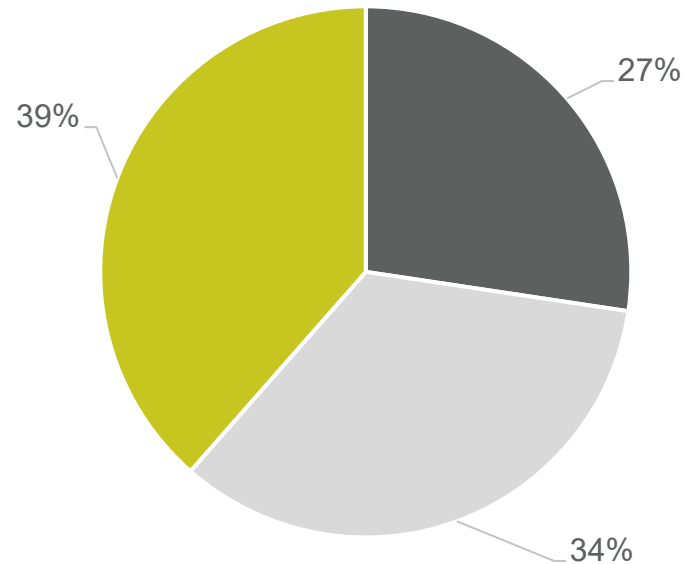


## 3D Machine Vision



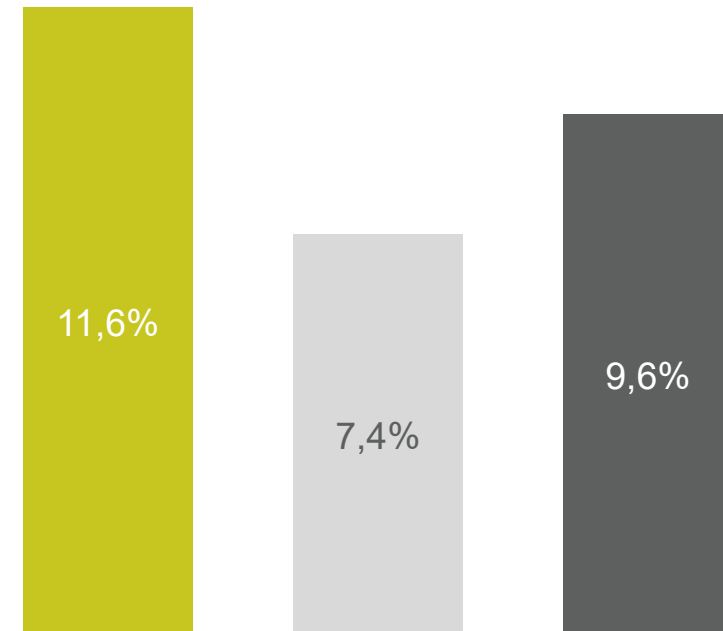
# Turnover and market growth potential

Turnover Share



■ 2D Security Vision   ■ 2D Machine Vision   ■ 3D Machine Vision

Market Growth – 5-year CAGR



# Strong Return on Sales, growing stronger

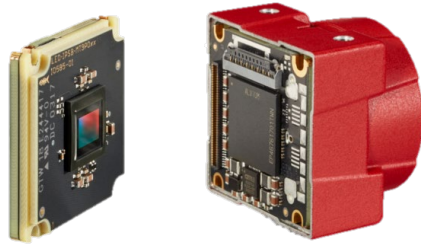
- TKH Smart Vision achieved 17.8% ROS in H1 2021
- Forecast is to increase ROS by greater than 5%

## Parking



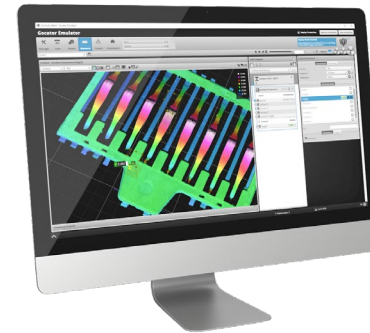
Parking Segment rebounding from COVID-19, turning negative result into >15% ROS (+1.5% TKH Vision ROS)

## Innovation



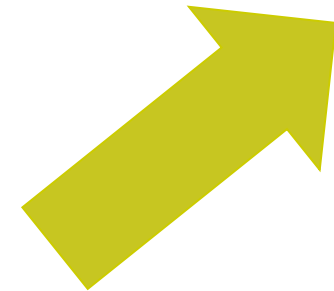
Innovations in Pipeline will increase added value and market share (> +1.0% TKH Vision ROS)

## Software



Increased software emphasis increases the product value proposition and drives higher added value (> +1% TKH Vision ROS)

## Scale



Scaling Revenue and cost efficiencies will improve returns (>+1.5% TKH Vision ROS)

# Vision Segment Strategy

Utilize Smart Technologies to maximize long-term value creation

## **Innovation driven**

- 13% turnover invested in R&D Activities
- 25% of turnover from Innovations
- 450 FTE dedicated to R&D and software development

## **High value solutions of software and embedded hardware**

- Hardware and software are bundled to create integrated smart solutions
- Expertise in traditional and AI/DL vision algorithms
- Embedded hardware for high-performance, low-power edge solutions

## **Customer and End-Market Focused**

- Focused on rapidly growing market sub-segments and tier-1 players
- Extensive application knowledge and industry leading support
- Global presence to achieve customer intimacy

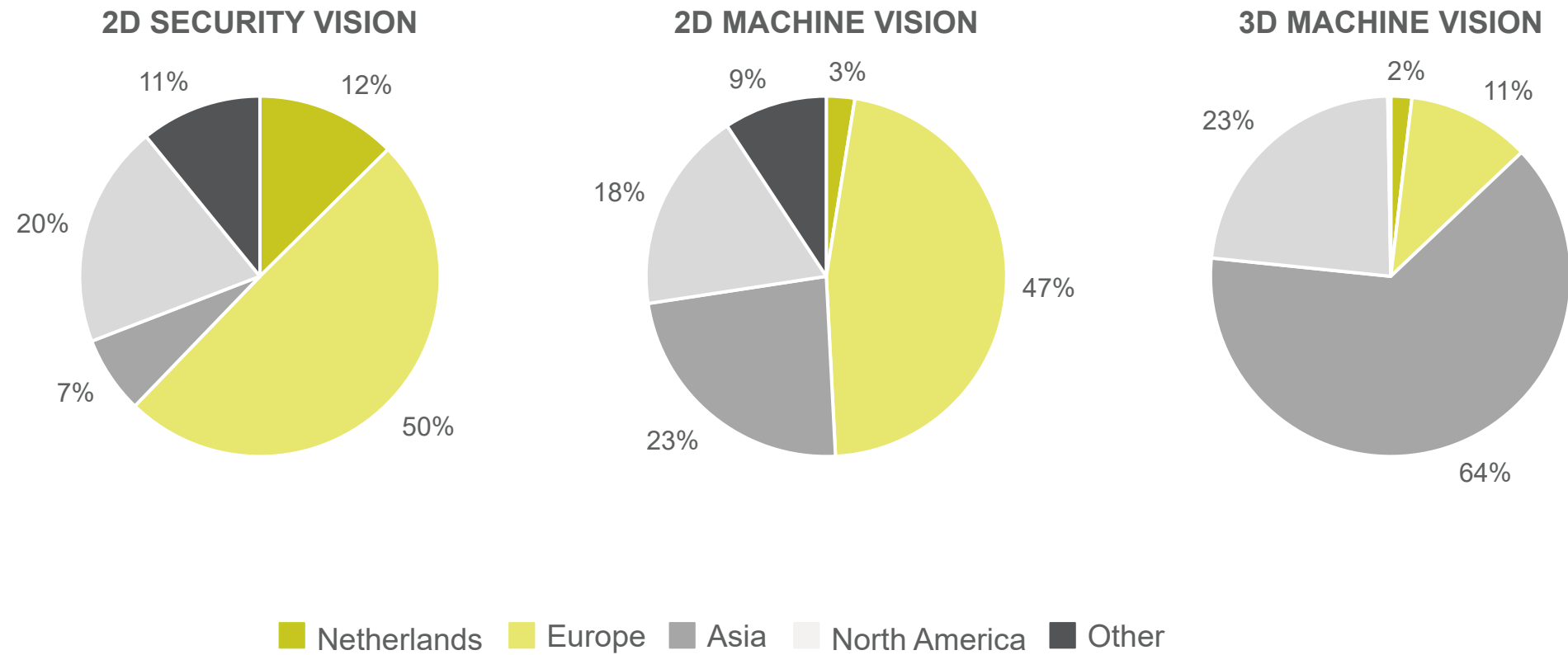


# Global presence

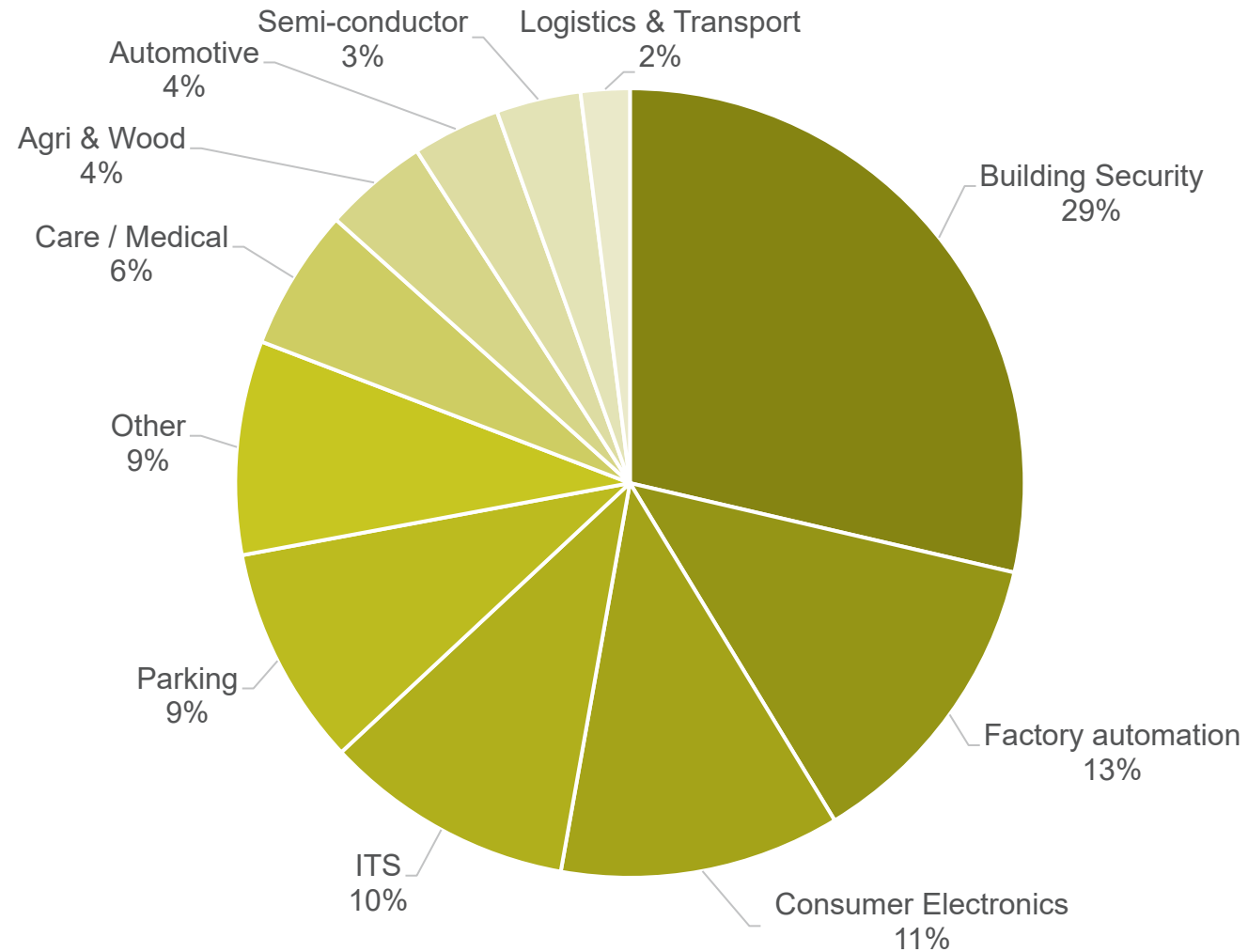
Global footprint and excellent service & support



# Geographic Distribution of Turnover



# End Market Distribution of Turnover



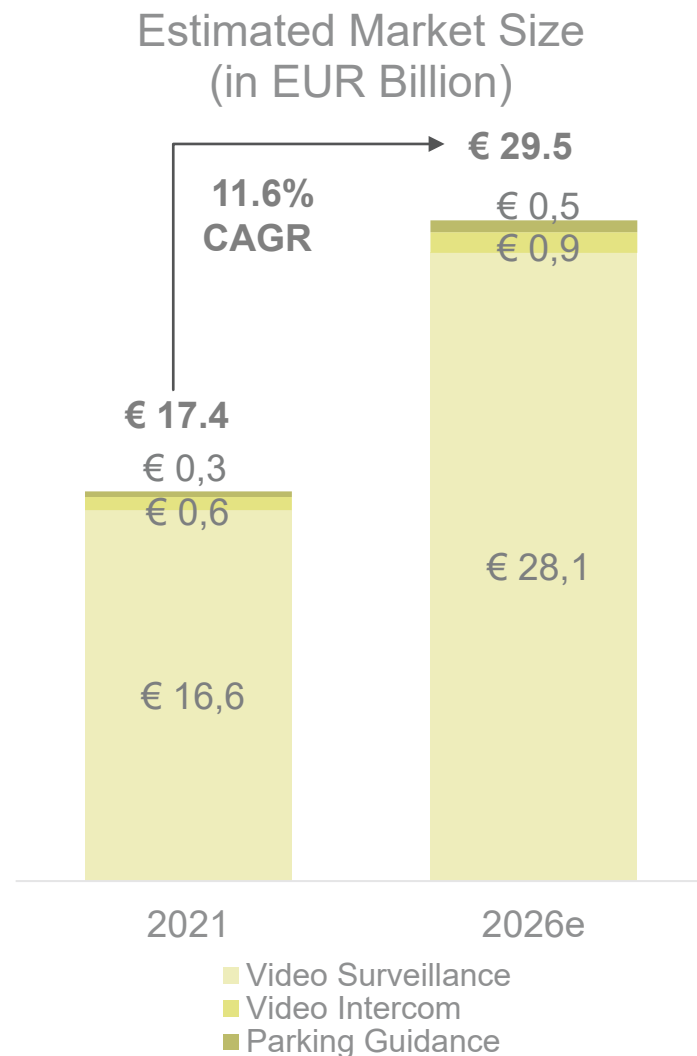


## 2D Security Vision





# 2D Security Vision - Market



Source: various market reports and TKH' estimates

## Market Drivers & Opportunities

- Increasing concerns over public safety and security are driving adoption of Video Surveillance systems
- Priority for smart camera systems and analytic software are improving the effectiveness of security vision systems
- Cities are building reliance on video surveillance and AI to automate responses to domestic incidences and traffic flow
- COVID has left individuals less comfortable with shared mobility, increasing the demand for parking
- Smart parking increases efficiency of parking operations and reduces congestion

## Technology Trends

- Advances in AI are allowing for powerful edge computing to reduce data bandwidth and storage requirements, and provide advanced analytics
- Cloud storage are allowing for easily scaled systems (number of camera, resolutions, retention periods) without substantial hardware cost increases
- Hardware improvements such as 4k resolution and improved low light performance are increasing the effectiveness of video security systems

# Security Vision Portfolio



## Video Surveillance



## Video Hardware



## Intercom & PA Systems



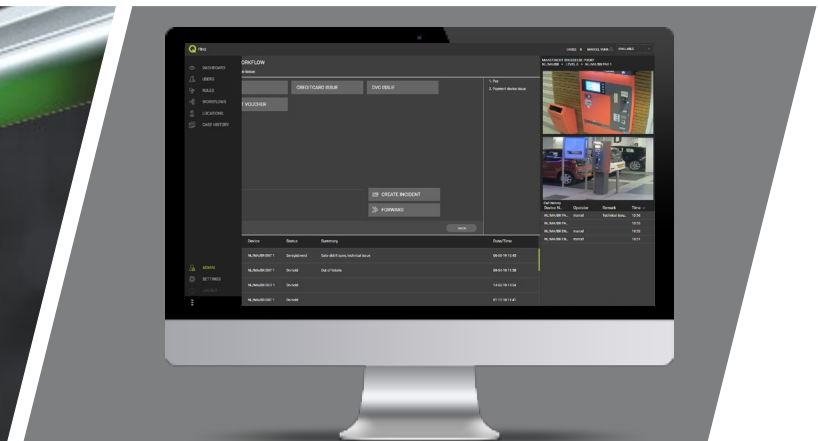
## Video Management



## Parking Guidance



## Parking Management

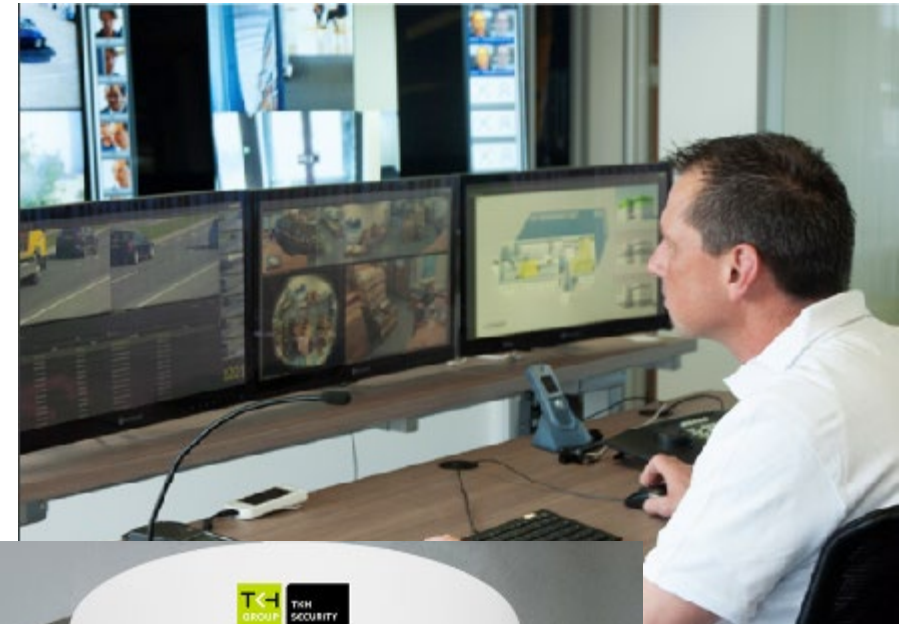


# Technology: Integrated Video Surveillance

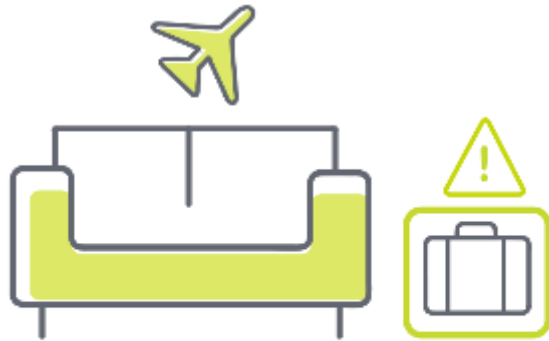


## A Perfect Pairing!

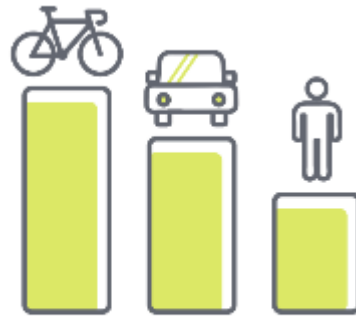
- + VDG Sense video management
  - + Highly scalable
  - + Seamless integration across security, parking, access control
  - + Video Content Analytics
- + Siquira surveillance cameras and accessories
  - + Indoor/Outdoor
  - + Harsh Environment
  - + Video encoders
  - + Network equipment



# Technology: Video Content Analytics



**ObjectR- object detection**



**ObjectC - Object Classification**



**SceneR\* - scene change detection**



**ColorD\* - Color detection**



**FaceD\* - Face Detection**



**CarR License Plate Recognition**



# Technology: Multifunction Parking Head

- + New smart parking guidance sensor introduction end 2021
- + Multiple functions include:
  - + Integrated camera with:
    - + 24/7 video recording
    - + Security/Anti-theft
  - + Deep learning algorithms for detection of:
    - + Incidents
    - + Incorrect parking
  - + RGB Illuminator
  - + Guidance indicators



# Technology: Multi-sensor Vision Intercom module

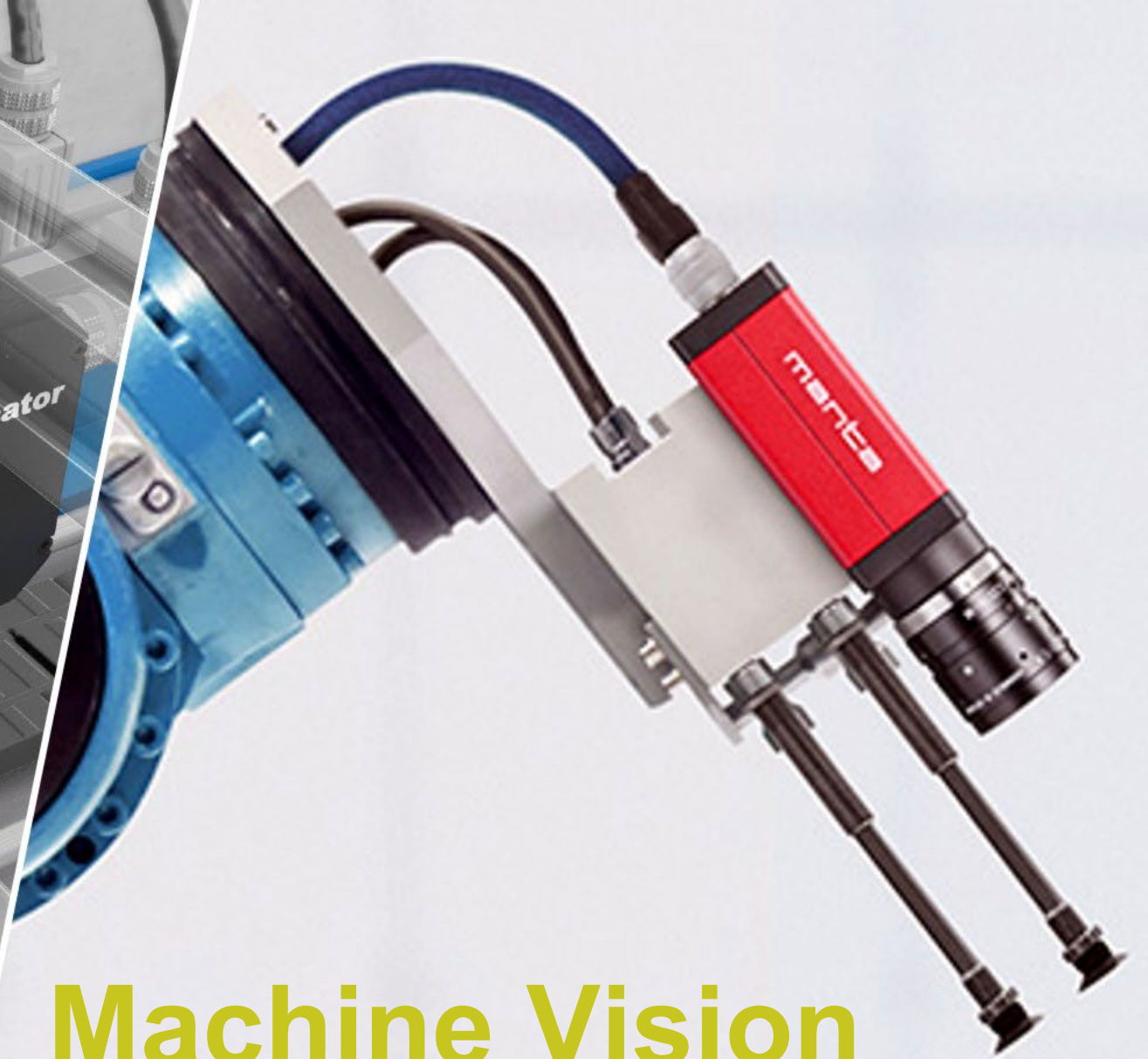
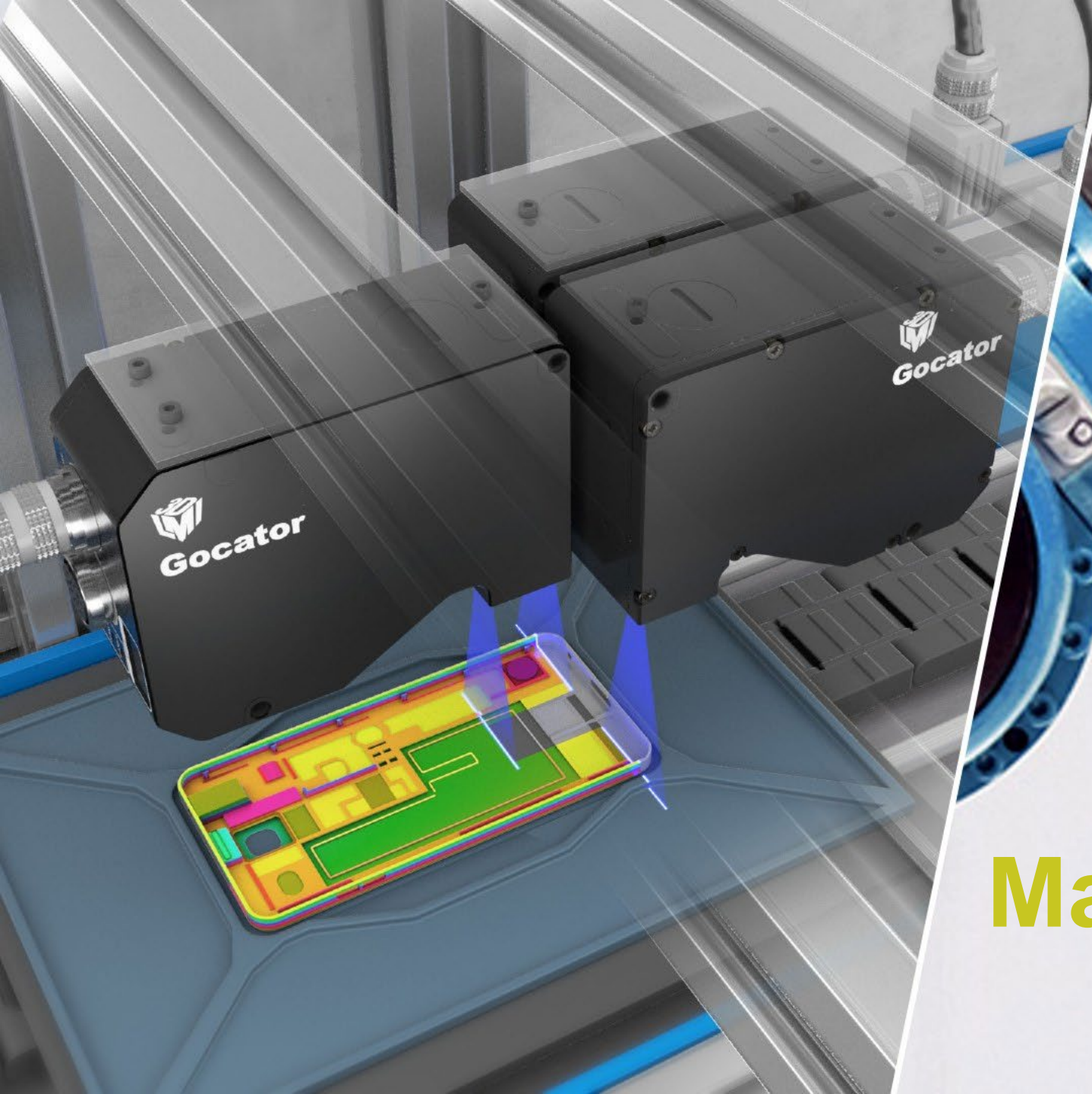


- + Disruptive solution that combines a variety of vision, communication, display and control sources on a compact single-source device.
- + Potential to operate in harsh conditions with extreme temperatures -25 to +55.
- + ADA/DDA Compliant door communication
- + Touch combination is accessible with gloves.
- + Emergency mode
- + Outdoor stations with touch screen



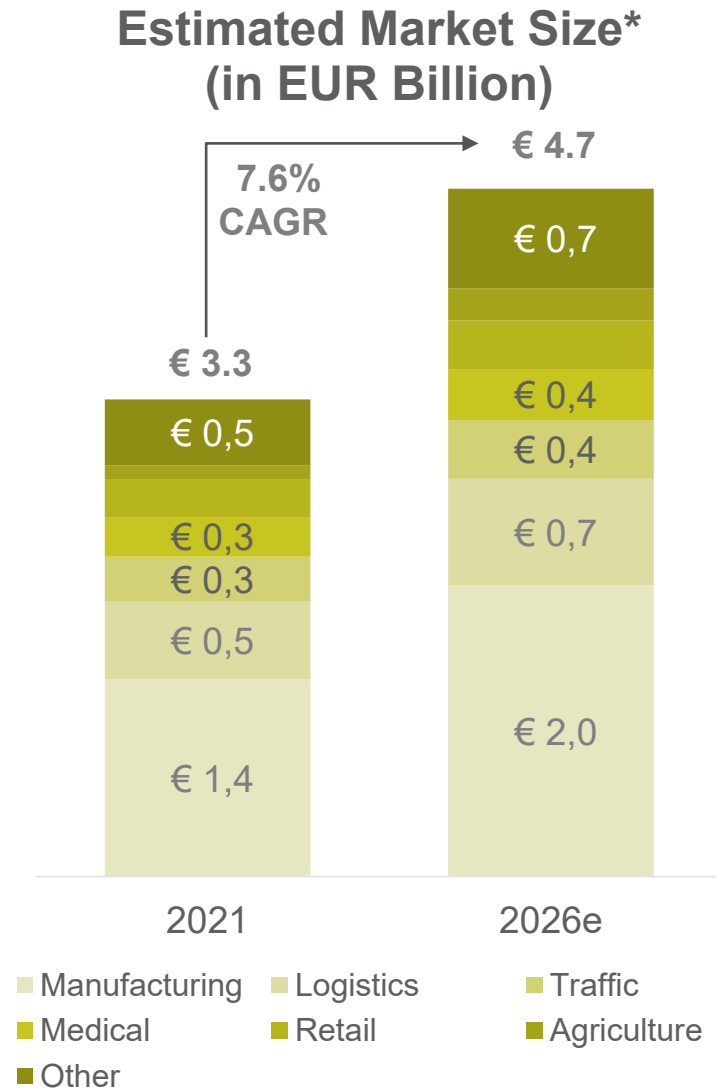
Video: Symphony





**Machine Vision**

# Machine Vision - Market



## Market Drivers & Opportunities

- Reshoring of supply chains are creating new capital investment in highly-automated production lines
- Ongoing investments to drive automation in packaging and logistics
- Global labour shortages and rising wage costs are driving investment in automation to keep plants running
- The electrification of the auto industry is driving new processes (and investment) in automation
- Automation in agriculture lacks intelligence – one of the highest projected growth rate of all end markets

## Technology Trends

- Advances in AI are allowing vision systems to solve applications previously deemed too complex for machine vision
- SWIR advancements have decreased cost and complexity of systems
- Preference for open-interfaces for maximum interoperability
- Computing power advancements have allowed embedded systems to replace many PC based vision systems

\*Source: Yole Developement, Fortune Business Insights



# Machine Vision Portfolio – 2D



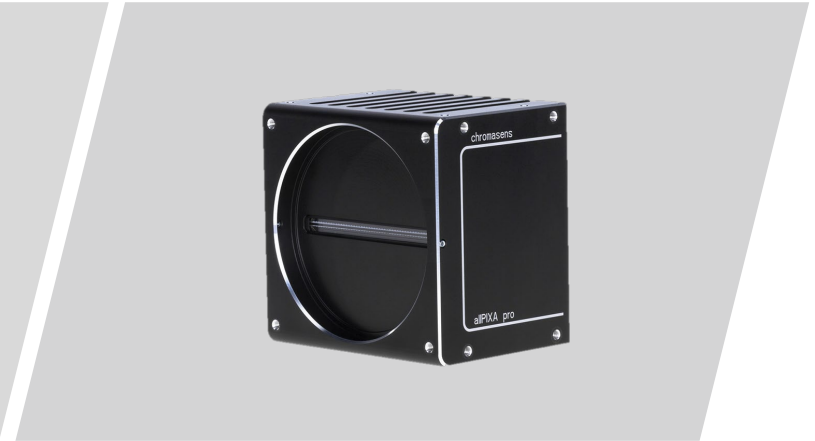
2D Cameras



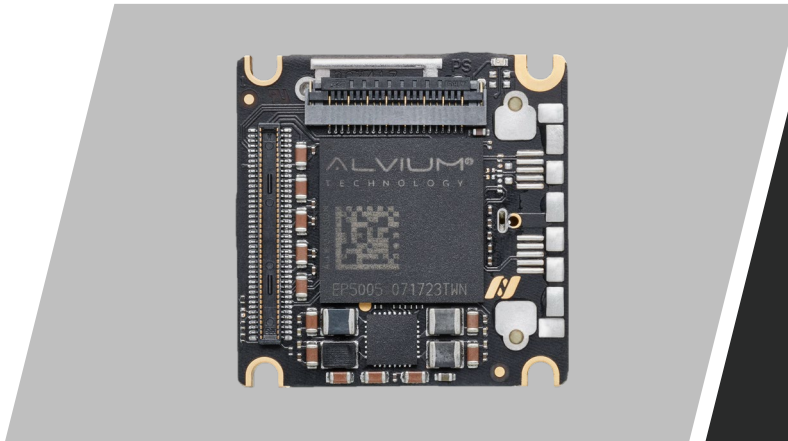
ITS Vision Systems



Line Scan Cameras



2D Board Cameras



2D Smart Cameras



SWIR Cameras



# Machine Vision Portfolio – 3D



Single Point Sensors



Laser Line Profilers



Snapshot Sensors



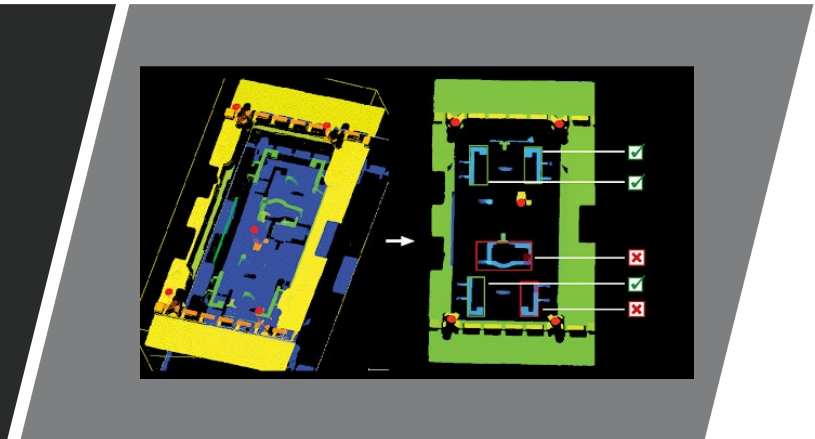
Line Confocal Sensors



Embedded Computing



AI Software







TKH  
VISION

JOINT POWER FOR YOUR VISION SOLUTION <



# TKH Vision Group – Vision 2021, Stuttgart, Germany

The One-stop-shop of TKH Vision – Joint Power for you Vision Solution

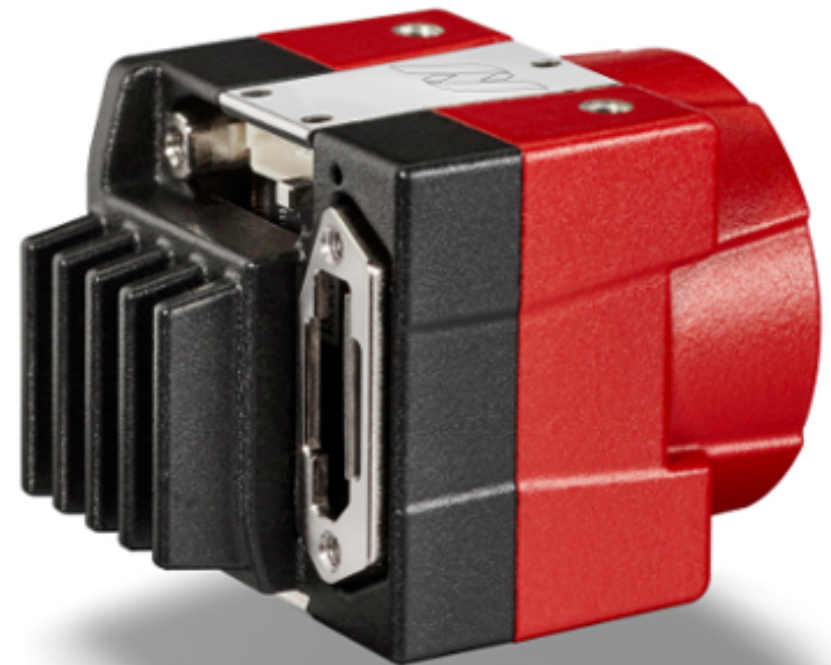
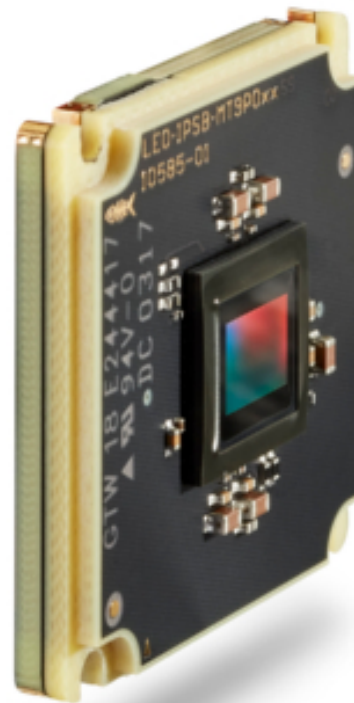


**VISION**  
World's leading  
trade fair for  
machine vision



# Technology: Alvium 2D Cameras

- + Built around the custom Alvium ASIC – highest performance in the smallest package with the least power
- + Requires less additional components (no FPGA, Phy)
- + Supports USB, CSI-2, 5GigE
- + Modular approach for supporting numerous image sensors
- + Highly configurable and customizable







# Application: Autonomous Vehicles in Logistics



# Technology: VEGA ITS and ANPR Vision Systems

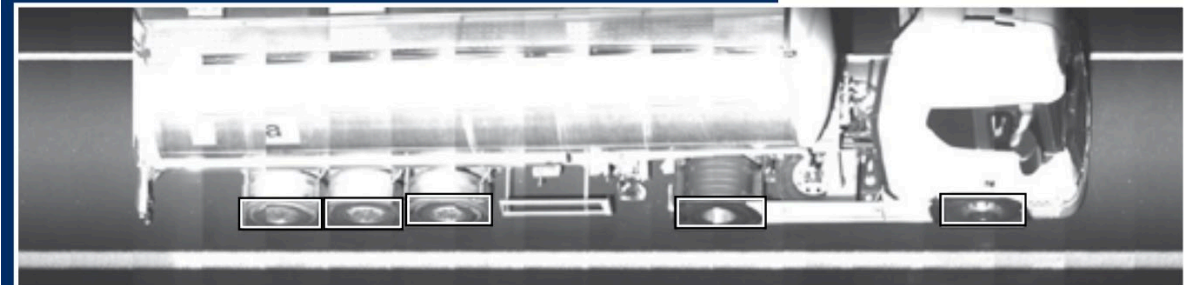
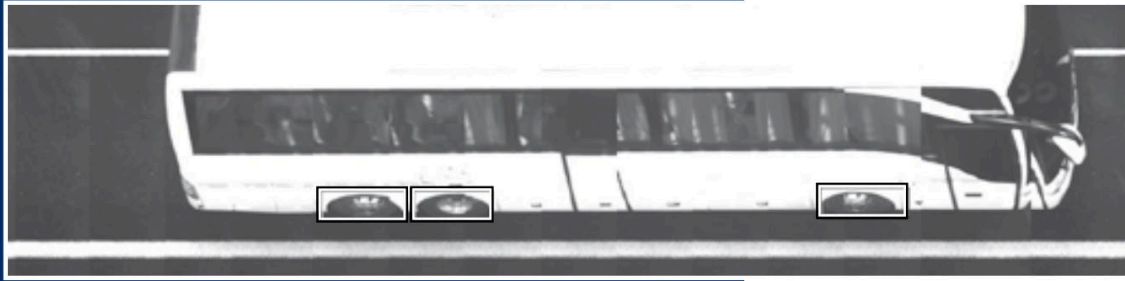
- + Disruptive image-based systems for:
  - + Free flow tolling applications
  - + Traffic monitoring
  - + Security
  - + Speed enforcement
  - + Traffic light enforcement
  - + Vehicle Identification
- + AI based algorithms for high accuracy for different solutions and varying conditions





# Application: Axle Counting System

Artificial intelligence-based image analysis technology for axle counting.



- Disruptive image-based axle counter technology
- Higher accuracy (99.6%)
- Capable of counting vehicle axles in free-flow tolling applications.
- Maximum vehicle speed 250 km/h

# Technology: Gocator All-in-one Smart Sensors



**Gocator®**  
Laser profilers  
for objects in motion



**Gocator®**  
Snapshot sensors  
for stationary objects

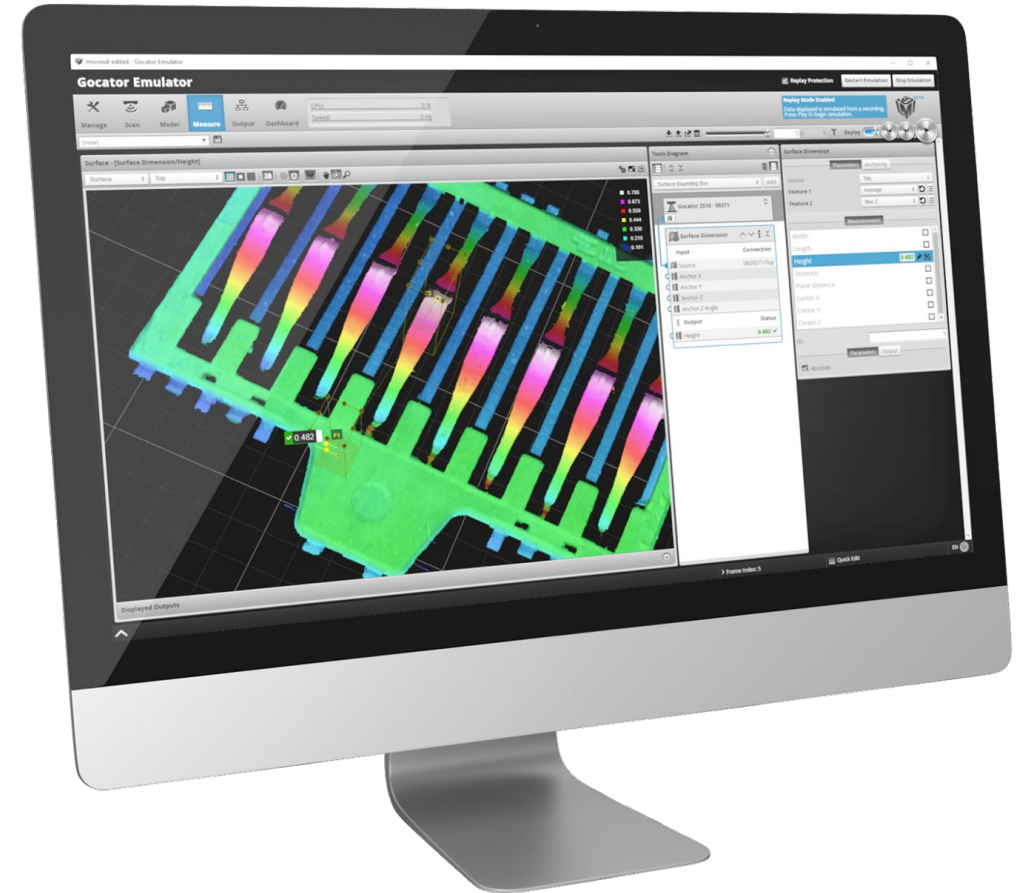
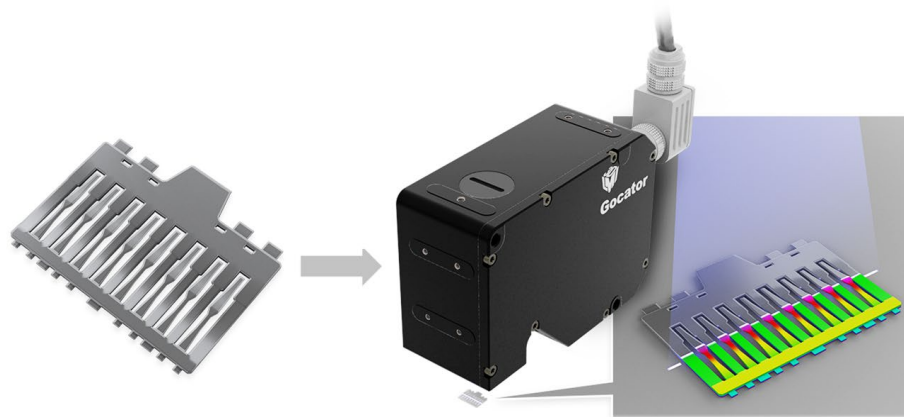
# The Advantages of Our Sensor Technology



## Gocator®

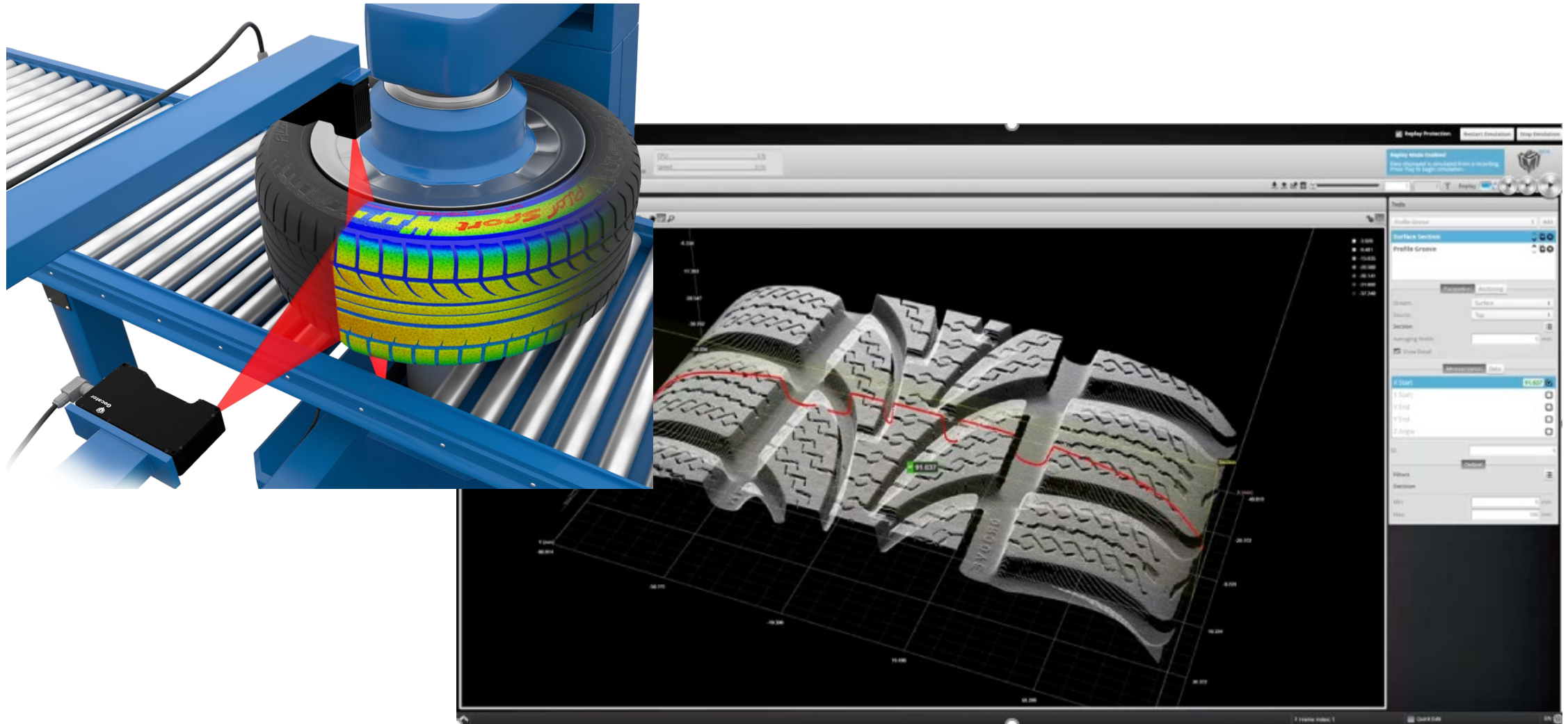
### Powerful Onboard 3D Measurement Software

- + Easy to Use Web-Based User Interface
- + Robust 2D Profile and 3D Measurement
- + 150+ Built-in Measurement Tools
- + Powerful Multi-Sensor Networking, Stitching, and 3D Point Cloud Generation





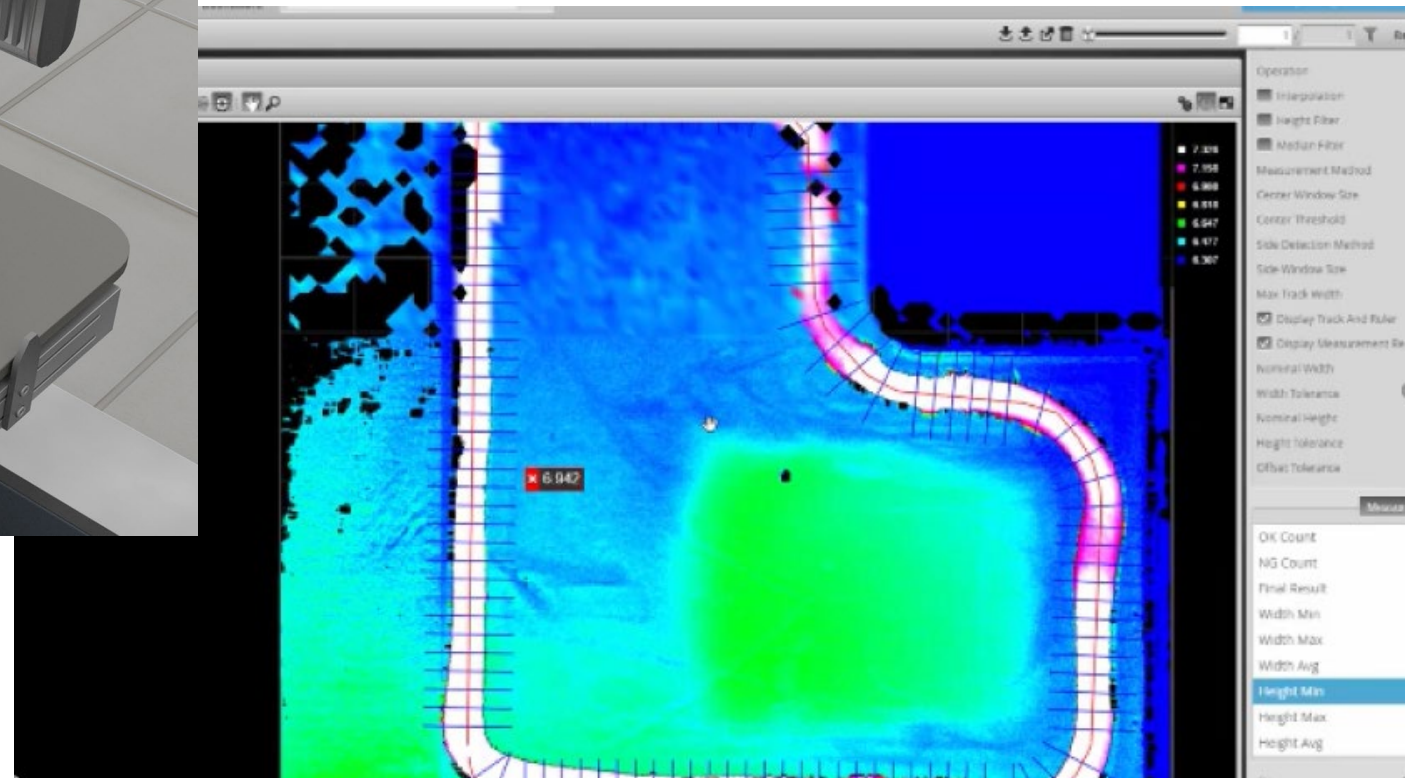
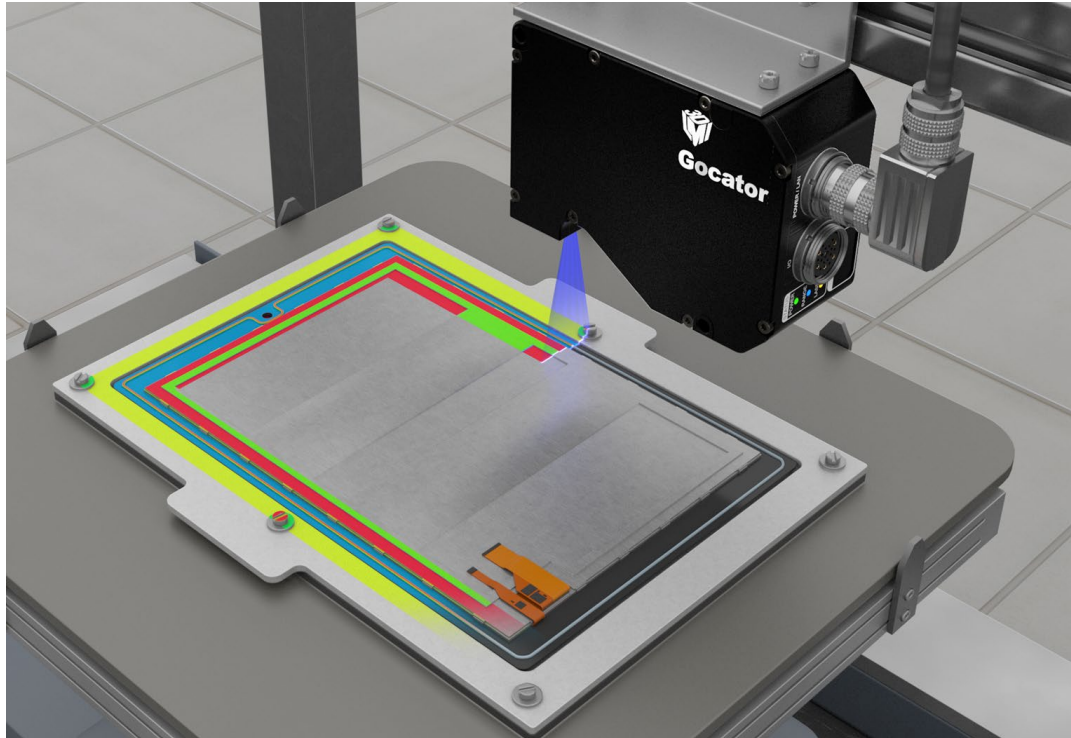
# Application: Tire Tread Measurement



Video: Tire tread measurement

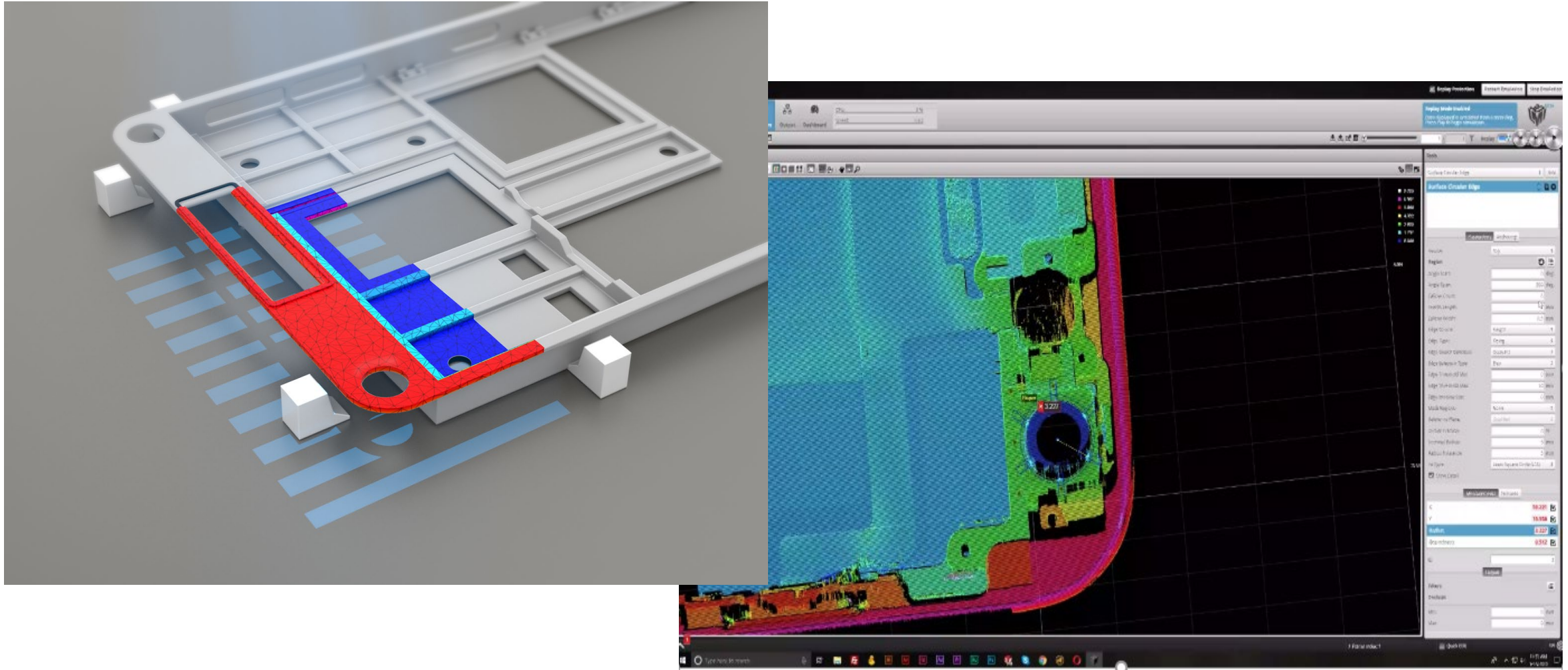


# Application: Glue Bead Dispensing



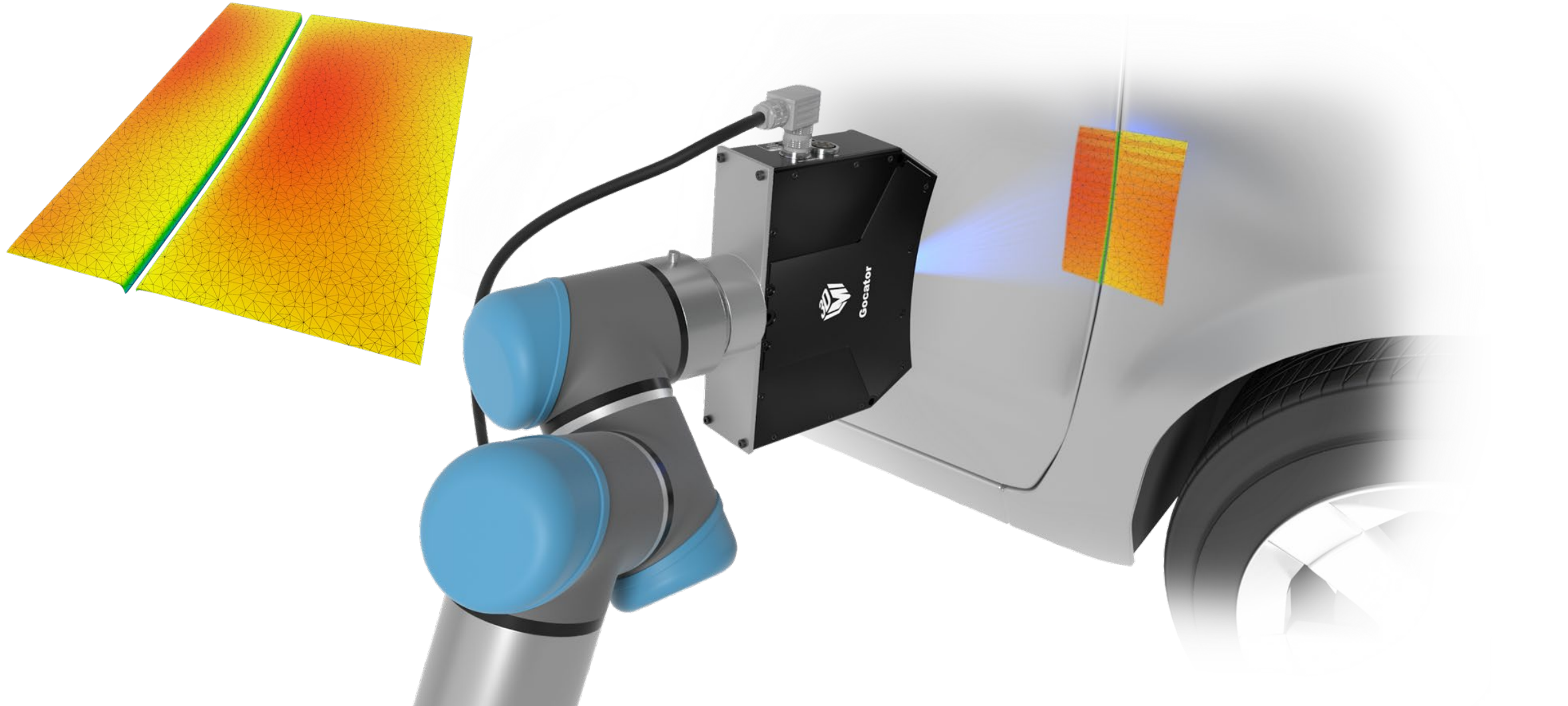
Video: Glue Bead Dispensing

# Application: Cell Phone Inspection



Video: Cell Phone Inspection

# Application: Automated Gap and Flush Inspection



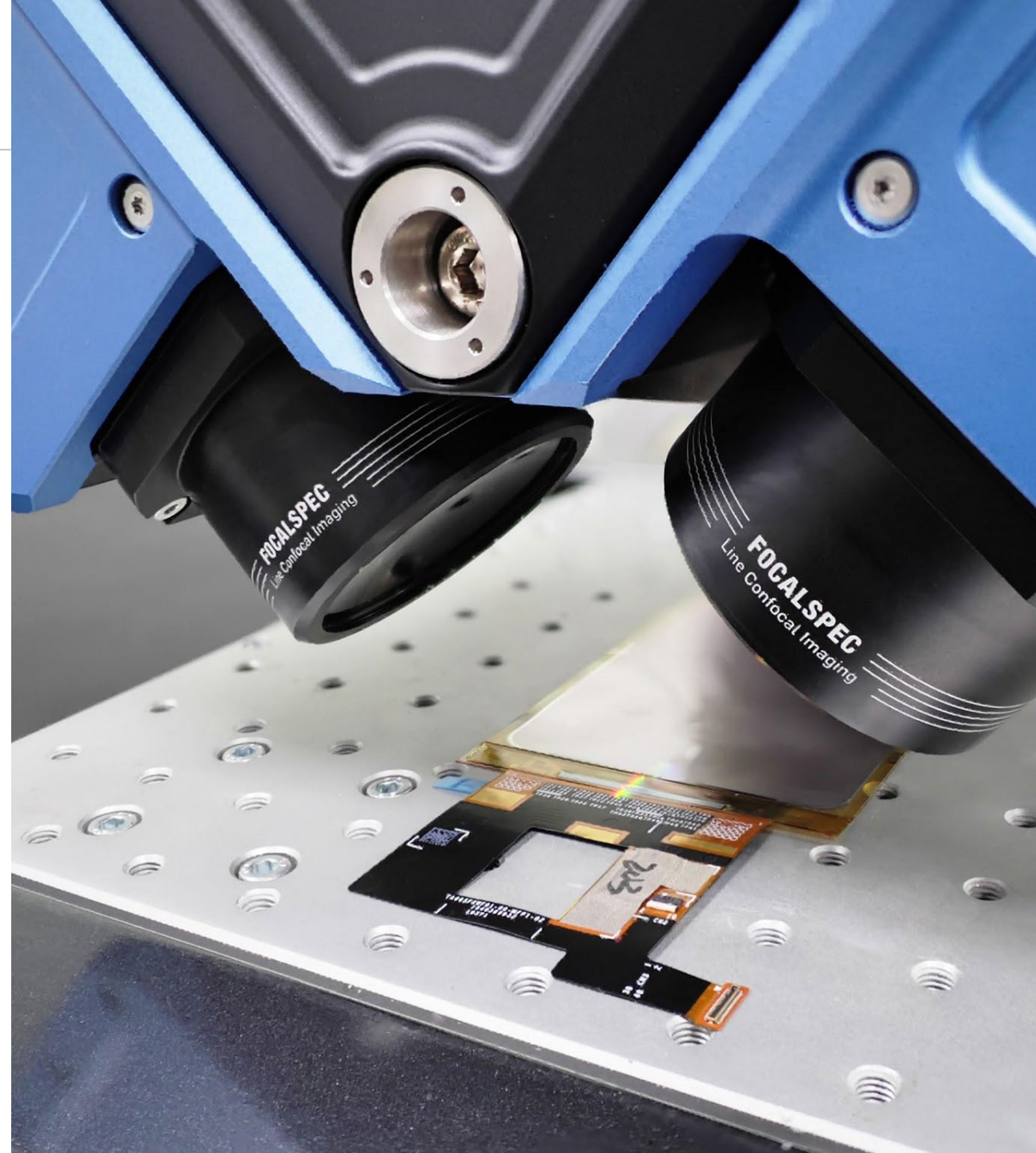


# Line Confocal Imaging

## FocalSpec®

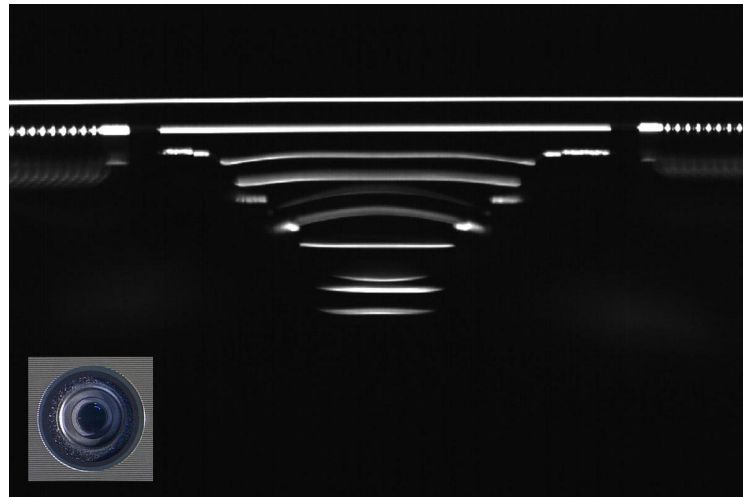
High Performance in The Most Challenging Applications

- + Identifies Defects Such as Delamination, Scratches, or Dust On The Surface or Inside of Laminated Glass, Mobile Phone Displays, And Other Transparent Multi-Layered Materials Like Sealed Medical Packages.
- + Handles Any Surface Type Including Mirror-Like, Glossy, Opaque Transparent, Translucent, Curved, Convex, Concave, Soft, Fragile, or Porous.
- + Scans and Measures Materials with Any Color Combination.





# Application: Multi-layered Lens Inspection



# Key messages

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**Market leading (3D) and established top positions (2D) in rapidly growing markets**

**Unique integrated Vision technology systems and outstanding specialized knowledge that drive competitive advantages**

**Ongoing innovation to strengthen position and outperform market growth rates**

**One-stop-shop for customers with leading knowledge, global footprint and excellent service & support**

# Thank you for your time





