IMMERVISION

see more, smarter

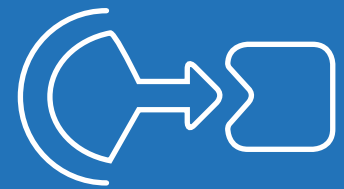Smart Vision for your Device

We are a research, development, design, and technology licencing company. Our multidisciplinary team enables **advanced wide-angle smart vision systems** for smart devices, across various hardware, operating systems and software, from capture, to augmentation to display.

We work with state-of-the-art **lens, module and processors manufacturers, OEMs, ODMs** and **semi-conductor IP architects** across the entire imaging eco-system.

Our seamless **Immervision Enables certification program** empowers our network of partners with proprietary technology for unparalleled image quality and undistorted viewing.

3 CORE TECHNOLOGIES

WIDE-ANGLE OPTICS

Our wide-angle **Panamorph Optical Design** enables both augmented resolution and miniaturization of optics with fields of view ranging from 80° to over 260.

SENSOR FUSION

Our **Data-in-Picture** technology offers a radical paradigm shift for multi-sensor data capture, transport and synchronization.

IMAGE PROCESSING

Our suite of proprietary advanced **Image Processing and Real Time Adaptive Dewarping** algorithms is specifically suited for wide-angle imaging.

20 YEARS OF INNOVATION

We have been innovation driven since our inception in 2000. Our signature results-oriented approach is rooted in a tight collaboration between scientists, optical designers and image processing engineers.

25 PATENT FAMILIES

To fulfill our mission to advance the field of smart vision systems, we develop, manage and grow a robust and comprehensive patent portfolio.

11 INDUSTRY VERTICALS

Our technology has been adopted by the most prestigious global brands to enable smart professional and consumer applications in a wide range of industries: communication and mobile, automotive, robotics, health and science, defense, aerospace, security, broadcast and live streaming, video cameras and photography, virtual and augmented reality, home appliances.

A SMARTER VISION SYSTEM FOR YOUR DEVICE

Optimizing your device's optical performance requires a perfect balance between optical design and image processing.

Since 2000, we have been enabling advanced wide-angle optical devices. Our signature results-oriented approach is rooted in a tight collaboration between scientists, optical designers and image processing engineers.

**WIDE-ANGLE
LENS DESIGN**
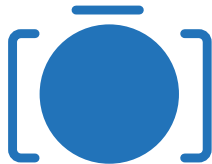
**LENS AND HOLDER
MECHANICAL DESIGN**

**IMAGING PIPELINE,
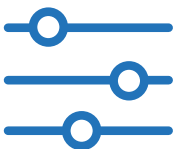AUDIT AND SOLUTIONS
STRATEGY**

**WIDE-ANGLE LENS
MANUFACTURING,
ASSEMBLY AND TEST**

**IMAGE PROCESSING
TECHNOLOGY
INTEGRATION, PORTING
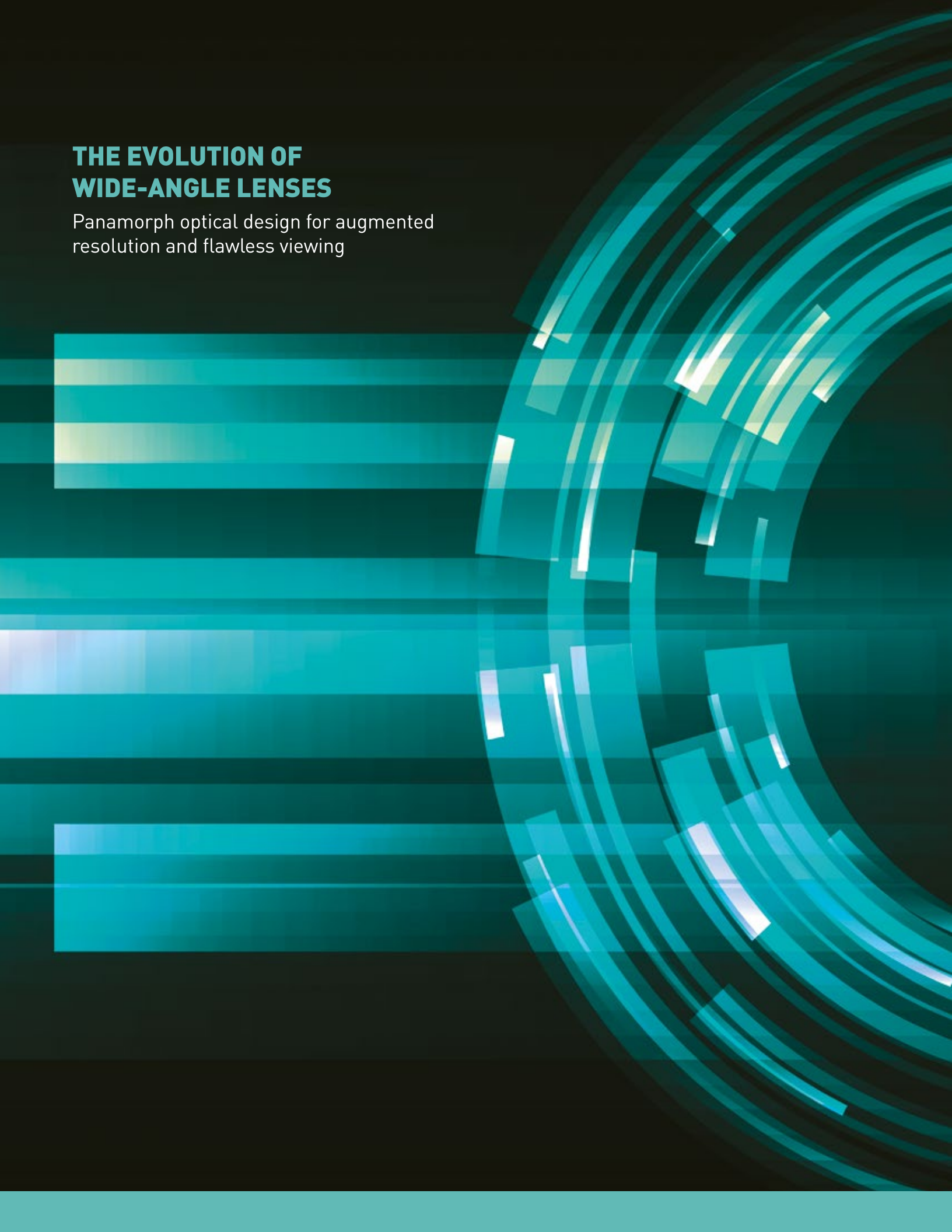AND OPTIMIZATION**

**IMAGE PROCESSING
SOFTWARE
CUSTOMIZATION**

WIDE-ANGLE IQ TUNING

**OPTICAL DESIGN
STRATEGY AND PROJECT
MANAGEMENT**

THE EVOLUTION OF WIDE-ANGLE LENSES

Panamorph optical design for augmented
resolution and flawless viewing

WIDE-ANGLE OPTICS

Our wide-angle **Panomorph Optical Design** marks the evolution of wide-angle lenses, replacing fisheyes with a technology enabling **ultra-wide-angle** field of view, **augmented resolution, flawless viewing** and **miniaturization of optics**. Panomorph Optical Design outperforms all competing technologies.

Off-the-shelf Panomorph wide-angle lens modules are readily available for integration, and custom designs are developed to meet specific requirements.

19 OFF-THE-SHELF LENSES AND MODULES

We monitor market trends across all industries to ensure that most product designers' needs are easily met with off-the-shelf wide-angle lenses and modules.

3256 OPTICAL DESIGNS

Innovation in smart vision systems is our *raison d'être*. Our eyes are set on the future. Our research, development and design team is passionate about constantly enriching our design library.

	Multiple cameras	Mirror	Fisheye	Panomorph
Miniaturization	●	●	●	●
Magnified zones of interest and distortion control	●	●	●	●
Image quality	●	●	●	●
Scene coverage and field of view	●	●	●	●
Camera form factor	●	●	●	●
Technology cost	●	●	●	●
Multi-market applicability	●	●	●	●

GIVE YOUR DEVICE HUMAN-LIKE VISION AND BEYOND
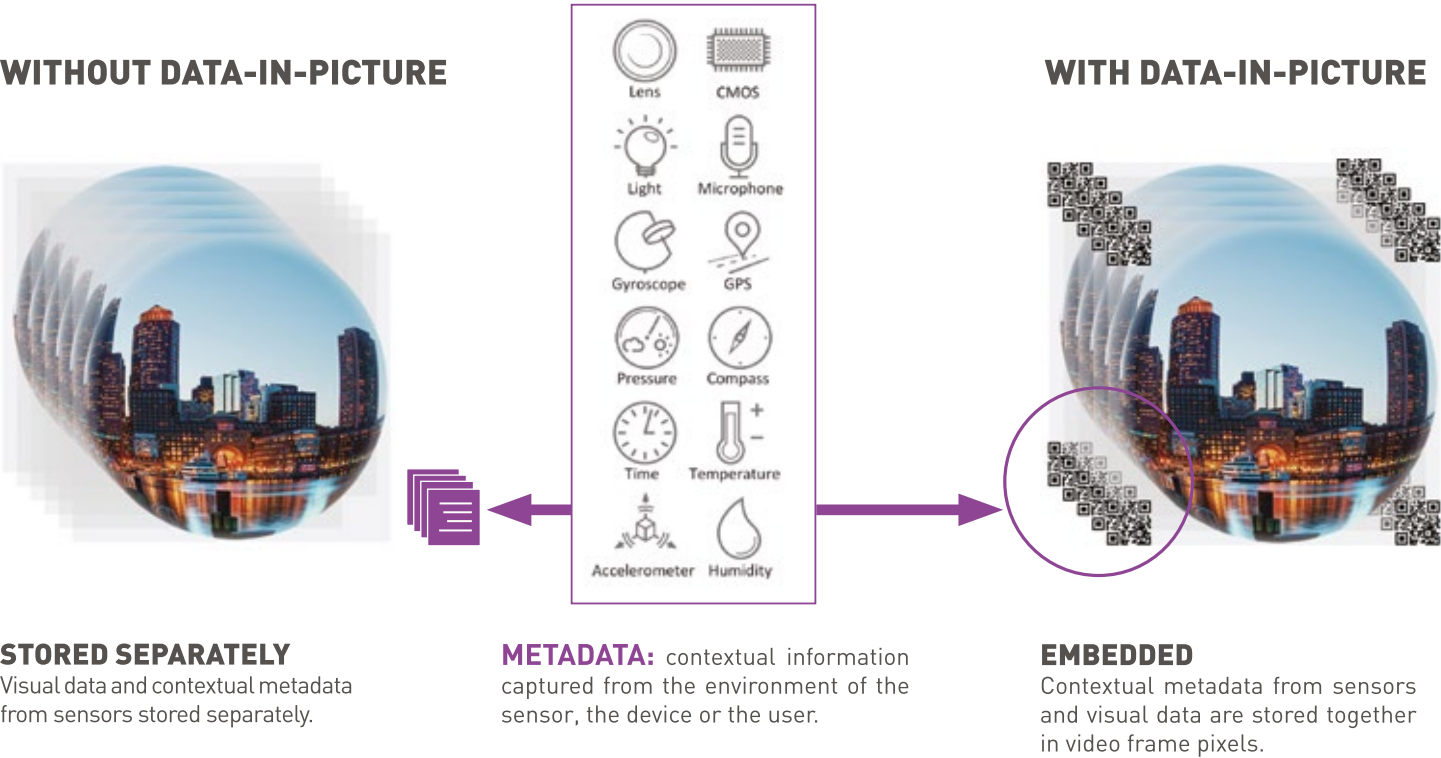
Data-in-picture, a radical shift in multi-sensor data integration

SENSOR FUSION

To enable devices with superhuman sight and unlock the full potential of AI, device designers need to augment sight with multi-sensory data. Through a radical shift in multi-sensor data integration, our **Data-in-Picture technology** solves the pain points of legacy video metadata, offering significant benefits.

With Data-in-Picture, meta-information is embedded directly into the pixels of videos and stills. For perfect image-data synchronization, this meta-information is dynamically collected, synchronized and stored in each frame. The result is a single image or video file with robust and persistent data ready for smarter applications.

WITHOUT DATA-IN-PICTURE

WITH DATA-IN-PICTURE

Lens | CMOS
Light | Microphone
Gyroscope | GPS
Pressure | Compass
Time | Temperature
Accelerometer | Humidity

STORED SEPARATELY
Visual data and contextual metadata from sensors stored separately.

METADATA: contextual information captured from the environment of the sensor, the device or the user.

EMBEDDED
Contextual metadata from sensors and visual data are stored together in video frame pixels.

DATA-IN-PICTURE ENABLES:

- Sensor fusion
- Multi-platform real-time distortion correction
- Electronic image stabilization (EIS)
- Image quality preservation
- Augmented sensing for AI
- Fog-cloud contextual data sharing
- Reduced cloud traffic and processing
- Real-time, on-demand, VR spherical video stitching and viewing
- 360° ambisonic audio stabilization
- Extended battery life due to reduced power consumption

	Without Data-in-Picture	With Data-in-Picture
Processing speed	●	●
Platform compatibility	●	●
Data Integrity and synchronization	●	●
Integration and development cost	●	●
In-context information	●	●
Low power (extended battery life)	●	●

DELIVER OUTSTANDING PICS, EVERY TIME

Innovative image processing
algorithms for wide-angle optics

Exclusively
distributed
by **CEVA**®

We are subject matter experts in the field of image processing. Since 2000 and through a collaborative approach between scientists, software engineers and optics designers, we have developed and patented a wide range of advanced image processing algorithms that address the specific challenges of wide-angle imaging in radically new ways and render superior image quality.

ADVANCED IMAGE PROCESSING PROPRIETORY TECHNOLOGY

- Real-Time Adaptive Dewarping
- Distortion Correction
- Multi-Camera Stitching
- Image Color and contrast enhancement
- Electronic Image Stabilization
- Multi-Sensor Data Capture and Integration
- 3D and Stereo Imaging

FEATURED TECHNOLOGY: REAL-TIME ADAPTIVE DEWARPING

Optics Calibration

REAL-TIME ADAPTIVE DEWARPING

Real-Time Adaptation to Context
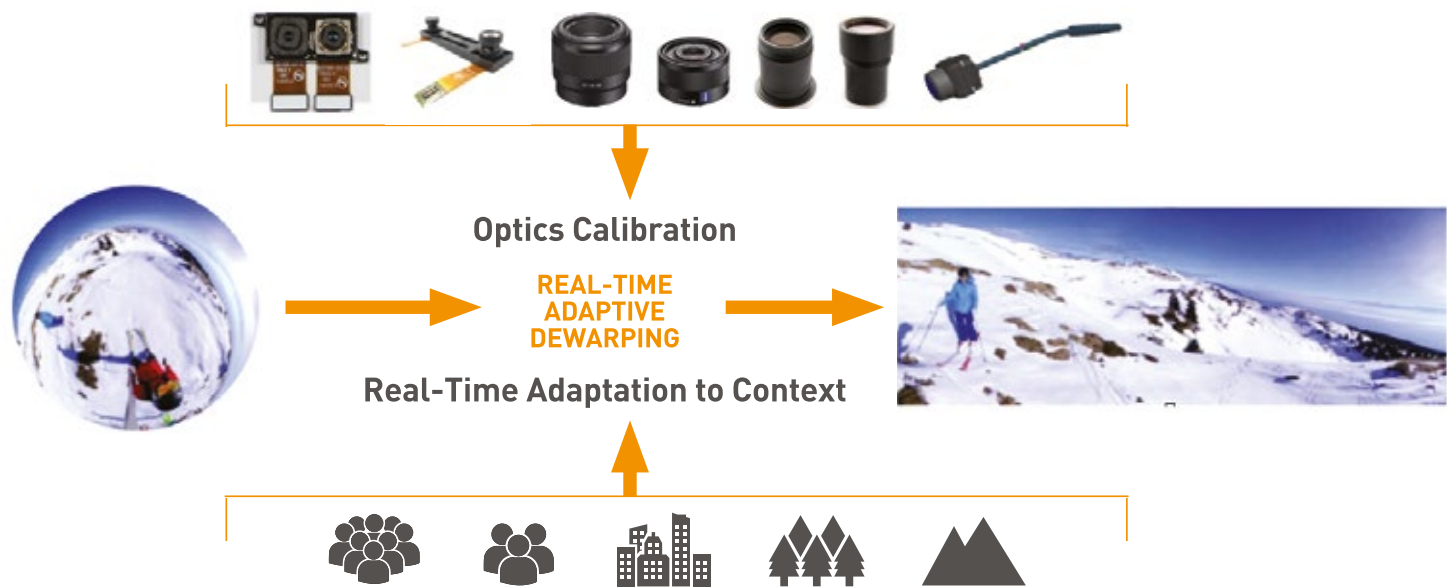
REAL-TIME ADAPTIVE DEWARPING ENABLES:

- AI or user triggered adaptive projection
- Real-time and live processing
- Custom optics calibration
- Customized projections
- Straighforward Multiplatform Integration
- Enhanced wide-angle still and video image quality
- Innovative product development with patented technology

	CONVENTIONAL DEWARPING	REAL-TIME ADAPTIVE DEWARPING
Adaptability to context	●	●
Adaptability to optics	●	●
Real time processing	●	●
Proprietary technology	●	●
Accurate Dewarping	●	●

BEST VISION SYSTEM FOR MOBILE

With wide-angle cameras being mainstream, Immervision offers a proven solution to give smartphone manufacturers the best camera. This unique panomorph lens technology, wide-angle freeform design for imaging and time-of-flight along with Immervision's adaptive dewarping algorithms, deliver outstanding picture quality and authenticity. This unique technology enables the capture of life's epic moments with acuity, context and reality and allows users to adjust the image to their taste, in real-time.

IMMERVISION'S LENS AND ALGORITHMS HELP CAPTURE AND SHARE MORE OF THE SURROUNDINGS WITH WIDER FIELD OF VIEW (FOV) AND UNPARALLELED IMAGE QUALITY

BETTER WIDE-ANGLE OPTICS

Ultra-Wide-angle:
125 FoV off-the-shelf lens features the best specifications on the market

Augmented Resolution:
controlled distortion and relative illumination for enhanced performance

- **High MTF:** provides a better image quality, sharp texture and high level of details

- **Lower Lateral Color**: for high quality picture free of artifacts (flare and color fringing)

- **Lower F#** offers better performances in low-light conditions

- **Panomorph Distortion** to capture the maximum of the scene while keeping straight lines

Licensed manufacturer of the Immervision 125° FoV lens.

Licensed manufacturers of the 125° FoV camera module.

BETTER IMAGE PROCESSING

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Adaptive Dewarping Algorithms:
AI-based, maximize FoV, straight lines, object and face proportions, correct perspectives for human-like vision.

Preserve the scene.

User Generated Live dewarping processing gives back control to the end-users enabling them to "point and shoot" images and videos in real-time

JMO 16002 (Sockeye)

THE BEST VISION SYSTEM FOR SECURITY AND SURVEILLANCE

At Immervision, we are grateful for the trust that 65% of camera makers have put in us, making our vision system an Industry Standard. The panomorph augmented resolution 180-plus lenses enable high-performing 180 x 360 coverage for surveillance cameras.

In addition, the leading-edge software development kit (SDK) is fully compatible with any existing 360° security cameras and can upgrade your system with best-in-class situational awareness and faster decision-making.

Immervision's technology portfolio also customized to the needs of those looking to develop high-quality wearable camera devices and AI-based vision system.

IMMERVISION'S OPTIC AND SOFTWARE TECHNOLOGY GENERATE A 360° VIEW OF EVENTS FOR OPTIMAL SITUATIONAL AWARENESS IN THE FIELD AND AT THE COMMAND CENTER.

BETTER WIDE-ANGLE OPTICS

Market Adoption:
Unique panomorph augmented resolution 180-plus FoV lenses available from major lens manufacturers.

Outstanding Performance:
Helps eliminate blind spots, increase clarity, optimize resolution and increase digital zoom capabilities

Accessibility:
Trusted by over 65% of major cameras manufacturers, Immervision's optics can easily be found at most licensed manufacturers, with many options available to fit your selected sensor of choice

Easy to integrate Wearable 180 Lens:
Design for mobility, ultra-wide-angle lens for greater coverage and already compatible with most Security Video Management System (VMS)

BETTER IMAGE PROCESSING

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Compatibility:
Immervision's software technology is available within major VMSs making any 360° minidome plug 'n 'play

Available for upgrade:
Software Development Kit (SDK) can be used to upgrade the capabilities of any 360° cameras and VMSs

Picture-in-Picture Algorithm:
merges traditional and PTZ cameras video feeds into a single 360° camera videos for optimal situational awareness and video quality

AI-ready: Available for intelligent vision, the patented technology also provides AI developers with live access to rich data video

Hanwha
XNF-9010RV

IONODES Body Worn Camera
Solutions. ION-BWC Series

BEST VISION SYSTEM FOR AUTOMOTIVE

Immervision provides OEMs and Tier one players with a customized vision technology to further increase vehicle perception and road safety. Our optic technology for wide-angle vision and lidar as well as our suite of intelligent vision algorithms for ADAS, human vision and computer vision applications provide you with the building-blocks to develop e-mirrors, back-up cameras, surround view system and dash-cams. With more than 20 years, Immervision has a proven track record of intelligent vision technology, striving to bring human-like vision to all relevant industries.

WHEN IT COMES TO ROAD SAFETY, EMBRACING OUR ZERO-COMPROMISE APPROACH TO PIXEL QUALITY PAYS OFF!

BETTER WIDE-ANGLE OPTICS

Reliability:
Immervision designs lenses to withstand extreme environmental requirements and vibrations for aerospace, defense and security, and apply all this knowledge to the automotive industry

Augmented Resolution:
Wide-angle lens technology delivers augmented pixel resolution where it matters most so that AI-based algorithms can offer the best performance, even in low-light or bad weather conditions. More pixels mean a better image quality.

BETTER IMAGE PROCESSING

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Realistic image perspective:
Best-in-class adaptive dewarping algorithms to provide accurate perspectives and object proportions required for back-up camera and e-Mirror

Stitching:
Immervision's algorithms can be ported to any type of platform to enable multiple camera stitching

Sensor Fusion:
Data-in-Picture technology provides live access to a video stream enriched with already synchronized data, incoming from a wide range of integrated sensors

AI-ready:
Immervision's SDK has been developed to simplify the integration of live video feed with AI-based algorithms

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