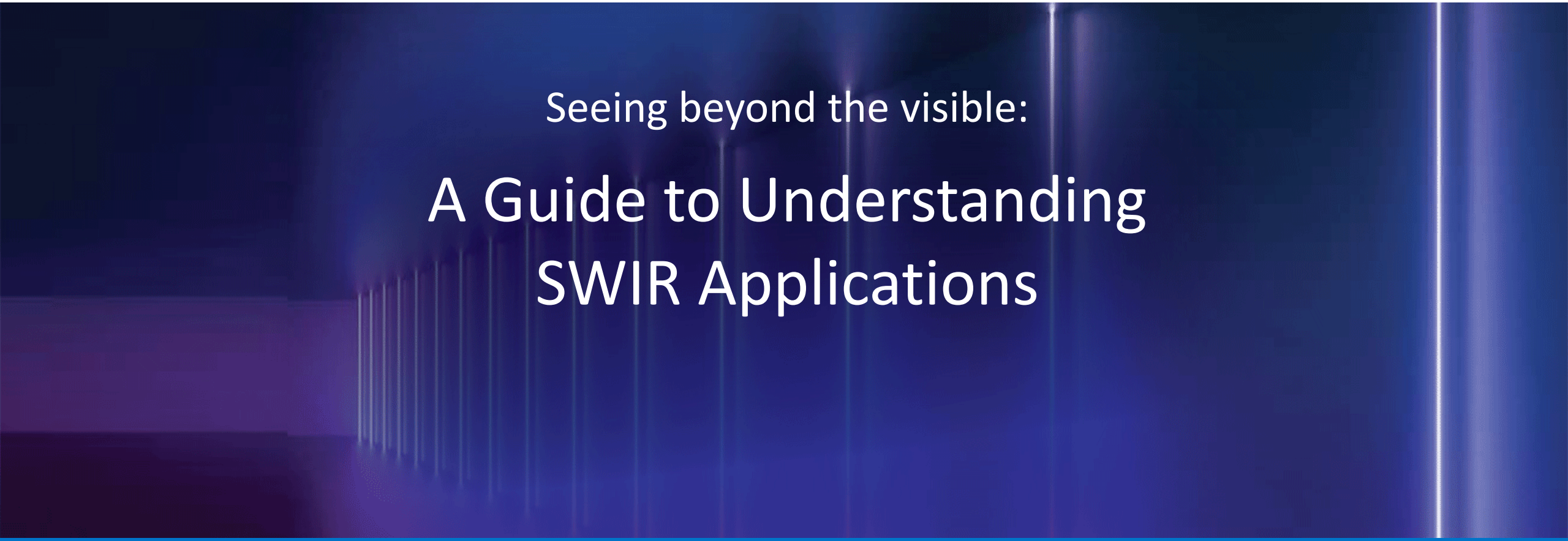
METAPHASE LIGHTING TECHNOLOGIES

FOUNDED 1993

A LEGACY OF INNOVATION, A BRIGHTER FUTURE



Seeing beyond the visible:

A Guide to Understanding SWIR Applications

Welcome

Webinar Details

- 20-minute presentation
- Session is being recorded
- Registrants will receive an email within two days of the webinar
- Submit all questions through the Q&A button at the bottom

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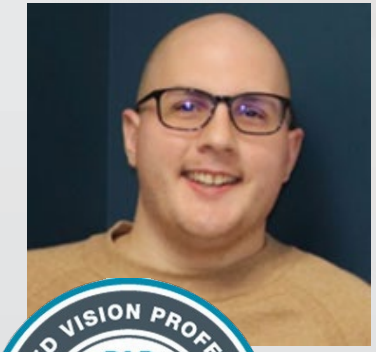

Austin O'Neill

APPLICATION ENGINEER

Austin has in-depth knowledge, finding innovative solutions for customer applications.

He focuses on testing sample products to determine the best lighting configuration, managing the Metaphase Application Lab, and spearheading the creation of a Metaphase intern program. Austin received a Bachelor of Science degree in Physics from Rowan University.

He is also an avid photographer, with a unique perspective-a result of his unique lighting and physics background.

Paul Proios

PRODUCT MANAGER

Paul has extensive experience across a variety of industry roles, including engineering and IoT.

He now focuses on development and maintenance of products offered by Metaphase, communicating with customers to continually deliver what they need for successful Machine Vision applications.

Paul served on active duty in the US Army for eight years as an Aviation Officer and UH-60 Blackhawk Pilot. He received his Commission and Mechanical Engineering degree from West Point, and is working on his Master's Project at Johns Hopkins University. He is currently a Major in the US Army Reserves, as a career management officer.

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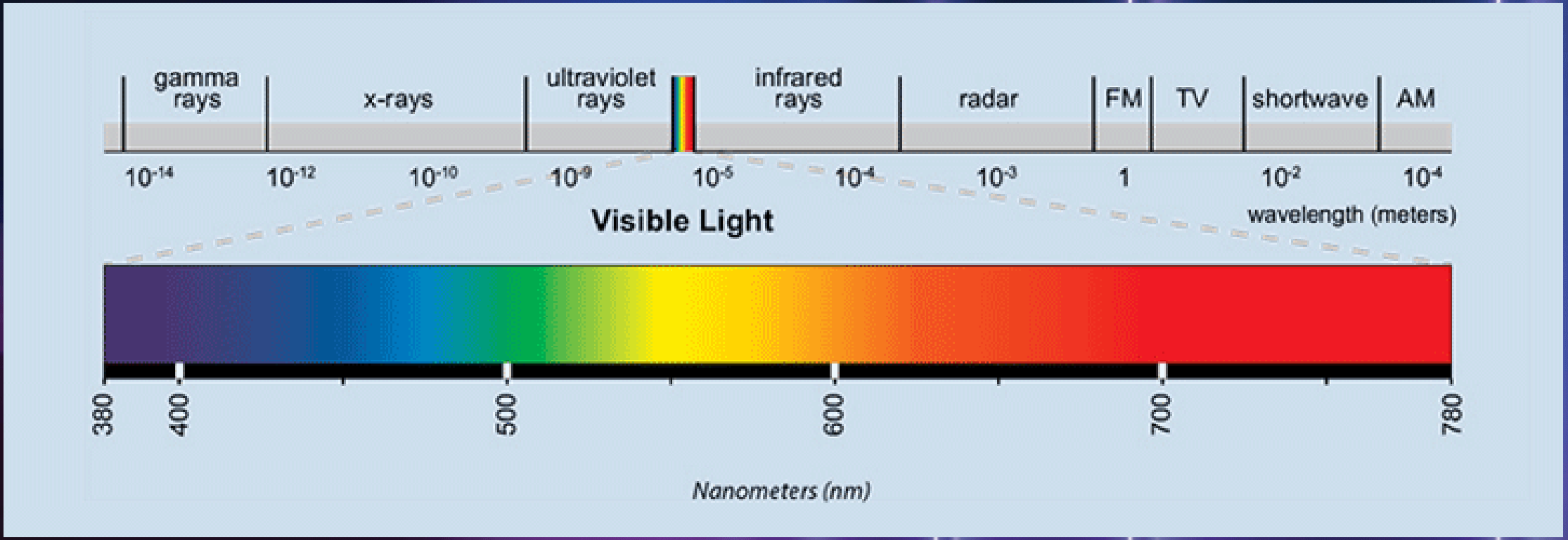
Objectives

- Understanding Short Wave Infrared (SWIR) as part of the Electromagnetic (EM) spectrum
- Understanding the industries using this wavelength range
- The types of applications currently leveraging SWIR
- Hardware needed to implement solutions
- Other application considerations

There is more than meets the eye

- All light is a part of the electro magnetic spectrum
- Visible 400-780nm
- UV <400nm
- IR >780nm



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Infrared Light

- SWIR goes from 900-1700nm
- Similar but going beyond the visible

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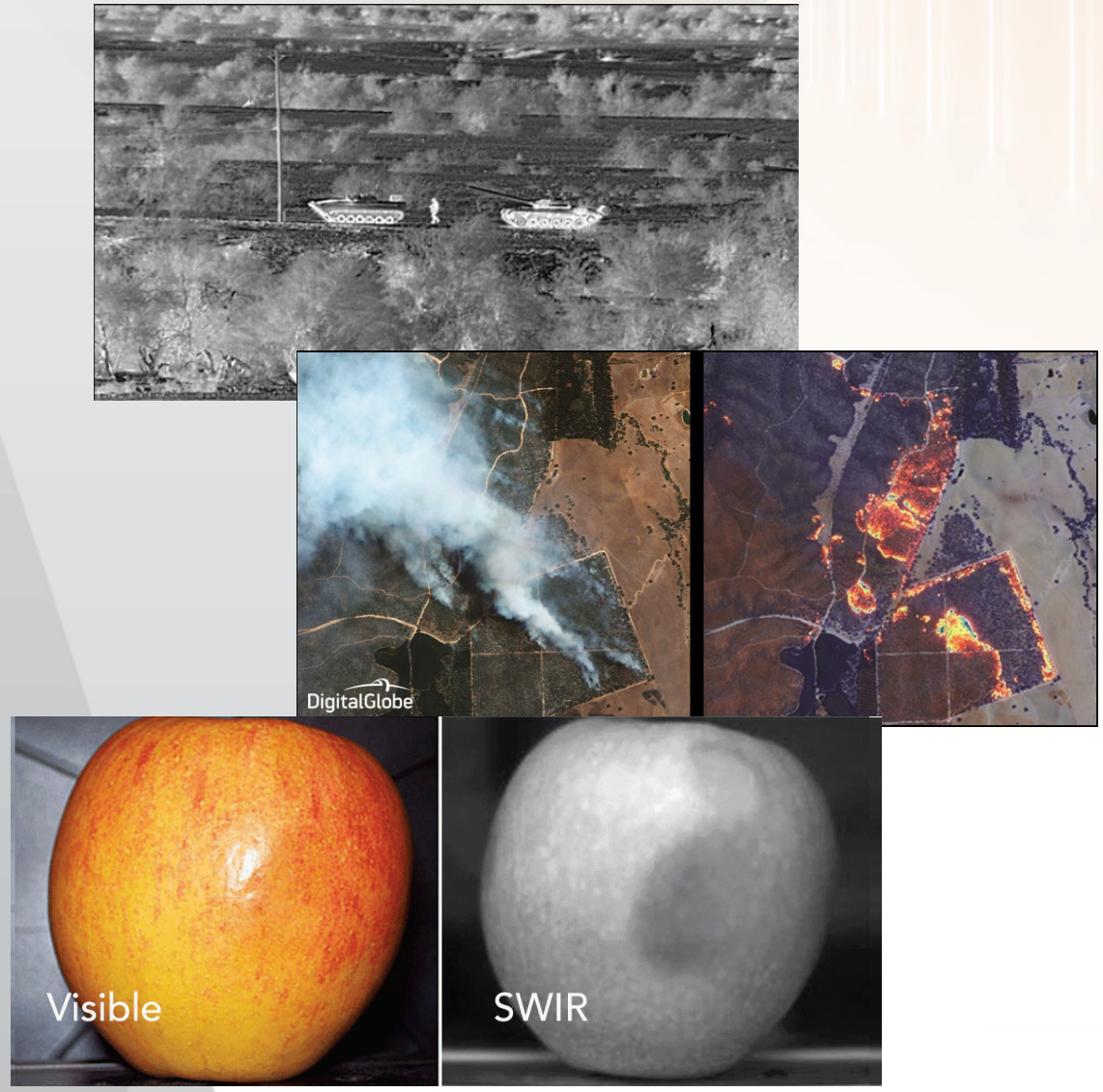

Industries that use SWIR

- Military/Defense and Security
- Satellite Imagery
- Agriculture
- Manufacturing
- Logistics

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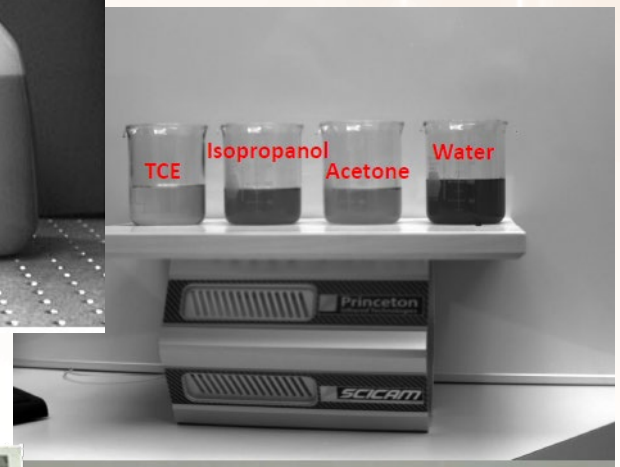

Applications

- Fill Level
- Liquid Detection
- Counterfeiting Measures
- Hot End Bottling

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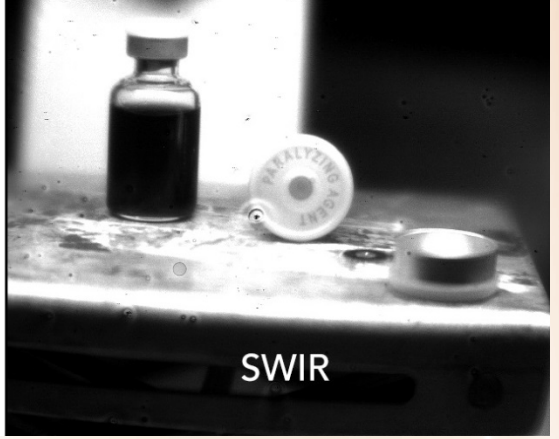
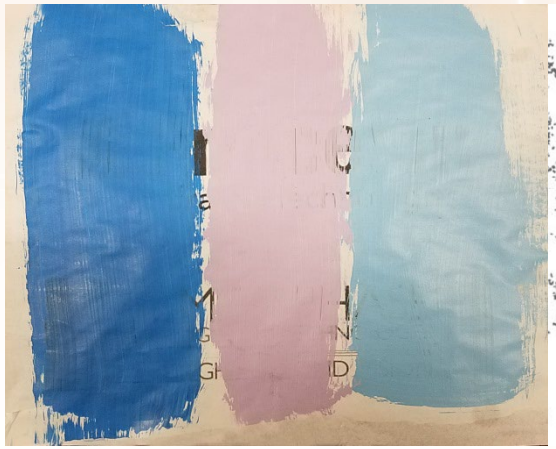
Applications

Continued

- Material Analysis
- Paints, adhesives, and caulks
- Semiconductor wafer inspection





Lights, Camera, and Lens…Action!

Cameras

- Spectral Response / Quantum Efficiency (QE)

Lenses

- Anti-Reflective versus SWIR

Lights

- Monochromatic, Multispectral, and Hyperspectral SWIR

Cameras: Seeing the Unseeable

- Silicon vs. InGaS / Quantum Dot
- Area and line
- Resolution considerations
- International Traffic Arms Regulations (ITAR) Compliance

Allied Vision

FLIR®

Princeton Infrared Technologies

SWIR® VISION SYSTEMS

SENSORS UNLIMITED
A part of Collins Aerospace

TELEDYNE DALSA
Everywhereyoulook™
Part of the Teledyne Imaging Group

Xenics
Infrared Solutions

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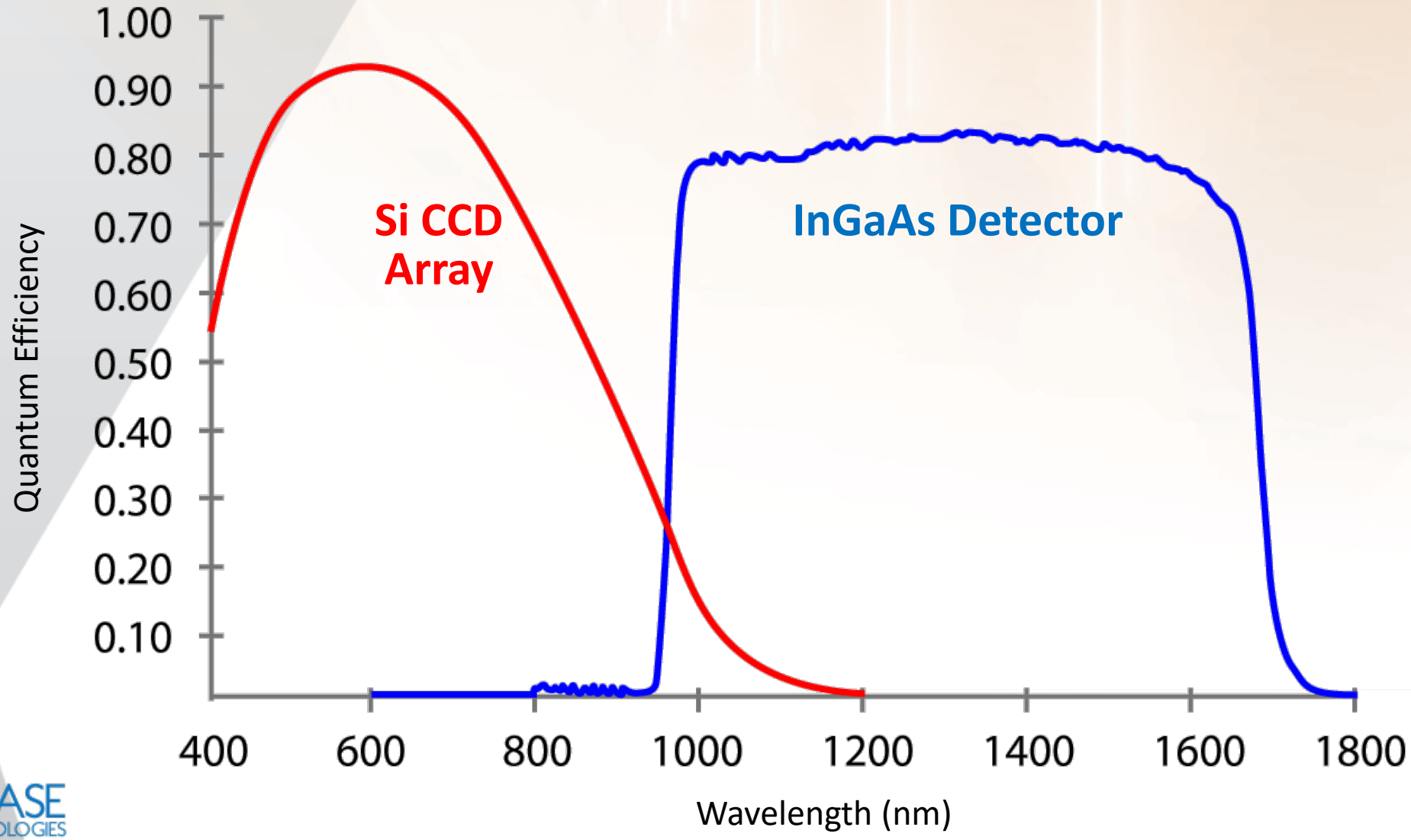
Spectral Response for Si and InGas Sensors



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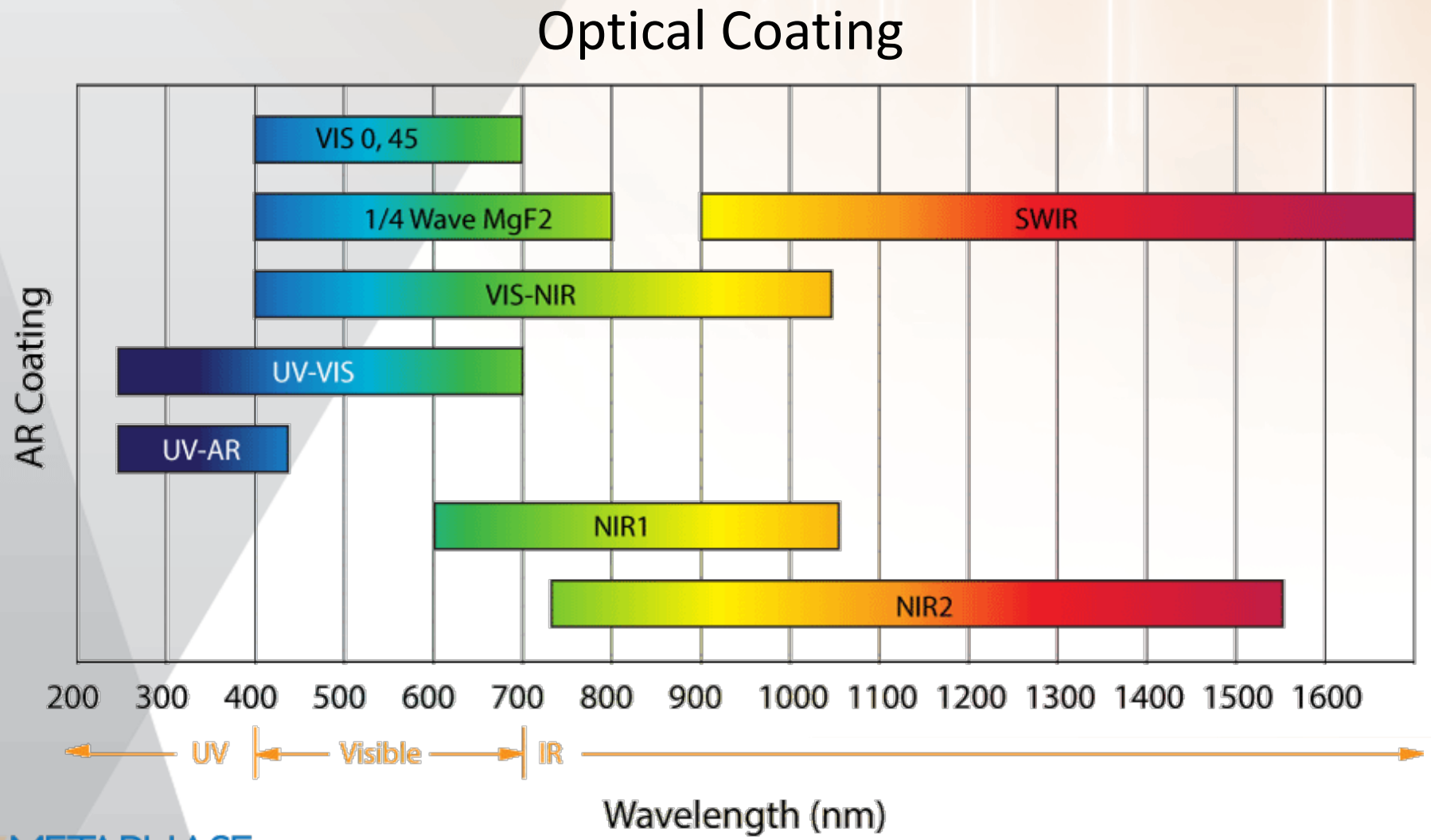
Lenses



- Coating Matters
- Alignment
- Raytracing

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SWIR LED Lights

- Line Scan
- Diffused Lighting
- Backlights
- Front Lighting
- Monochromatic, Multispectral, Hyperspectral
- Large range of sizes

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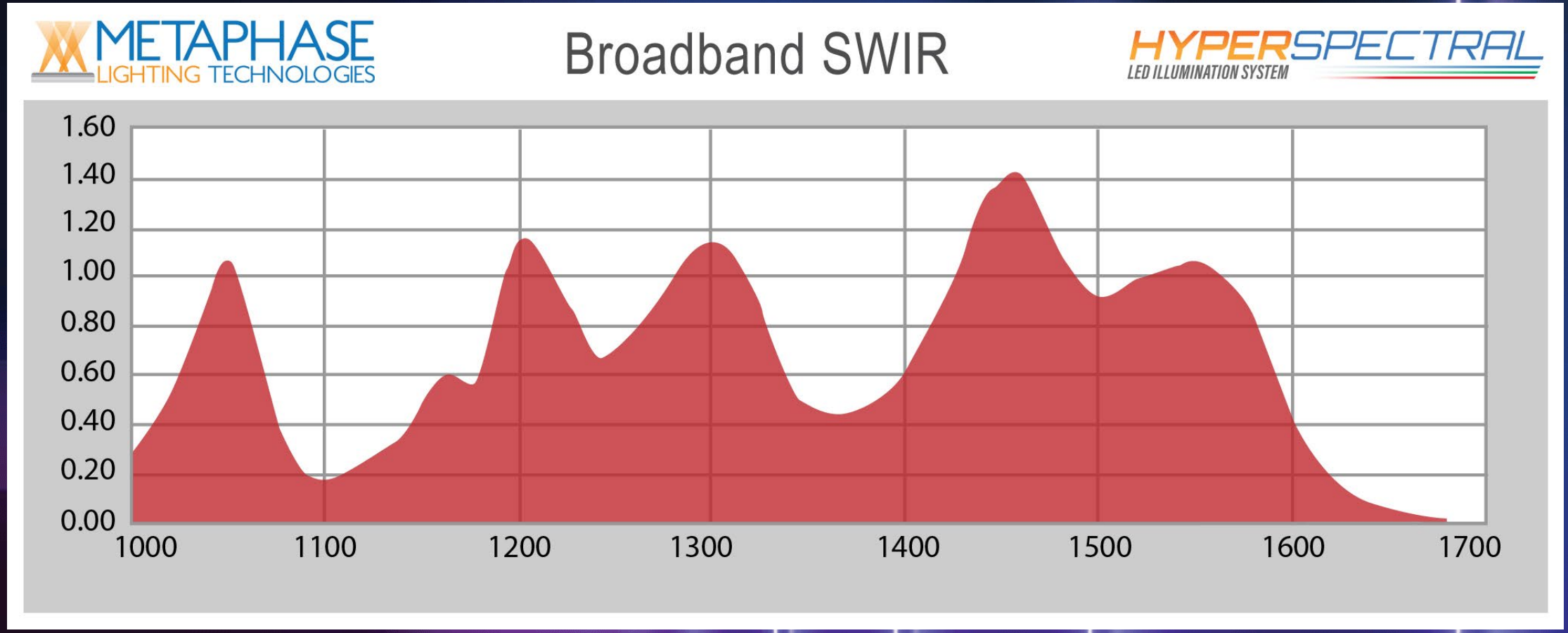
Hyperspectral Curve



Takeaways

- SWIR allows for more utilization of the EM spectrum
- Another tool in the toolbox
- Hardware considerations
- “See the invisible”

METAPHASE
LIGHTING TECHNOLOGIES
LIGHT BEYOND VISION

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