

- Name of Organization: Teledyne Scientific & Imaging (TS&I)
- Team Members:
 - James Beletic
 - Mark Peot
 - Keith Sage
 - Engineering & Operations staff as required

- **Teledyne Scientific Company (TSC)**

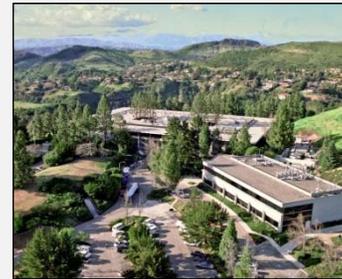
- Electronics
- Materials
- Optical systems
- Information sciences

- **Teledyne Imaging Sensors (TIS)**

- Infrared (IR) & visible sensors
- Custom cameras (MWIR, SWIR, HS)
- Laser eyewear, visor and sensor protection
- IR scientific cameras
- Advanced camera electronics
- Rapid prototyping
- IR lenses
- Custom opto-mechanical assemblies

- **Teledyne Judson Technologies (TJT)**

- IR detectors for instrumentation and space
- Dewars / Coolers
- Hermetically sealed thermoelectrically cooled detector packaging



TSC – Thousand Oaks, CA



TSC – Durham, NC



TIS – Camarillo, CA



TJT – Montgomeryville, PA

- Research areas of interest in the SILMARILS program
 - High performance infrared sensors
 - IR illuminator sources
 - Compact camera electronics
 - For focal plane operation and instrument control / data processing
 - Custom-designed and manufactured infrared optics
 - Algorithms for hyperspectral signal exploitation and visualization
 - Aided Target Recognition algorithm architectures
 - Compact instrumentation design and fabrication
 - Instrument control and operation
 - Phenomenology

Single Photodiode
Sealed Package



- TS&I's unique qualifications and capabilities
 - A world leader in high-performance infrared imaging sensors
 - Tunable wavelength coverage: Visible-shortwave IR (VSWIR), MWIR, LWIR
 - Ability to customize / optimize IR sensors for the application (ROIC, detector)
 - Hermetically sealed TEC packaging & closed cycle dewars
 - Compact camera electronics
 - Large amount of processing power in the focal plane electronics
 - IR sources (currently developed for scene generation)
 - Custom-designed and manufactured IR optics
 - Algorithms for hyperspectral signal exploitation and visualization
 - Aided Target Recognition algorithm architectures



16 Mpixel array

Electronics

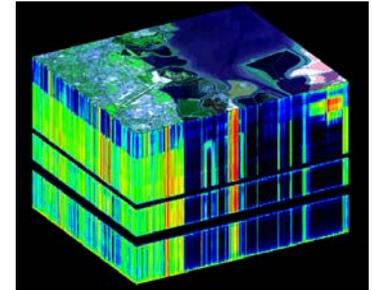


- Capabilities

- Foundry for Visible and Infrared detector fabrication
- CMOS readout design
- Electronics design and manufacture
- Visible and infrared camera design and manufacture
- Infrared optics design, fabrication and test
- Signal processing algorithms
- Firmware and software development and verification & validation



Camera Systems



Relevant Experience



• Infrared Detectors

- Our detectors enable scientific & DoD hyperspectral systems
- Space: ARTEMIS, Moon Mineralogy Mapper, Mars Reconnaissance Orbiter, HypIRI
- Airborne: ACES-Hy, AVIRIS-ng, PHyTIR, NEON, SWIS
- Plus several DoD applications & NASA development programs

• Algorithms & software

- Winning performer under NGA-sponsored effort to demonstrate robust detection/recognition of hyperspectrally defined targets in urban terrains.
- Highly efficient algorithms for atmospheric compensation, feature extraction, and fast on-line learning.
- Innovative development of bispectrum techniques for man-made object classification in cluttered environments.

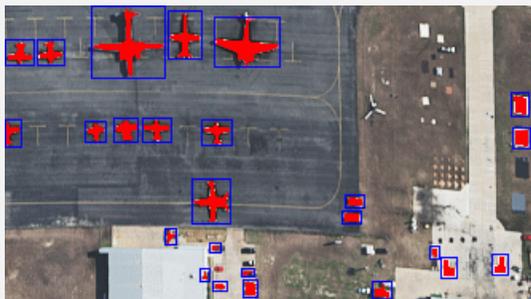
Mars Reconnaissance Orbiter (MRO) focal plane array in TEC package



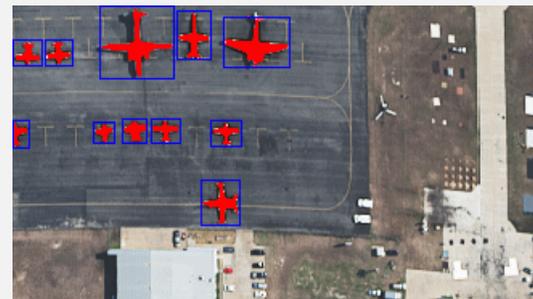
CHROMA 1280 × 480 pixel Sensor Chip Assembly (SCA)



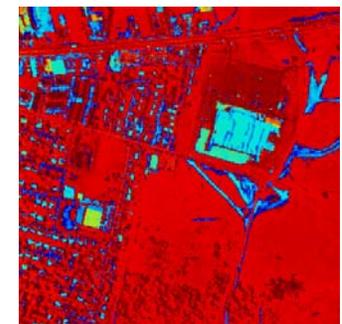
Object classification



State-of-the-art hyperspectral imaging leads to a high number of false alarms



Teledyne's approach eliminates false alarms



Man-made object segmentation

- Capabilities that Teledyne Scientific & Imaging seeks:
 - Phenomenology
 - Instrument design, integration and test
- Type of research group we seek to join:
 - Instrument team
 - Algorithm development
 - Data / image processing

Contact Information

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