

# National Institute of Justice

**Award Title:** Brass Board Forensic Crime Scene Survey Camera

**Award Description:**

Teledyne Scientific & Imaging (TS&I) proposes a 15 month, \$452K effort in response to solicitation SL000993, with the goal to build and test a portable, user friendly brass board multispectral forensic survey camera, and to demonstrate it using simulated crime scene targets. The camera will be ready for evaluation by NIJ Center of Excellence personnel or other field experts. The proposed effort is the logical next step to the successful completion of the proof of concept trade study effort funded by the DoJ from October 2010 till April 2012. The proposed camera uses multi-spectral (UV-visible-NIR) and fluorescence imaging with pulsed illumination and user selectable polarization, to detect and identify body fluids, stains, other residues, and fingerprints in real time and in the presence of sunlight. This camera system will enable previously unrealized flexibility, speed, and efficiency in surveying a crime scene in day/night, indoor/outdoor conditions. The forensic community employs contrast enhancement techniques using alternate light sources (ALS) with multiple wavelength filters, off-axis illumination for prints, and fluorescence imaging for bio-fluids. However, these techniques require a darkened environment, limiting their utility and posing significant logistical challenges. We have developed a breadboard proof of concept imaging system using a combination of a narrowband wavelength filter, a pulsed light emitting diode (LED) illuminator, and background suppression sufficient for indoors environments. We demonstrated the feasibility of a single affordable, integrated solution for data collection and analysis to identify channels with optimum contrast, image processing algorithms to further enhance the contrast, and visualization using optimum dynamic range and false color mapping. We had anticipated that a follow on effort would be necessary to fully realize the value of the initial investment. Our success in the proof of concept phase warrants further investment in evaluation of brassboard hardware, combined with further target sample testing. The proposed effort will mature the system definition, and enable Teledyne to proceed with the development of a forensic crime scene camera product. In the proposed effort, we will: Develop and test a compact brass board camera with emphasis on performance, portability and user friendly interface that will enable ease of testing and evaluation by the DoJ field experts. Implement changes to improve performance and portability, and address lessons learned from the trade study and feedback from the subject matter experts (SMEs); Upgrade the hardware from 2MP to 12MP camera, TS&I designed and built fast agile filter, 6X brighter illuminator with semi-custom electronics; Provide user friendly graphical user interface (GUI); Evaluate additional targets suggested by SMEs and extend sample evaluation to cluttered indoors and outdoors environments; Update technology transition plan, including Teledyne investment strategy for the development of a commercial product. Our team includes local crime scene experts to assist with design specifications and tradeoffs, create test scenarios, and provide operational feedback. Our team approach and complementary capabilities between various team members are depicted in Figure 2. Teledyne Technologies, Inc. has an extensive track record in instrumentation products including several currently used by forensic laboratories. TS&I is a camera company with access to production, market analysis and distribution expertise within Teledyne, to commercialize an integrated imaging product. Teledyne DALSA adds to the transition strength, with products ranging from machine vision to x-ray cameras.

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<b>Awardee Name:</b> Teledyne Scientific & Imaging, LLC	<b>Award Number:</b> 2012-DN-BX-K046
<b>Solicitation Title:</b> NIJ FY 12 Applied Research and Development in Forensic Science for Criminal Justice Purposes	<b>Fiscal Year:</b> 2012
<b>Amount:</b> \$409,774.00	<b>Earmark:</b> No
<b>Recovery Act:</b> No	<b>State/Territory:</b> CA
<b>County:</b> Ventura	<b>Congressional District:</b> 24
<b>Award Status:</b> Open	