

M153 CROWS Software Integration Laboratory

The M153 CROWS is a remotely operated system that provides the capability to remotely aim and fire a suite of crew-served weapons. This capability can be accomplished from either a stationary platform or while on the move. The system is capable of being mounted on a variety of vehicles and will use the host vehicle's system power. The system is currently fielded.

The M153 CROWS consists of a mount and a weapon cradle, traverse and elevation drives, weapon interface, weapon remote charger, ammunition magazine feed system, viewing and sighting unit, and a fire control unit (electronics support, fire control processor, control/display unit) and a control grip located inside the vehicle.



The Armament Software Engineering Center (Armament SEC) M153 CROWS Software Integration Laboratory (SIL) is a fully functional development and testing laboratory developed to support the M153 CROWS system. The lab was designed and created to provide the ability to develop new enhancements and modifications to the underlying fire control unit software within the M153 system.

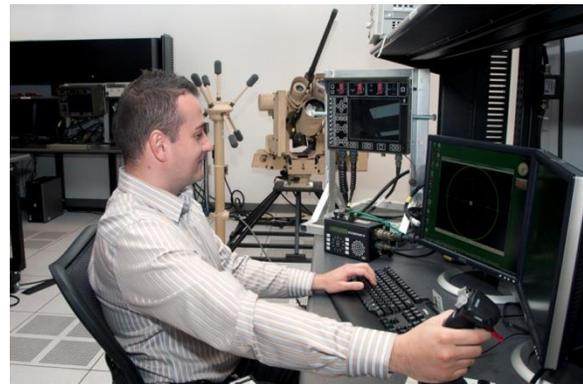
M153 SIL variants are currently in various stages of either planning, development or fielding. These variants offer enhanced functionality to selective M153 users. The development of these releases is the realization of one of the original goals of the SIL, which is to provide a more efficient method to deliver capabilities to the warfighter.



The M153 CROWS software is comprised of multiple software components. The M153 CROWS SIL provides a development environment for each software component. All M153 CROWS software components have been built and can be recreated and/or modified as needed on request from the Program Manager. In addition to providing direct support for the M153 CROWS project the SIL also promotes research and development efforts for new fire control technologies and extensions to the existing project.

The lab includes the following hardware and functionality:

- Multiple production representative and full working M153 CROWS systems
- M153 (Split Screen), M153A1 (Thick Screen), and M153A2 Weapon Station Control Panel (WSCP) Configurations
- Monitors for teaching and demonstration
- Added research components and extensions to M153 project
- Hardware component installation, removal and replacement
- Troubleshooting and diagnostic field support
- TFS (Team Foundation Server) development
- State of the art PC workstations with access to TFS
- Software download tools
- Development of hardware emulators
- FQT (Full Qualification Testing) Support



The SIL contains nine separate IDE environments along with the capability for expansion. Software development is performed efficiently and economically as requirements are translated through the design and implementation stages entirely within the SIL. This capability of developing and maintaining M153 software local to Picatinny allows for a quicker time to the field, cost savings and increased domain knowledge. Close proximity to the customer (soldier) provides the greatest feedback for suggested enhancements and improvements. Mock-ups and prototypes can be utilized to quickly define needed requirements accurately and efficiently.

An additional feature of the SIL is rapid and advanced troubleshooting to support field operations. Questions regarding the specific behavior of a particular feature of the M153 CROWS system can be tested empirically while verifying programmatically through a source code walkthrough. This unique feature provides the field users with a high level of confidence regarding the expected behavior of the M153 CROWS system.

The SIL also provides software sustainment and field support for ancillary CROWS products such as the CROWS Interactive Multimedia Instruction (IMI), the CROWS Automated Software Downloader (ASD), and the CROWS Appended/Desktop Trainer (DTT). The CROWS IMI is an interactive graphical training package designed to supplement the Mobile Training Team (MTT) prior to units being deployed. It gives the students 40 hours of courseware and covers all aspects of operating the CROWS system. The CROWS ASD is an all in one utility designed to streamline the update of system software residing on the CROWS unit. Finally the CROWS Appended/DTT is a training system designed to use the host system's hardware to run training and combat simulations through. All of these products are either designed, developed, and/or their software sustained through the Armament SEC.

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