

# INNOVATION = LEVERAGING FIRMWARE DEVELOPMENT SKILLS TO KEEP SERVICEMEN SAFE

## INNOVATION AT A GLANCE

**Client:**  
Precision Remotes

**Industry:**  
Defense

**Syncroness services:**

- » Video overlay and control system development
- » Circuit board layout
- » Firmware development

**Objectives:**

- » Develop hardware to control weapons from a safe distance
- » Augment live video with targetig information
- » Compute critical parameters in real time
- » Control weapons system components - cameras, laser range finder, weapon aiming

## RESULTS

The finished system has been proven in combat with the U.S. military and select foreign governments.



Remote controlled weapons have become an important asset to the U.S. military. Optimized for first-line defense of high-value assets, the PRI system can be controlled from a safe distance with input from multiple data sources. This data enables users to effectively assess threats without putting themselves in direct danger.

## INNOVATIVE SOLUTIONS

Syncroness was tasked with developing the video and control systems that would make it possible to control the weapon from a safe distance. Firing a weapon seems easy at first, but a lot of variables go into making the shot: positive identification of the target, distance to the target, angle of the elevation, the muzzle velocity of the ammunition, the weapon being used, the ballistic drop and parallax between the scope and bore. Keeping track of these variables is difficult at range, particularly if the target is returning fire.

The Remotely Operated Weapons System (ROWS) from Precision Remotes manages much of the complex information required to make a quality shot while keeping the operator at a safer distance. The system was designed to be deployed in-theatre to assist our armed forces in

accomplishing missions and to protect high-value targets such as embassies and nuclear power plants.

The Syncroness team designed the circuitry for the video overlay as well as the interfaces within the system to support multiple video cameras for target identification, laser range finders weapon safety and control as well as elevation control. The hardware uses a field programmable gate array (FPGA) to augment an NTSC video signal with grayscale graphics.

Our engineers also wrote the firmware to compute various critical values such as parallax and ballistic drop in real time, control the camera, augment the video with a user interface and targeting information, control the laser range finder and allow aiming the weapon.

## LET'S KEEP INNOVATING.