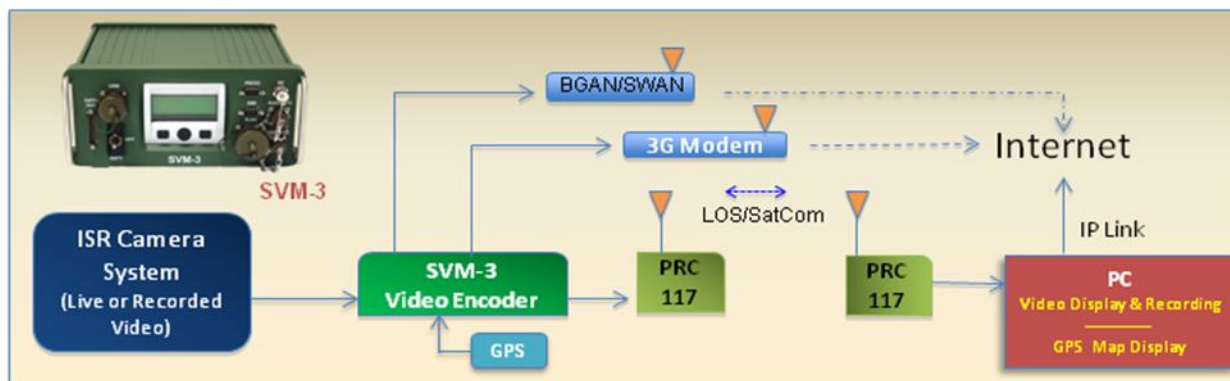




High Frame Rate ISR Video Transmission over Tactical Radios

The desired capability is to transmit Intelligence, Surveillance, and Reconnaissance (ISR) video (live or recorded) using spectrum that does not interfere with existing military frequencies. One practical solution is to use the data stream of existing field radios to transmit the video. The bottleneck of that approach has been the relatively low data rates of these radios (typically 9600 Baud or 16 Kbaud). Uncompressed, the video frame rate at 9600 baud is approximately 1 frame per 10 minutes. The technical work-around therefore has to be to highly compress the video first. However, the existing commercial technologies (MJPEG, MPEG2, MPEG4) were not designed to function efficiently at these low data rates. Even H.264 (aka MPEG4, Part 10), while specifically created to operate at 50% lower data rates than earlier encoders/decoders, is not effective below about 100 Kbaud.

The SEMCO solution is to employ a video compression technology that was purposefully designed to operate at very low data rates (and higher) - the SEMCO SVM-3 Codec. The SVM-3 can generate 3 video frames per second (fps) at 9600 baud; 6 fps at 16 Kbaud. If the mission requires higher frame rates than standard, the SVM-3 can be operator-programmed to provide it (at the expense of resolution). Similarly, if the mission needs high resolution, that can be programmed (at the expense of frame rate). The SVM-3 operates in both the line-of-sight and non-line-of-sight (SatCom), encrypted radio modes.



A unique feature of the SVM-3 is 'IP Link' - the ability to directly hand-off the decompressed video (being viewed on the PC) to a web-based server. Now the ISR video can be passed over the Internet and be observed by anyone with the appropriate decryption software and access (server, user name, and password). This makes the SVM-3 complementary with the current ISR Information Service (ISRIS). While specifically designed for the relatively low data rates of field radios, the SVM-3 can also be employed with BGAN/SWAN Satellite Phones and 3G broadband cellular networks (using a SIM card and the SVM-3's internal modem). With BGAN/SWAN or 3G, the SVM-3 frame rates are 25-30 fps.

Highlights of the SEMCO SVM-3:

- Ideal for use by the Army's Company Intell Support Teams (CoIST) and the Marine Corps' Company Level Intell Cells (CLIC).
- Real time video over narrow bandwidths – operates from 9600 Kbps to 1 Mbps (successfully tested at 2200 baud).
- High resolution (uncompressed) image capture.
- Environmentally robust. No moving parts for reliable and silent operation.
- Interoperable with all forms of transmission devices – manpack radios, satellite phones, BGAN terminals, broadband internet modems.
- Attach a USB GPS receiver to the SVM-3 and the camera's present position can be displayed both under the streaming video (Lat/Long) and directly onto Google Earth.