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The TeamView™ System -- Full Motion Immersive Video Advanced Situational Awareness in All Environments

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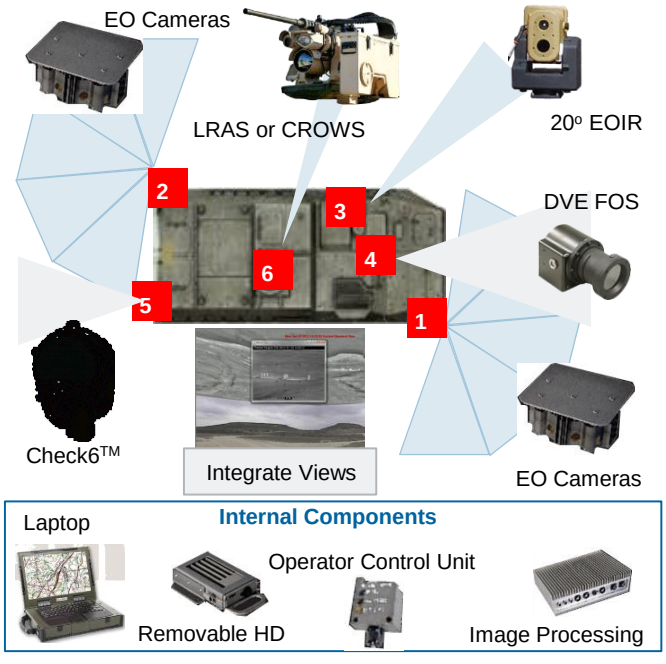
ABSTRACT

The TeamView™ system is a combat proven multifunctional passive surveillance system providing 360° video-on-the-move and continuous recording. Integrated with GXP Xplorer™ and Socket GXP™ software products, the TeamView™ system can be a key part of a Ground Based ISR enterprise solution that improves mission capability. The system uses field proven hardware and software creating an end-to-end solution including video collection, management and exploitation.

INTRODUCTION

Current platforms are typically equipped with some form of video capability used for surveillance, targeting, maneuver safety and Situational Awareness (SA). The opportunity is available to capture mission information for post-mission evaluation, forensics or training. Unfortunately most of these video systems are federated, providing no recording or playback capability. The TeamView™ system provides this recording and playback capability to enhance situational awareness. It does this by integrating the basic iMove®* system with EO cameras and advanced IR cameras and sensors, providing the capability for near-real time viewing of the video from inside the vehicle. In this way the full motion video can be viewed in the vehicle during the mission while at the same time it is being recorded for post-mission analysis. The TeamView™ system also provides fusion of full motion 360 degree video around the vehicle with picture-in-a-picture views from EO cameras and short and long range IR cameras together with metadata such as GPS coordinates, radio communications and other user inputs. The near-real time display capability significantly improves the opportunities for mission command and discovery during operations; at the point of need. The system readily adapts to day or night mission requirements by its ability to accept any combination of electro optic and infrared cameras including those already installed on the vehicle. The TeamView™ system also has an easy to use After Action Review (AAR) capability which allows for quick post-mission review and lessons learned sessions. The system has the ability to automatically create a "birds eye" view of the mission route with a feature that allows users to "mark" the route at significant points of interest. During the AAR, a user can go immediately to a particular point of interest by clicking on the specific "M" (i.e. mark).



*Foot note – iMove® is a registered trade mark of iMove Inc.

Figure 1: *TeamView™ – iMove® System with Advanced IR Cameras & Video Displays.*

Remote Viewing of Vehicle 360° Video-on-the-Move

The 360° video-on-the-move can also be viewed remotely by streaming the full motion video off-platform by using a secure radio with the appropriate bandwidth such as the WIN-T LAW radio. The 360° full motion video can be streamed to a Command Post, After Action Review Laptop or Dismounted Soldier's PDA and the viewer can view the entire 360°field of view independent of the vehicle user.

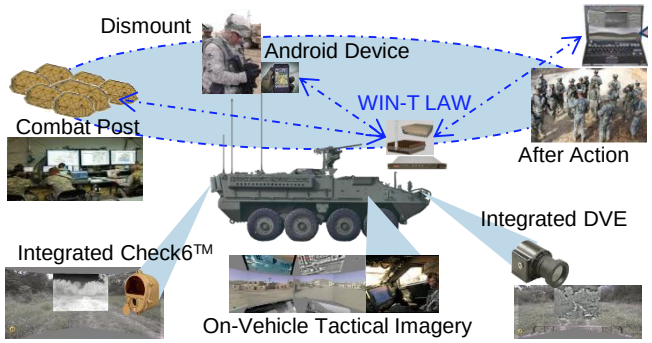


Figure 2: *360° Video-on-the-move Across the Battlefield.*

In November 2012, during the Army Network Integration Evaluation (NIE) 13.1 the TeamView™ system successfully demonstrated the use of a WIN-T Local Area Waveform radio to stream 360° near real time EO/IR full motion video from a scout platform to a remote command post over 30 kilometers away. Advanced Situational Awareness means the most complete fused data possible for operators, mission command, intelligence analysis and mission planning /rehearsal.

The TeamView™ system software allows the vehicle operator/commander to view all EO/IR video streams during the mission, and permits virtual scanning around the vehicle for intuitive 360 degree views. Simultaneously, the processor records all of the video and metadata onto a removable hard drive for further analysis and exploitation.

As seen in Figure 3, while the vehicle commander is observing 360 degree activity during a mission, a remote command post can also simultaneously view and scan around the vehicle without interfering with other users. This capability is accomplished using thin client software. The screen shot shown in Figure 3 was taken at an Operations Center approximately 3 km away while the vehicle was on patrol.

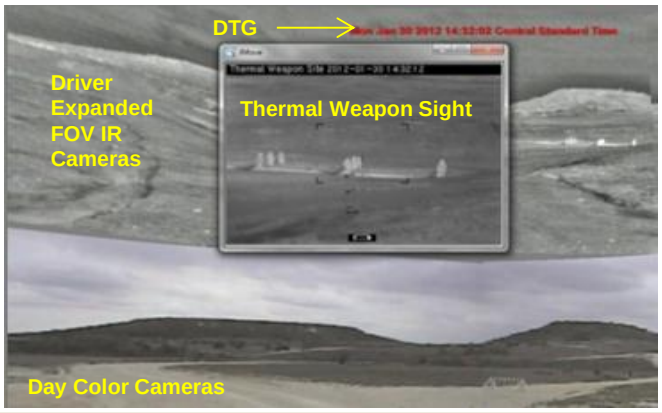


Figure 3*: Observing 360 degree activity during a mission*

TeamView™: Turning Situational Awareness into Actionable Intelligence

As shown in Figure 4, streaming video from a mobile ground vehicle provide a very useful tactical perspective; capturing action and human activity during an attack at the point of attack. Whether looking for forensic evidence after an attack, or patrol video to assist in mission planning with coalition forces- The TeamView™ system turns advanced situational awareness into actionable intelligence.

Soldiers and leaders with the Brigade Combat Teams (BCT) noted that video from an Unmanned Aerial

Vehicle (UAV) was difficult for indigenous forces to understand because of the perspective, whereas they had no difficulty understanding video from the TeamView™ system. As a result, the BCT had to establish much larger cordons around mission sites; which required additional forces for the mission. Besides being able to deploy in all weather, day or night another key advantage of the "ground level" TeamView™ system is that it passively captures critical views and points of interest that are familiar with the local indigenous forces without being noticed by potential adversaries.

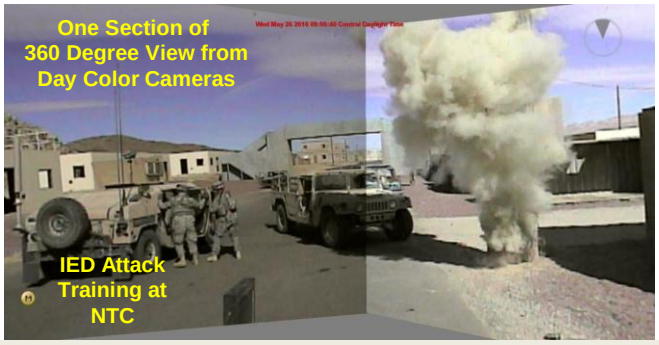


Figure 4: *Capturing action and human activity during an attack at the point of attack.*

TeamView™ System Provided Forensic Evidence, Defeats Iraq IED Cell

Two TeamView™ systems were deployed with the 3d Armored Cavalry Regiment in Iraq in 2011. The scouts said it enabled them to collect and exploit forensic visual evidence after an IED attack on one of their patrols. The TeamView™ system was instrumental, in combination with SHADOW UAV imagery, to the successful defeat of an IED cell that led to the first ever prosecution and conviction of enemy insurgents in an Iraqi court of law. We have full motion video from that IED attack that can be shown during a briefing as requested.

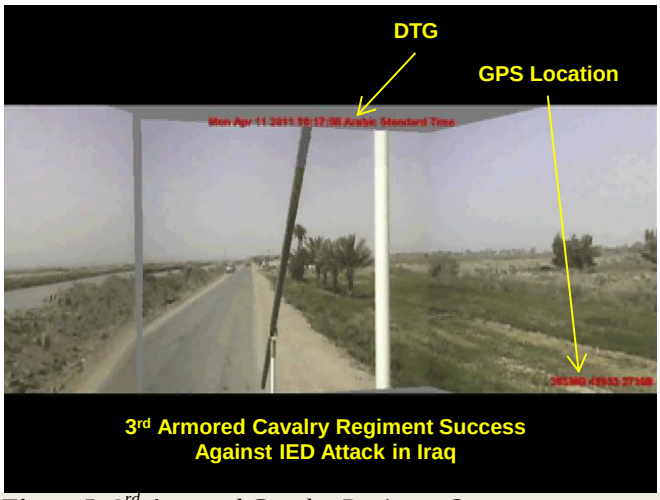


Figure 5: *3rd Armored Cavalry Regiment Success Against IED Attack in Iraq.*

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The TeamView™ System Integrated with GXP Xplorer™ and SOCET GXP™ software:

As a future capability, the TeamView™ system can be connected to GXP Xplorer™ and SOCET GXP™ software products. This would allow 360° Immersive Video from the system to be directly fed into the GXP Xplorer™ and SOCET GXP™ software where the video can be exploited and shared across the enterprise with other analysts. The GXP Xplorer™ and SOCET GXP™ software are COTS products that are widely used across the US Army and Intelligence Community.

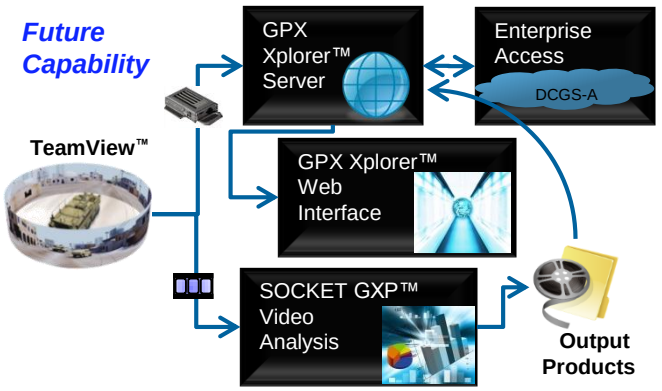

Figure 6: *The TeamView™ system integrated with GXP Xplorer™ & SOCET GXP™ software*

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