FUTURE GLOBAL POSITIONING SYSTEMS TECHNOLOGIES

Future Global Positioning Systems Technologies

MSG Cory G. Shouse

United States Army Sergeants Major Academy

Class # 58

SGM Caspari

13 November 2007

Outline

Thesis Statement: The future technology and employment of Global Positioning Systems in combat will reduce fratricide, collateral damage, and the amount of time Soldiers are exposed to danger during combat operations.

I. Introduction

II. Future Munitions

- A. Missiles/Bombs
- B. Artillery

III. Future Soldier Tracking

- A. Microchips
- B. Tagging

IV. Future Aerial Systems

- A. Unmanned Aerial Vehicles
- B. Aerial Delivery Systems

V. Conclusion

Abstract

The future technology and employment of Global Positioning Systems in combat will produce more precise weapons, better tracking capabilities, and create less troop exposure that will reduce fratricide, collateral damage, and the amount of time Soldiers are exposed to danger during combat operations.

Future Global Positioning Systems Technologies

The future technology and employment of Global Positioning Systems (GPS) in combat will produce more precise weapons, better tracking capabilities, and less troop exposure that will reduce fratricide, collateral damage, and the amount of time Soldiers that are exposed to danger during combat operations. These technological advances and employment practices will forever change the face of combat operations.

Munitions

Just as the first guided munitions revolutionized the conduct of strategic bombing, the future technologies in missiles and bombs prove to be just as revolutionary. The focus of missiles and bombs is no longer just the ability to hit a target from a faraway distance but to eliminate the need for a laser to pinpoint the location of the missile or the bomb. The focus has turned to using a GPS seeker instead of laser. The seeker guides the munitions to its target based on a set of pre-programmed coordinates. The desired effect of the GPS seeker is to eliminate the need of a laser pinpointing the target and to allow the delivery platform a greater standoff distance. (Arora, 2006)

The advancement of GPS technology has taken guided munitions from bombs and missiles into the arena of indirect fire artillery munitions. GPS receivers have gotten smaller, and with the smaller component come the ability to use them in new ways. Couple the GPS receiver with a small laser and the ability to deliver precision indirect fired munitions is now a reality. The precision of these indirect fire munitions is currently being tested at 50m and is estimated to be as low as 30m when actually fielded. (Unknown, 2006) The ability to deliver guided artillery

munitions on the battlefield allows the commander on the ground to use direct fire in situations where it was previously deemed too risky.

The technological advancements in guided munitions has provided the military an effective means to deliver ordance with extreme precision. This precision reduces the amount of collateral damage because a single target can be destroyed without taking out an entire city block. This precision allows commanders to deliver ordance closer to friendly troops without the worry of human error. The new technology allows the method of delivery to remain further out of harms way and reduces the chance that military troops may be exposed to hostilities.

Tracking Systems

GPS technology has not only helped the war fighter deliver more precise munitions, it has greatly increased the ability to track Soldiers on the battlefield. Currently, the United States military is tracking vehicles on the battlefield with the BLUEFORCE Tracker, FBCB2, and the MTS systems. This technology tracks the crew of a platform, but not the individual. Again, the technology that has reduced the size of the GPS receiver will play a significant role on how commanders track the individual Soldier. Though the military has not specifically mentioned how it plans to track the individual on the battlefield, there are two technologies that would definitely prove feasible and plausible.

GPS microchips are one approach to tracking individual Soldiers. A small microchip placed under the skin would allow Soldiers to populate a commander's situational awareness screen. This current technology is being utilized by law enforcement agencies as a means for tracking criminals. (Research, 2006) It is a relatively new technology and the data regarding the ability to accurately track an individual is not available, but the technology exists and is only a matter of time before it is able to be effectively employed.

GPS tracking tags provide the same ability as the GPS microchips. They are not as small nor are they as stealthy as the microchips. The tracking tags or collars are similar to what is currently being used to track animals in the wild, and have had great success. The tags could be donned by the Soldier prior to each mission, but could also be removed if captured or during the normal routines of combat operations. One means being developed to visibly remove the tracking tag is to imbed the tracking system into the clothing or equipment of the Soldier. (Eramo, 2005) The GPS tracking system would remain with the Soldier as long as he/she had their clothing or equipment.

Regardless of the means the military chooses to track the individual Soldier, the end result will be a better situational awareness on the battlefield. This awareness will allow commanders to see intricate details never seen before that will prevent fratricide and the loss of a fellow Soldier on the battlefield.

Aerial Systems

The Unmanned Aerial Vehicle (UAV) has proven to be the future of intelligence gathering and precision strike. UAVs are currently providing commanders with real time video surveillance of routes, targets, and key terrain. Additionally, these UAVs are being utilized as platforms for precision munitions. As the technology to decrease the size of the GPS receiver continues, UAVs will continue to become smaller themselves, and with the decreased of avionics they will be more capable of carrying larger payloads of munitions or fuel. (Syntronics, 2006) These advances will drastically increase the amount of station time a UAV has and diminish the gaps created by getting a replacement UAV on station. Additionally, a smaller UAV provides the commander a stealthier means of observing the critical targets.

GPS technology has also increased the ability to deliver supplies and equipment to ground forces with precision. Gone will be the days of hoping that air dropped supplies reach the ground unit. These guided parachutes utilize the same technology as guided munitions and are benefitting from the decreased size of the GPS receiver as well as independent guidance units. (Defense Update, 2006)

The future technologies of GPS will drastically reduce the amount of troops required to conduct many combat operations. The UAV and guided aerial delivery systems will change the way the military conducts surveillance, precision strike, and re-supply operations.

Conclusion

The advancements in GPS technology will forever change the way the United States conducts combat operations. This new and enhanced technology provides us with more precise munitions that drastically reduce collateral damage and the potential for fratricide. We will further reduce the potential for fratricide by being able to track the individual Soldier and coordinate our fires with more precision. GPS technology touches every aspect of operations and the affects will be felt worldwide.

References

Arora, R. B. (2006, April). *GIS Development.* Retrieved October 22, 2007, from GIS Development: http://www.gisdevelopment.net/technology/gps/techgp0048a.htm

Defense Update. (2006). *Defense Update Airborne Systems Group* . Retrieved October 22, 2007, from DefenseUpdate.com: http://www.defense-update.com/topics/uvs/index.html

Eramo, J. (2005, June). SenseSuit Targeting Technology. *Law and Order* , pp. 50 - 53.

Research, Global. (2006, February 22). *Global Research Police State Technology.* Retrieved November 5, 2007, from Global Research.ca: http://www.globalresearch.ca/index.php?context=va&aid=2034

Syntronics. (2006). *Syntronics.* Retrieved October 22, 2007, from Syntronics: http://www.syntronics.net/Guidance%20Systems%20Division.htm