

**ACTIVE ELECTRONIC MONITORING BECOMES
VIABLE OPTION FOR OFFENDER TRACKING**

A White Paper

ACTIVE ELECTRONIC MONITORING BECOMES VIABLE OPTION FOR OFFENDER TRACKING

Table of Contents

Executive Summary	3
Passive Is Better Than Active – Or Is It?	4
Passive vs. Active	5
GPS Enters the Picture	7
What Makes a Good Active System?	9
Three Catalysts for Active Systems	9
BI Enters the Active Market	11
The Future of Active Systems	13
About BI Incorporated	14

Executive Summary

The virtues and benefits of electronically monitoring offenders have been well documented. The question becomes whether to use active or passive monitoring technology. The problem is, active monitoring, which formed the foundation of the entire GPS monitoring effort back in 1997, simply did not deliver the performance that the community corrections industry had been anticipating, either from a technological or financial perspective.

That was then, and this is now. BI Incorporated, the recognized leader in the electronic monitoring market, recently marshaled its vast resources in an effort to produce an active GPS product that delivers the performance that was envisioned when the concept was first drawn up. The following document outlines the primary differences between active and passive GPS monitoring systems, the shortcomings of active GPS systems, and how BI has addressed those shortcomings to produce an active tracking system that provides a strong addition to the community corrections toolbox.

Passive Is Better Than Active – Or Is It?

As students in English class, we have always been instructed to write in the active voice. A sentence written in the active voice conveys its message more directly and contributes to a stronger sentence structure.

The same does not hold true in monitoring technology. In fact, in this arena, the exact opposite has been true: passive GPS products released since 2003 have been more effective tools for community corrections than active GPS products.

Actually, the origin of electronic monitoring finds its roots on the active side, back in 1997. However, the technology behind these active tracking systems was inferior and contributed to products that performed well below the standards established by the reliable radio frequency products when they were developed. As a result, passive GPS monitoring systems began to appear on the landscape around 2003, fortified with advanced technology that generate fewer false alerts and exhibited far greater reliability.

BI Incorporated, a leading solutions provider in community corrections, may very well be shifting the monitoring paradigm with the introduction of a new active GPS product. Based on the superior performance of the elements within its existing passive GPS tracking system, while overcoming the deficiencies of previous active offerings from other vendors, the system is a welcome addition to the community corrections toolbox.

Undoubtedly, this breakthrough arrives at a highly propitious time. Within the community supervision arena, radio frequency monitoring and GPS tracking have become extremely viable options for professionals within the three “P’s” of the judicial system: probation, parole, and pre-trial release (currently the hottest market for

monitoring efforts). The concept of electronically monitoring offenders in the community was conceived by an American psychologist, Dr. Robert Schweitzgebel in the 1960s, but it took almost 20 years to become a reality in corrections. The virtues of this technology are clear: keeping tabs on the whereabouts of offenders and defendants awaiting their day in court, particularly critical at a time when state budgets are stretched tight as a drum and the supply of probation officers to physically monitor the offender population is woefully inadequate.

At a time of increasing public pressure to enhance public safety, while keeping corrections budgets under control, electronically monitored home confinement is becoming an increasingly popular means by which to supervise offenders and provide accountability in the community. In the United States, for example, only 826 offenders participated in electronic monitoring programs in 1987 (Schmidt, 1998); by 1998, this number had increased to over 95,000 (National Law Enforcement Corrections Technology Center (NLECTC), 1999).

Monitoring technology also dovetails seamlessly with the basic tenet of the American judicial system: that a person is innocent until proven guilty. As mentioned earlier, anywhere between 10 and 20 percent of the jail population is comprised of people awaiting trial who were unable to make bail. Until the completion of their trials, these people are all innocent yet are taking up limited jail space. Monitoring technology allows these people their freedom while providing law enforcement officials with detailed knowledge as to their whereabouts.

Two Types of Electronic Monitoring

Before examining the intricacies of the GPS system from BI Incorporated, it is instructive to understand the difference between the technologies, as well as the shortcomings that active GPS systems have presented.

There are two basic types of electronic monitoring equipment, continuously signaling and programmed contact. Continuously signaling systems have three essential parts: a transmitter, a receiver/dialer and a central computer (Schmidt, 1998). The transmitter is strapped to the offender and broadcasts a coded signal at regular intervals. The receiver/dialer picks up signals from the offender's transmitter and reports to a central computer via a phone line or cellular technology when the signals stop and start. The computer compares any signal interruptions with the offender's curfew schedule and alerts correctional officials to unauthorized absences.

In a programmed contact system, a computer is programmed to call the offender at random or at specific times, and then reports on the results of the calls. Programmed contact devices are less restrictive since the offender's presence at home is only confirmed when the computer calls. When a call is placed to his or her residence, or place of work, an offender may verify his or her presence in a number of ways. Some offenders may wear a device strapped to their wrist that is inserted into a verifier box connected to the telephone to confirm that the offender is present when the computer calls (Schmidt, 1998).

Some programmed contact systems use voice verification technology that analyzes the offender's voice when he or she answers a call (NLECTC, 1999). The

voiceprint recorded at the time of the call is matched to a print recorded when the offender entered the program; other systems may require the offender to wear a pager and call a specified number when the pager beeps. Caller-ID technology establishes whether the offender is at an approved location (home, work, school, etc.) at a specific time. In programmed contact systems, a computer calls the offender at random or at specific times, and then reports on the results of the calls.

<http://www.johnhoward.ab.ca/PUB/A3.htm>

GPS Enters the Picture

As Global Positioning Systems (GPS) were developed and perfected, both active and passive systems were created to take advantage of this advanced technology. An active GPS tracking system consists of an ankle bracelet transmitting a radio frequency (RF) signal, a charging base station, battery charger, GPS tracking unit, and a cellular phone. However, the typical product weighed approximately four pounds, was considerably bulky, and roughly the size of a lunchbox. By and large, the GPS receivers and antennas that are such an integral part of the active system were not well suited to be carried by individuals within potentially harsh environmental conditions. Essentially, they were constructed for semi cabs and trailers sporting 12-volt, 80-amp alternator charging systems, traversing the country in wide-open spaces with little or no signal interference.

Unfortunately, these conditions are far from the circumstances in which the community corrections users of active tracking would find themselves. The electronic monitoring technology is typically used by unenthusiastic people traveling in

automobiles, working at construction sites, in busy restaurants, surrounded by varied landscaping and in other rugged environments. As a result, a new design was developed.

In 2002, after deciding to enter the GPS market with it's own active tracking product, representatives of BI went back to "square" one, asking potential users of offender monitoring products exactly what they wanted. The overriding answer within the survey results was that active tracking was not a product they wanted, due largely to the unreliability of the cellular communications that formed its foundation. The tracking products available at the time offered GPS signals that were intermittent at times, and the RF signal linking the transmitter to the tracking unit was highly undependable. What's worse, the constant breaks in communication were triggering hundreds of false alerts, sometimes as many as 400 a month per unit. After becoming desensitized to these misleading signals, probation and parole officers simply began to ignore all of the signals, much like the boy who cried wolf.

Ultimately, it became clear that community corrections professionals could make good use of reliable GPS, reliable RF, and a smaller package. Furthermore, in many cases, they didn't want to be told about any alerts until later in the day, because they did not want to address these situations instantaneously. Their *modus operandi* was usually to review the information the next day and then take appropriate action. This approach was diametrically opposed by those for whom the first active products were created - "cowboys and bounty hunters" with guns on their hips, ready to respond to a problem within minutes. They intended to rush out and arrest a parole violator at an elementary school or an offender at his ex-wife's house.

When all of the available technology was incorporated into the active tracking systems of the day, they did not deliver anywhere near the level of functionality that the creators envisioned. As a result, the active tracking push lost significant momentum. Companies were producing active tracking products that were simply not working, relying on old analog cellular networks that required by-the-minute payment. Perhaps the 15 dollar-per-day cost of some active systems sounds reasonable at first blush. But with the generation of scores of false alerts, at a cost of 50 cents for each one, the per diem cost can go up to \$25-\$30 per day. The cost effectiveness of such a system would legitimately be called into question.

What Makes a Good Active System?

It became clear, based on cost alone, that customers preferred a passive product. Thus, any viable active product would have to satisfactorily address four issues:

1. Ease of use (i.e. a simple user interface)
2. Solid transmitters with a strong RF link to the tracking unit
3. Smaller size and weight of the GPS tracking unit, combined with increased sensitivity
4. Flexibility to allow offenders to be either totally responsible for their equipment or not responsible at all, depending on the specifications of the community corrections officers.

Three Catalysts for Active Systems

In 2004, the community corrections landscape virtually screamed for an active tracking product. There were three primary factors that, taken *in toto*, created a sort of “perfect storm” that served as a catalyst for this demand:

- *Cell phones with data technology.* In 1998, a computer with 64 mg of RAM was considered a powerful machine. In 2003-2004, cell phones with 128 mg of RAM were being produced and available everywhere. In addition, these phones had Java programming capabilities, allowing the user to actually write an application on the phone. Clearly, the telecommunications industry had rebounded from the “meltdown” of 2000-01, resuming its efforts to enhance cell phone capability. The result was the development of cellular phones based on digital platforms, allowing for data communications and far more reliable communications.
- *911.* Also in 2003, the Federal Communications Commission (FCC) mandated that 911 functionality would be required on all cell phone companies. This meant that dispatchers would need the ability to track cell phone callers seeking emergency services. This led to hundreds of millions of dollars being spent to build out data networks, which primarily translated to putting GPS receivers on every cell tower to bring GPS capability into cell phones – a key ingredient of active tracking technology.
- *The Jessica Lunsford case.* In February 2005, Jessica Lunsford, a 9-year-old Florida girl, was kidnapped from her bedroom and subsequently murdered by a convicted sex offender living nearby. This single incident played an integral role in swinging the pendulum towards the incarceration and monitoring of sexually

violent offenders. As a result, active tracking became the “glamour” product of the industry.

At that point in time, in 2004, BI had significantly improved its development of passive GPS technology, so attention was turned to an active product. The company’s objective was to build on its existing solid RF foundation, as well as take advantage of the improved technology available at the time.

It should be remembered that if 40 distinct alerts are possible in a passive product, as many as 60 exist in an active device. With each new stage of supervision, it is not only the complexity of the product that is being increased; it is also the expectations that the officers will follow-up on a substantially higher number of alerts.

BI Enters the Active GPS Market

BI's new active GPS system offers a plethora of features and benefits too comprehensive to enumerate here. However, in considering the capabilities of the system, there are a few basic areas that should be examined - competitive advantages that contribute to the creation of the industry's first *viable* active monitoring system.

The phone itself is a centerpiece of BI's active system: a Motorola i355, developed for rugged, military-type use and geared towards professionals like police officers, emergency first responders, and construction workers. The phone is then encased in a plastic covering made from the same material as the ankle transmitter. This case protects the phone's keypad and other critical parts so that damaging the phone is virtually impossible.

When people talk about cellular quality, they are basing it on their own experiences, which normally involve a mixture of static-filled conversations, gaps in cellular reception, and dropped calls. Because the BI cell phone operates on a data channel, the reception is improved a hundredfold – essentially equivalent to a landline in terms of performance - quite different than people's expectations of cell phone operation.

The most basic capability of an effective intensive supervision system is to allow the officer to communicate with the client; consequently, besides the actual phone to verbally contact the offender, some form of keypad is necessary in order to perform text communications. Additionally, it's essential that the client's cell phone provide only inbound communication; the reality is, officers don't want clients to contact them, nor do they want clients using the cell phone for their personal use.

The scheduling of text messages is not only a matter of convenience but is one of effective organization. An officer might come to work on Monday, review his or her cases, and then set up text messages for the week ahead, with Johnny getting his on Monday, Mary getting hers on Tuesday, etc., as well as requiring the recipients to acknowledge the messages. Short Message Service (SMS), or text messaging, is a service available on most digital cell phones that permits the sending of short messages between mobile phones and other handheld devices. When you send out a text message you essentially hope that it reaches the intended party. Conversely, the BI solution utilizes a TCP/IP protocol, meaning that the sender of the text message knows exactly when the message is delivered and precisely when it is acknowledged.

While a somewhat neglected area by some manufacturers, batteries have been accorded significant attention in BI's active system. All of the current systems on the market use non-replaceable, lithium ion batteries in their transmitters and/or tracking units; these batteries will hold approximately 300 charges.

The shortcomings of these batteries are profound. Imagine you are a probation officer who has just started a new agency. You've shipped 50 tracking units, with 50 stations in 50 homes and 50 transmitters. About a year later, all of the batteries are dying, so now you are forced to arrange face-to-face meetings with all of your clients, change their transmitters, then change their tracking units. Now you've got all of the old pieces of equipment leaning against the wall in your office, with nowhere to store them.

Of course, you have to account for a certain number of "out of the box" failures, meaning that you will likely need a second meeting with some clients to replace the defective units. You're boxing up equipment and you're shipping units back to

manufacturers. Rather than a probation officer, you've become a full-time inventory and shipping clerk. By using replaceable batteries in the BI active system, all of these ancillary jobs – and the headaches associated with them – are eliminated.

The Future of Active GPS Systems

As effective as the active GPS units are expected to be, it is highly unlikely that they will supplant passive GPS products or radio frequency systems. Why, for instance, would someone who lives on a farm, is miles from another home, and has been charged with a relatively minor crime, be required to use an active GPS system? Given the extra expense of active GPS, as well as the individual's overall profile, they are not ideal candidates for active tracking, particularly when you consider the additional cost.

Rather, active systems will become an adjunct to them, giving law enforcement another option and taking their place in the continuum of monitoring products. The greater the choice, the better: over 550,000 inmates were released from prisons last year, with another 630,000 expected to be freed this year. By 2010, over 1.2 million inmates will be returning home every year. It is mandatory that our criminal justice system, and the officers tasked with supervision, successfully manages the prisoners returning to society. The more tools we have in this difficult but necessary crusade, the more effective protection we will be able to provide society as a whole.

About BI Incorporated

Established in 1978, today BI Incorporated contracts with more than 1,000 governmental agencies nationwide to provide offender monitoring technology, supervision services from a national monitoring center, community-based treatment services, and reentry programs to adult and juvenile offenders in the community on parole, probation or pretrial release. BI works closely with local public corrections officials to cost effectively reduce recidivism, promote public safety, and strengthen the communities it serves.

###