



# **Electric Compass White Paper**

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## Planning a Mobile GPS Project

Michael Forbes  
Managing Director  
Electric Compass

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**ELECTRIC COMPASS**

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# Planning a Mobile GPS Project

The Global Positioning System (GPS) is a revolutionary technology that is changing the way businesses operate in the field. From its origin as a military navigation technology to its use for “black box” tracking of trucks on the road, GPS technology has proven its worth to enterprises worldwide.

The integration of Electric Compass GPS solutions with mobile computers is making location information available in real time as an intrinsic part of field activities and the business decision making process. GPS location data is now accessible by users in the field and supervisors in the back office, providing greater visibility to operations and giving managers better control over operations in ways that have previously been impossible.

What this means for mobile enterprises is that, for the first time, GPS can be tightly integrated into current business applications that utilize mobile computers. The result is increasing productivity, lowering operational costs and improving safety – with all these benefits leveraging the enterprise’s investment in mobile computers.

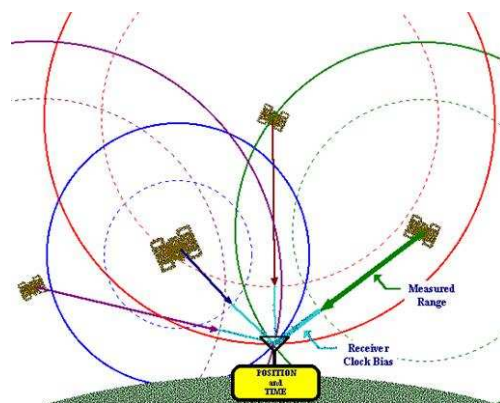
There are a number of GPS options available when planning your mobile GPS solution. The breadth of selections allows you to choose the GPS solution best suited to your needs in the field.

This white paper explores the questions and considerations behind planning a successful mobile GPS project.

## What is GPS?

The Global Positioning System, or GPS, is a satellite-based navigation system. It was developed by the United States Department of Defense (DOD) for military and government use, but the information it provides is now available free for civilian and commercial uses worldwide.

From complex military applications to handheld receivers carried by hikers, GPS offers a wide range of applications and uses. Between these two ends of the spectrum, GPS technology can provide mobile enterprises with a number of significant benefits.



Source: P.H. Dana

The first GPS satellite was launched in 1978. The full constellation of 24 satellites was in place in 1994 and the system was declared fully operational in 1995. Today, the number of satellites has been increased to 32 satellites for enhanced performance. In May 1, 2000 "Selective Availability," a means of diminishing civilian GPS accuracy was discontinued, significantly increasing the accuracy of GPS signals to what is available today

In simple terms, GPS is a broadcasting system in which satellites transmit information toward Earth. GPS receivers take the transmitted information and use a form of triangulation to calculate the user's exact location. The basic premise of the technology is that the GPS receiver compares signal transmission time with the signal reception time, and then uses the time difference and the propagation speed to deduce the distance from each of the visible satellites. The distance calculation for each satellite creates a sphere of possible positions for the GPS receiver. The point at which the spheres representing the distances for all the GPS satellites used in the solution intersect is the user's location. The GPS receiver translates the position into latitude and longitude that can be used in software applications. Typical GPS accuracy for mobile computer-based GPS solutions is 3-5 meters. Better accuracy can be achieved through GPS correction technologies such as the Wide Area Augmentation System (WAAS), which can bring typical accuracies into the two meter range. WAAS technology is included in many GPS receivers.

Today, there are two basic types of GPS in use:

Autonomous, or Active, GPS ("GPS") where the GPS receiver has the ability to resolve the device's location without the need for assistance from a wireless network;

Network Assisted, or Aided, GPS ("aGPS") which relies on a GPS receiver associated with a Wireless Wide Area Network that is supported by network location server technology to resolve the unit's location. This type of assisted GPS is based on technology originally developed to support the United States Federal Communication Commission's Enhanced 911 ("E911") requirement for public safety location services and is generally not available outside of the United States. Another new method of assisted GPS provides performance enhancements by allowing satellite position data to flow to the GPS receiver via the internet for future use. This method of assisted GPS provides benefits such as faster times to first fix as well as the ability to get location information in places where active GPS fails, such as indoors.

## Steps to Deploying a mobile GPS Solution

GPS represents a new technology that offers serious benefits to enterprises using Mobile Computers. But, as in any technology deployment, real benefits only come from solutions that are well thought out in advance. While there are many well-known uses for GPS, such as real-time tracking and turn-by-turn navigation, the power of GPS solutions for enterprises often comes out of less obvious applications of the technology. And it often turns out that more than one GPS application can benefit an enterprise.

Here are some steps to think about when planning a GPS solution:

- 1) Identify the business processes you are trying to improve, or problems you are trying to solve. Don't necessarily think of it in terms of "I need tracking" or "I need navigation," rather look at the process improvements you'd like to gain from deploying a GPS solution. Here are a few sample questions to consider:

- Do you want to gain greater visibility into activities?
- Is it more important to track vehicles or workers?
- How will the location data be used in the field and in the back office?
- Do I need the location data in real time, or can I batch it to save costs?
- With what other applications will you be integrating your GPS solution?
- Are you interested in helping drivers find service call locations?
- Do you need to know vehicle locations for dispatch purposes?
- Are you trying to get a better handle on stop performance and analytics?
- Do you need to validate that transactions or inspections are being conducted in the appropriate places?
- Are you looking to curb unnecessary mileage and vehicle use?
- Do you need to confirm the actual locations of assets or customer?
- Are you trying to improve fleet safety performance?
- Do you need to fit your solution into an existing mobile computer infrastructure or is this a new deployment.

**2) Understand the Return on Investment (ROI).** GPS can provide a measurable ROI as part of an overall mobile solution. Once you've determined how you intend to use GPS in the field, you can create an ROI case study that will allow you to determine the bottom line impact of your system. Your operational cost savings can be based on a number of results that a GPS solution can provide including, but not limited to:

- Identifying unproductive time that can result in a decrease in overtime hours.
- Identifying and eliminating unnecessary mileage resulting in fuel costs and/or cost-per-mile savings.
- Adding more stops or activities per day per driver/worker allowing more work to be completed with fewer personnel.
- Improving safety in the field leading to lower long-term insurance costs.
- Better understand field operations, route dynamics, customer characteristics and worker behavior for more effective strategic planning.
- Specific issues or opportunities that are unique to your business.

**3) Identify the appropriate GPS hardware and software solutions for your needs.** Based on the answers to the questions above, you should have an understanding of how you intend to use GPS in the field. From this, you can determine which hardware configuration and application choices make the most sense for you. Below, we'll

review the various GPS hardware configurations. For an overview of the types of GPS applications available for Mobile Computer, refer to the companion white paper, *GPS Applications for Mobile Computers*.

- 4) Plan and execute a proof of concept or pilot to prove your business case. You can do this on a small scale to gather first-hand experience on the technology and to test your assumptions on ROI. To save time and money, you can conduct your pilot without a full integration of all software elements. While this will not give field workers the same experience as the final integrated solution, it can provide valuable insights into how GPS can benefit your business. The key in an un-integrated pilot is to understand that the field processes will be less elegant than in the final deployment and not let that get in the way of understanding the information collected.
- 5) Based on your pilot experience, Integrate your GPS solution within the framework of your work processes including any software integration with mobile and backend systems.
- 6) Deploy your GPS solution into the field.

## Conclusion

The combination of GPS and mobile computing has created a technology that can reach into and improve every aspect of enterprise field operations. From increasing productivity in the field to gaining better understanding and control over activities, GPS promises to change the way enterprises manage their operations in the field.

In conclusion, we hope we have provided some insights and tools for enterprise users to begin planning a successful GPS solution. GPS technology offers powerful benefits and costs savings to enterprises that can be achieved right away, and we hope this white paper will help businesses make the most of the opportunities.

## About Electric Compass

Electric Compass is a GPS solutions company. It provides two key software products designed to use the Global Positioning System and mobile computers to allow enterprises to reduce fuel costs and increase field worker productivity. Enterprise Navigator is a turn-by-turn GPS navigation product that is strongly differentiated from consumer solutions by its ability to be integrated into other mobile productivity solutions, the availability of commercial truck routing restrictions and its fleet-oriented licensing methods. RouteTrak is a GPS tracking product differentiated from other "Automatic Vehicle Location" products by its focus on using a multi-purpose mobile computer rather than a single purpose "black box" tracking unit and its integration capabilities with other mobile applications.

For more information, visit [www.ElectricCompass.com](http://www.ElectricCompass.com) or contact Electric Compass at [sales@ElectricCompass.com](mailto:sales@ElectricCompass.com).

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