

## The Ins and Outs of Portable Applications



A hypothetical look at a construction site provides valuable tips for building your mobile application.

by Andy Hilverda, Director of Marketing, Videx, Inc.

Fixed-station and portable data collection applications share many similarities--with both, you should carefully select the provider, design software to meet your needs, and compare the costs to the potential benefits. However, a key issue differentiates the two and will determine whether or not your portable application is a success--choosing readers and ID tags that match the environment.

Imagine for a moment that you are the manager of a large construction company and you've decided to implement a new automatic data collection application. You have already set up one automatic data collection project within the company: document tracking, that is, checking files and drawings in and out of the central file room. The information being collected is easy to define: who is managing the file room, what file is being tracked, where is the file, and when was it checked out or returned.

Hardware and software requirements were satisfied by attaching a bar code pen with decoder to the serial port of the computer in the file room. The necessary data was scanned directly into the database. It was a relatively easy application to implement. And, since the benefits and payback were so immediate, you are convinced the same process can be implemented to solve other problems.

### Portable Applications Are Different

The new project you're undertaking is the tracking of equipment and materials at construction sites. A fleet of vehicles delivers hundreds of items to job sites all over the city each day. One of the key problems is tracking these deliveries.

Tracking the driver, vehicle, equipment, and materials delivered to each site is a paperwork nightmare. Handwritten work orders go with each driver at the beginning of the day. The driver notes the items delivered at each site and turns in a stack of completed work orders at the end of the day. Office staff spend hours entering the information for inventory and billing purposes. Delays and inaccuracies in billing and work stoppages waiting for equipment have become major expenses.

You now need to collect data "on the go," in locations where there's no computer available. This requires a portable data terminal (PDT). An application that uses a PDT has requirements that you didn't face with the fixed-station solution in the file room; however, if the problems can be solved, the payback of a successful installation will be even greater than the payback in your first application.

The new application requires careful consideration of the environment, technology requirements, and user requirements. Your first and perhaps most critical decision involves selecting the right solution provider, or value added reseller (VAR), a decision that may contribute most to your satisfaction with the system once it is set up. The company you work with must provide more than just hardware and software; it must be committed to providing a total solution, from design, to installation, to ongoing support. The proper solution provider is invaluable in outlining hardware and user requirements based on the environment of the job site, providing training to the drivers, and troubleshooting problems once the system is implemented.

## Environment Determines Hardware

Let's consider the environment. The typical construction job site is a perfect example of a harsh environment. It has it all--mud, dust, heat, rain, and snow--along with the problems of moving equipment from one job site to the next in the back of a truck.

Both the ID tag and the data collection unit must be able to survive these conditions. Most materials for printed bar code labels are not acceptable for this application; paper or vinyl labels will not withstand exposure to the elements. Several types of tags will "weather the storm": a bar code etched onto a metal label, the touch/button memory ID tag (see, "What Is a Touch/Button Tag?" at the end of the next page), or an RF/ID tag.

Next let's examine the reading device. For the indoor document application, the decision was made to use a bar code wand connected to the computer in the file room. In a portable application, the requirements for the reader are far more demanding. A portable reader must be able to perform four primary functions: read the ID tag, decode the scan, store the information internally, and transfer the information later to the host computer, all while maintaining its own power. In a meeting with the drivers and the solution provider, your group decides that the following are critical factors to consider when selecting the ideal PDT for this application.

**Durability.** The unit must be able to survive not only all weather conditions at the job site, but also frequent drops and tough treatment.

**Environmentally Sealed.** The PDT must resist moisture and dust, and work reliably in a wide range of temperatures.

**Ease of Use.** The user must be able to operate the reader with one hand. A fully integrated scanner is a must. In addition, the reader should not be intimidating for the user, but should be simple to operate with a minimum of instruction.

**Battery Life.** The battery should be sufficient to power the unit for a minimum of 16 hours. A charger designed to power the PDT while traveling in the vehicle may be an option.

**High First-Read Rate.** This will prevent operator frustration. A goal was set to have a first scan read rate in excess of 95 percent. If the operator has to make multiple scans to get one good read, the resulting loss of confidence in the system could mean that some equipment goes untracked. To meet this requirement, carefully review the features of the PDT and the quality of the ID tag.

## Software Considerations

The reporting requirements of the portable delivery tracking application are somewhat similar to those of the fixed station document tracking application. In both cases, you want to know who, what, when, and where.

In your new application, the collected data is transferred as a batch from the PDT to the host computer via the serial port. Your solution provider can supply report-generating software to meet your needs, either by using a familiar database program, or by creating a custom application. Data can be transferred directly into the application software, or transferred to your host as an ASCII text file, allowing you to import the data into existing reporting software.

## Analyzing the Cost

Before a project is undertaken, an analysis should be made of the cost, relative to the potential benefits. In the example above, the payback in automating tool tracking could be dramatic.

The initial investment in hardware, software, and support would most likely be offset within the first 12 months. The construction company has cost exposure due to lost equipment, lost time in project delays because of misassigned equipment, excessive key entry time by clerical staff, and misplaced equipment forms. This cost/benefit analysis should be rechecked at selected review points to ensure that the project continues to meet or exceed initial guidelines.

Now imagine that your first portable data collection application has been so successful, you're taking a close look at tracking each employee's time on the job site ....

## How To Select a Solution Provider

Selecting the right solution provider or value-added reseller (VAR) to work with may be as critical as the hardware and software in determining the overall success of a data collection application. The following questions should help in sorting through what is important to you, and assist in your selection process.

- Will the VAR provide on-site training support and if so, at what cost?
- Does the VAR have extensive knowledge of the different types of labels, tags, and substrate materials to ensure the best performance for the environment? Can the VAR source different types of labels and tags, or does it take the approach that one type fits all?
- Does the VAR have the expertise to create application software to meet your specific needs?
- What post-sale support will be available? Is there past experience in working with PDTs, and will this experience help in troubleshooting problems?
- What type of applications has the VAR worked with? Will its past experiences be useful?
- Will the VAR provide analysis and on-site surveys to determine hardware, software, and environmental requirements?

Good support costs money, and it is worth it. Ensure that there is a complete understanding of the cost for each step of the project. Remember, the total solution is made up of hardware, software, and support.

## What is a Touch Button Tag?

A touch button system consists of a button-size stainless steel disk with a memory chip sealed inside. The top of the button is bonded to one point in the memory circuit, the container to another. When these two points are touched by the button reader, they establish a communication circuit.

Buttons generally have a unique preprogrammed ID code and come in a variety of memory configurations that can hold up to four million bytes of reprogrammable data, including text, pictures, and voice messages. This data can be transferred to a computer via a button reader at speeds up to 16.6 Kb per second.

Buttons are specially sealed to withstand moisture, radiation, and temperature extremes, and are ideal for industrial and other applications where environmental conditions would render bar code labels unreadable and/or scanners unusable.

Reprinted from ID Systems, April 1996  
Copyright 1996 by Helmers Publishing, Inc.  
174 Concord St., Peterborough, NH 03458  
All Rights Reserved