

As part of our evaluation of the three mobile technology pilots, CTG conducted an extensive review of existing initiatives of similar nature in other states. Although the use of mobile technology in Child Protective Services (CPS) is new and remains relatively unexplored, we were able to identify seven states that have begun testing and using mobile technology for their CPS workers. Our review examined Internet and print literature sources, followed by phone interviews and email exchanges with most states identified through the search. This section presents general findings of the review, followed by short descriptions of each of the seven state's projects.

General Findings

The general findings are based on a relatively short record of experience with the use of mobile technology for CPS work. All seven of the state projects examined here began within the last three years. In these cases the motivations for testing this technology focused on improved record keeping and recording of field work, with emphasis on making more efficient use of CPS workers' time and preventing tragedies through better investigations and information access. There was also concern for improving CPS worker security while in the field. The final selection was ultimately driven by the cost of the device, its technological characteristics, and its ability to integrate into existing and future IT infrastructure plans of the agency.

We identified three distinct approaches to data entry into central database systems: direct data entry over a wireless connection, synchronization of data over a wireless connection, and entering data upon return to the office either via a docking station or copying and pasting. Some states took advantage of direct data entry into a central database over a wireless connection to avoid storing confidential information on a device that could be easily lost or stolen. Other states used synchronization and in-office entry because of the unreliable nature of wireless connection in some parts of the particular state. Loss or theft of devices did not appear to be a substantial problem in these tests, but wireless connectivity was problematic to some degree in all cases.

Several important lessons for deploying mobile devices for CPS work emerged from our research. Although each state worked under somewhat different circumstances and constraints, they all faced the same basic challenges and issues. Their ability to address these challenges ultimately determined the overall success of their projects.

Lessons learned:

- Worker-driven programs are most likely to succeed
- Organizational and political commitment is vital to success
- In-depth pilots are necessary to draw accurate conclusions about device's suitability for CPS work
- Elimination of double entry is crucial to workers' satisfaction
- Wireless connectivity is essential but problematic
- Adequate IT support and training are necessary for successful implementation

Worker-driven programs are most likely to succeed. The most important condition for a project's success was the degree of technology acceptance by the CPS workers themselves. The states with the most success in implementing mobile technologies involved their CPS workers in choosing the technology and actively sought and incorporated their feedback throughout the pilot and throughout the state wide implementation. This is consistent with the general finding that people are more likely to embrace a new way of doing things if they have a say in choosing or developing the new ways.

Strong organizational and political commitment is vital to success . Mobile technologies that were tested in all seven states required significant financial commitment from the states and the agencies. States that were successful in pursuing their mobile technology projects had a strong commitment from the leadership of the agency as well as strong support from the governor or the legislators in charge of appropriating necessary funding for the project. States that lacked similar commitment experienced significant problems with their budgets, which proved to be detrimental to the projects' outcomes.

In-depth pilots are necessary to draw accurate conclusions about device's suitability for CPS work. Pilot projects must have a substantial number of participants over several months to test technologies in order to inform decisions about the feasibility of a statewide deployment. A technology might work well when tested by a small set of workers for a short time, but fails when deployed state wide because of problems that could not be uncovered in a small pilot. Such a failure can be very costly, not only financially but also politically, by creating residual resistance to new technologies among workers' who have been failed.

Elimination of double entry is crucial to workers' satisfaction. The introduction of central databases into CPS work impacted the front-line workers in many ways. One of the effects was the emergence of additional steps in

recording notes. The advent of the central database required CPS workers to first handwrite their notes in the field and then copy these notes into the computer upon their arrival in the office. Adopting mobile data entry technology into the day-to-day work can eliminate this extra step, thus making the CPS workers more efficient in the use of their time. Technologies that are useful in other ways but do not eliminate the need for double entry simply do not live up to the workers expectations and their reception is not as positive as it otherwise could be.

Connectivity is essential but problematic. Wireless connectivity is essential to eliminating double entry and making the mobile device useful beyond just data entry. A device with wireless connectivity enables the worker to not only search agency databases and enter case information, but also use the internet for day-to-day tasks, such as criminal background checks, looking up directions, or helping their clients with locating additional services. Unfortunately, the quality of wireless connection is dependant on the quality of its supporting infrastructure, which remains problematic in many locations around the nation.

State Projects

The following section provides brief summaries of each of the seven states' mobile technology projects in CPS work.

Texas

Motion Computing LE 1600 Tablet with wireless connection

The state of Texas began testing mobile technology in 2005 with 27 Adult Protective Services (APS) workers, and later expanded the test to all 502 APS workers in fall 2005. In May 2006, 94 CPS workers begun testing the tablet's use in their work and a state wide deployment of 2,950 devices is currently underway. Texas piloted the tablet PC equipped with a Sprint Wireless card, portable keyboard, and a docking station. Due to the inconsistent quality of wireless connection in some parts of Texas, they have developed a Web-based application that does not require continuous connectivity, but can synchronize with the central database Mobile Protective System. Caseworkers identified the system's functionality as fulfilling the primary information and data entry needs for work in the field. It enabled caseworkers to download assigned cases for the day onto their device, work with the case information throughout the day, and later synchronize the information with the central database over a wireless connection or a docking station in their office. In addition to the capability to access their central database, they also have access to email and Internet.

The overall results of the Texas experience are positive, with 90 percent of users reporting being very pleased with the overall performance of their tablet. In addition to the overall performance, users reported increases in documentation timeliness and quality, plus an 11 percent reduction in investigation backlogs. However, they did encounter unexpected problems, such as major increases in help desk calls resulting in the need to hire more IT personnel and higher rates of damaged equipment resulting in the purchase of additional spare devices. They also discovered that the most important feature of the device is network access from both the field and the caseworkers' homes. Without this feature, tablets were beneficial but did not meet the full expectations of the CPS workers. Additionally, they emphasized the need for sufficient training in the use and security features of the devices, for field work and reporting, and to help them organize and manage their new tools. This will help minimize workers' frustration with carrying unnecessary gear into the field.

Kentucky

Dell LatitudeD-410 laptop with a docking station

In November 2005, 50 Kentucky CPS workers begun a six-month long pilot of mobile technology. The Dell Latitude D-410 laptop was selected based on extensive conversations with caseworkers as to what they needed to do their work more efficiently, exploration of business processes in CPS work, and shadowing CPS workers in the field. In addition, future IT plans were taken into consideration to assure future compatibility. A state wide deployment of 1,500 devices is planned for November 2006. In addition to the laptop, CPS workers were issued cell phones and digital cameras to help them with their investigative work.

The worst thing you can do is to >give workers technology that was chosen by leadership and IT people without the input of caseworkers." - Dr. Eugene Foster, Kentucky's Undersecretary for Children and Family Services -

Currently, they are using an investigative template designed with caseworkers' input, which is later copied and pasted into the central database upon return to the office. Although they are investigating a possibility of wireless

access, the inconsistent quality of wireless connection around the state presents a major challenge.

The overall results reported by Kentucky's CPS workers are positive, with a majority reporting that laptops allowed them to complete their work outside the office: frequently in courts and in their own homes. Additionally, workers reported increased quality of work, reduction in stress and five percent overall reduction in past due investigations. Despite the caseworkers' positive experience with the mobile technology, the pilot tester acknowledged that in order to maximize the value of the devices they will need direct access to the central database.

Ohio

HP Compaq nc8230 Notebook with wireless connection

The state of Ohio initiated its mobile technology project on September 24, 2006, with three groups of six caseworkers testing laptop computers for a duration of 30 days. This pilot is part of a bigger project testing the SACWIS database that began in the summer of 2006. They are testing laptop computers that have the capability to connect to the SACWIS database via a wireless connection and enable direct data entry into the central database.

The pilots will be evaluated through weekly and end-of-the-pilot surveys issued to participating CPS workers, as well as tracking of activities performed on the laptops. Because of the recent initiation of this pilot, results are not yet available for dissemination.

Georgia

HP Compaq 1100 Series Tablet PC

In 2004, Georgia completed a pilot that involved 30-40 CPS caseworkers. Based on the pilot results, the state invested \$7.5 million to purchase 2,500 Tablet PCs for its CPS workers. The implementation of Tablet PCs was in conjunction with the Risk Assessment Form project, in which caseworkers were able to download a risk assessment form onto their devices and later synchronize the form directly into the central database via a wireless connection. Unfortunately, this effort has met some insurmountable difficulties, and its managers acknowledge that the project, as originally envisioned, has failed. Currently, the Tablets are used to fill out a simple risk assessment template that is later downloaded onto a local server, where the information remains.

The problems leading to the project's failure could be divided into two categories, technological and organizational. The technological problems included poor quality of wireless connectivity around Georgia and insufficient hardware infrastructure on the agency side to support state wide implementation of the devices. These deficiencies triggering repeated shut-downs causing significant loss of data. The organizational problems included weak organizational and political support resulting in budgetary problems. There was also resistance from CPS workers who were not consulted about their preferences and who were forced to adjust to a new business process (i.e., Risk Assessment Form) at the same time being asked to use a new device to do their work.

The IT personnel that we interviewed felt that the Tablet PC could be a useful tool and they hope to use it in the future after a state wide implementation of a new SACWIS database that is currently under development.

Wisconsin

Tablet PCs with wireless connection

The state of Wisconsin initiated its pilot of mobile devices with two counties in August 2003. Their selection of a Tablet PC was driven by several factors: the desire to minimize user training and impact, minimize maintenance and management costs, allow sharing of devices, and provide secure storage and transmission of data. Prior to purchasing the technology, counties are able to borrow devices for a month to ensure that they are able to support it with sufficient IT personnel and to test its usefulness in their day-to-day operations.

In order to minimize duplication and limit impact of inconsistent quality of wireless connection, they have developed the eWiSACWIS interface. It enables them to check out cases from the central database at the beginning of their day, and later synchronize their work over a wireless connection. The project materials we obtained emphasized the importance of starting small and letting users determine what functionality to implement in the future. In order to do that, they have established procedures to gather input from the end-users and

incorporate their suggestions into the future development of the application.

Delaware

Laptops with digital cellular technology

The state of Delaware experimented with laptop computers equipped with digital cellular technology that enabled direct access to the central database for reviewing existing client information and entering data. They used a thin-client application with CitriX MetaFrame processing to optimize the devices' performance and minimize the effects of connectivity disruption. The MetaFrame was set up to hold each user's application for up to four hours to allow the user to reconnect without losing data in case the connection was interrupted. Although the devices reduced transit time and enabled entry of information immediately after a visit, the laptops were seen as too heavy to make them practical in the field and the quality of the wireless connectivity was problematic in certain parts of the state.

They are currently looking into the use of tablet PCs to capture data in the field and upload them into the SACWIS application. They do not have enough experience as yet to determine the system's effectiveness in general use, although preliminary results were reportedly favorable.

Oklahoma

NEC - MobilePro 880 handheld PC

Oklahoma experimented with a handheld PC that was a cross between a laptop and a palm pilot. It offered both a wireless and hard connection and its exceptionally small size (only 2.43 pounds) made it especially appealing to CPS work. Unfortunately, the program was discontinued due to budgetary issues and the device's production has been discontinued.
