Mobile Technology for the Nursery Industry

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INTRODUCTION

Mortellaro's Nursery Ltd. is a wholesale grower with two locations of approximately 40.5 ha (100 acres) total which are 97 km (60 mi) apart. The primary location is 28 ha (70 ac) production and sales area and the second location of approximately 18 ha (45 acres) is strictly a growing area. We employ between 80-120 employees between these two locations. This division of our operations required changes in management methods to ensure both locations were consistent in all operations.

Mortellaro's Nursery has fully embraced the use of mobile technology to allow communication and co-ordination between managers, employees, and locations. Our system has evolved over five years. In adapting new technology, one should not expect instant results. It is important to allow your employees to help implement new uses – and be open to suggestions and advice. Mortellaro's Nursery is currently using 20 IPads and 10 IPhones along with three Bluetooth enabled printers (Figure 1). The IPads are used by management – and designated supervisors in production,

propagation, pest control, shop mechanic, HR/Safety, Shipping, and drivers. We use a combination of native IOS applications, purchased off the shelf applications, and custom written applications on a Snappii platform. A native mobile app is a smart-phone application that is coded in a specific programming language, such as Objective C for iOS or Java for Android operating systems. Native mobile apps provide fast performance and a high degree of reliability.

Mobile Technology Equipment Used at Mortellaro's Nursery

- 20 IPads, IPad 2 to IPad pro, IPad mini 1 and 2
- 10 IPhones, IPhone 6 to current
- 3 Bluetooth and Wi-Fi enabled HP printers- We have printers in our field office, shop, and Poteet operation. Two of the locations do not have any type of internet connection.
- We have eliminated 2 fax lines and fax machines with the use of IPads and Wi-Fi enabled printers.
- Laptops vs desktop. A laptop can be used anywhere needed rather than only in a networked building. A laptop can be carried anywhere the same as an IPad.

Figure 1. Mobile technology equipment used at Mortellaro's Nursery.

With the multiple programs and apps that we use and the methods we have developed over time, we are able to effortlessly cover for a missing manager or supervisor (Figure 2). Every manager and supervisor's daily jobs, scheduled crew duties, and other info is accessible by any other manager or supervisor. We use Evernote, Numbers, Pages, and IOS Calendar to organize duties, information, and schedules. These four un-modified programs/apps are used extensively in day to day operations. We use custom programs on a Snappii IOS Platform for many specialized inspections and reports.

Software Used at Mortellaro's Nursery

- Snappii-Custom written Applications
- Evernote
- Dropbox
- Microsoft Office
- Find my Friends
- Google Maps
- Accuweather, My Radar, Radar Pro, WunderStation, Live Lightening, Lightening Alarm.
- JJ Keller ELD software for Drivers

Figure 2. Software used at Montellaro's Nursery.

SNAPPII

Snappii is the most developed program/application that we use. Snappii is a program that works off a remote computer and you either use premade programs available from Snappii or write your own programs to run on their server. We use the IPad's in a way similar to a terminal logging into their system. This allows any mobile device to be used, not just the newer IPads or IPhones. Snappii offers hundreds of readymade template applications for all industries. They also offer the option of using their software to create your own custom application.

I chose to create our own applications after looking at the provided applications for ideas. My programs are written to be very lean and able to be completed in a very short time using drop down lists, checkboxes, and minimal data entry. (Figure 3). I went for efficiency and utility over creative displays. Two of the programs I wrote take less than a minute to input the data and send it to the relevant employees.

At this point I have created the following applications that we use on a daily basis:

- Scouting Report-Quick Reporting of weed, insect, or disease issues. Reports are sent to managers, order assembly, sales and pest control automatically.

- Verbal Warning "Paper Trail" and notification to management of any employee issues. Reports are automatically sent to management and HR.

- Repairs Needed Tickets for all equipment. Reports are automatically sent to management and mechanics.

- DOT Truck Inspection-monthly inspection of highway vehicles. Reports sent to shipping manager.

- Air Compressor Inspection-Monthly Inspection. Reports sent to HR/Safety.

- Fire Extinguisher and Fire Exit Inspection-Monthly Inspection. Reports sent to HR/Safety.

- Off Road Equipment Inspection - Inspections and maintenance checklist. Reports sent to HR/Safety.

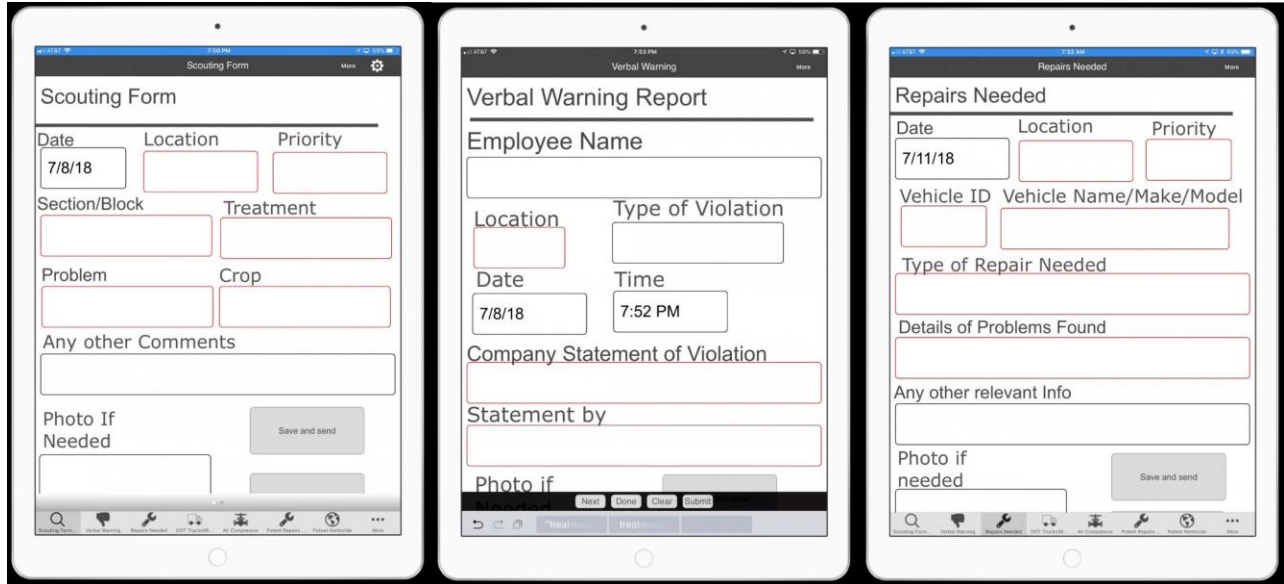- Eye Wash Station, Eye Wash Bottle, and Safety Shower Inspection. Reports sent to HR/Safety.

Figure 3. Snappii program examples.

Each of these modules of the application were written so we could quickly document and inform the relevant people of problems/ issues. The Scouting Report, Verbal Warning Report, and Repairs Needed Report, etc. takes less than a minute to fill out. When the information has been entered, the save/send button sends the information to preselected managers or employees. This allows quick distribution of information from anywhere in the field to multiple people. The user does not need to be concerned with recipients, only entering the relevant data.

EVERNOTE AND DROPBOX

Evernote is an application that allows you to save documents, lists, pictures, pdf's or any other type of information. It can be considered as a notebook with an infinite number of tabs. We use Evernote in a multitude of different ways. We create job lists, equipment info and pdf manuals, production records, production schedules, customer delivery info, employee info, etc.

Dropbox is used as one of two backup methods for all data on our IPads. ICloud is the other backup option we use. All info is backed up onto ICloud when the IPads are charged daily.

WEATHER APPS

Weather is a very important element in our industry. It can affect all aspects of growing and also sales. We not only use forecasting applications, but also radar applications for reporting wind and lightening.

- Accuweather. We use Accuweather for forecasting. It has been shown to be more accurate for colder temperatures than for rain or heat.
- MyRadar and Radar Pro. MyRadar and Radar Pro are used for close-in prediction of rain or storms affecting our locations and also for delivery scheduling during winter storms. My preference is MyRadar for a larger picture or severe weather. But Radar Pro often shows lighter intensity rain that may affect chemical applications.

- Lightning and Lightning Alarm. Both programs are used for lightning strike notification. Lightning will send a text warning to you after you have set distance parameters in which to be notified. It also works for multiple locations to have their own distance parameters. Lightening Alarm includes a circular radius around your central area so that you can see lightning strikes within these areas. Lightening Alarm has to be reset for each location you want to view.
- Weather Underground and Weatherlink. Both of these programs are used to monitor on site weather stations. We use Weather Underground to monitor our ambient weather station at the Schertz location. Weatherlink is used for our Davis weather station at our Poteet facility. We are using two different stations due to internet connection at one location and to test the longevity and quality of the two different brands. We are able see live data of both locations and also keep weather history of both locations. We post current weather conditions on our website, and also allow employees to access the same data.

SHIPPING AND ELOGS

For shipping we use Google Maps, Apple's Find My Friends, Evernote, and JJ Keller Elog software.

Google Maps enables:
- Calculating mileage for freight
- Scheduling deliveries or reroute due to traffic
- Staying on top of developing traffic issues

Find My Friends (Figure 4) enables:
- Use of Native Apps on Apple. Native apps can provide optimized performance and take advantage of the latest technology, such as a GPS, compared to web apps or mobile cloud apps developed to be generic across multiple systems.
- Locates every IPad or IPhone with live tracking.

JJ Keller Elog Software enables:
- Each driver to use the same IPad for Elog as for other uses
- Any truck can be added to the fleet system with a snap in module on the vehicle data port.
- Shipping Manager to see at a glance all remaining hours for each driver for the week. He/she can see daily log on any driver.
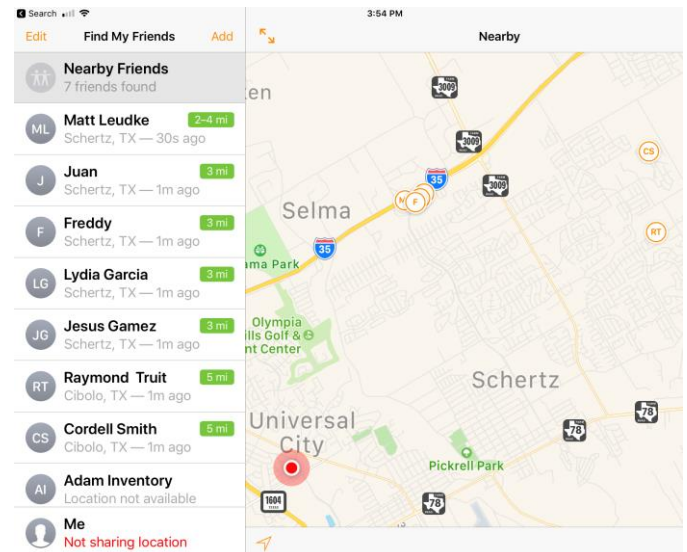

Figure 4. Tracking employees to know their locations and availability – helps facilitate the management of two locations, 97 km (60 mi) apart.

CALENDARS

We use Calendars for many different departments. We have custom calendars set up for the following uses:

- Vacation and Holiday work crew scheduling
- Scheduled personal and work injury doctor visits
- Hiring and training of new employees
- Deliveries
- Inventories of supplies
- Safety Inspections of Eye Wash, Extinguishers, Ladders, etc.
- Pest Control Preventive Treatments
- Management and Supervisor scheduling for weekends
- Irrigation Crew schedules
- Equipment PM and Inspections

NUMBERS

- List of customer information
- Production lists to Inventory
- Production to Herbicide Applicator
- Production Quota
- Lockout Tagout lists
- Winter Protection Checklist and heater list

CONCLUSION

- In adapting mobile technology for your nursery, only you can decide how fast to implement. We suggest to walk before you run!
- Start with the right employees, rather than the problem areas. Initially use the path of least resistance. Let the idea and benefits sell themselves rather than forcing it on employees.
- Choose your priorities on mobile technology equipment-price, support, reliability and/or security.
- Your software choices will change as you progress, so do not be inflexible to changing software for support or new features.
- Trial programs similar to what you need first then write your own programs. Create custom software in house as needed - many programs are simple to modify.

Keep control of data and backup critical data continually. Restrict employee's abilities to erase or damage data.