

MINSPECTOR



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Introduction

The Nation's airports are changing the way they gather information. Driven by the need to respond more quickly and efficiently to FAA airport compliance issues discovered through FAR-139 inspections, Airport managers are searching for a way to replace pen and paper inspections with a solution that will take data from the field and quickly get it into the hands of decision makers. This need, along with airport managers' desire to keep supplementary information such as photos of faulty equipment found during inspection leads to the dilemma of how best to collect all pertinent data for FAR-139 inspections and deliver it to managers in the most cost-effective and efficient manner.

To meet these needs, Cybertec introduces its mobile inspection solution, m-Inspector. M-inspector is a robust and user friendly mobile inspection engine that lets inspectors quickly complete FAR-139 inspections, collect photos, track locations using GPS, and quickly upload results right from the field. This white paper outlines the current airport inspection environment, and the key factors that influence the need for this new type of solution. It describes how m-Inspector can be used to satisfy the survey collection and information gathering demands of airport facility managers.

FAR-139 and Challenges in the Airport Inspection Environment

Commercial airport facility managers are realizing that the need for a mobile digital solution to complete routine FAR-139 inspections faster. FAR-139 (Federal Aviation Regulation part 139) comes from Title 14 of the Code of Federal Regulations and "prescribes the rules governing the certification and operation of land based airports which serve any scheduled or unscheduled passenger operation of an air carrier that is conducted with an aircraft having a seating capacity of more than thirty passengers" (14 CFR section 139.1). Currently, inspectors performing a routine airport facility inspection are relying on various non connected systems: pen and paper for survey completion, cameras for photo capturing, and carrying maps for location tracking. When a survey is completed, inspectors have to manually carry their survey data and related materials back to an administration office for review. With the sheer size of airports (from an isolated runway back to an office can be a matter of acres) and any range of weather related issues, and this process can very quickly become a lengthy ordeal. If an inspector finds problems on the runway, such as a broken light fixture or a crack in the runway, currently his only recourse is to make a note to come back and create a work order to fix the problem.

Naturally timing is vital in ensuring safe and compliant airport operations. However, with pen and paper, inspectors are tied to the time limitations of physically getting their completed surveys back to the administration office. Along with this, the burden of keeping up with regulatory changes becomes expensive as old surveys have to be discarded for new ones which reflect the most current FAR requirements. The amount of overhead costs associated with constant paper usage and the amount of space needed for archiving large amounts of past surveys and inspections are just part of the inefficiencies of the paper system. Add to this the flimsy quality of paper and it becomes readily apparent that a better alternative is needed – one sudden rain shower and your inspector on the fields' work is ruined.

Soggy surveys aside, what good is a FAR inspection survey if there is no information to supplement responses and provide guidance on the next steps to make appropriate changes on the field? Whether creating a work order or alerting work crews of changes on the field, the current pen and paper process



misses the beat and slows the process of issue resolution. After an inspector completes his inspection survey, they take it back to the facility manager, who then looks it over, and takes the next actions necessary to fix issues which may conflict with FAR compliance. For example, inspector Jones notices a 5 inch hole on the runway. He makes note of it on his printed survey form and moves to the next part of his inspection. When he's done with the inspection, he drives back to the facilities bay and reports to his manager. The manager looks over the survey, sees the entry about the hole and assigns a worker to go back to the runway to find identify the hole for repair. The entire process can take hours, or even days to complete; and in the midst of delegating responsibilities, much of the vital details needed to find the hole on the runway are glossed over through inconsistent communication. When an incident report or work order is generated, data like location maps, inspection notes, photographs, and worker resources have to be collected from multiple sources, taking more time away from regulation compliance, and moving resources away from more important tasks.

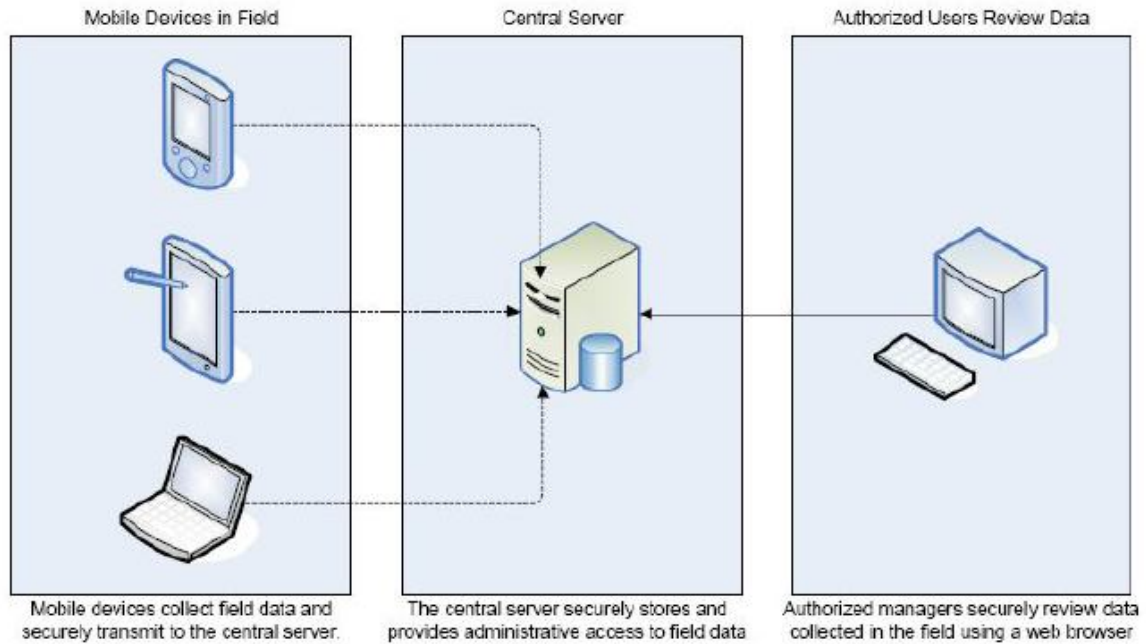
As these issues mount, managers and inspectors are looking for a solution that:

- Is completely digital and easy to use for security and organization purposes, and makes adapting to future changes a seamless process.
- Is always connected to the administration unit so that updates and surveys are immediately available the moment they are completed.
- Collects more and varied types of data related to an inspection, including maps, photos, and GPS tracking so finding a problem area is quick and painless.
- Minimizes the steps needed to locate a problem, and take further action – create a work order from the runway, alert crew and managers of critical information right from their mobile device.
- Plays well with their current IT infrastructure and can plug into their existing databases for data exchange and process sharing.

The Solution

In light of the needs of airport inspectors and their managers, Cybertec introduces m-Inspector, the newest addition to the Cybertec Solutions family. It is an evolution in survey and inspection technology. While pen and paper inspections slow FAR-139 compliance inspection processes to a crawl, m-Inspector leverages the power of a robust mobile platform to create a simple-to-use mobile application to enable the scenarios discussed earlier in the paper. Built on an industry standard platform consisting of Microsoft .NET 2.0, Microsoft SQL Server 2000, and Microsoft SQL Server 2005 Mobile Edition, m-Inspector allows scalable growth and robust synchronization with other databases for easy and efficient information sharing.

How m-Inspector Works



How m-Inspector can Help Airport Inspectors and Managers



Capture, Process, Present, Respond

m-Inspector is built with the needs of inspectors in mind. The entire FAR-139 regulation inspection is uploaded into the system and broken down into categories to make it easy to keep organized. The application works on windows mobile PDA's or Tablet Edition PC's and has a unique and easy-to-use interface which is identical on every device type – making the learning curve very low and allowing for equipment to be cycled with ease. As a security layer, inspectors are required to log in and synchronize with their remote server to complete a survey. By requiring this, m-Inspector ensures that the correct inspections are being completed and allows for changes made to inspection formats by administrators to be accurately distributed to all inspectors on the field. Inspectors only need their mobile device running m-Inspector when on the field to complete their compliance surveys, as well as capture auxiliary data.

Capture

This is attributed to m-Inspector's module system. The module system extends the functionality of m-Inspector from beyond digital forms and surveys and into a total multimedia solution. Users can plug into a camera, or tether a GPS device via Bluetooth to track locations – useful for incident reports or for when work crews need to be directed to an exact location on the runway. Additional modules like RFID or barcode readers can be used for mobile asset tracking and inventory, or using the voice module, inspectors can speak their responses into a Bluetooth enabled microphone, and m-Inspector will automatically understand.

Process

Along with modules to capture essential supplementary data while completing a compliance inspection, m-Inspector enables inspectors to process information directly from the field. If during an FAR-139 inspection a problem is found, a broken lighting fixture, for example, an inspector can use m-Inspector to wirelessly synchronize with either the facility CMMS server, if available, or m-Inspector's own internal work order server, to retrieve the next available work order number from the queue and assign it to the problem item from within the inspection itself, all with a push of a button. Inspectors also have the option of adding items that are in satisfactory condition but in need of review to an internal watch list which can then be used by managers to take further action. In situations where immediate notifications to facilities crews are needed, m-Inspector can be used to send a wide-reaching bulletin via fax, email or SMS text to pre-defined recipients. Ultimately, someone using m-Inspector to complete FAR compliance inspections is fully equipped to capture vital inspection data and process it according to whatever action is needed – all with one device.

Present

m-Inspector eases the load off of managers too. With all inspection data centrally located on a main server, managers can view any inspection that's been recently completed, or create new inspections from within m-Inspector's web-based administration module. Detailed reports can be built using the master query report, bringing together all data captured and allows managers to build high quality custom reports. As more surveys and responses are entered into m-Inspector, libraries of



questions and available answers become available; eventually, creating a new survey from scratch becomes a simple drag and drop affair.

Respond

Beyond just reporting and survey creation tools, m-Inspector gives managers the power to take action the moment a problem is found – or prevent future issues before they happen. Using the internal work order server, managers can assign work orders to items within a compliance inspection. They can track the status of pending orders, or schedule preventative maintenance orders to make certain that FAR compliance is met in a timely manner.

Conclusion: Better Decisions, Better Records

M-Inspector rises to the challenge of providing a robust and easy to use mobile solution for airport inspectors to comply with FAR 130 regulations. Whether it's a simple compliance survey that needs to be completed, or a complex schedule of work orders which needs to be assigned, m-Inspector has a host of features that enable it to effectively serve as the main data and inspection engine for all airport facilities, no matter how large. Such features include wireless or tethered synchronization, drag and drop survey creation, multimedia data capture and from-the-field work order creation.

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