

Inspection Technologies and Crisis Management: Field Automation lessons from the field

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Inspection Technologies and Crisis Management: Field Automation lessons from the field

The task of capturing accurate information from the field and sharing it with response teams, incident commanders, command posts, regional offices, and internal/external agencies in a timely manner is a goal that has been difficult to achieve, especially on large scale events. Growing fiscal constraints necessitate that solutions be part of a stable reusable system that is easily used by responders/inspectors, and also easily expanded when additional support and complexity become necessary. However, the various types of events/activities can be very challenging for both responders and inspectors. Government agencies are not always homogenous; their regional branches may collect different details on the same object, leading to incompatibilities between regional information. If the various agencies' engaged in data collection and dissemination do not standardize their efforts, then, information melt-down occurs. Ultimately, the data that were collected and disseminated become untrustworthy and unreliable. In some cases, this can compromise enforcement actions. Once information is collected, it also requires processing and distribution to different internal, external, non-profit, and private agencies.

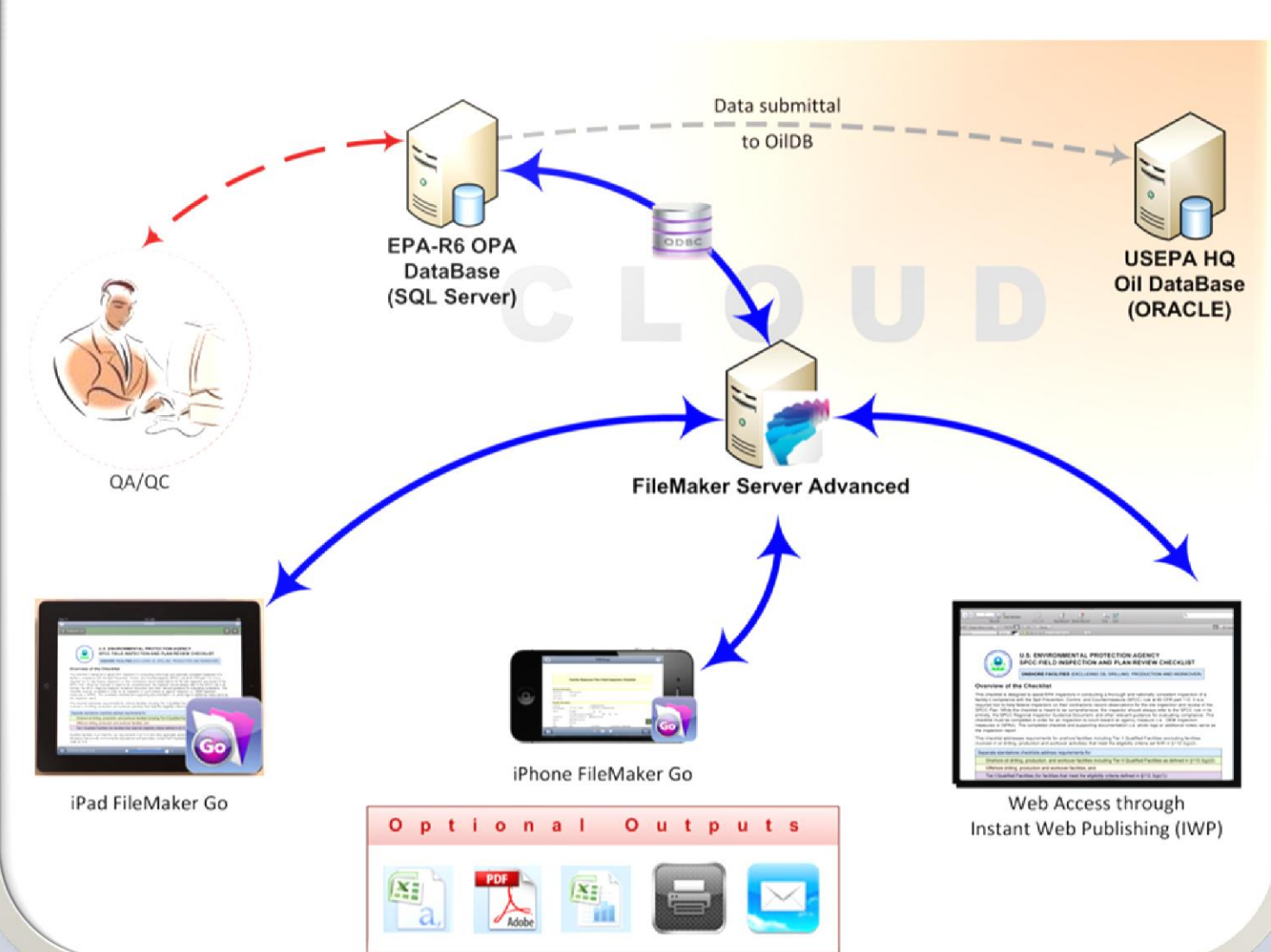
Recent mobile technologies that are available through smart phones and tablets offer solutions that allow quick customizations, scalability, and low-cost alternatives to data collection/dissemination. The concept of Bring Your Own Device (BYOD) helps agencies to utilize existing equipment/infrastructure and to standardize policies and minimize training/software needs. These technologies can be utilized during all phases of Disaster Management - mitigation, preparedness, response, recovery, and day-to-day inspection activities. This shifting paradigm offers opportunities for all field-deployed personnel to share data in a near real-time environment. Over the past few decades, we have been actively involved in developing field inspection applications and establishing an infrastructure for Disaster Response/inspection programs that has allowed EPA to successfully manage field data collection. This poster intends to share these efforts and to demonstrate their effectiveness. The following is a list of issues that will be covered by the application of field automation: cost sharing, rapid application deployment, ease of training, internet sharing, data quality, and data dissemination.

Project Scope

- ❑ Field Inspection Application (Tablets/Desktop/Web Apps)
 - Field Reconnaissance
 - FRP Inspections
 - SPCC Inspections
- ❑ Emergency Response (Oil & Hazmat) (Desktop/Web Apps)
 - Field Reconnaissance
 - Removal/Remediation
- ❑ Disaster Response Application (ESF-10) (Tablets/Desktop/Web Apps)
 - Rapid Needs Assessment
 - Field Reconnaissance
 - Removal/Remediation

Conceptual/Architectural Design

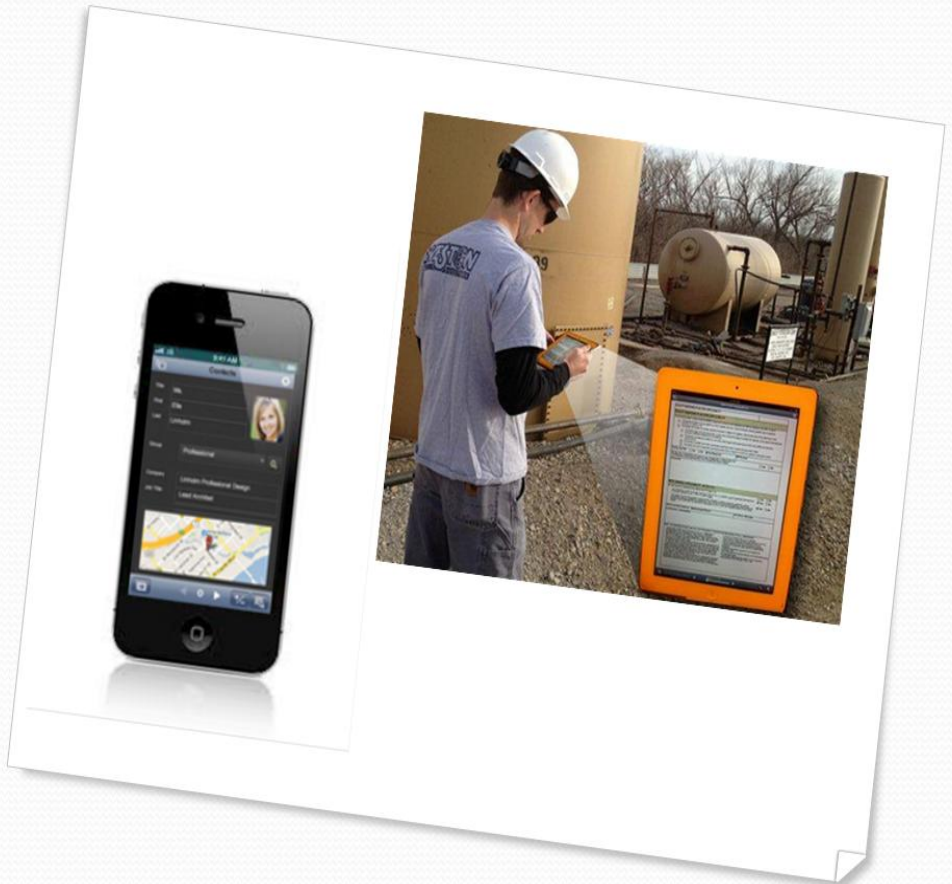
Field Inspection Data Collection



The Technology-The Tools

Data Collection / Sharing / End User Compliant

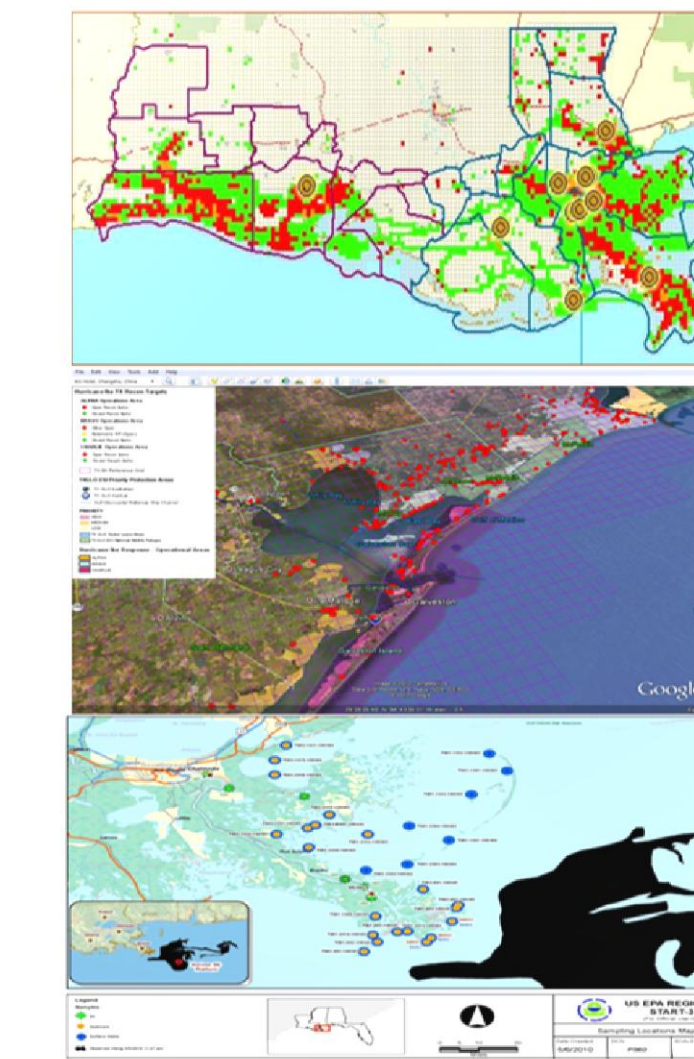
- Tablets (iPad/Android)
- Smart Devices (iPhone/Android)
- Laptop/PC
- Ubiquitous Web Access
- Very High technology adoption rate
- Very low training time needed
- Integrated technology - note, voice, video, photo, email, web, geo-coding, mapping, navigation, satellite imagery & google earth



Data Sharing/Extrapolation

Information Exchange / System Features

- Inter-agency data exchange
- Public Private data sharing
- Field to Command Post data exchange
- Data Security
- Authentication
- Data Privacy
- Inspection /Investigation Report Generation
- Data Base / Server Performance Monitoring



Lessons From the Field Translate Into Success

From the journey less travelled by few, to the vast knowledge obtained from the experience, time has demonstrated the need for Field Force Automation. This paper has examined data capturing, sharing, and information management needs and has attempted to show our success through the application of technology. The task of capturing accurate information from the field and sharing it with response teams, incident commanders, command posts, regional offices, and numerous internal/external agencies has arrived. Growing fiscal constraints necessitate that innovation combined with field experience can become the great equalizer. As technology advances, newer solutions will come online and be deployed. It is necessary to remember that these applications should be part of a stable reusable system that is able to support the needs of the mission.

Application Software

FileMaker GO (iPad) - iPad app that runs FileMaker inspection applications. Current application build is in FileMaker 12 and is compatible with FileMaker 13 which was recently released.

FileMaker Pro Advanced (Desktop) - Desktop database application development program that was used to build OPA Inspection forms.

FileMaker Server Advanced (Cloud Server) - Server technology used to centrally collect all field inspection data.

GoSync FileMaker Database Synchronization Technology (iPad and Cloud Server) - Allows users to synchronize iPad data with FileMaker server in a disconnected mode.

SQL Server (Cloud Server) - EPA's servers that hold the EPA Response Manager Enterprise Database are also linked to FileMaker Server databases. These cloud-based servers house multiple spatial and non-spatial databases such as SARTS, Response Manager and FRP/SPCC facility database.

ORACLE Database (EPA RTP Server) - EPA Headquarters Oil Database resides on an ORACLE database server. A loosely coupled data exchange is planned between SQL Server and ORACLE Oil Database.

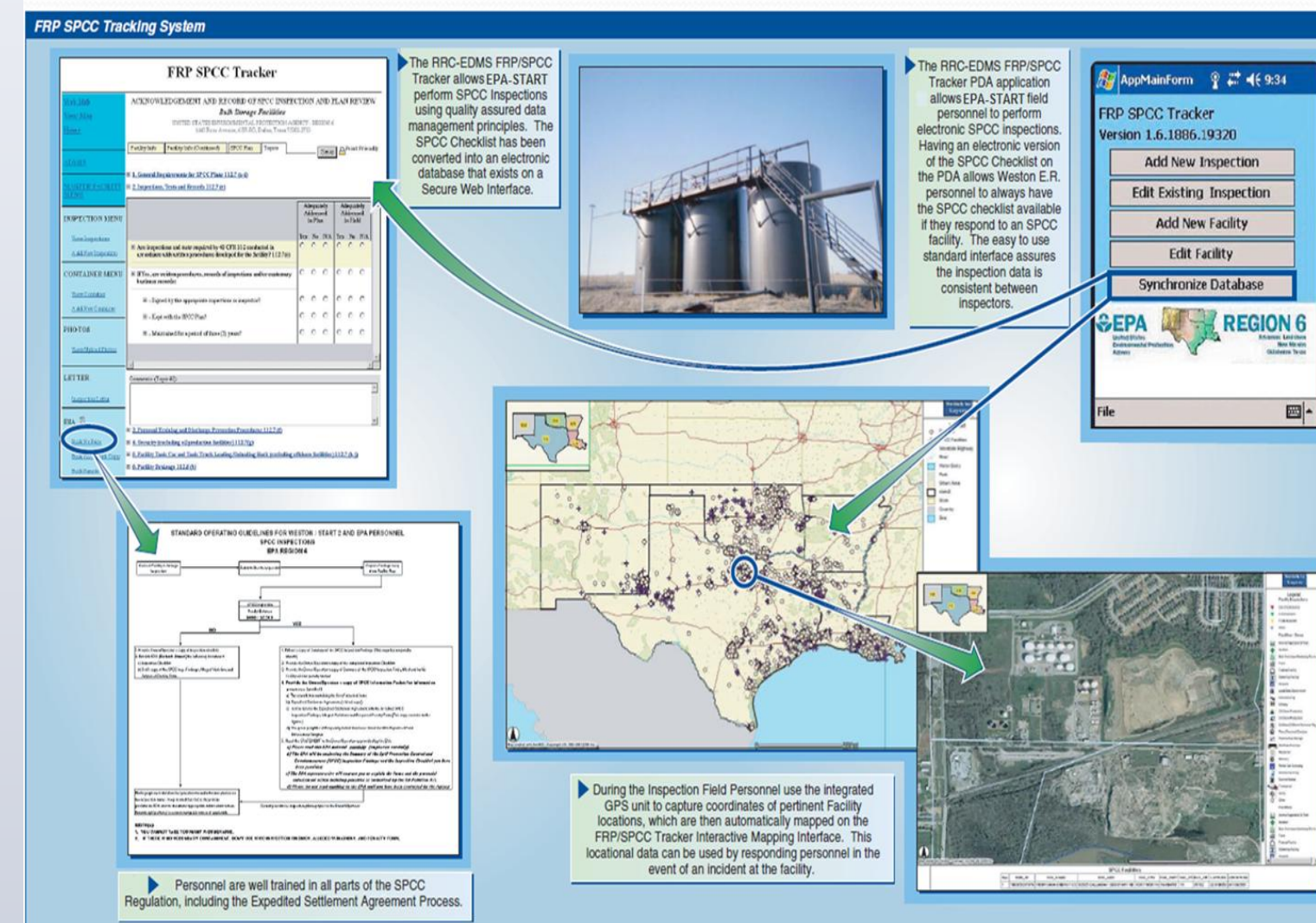
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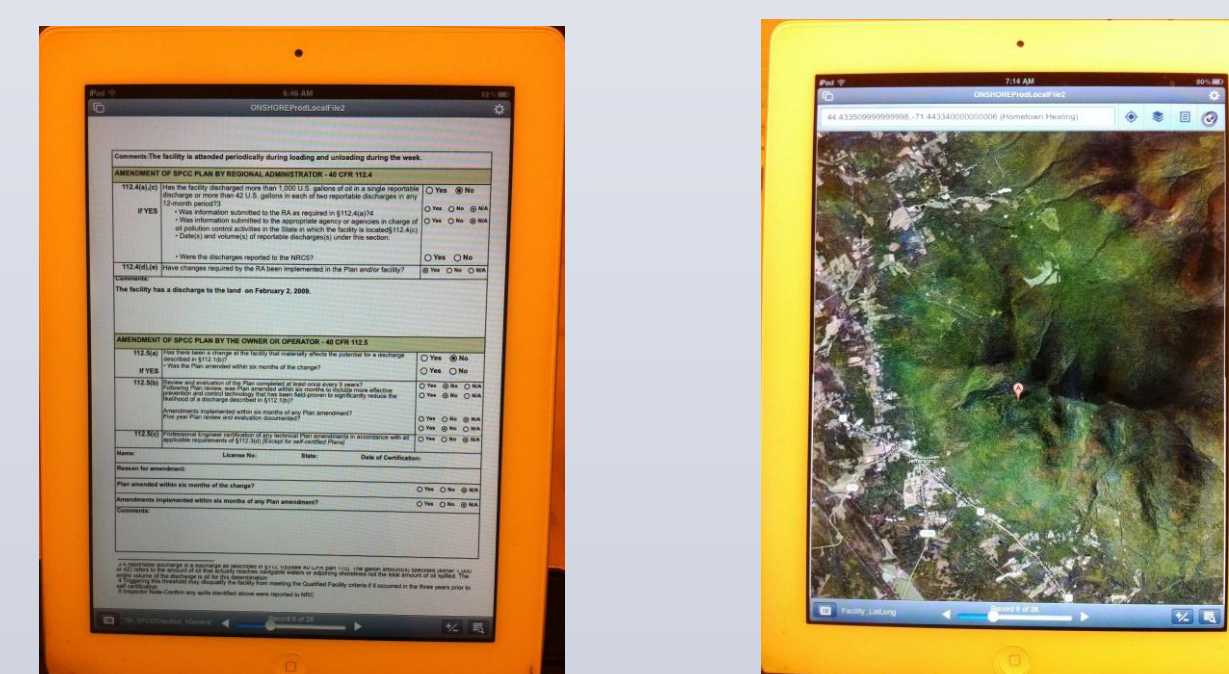
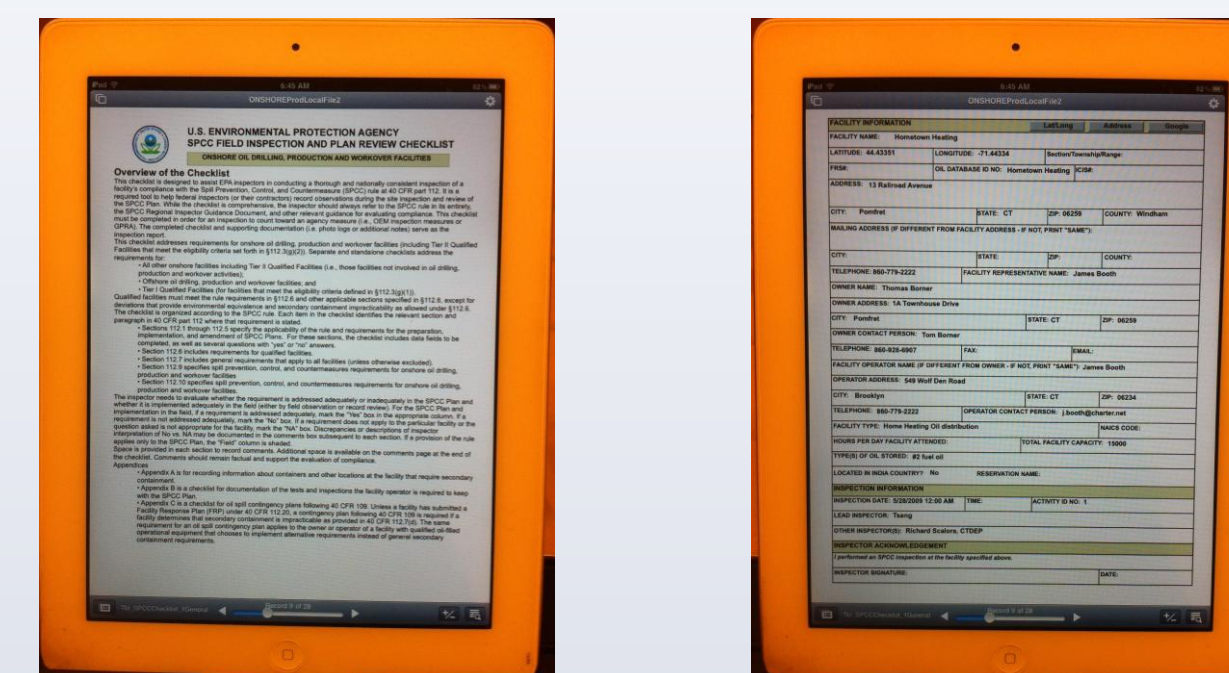
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IPAD/Database Implementation

FRP/SPCC Tracking System



FRP/SPCC IPAD Inspection Application



ESF 10 NDOW IPAD Application

