

FILEMAKER DEVELOPERS CONFERENCE 2011

SESSION FMG006: FileMaker Go/Pro Integration - A Real World Case Study

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This session is a detailed view at a FileMaker Go solution called PMD Mobile that we built for our client, PMD Promotion. In this session demonstrate the functionality of the Go solution and the integration strategy that is used to move data between PMD Mobile and an established database solution served by FileMaker Server 11.

Overall, our goal is to show a solution lifecycle and how a FileMaker Go solution can be successfully integrated with an existing FileMaker Pro solution. Specifically, we want DevCon attendees to consider issues presented by computing and operating environments of their solution, special development considerations of the iOS device(s) that they will use for their Go solution, and an appropriate Go/Pro integration strategy.

PMD Mobile was designed specifically for the iPod Touch 4G. Our client, PMD Promotion, needed a cost effective way to incorporate pictures into distributed data gathering activities. We also had to consider the unavailability and unreliability of current wireless networking (WiFi and 3G) environments. For PMD Promotion, both iPhones (contract cost) and iPads (size and camera) were inappropriate.

Because of the operating environment and the workflow, we focused on:

- Creating a simple interface;
- Strictly limiting the time required to pass data between the device and the main database solution; and
- Performing extensive data error checking to make sure that all data to be synchronized or transferred was completed successfully.

The PMD Mobile integration story involves a pool of distributed workers and devices, and the solution was built to not require network connectivity at most points throughout the workflow. We chose and were able to employ a “conflict avoidance strategy” because:

- A set of records could be discretely identified at all times.
- The record set could be controlled by one user and device at a time.

- Records were worked on by one user until their work was completed, and then the records were passed to the next stage in the workflow and became the responsibility of another user.
- Data could be transferred quickly between devices using imports.

The synchronization and data transfer methodology that we use with PMD Mobile was extremely appropriate for the PMD Promotion workflow and computing environment, and it may be highly relevant to your Go solutions as well. However, there are several ways to integrate FileMaker Pro solutions and FileMaker Go, and you should investigate how all methodologies may be relevant to your specific solution. Other FileMaker Developer Conference sessions, particularly those by Richard Carlton and Jason Young, speak to these methodologies in greater detail.

More detail information and observations are included in the slide notes that follow. For additional technical information, including detailed scripts, watch for our article on [Synching Data Sets Between FileMaker Go and Pro](#) in the September 2011 FileMaker newsletter.

SLIDE 9 – PMD MOBILE: FILEMAKER GO DEVELOPMENT

1. Know the operating environment of your Go solution

- Is it integrated with Pro or standalone?
- Will the Go solution be connected at all times (dependable WiFi) or disconnected (some sort of data synching required).
- What type of data are you synching and how often?
- Is your workforce distributed or local?

2. Design your Go solution with the device in mind – especially important for the iPhone & iPod

- Orientation changes happen – learn the use of layout anchors!
- Right size buttons for optimal usability (at least 32 x 32 pixels)
- Keep interface simple and straightforward – no clutter. Do not try to put too many fields or processes on one layout.
- Decide if you wish to make the solution look iOS native. If so, learn to hide background files, remove settings and other Go elements.
- We wanted photos less than 1 MB in size. You can use the Full Size photo setting on the iPod Touch but you must scale back for the iPhone 4 because it has a larger sensor.

3. Take advantage of all available resources.

- Written documentation and development guides – they let you know distinct Go behaviors and disallowed Scriptmaker steps.
- The Soliant templates help to create an effective iOS Go interface quickly.

4. Manage the security of the Go solution.

- PMD Mobile uses both FileMaker security & a secondary PIN coding scheme.
- There is a specific PMD Mobile user group that controls access to both the PMD Mobile file and FileMaker files in the main PMD solution.
- Each display rep has a record in the contact table with a unique PIN code that they use to access their current routes.

SLIDE 10 – FILEMAKER GO/PRO INTEGRATION

1. Make each solution aware of the other's data status

- Deal with conflict resolution – PMDMobile uses an avoidance strategy and can do this because of the company workflow. Create a record, move to mobile, move back using import that updates record.
- In PMD Mobile and the main PMD FileMaker Pro solution, we update the status of records on both sides constantly and convey that information to each solution:
- When a route sheet in the main solution has been set to Mobile Ready status, this tells PMD Mobile that it is ready to be uploaded to the iOS device.
- When the route sheet is in use on the iOS device, a flag is set in the route sheet record on both the device and the main solution.
- When the data from the finished route sheet has been imported successfully to PMDConnect, another flag is set on the iOS device and the route sheet record in the Main solution is set to Mobile Uploaded status.
- When the data has been successfully uploaded to the main solution, the route sheet is Set to Mobile Completed status, and the route sheet can be wiped from the iOS device.
- When the route sheet is fully processed, it is set to Processed status, and all data for that route sheet in PMDConnect is deleted.

2. Know data transfer & validation requirements

- Is Go integrated with Pro or standalone? Will the Go solution be connected at all times (dependable WiFi) or disconnected (some sort of data syncing required).
- Chances are that a solution on a mobile device will spend at least some time in a disconnected state!
- On a disconnected (or untethered) Go solution, will you be syncing data in batches or one record at a time? This will inform that method that you use to sync data. Three immediate options exist: Use the Open URL script step to embed modifications using the fmp7: protocol, embed data into the script parameter of a script in the destination file that parses the data, or batch imports from the Go solution. Remember, you cannot export records from a Go file to a Pro solution.

- In a distributed solution, script FileMaker Pro to establish WiFi or 3G connections only as necessary and to close files when they are no longer needed.

- How much data needs to be moved between two solutions? In PMD Mobile, we move a relatively small amount of data (usually one route's worth of venue data, or less than 100 records with 10 fields each) from the Pro solution onto the iOS device for use by Go. This is easily transferred by establishing a temporary WiFi connection to the main Pro solution and using the import script step in PMD Mobile. On the way back, we move a large number of ~100K photos back to the main solution. This requires more careful planning and data validation.

- External data source file references in PMDMobile (or any distributed file) that reference files on a remote network use the public IP address:
fmnet:hostIPAddress/filename.fp7.

- Set up data validation routines extremely carefully and exhaustively:

- Know the amount of data that you are transferring – particularly the number of records.

- Make sure that you check to see if there is a current connection.

- Deal with the Home button as part of the validation and failure checks – this is particularly important if you are using the Import script step to transfer data.

- Make sure that you verify success each step of the way. In PMD Mobile, we import new venue records, route sheet records, and photos. If each import does not work, the entire process fails, and the user is prompted to start again.

3. Consider using shadow tables & files

- Shadow tables temporary house data that is being moved from a Go solution to a Pro solution.

- In PMD Mobile, the shadow file is called PMDConnect and it sits on the FileMaker Server with the rest of the main Pro solution. PMDConnect has references to both the PMDMobile file (using the Get/DocumentsPath) function) and the rest of the main solution. It also has shadow tables for venue, route sheet and photo information. Data from PMD Mobile route sheets is imported into these tables. Why?

- Shadow tables minimize the connection time required by a distributed solution. PMD Mobile users only need to be connected long enough to move raw data into the shadow tables. Then the connection is severed. All other scripted processes happen in the main FileMaker Pro solution.

- Shadow tables can also be easily erased of incomplete data so that a data transfer can be rerun. If the user loses connectivity during a data transfer or in another way stops the transfer, PMD Mobile is not left in an unrecoverable data state.

4. Have a version upgrade strategy

- It is important to provide some method of maintaining the latest version of your solution on an iOS device, particularly with a distributed workforce and/or with a solution that gets frequent updates.

- We store the current version numbers of both FileMaker Go and PMD Mobile in the PMD Connect file along with a copy of the latest version of PMD Mobile in a container field.

- If FileMaker Go needs to be updated, users are prompted to quit FileMaker Gp and update it when they open PMD Mobile.

- If PMD Mobile needs to be updated they are prompted to download the latest version when try to download a new route sheet. PMD Mobile updates itself from within the solution.

- We can set each update to be mandatory or optional. Most are mandatory.

SLIDE 11 – 3rd PARTY TECHNOLOGY

1. PHP – An extremely useful technology for FileMaker development!

- We use PHP – with the SmartPill plugin – to extend the capability of the FileMaker calculation engine. •SmartPill – www.scodigo.com
- PHP is great for folder management, FTP, etc. without a separate plugin.
- PHP lends flexibility when you are working with external APIs and web services.

2. Google Maps API

- You can license the Google Maps API (and MapQuest as well) to generate latitude and longitude for an address.
- We are able to create route maps and maps of visited venues for display within the FileMaker Web Viewer using Javascript.
- You can control the scale and move the center point of a map within FileMaker Pro.

Look out for an upcoming blog entry on mapping at www.colibrisolutions.com.

3. AppleScript

- PMD Promo is a Mac-shop, so we used AppleScript to identify different camera types.
- Since the smallest photos that a digital camera take nowadays is many megapixels, we used AppleScript to process every photo down to an acceptable file size and resolution.
- The need for AppleScript resizing goes away on the iPod touch, but is still necessary if a route is completed old-style

4. QR Codes & Microsoft Tags

- PMD Promo prints QR codes (specifically Microsoft Tags) on posters.
- QR Codes link the consumer directly to websites and product offers.
- QR Codes also help both PMD and the client to gauge where posters are being seen and interacted with by the consumer.
- We generate a tag report using data from the MS Tags website.