**Notes from the Fourth meeting of the e-Device Subgroup: Sept 22, 2022**

**Attendees:**

Karrin Alstad, Dan Phillips (Pendragon), Virginia Afentoulis, Dan Ellis, Sarah Brown, Trinh Nguyen, Ryan Cook, Rachel Pisor, JT Robinson, Stephen Staiger, Doug Burch

**Agenda for Today (Sept 22, 2022)**

* + 1. Introductions and overview of group activity to date.
    2. Presentation by Dan Phillips (Pendragon Software Corp) Pendragon
    3. Group Discussion with reference to Criteria Table

**Agenda #1 (Karrin):**

* Introductions and quick summary of the working group goals and progress to date (see summary below – page 6.

**Agenda #2 (Presentation by Dan Phillips from Pendragon):**

**Presentation Notes: (Presentation images collected by Rachel Pisor start on page 8)**

**Form Design Options:** There are two approaches to developing a data entry form:

1. Basic Form Designer
2. Custom built solutions

Dan suggests that Pendragon falls into the middle of the array of e-device software options: between the very simple, quick menu driven and completely customized form developed from scratch using base coding languages.

Pendragon is in the middle because it has a basic structure that must be followed – but then it also has quite a bit of flexibility with some custom scripting.

On the more complex end, Pendragon forms can include Sub-forms, Scripting, Java scripting rules, calculations.

Calls:

Pendragon provides many built in Calls: (functions) Provide common forms options that are often repeated many times within a form; quite a few available. The ‘calls’ are proprietary. The core scripting language is Java. Pendragon code is simplified version of Java. One Pendragon ‘call’ can call Java script functions which Is a little more advanced, but provides further flexibility.

Within Pendragon Forms Designer:

Pendragon Forms Manager Screen: What Admin will use when designing the forms.

Users: Three different types of users. Use: can only get in from the interface on the device and cannot design or change the data collection form; Designer can design forms but cannot control users; Admin and do all of it.

Completed forms can be assigned to groups and users can be added to have access to these forms.

Teams can be a group of users that can be assigned as a unit.

**Web based Form Designer Tool:**

Fields can be added one by one through the forms designer GUI. The date time stamp is included no mater what, but form of date-time can be customized.

Radio buttons ( drop-down lists); look-up lists (for large list of records)

GPS can be captured by Pendragon from the device. Precision of GPS depends on capacity of device.

Images can be captures by devices and associated with a record.

Access to sub-forms can be added (nested format)

Forms can extend across multiple pages.

Voice to text can be used for text fields.

Web-designer provides and all fields view

‘Buttons’ are functions that use custom written scripts.

For someone who has never done any scripting or coding before, this Forms design routine will be new.

For someone who has done some basic scripting, this tool will be quick to pick up.

Option available to ‘Go To’ a second input field based on the response of the first input field.

There are ways to hide certain fields based on the response of an initial input field.

Once form created, you will ‘freeze’ it which is a way of ‘locking it down’ which indicates that you are done with the structure of it.

“Pendragon, unlike other competitors, creates and saves the form in a relational database.” MySQL is the database server.

“Publishing the form” is making the form available to the users.

**Mobile Side:**

Pendragon can be used and tested in any browser which allows you to test everything before you use on mobile devices.

All fields form ‘mobile view’ lets you see what you would see on the device.

The forms can be transferred to different devices (forms have a ‘responsive layout’)

When looking at a list, display will only show you the columns that can be fit on the page (all data showing); so design choice may change for different device types.

RULES: can be assigned to specify which records come off of the device.

Rules can be assigned to indicate which fields are transferred during synch.

Synchronization: Records to server; new Forms to device

GPS: even if you don’t have internet, you can still import a GPS reading from your device.

Running in offline mode – none of the data makes it to the serve – all running locally.

Can still use forms without internet access (locally)

KA: Can Pendragon be configured to synch to a local system?

Dan: It would have to be set up like that originally; The Java calls can send individual data to a server or an IP address. It is expecting a web server, and API could receive something simple..

Cannot back up to local laptop right now.

Trinh: Do you have version control on the cloud service; can you revert to previous states of the dataset?

Dan: No. Default access for getting data is either running the export (csv plus attachment) or php my admin; Could do secure obdc protocol (we can distribute keys and using a log in); you can administrate your own version control.

Trinh: If there is an API were we can connect to the Pendragon server on our own, we could pull the data daily and save on our own.

Dan: There is also a way to script to customize a version control.

Menu displays can help organize all forms created.

Pendragon can collect GPS from device API.

GPS through Bluetooth connections are a more complete problem.

**External sensor connections:**

Kestrel Environmental Meters has worked with Pendragon for collection from multiple external sensors.

Pendragon can do customizations – often these problems are very specific to the hardware of the sensor based on specific API of the hardware. Bar code scanners (we forgot to follow up)

Some customized features will only run on android and not on apple (need to follow up with Dan regarding this comment – it may historically true but better now?. Android is generally more open to custom apps. iOS systems are more uptight - requiring certification etc.).

**Agenda #3 (Discussion including comments from Doug Burch, long-time Pendragon user)**

**Doug Burch (CDFW):**

Had to really effort to convince IT dept to allow use of Pendragon over ESRI products. User friendly enough to get up to speed fairly quickly. Some tricky points – but Pendragon support is very good. Agrees that Pendragon fits that middle tier of complexity-flexibility.

Beyond Dan’s presentation – the linkages between the forms is really important to him (Doug). Information collected on one form can be transferred to another form.. The scripting does everything that his group needs.

MySQL cloud storage could potentially be used as an ‘enterprise database’.. but Doug’s group only used the Pendragon cloud as a ‘parking lot’ – does not run any SQL queries.

Doug’s team uses iOS devices.

Doug thinks it is possible to configure Pendragon to use a PC on the boat as the server – such that the Wi-Fi talks to the local computer. They did this with earlier version of the software.

Dan adds: technically possible, but may need additional licenses.

JT asks: can nested data be displayed in a table format? He needs to do field checks to go through all that he has entered as a whole for a first QC check.

Doug thinks no.

Karrin asks if one can can write SQL queries and have output available on the mobile app.

Dan clarified (to Karrin’s question) that one cannot write queries to produce views of data on the mobile app. The MySQL is only available on the server.

Dan indicated the one can use a sub form list as a ‘QC review’… but that the subforum review will only show number of columns that would fit on the device display. It is difficult to fit all data on the screen – so the ease of solution depends on the number of columns of data.

**Forth meeting of the e-Device Subgroup: Sept 22, 2022**

**Welcome Dan Phillips (Pendragon Software Corporation)**

**Welcome Doug Burch (CDFW Region 1, Pendragon user)**

**Member Introductions:**

**Please introduce yourself, your affiliation, and the**

**type of data you collect or want to collect using electronic field devices.**

**Overview of Activity to Date:**

1. **Goals of this group**:

**In general: to research field data entry devices and to generate resources that support IEP survey teams in their ability to select and deploy digital data entry procedures.**

1. **Intended products:** 
   1. A reference document summarizing the hardware/software options reviewed
   2. Contact names of folks within IEP (or outside of IEP) who might be willing to serve as a reference for different types of e-device software or hardware (Clear guidelines that these IEP refs are not full tech support, but intended as general decision-time and get-started support)
2. Potentially: report on a couple of test trials of different e-devices for specific surveys
3. **Status of our research:** 
   * 1. We conducted a survey to gather information on IEP survey staff:



* + - 1. who has experience with field apps; which apps and which hardware types.



* + - 1. who does not have experience but is interested to apply
    1. Sent the survey to promising external contacts (NEON, ICF, CDFW Marine)



* + - 1. I am still learning of new contacts
      2. Keep suggesting people
    1. KA is conducting follow up interviews and arranging demonstrations [in progress]



* + 1. Team currently extracting information from app demos for comparison table [in progress]

1. **Updates on Demonstrations:**
   * 1. Today: Dan Phillips – Pendragon
     2. Next Month: Dr. Kaelin Cawley from the National Ecological Observatory Network (NEON) on Fulcrum
     3. iFormbuilder has agreed to meet (try for Nov)
     4. Regroup to plan next steps/presenters
2. **Agenda for Today (Sept 22, 2022)**
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**Pendragon software presentation (collected by Rachel Pisor)**

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