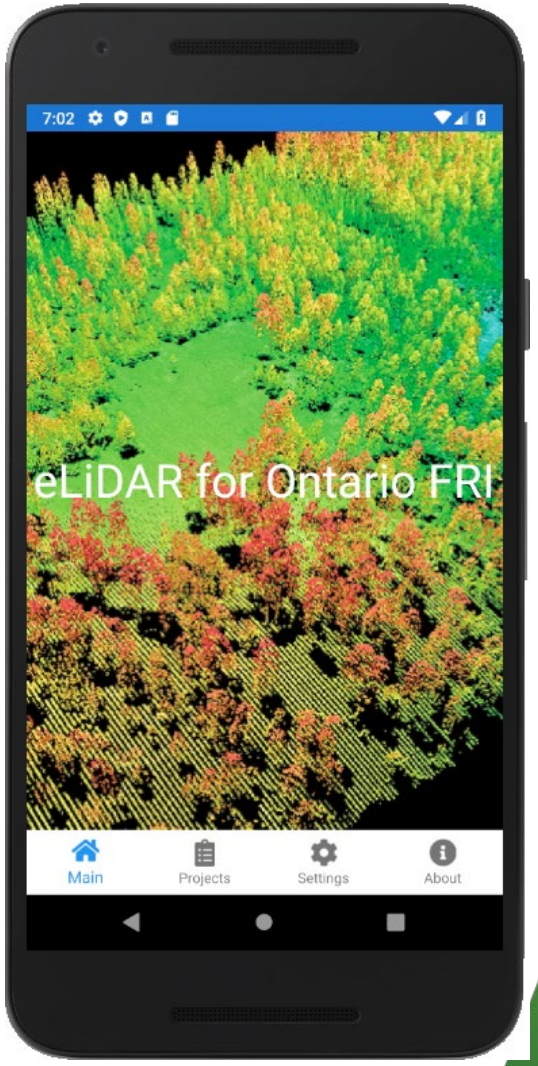
FORESTRY FUTURES TRUST ONTARIO

FORSITE
Forest Management Specialists

SUMAC



Presentation for KTTD 1A-2021

Enhancements for eFRI Next Generation Handhelds

Craig Robinson, RPF

Overview

- A bit of a history of Ground Data Collection Apps
- The other current technologies for mobile data collection
- Where we started in 2019
- What we did up to 2022
- eVSN in 2023
- Next steps

What are we targeting?

Vegetation Sampling Network Protocol:

Technical specifications for field plots

Technical Manual

Science and Research Branch
Ministry of Natural Resources and Forestry

Unpublished draft operational version 2.2, March 2023

Ontario

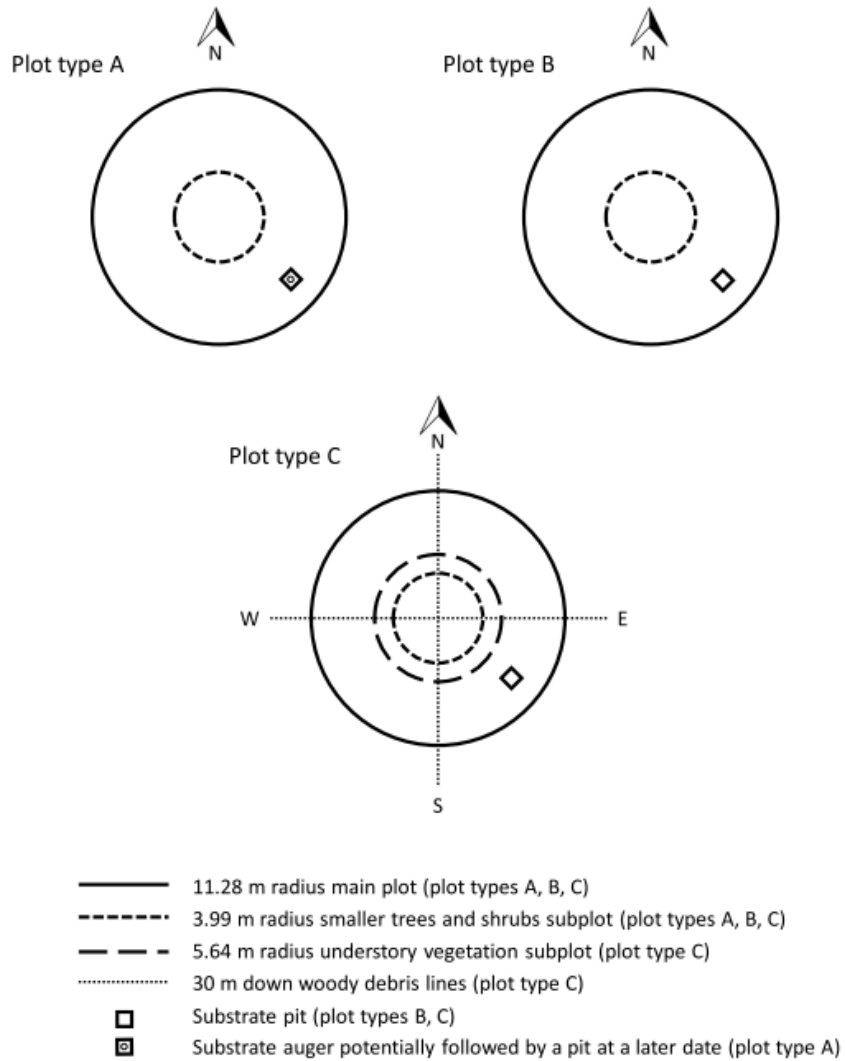
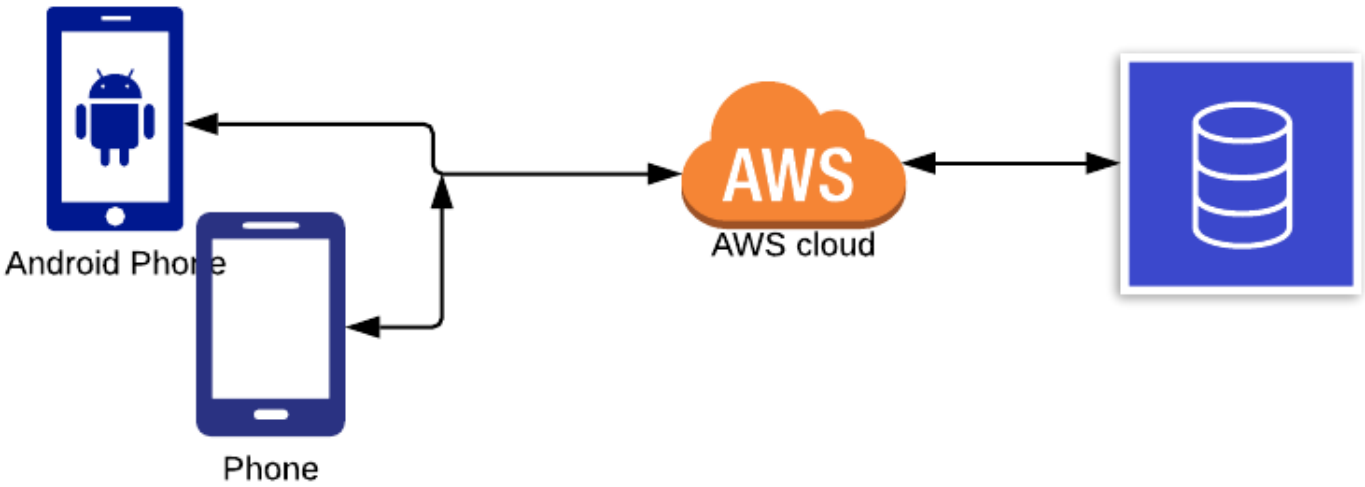


Figure 3. Elements and layout of the three plot types used in the Vegetation Sampling Network.

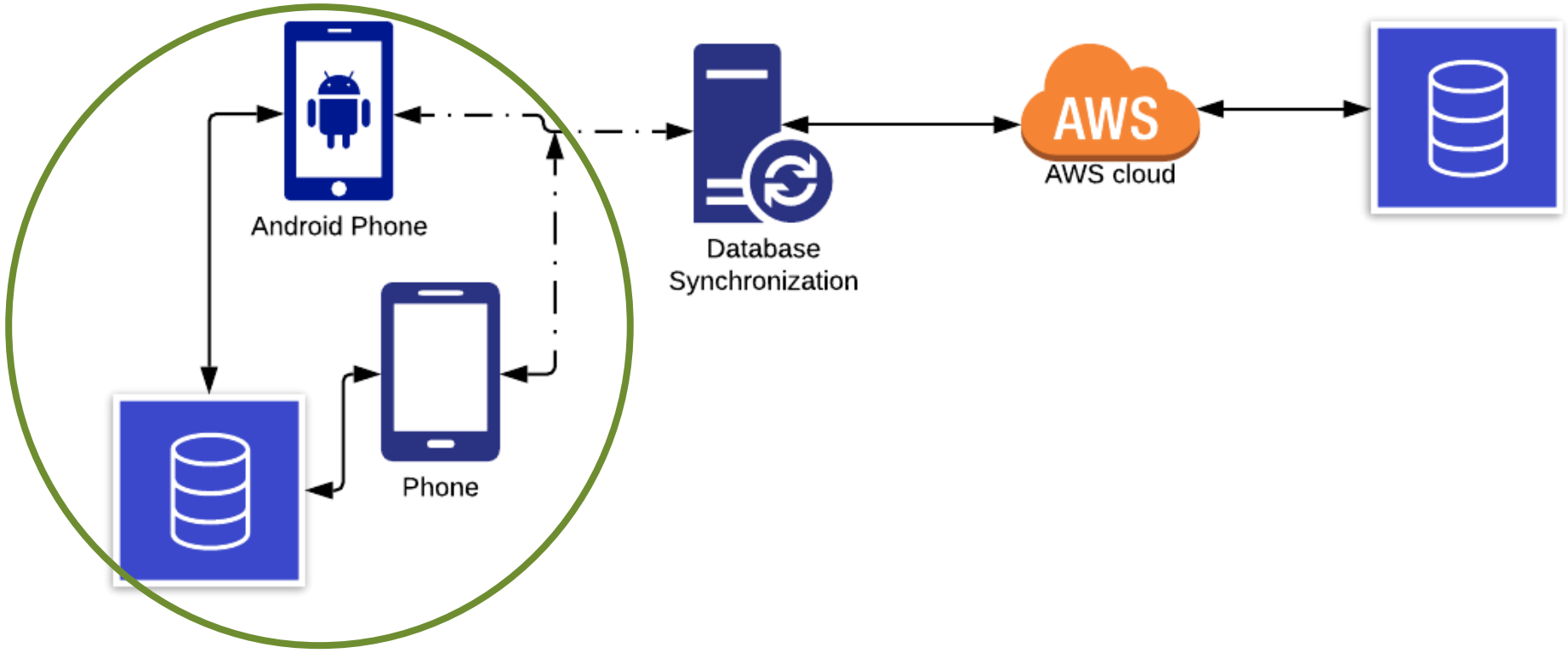
Thanks to Todd Domney for the photos

But first….

Connected Apps



Disconnected Apps



A bit of history

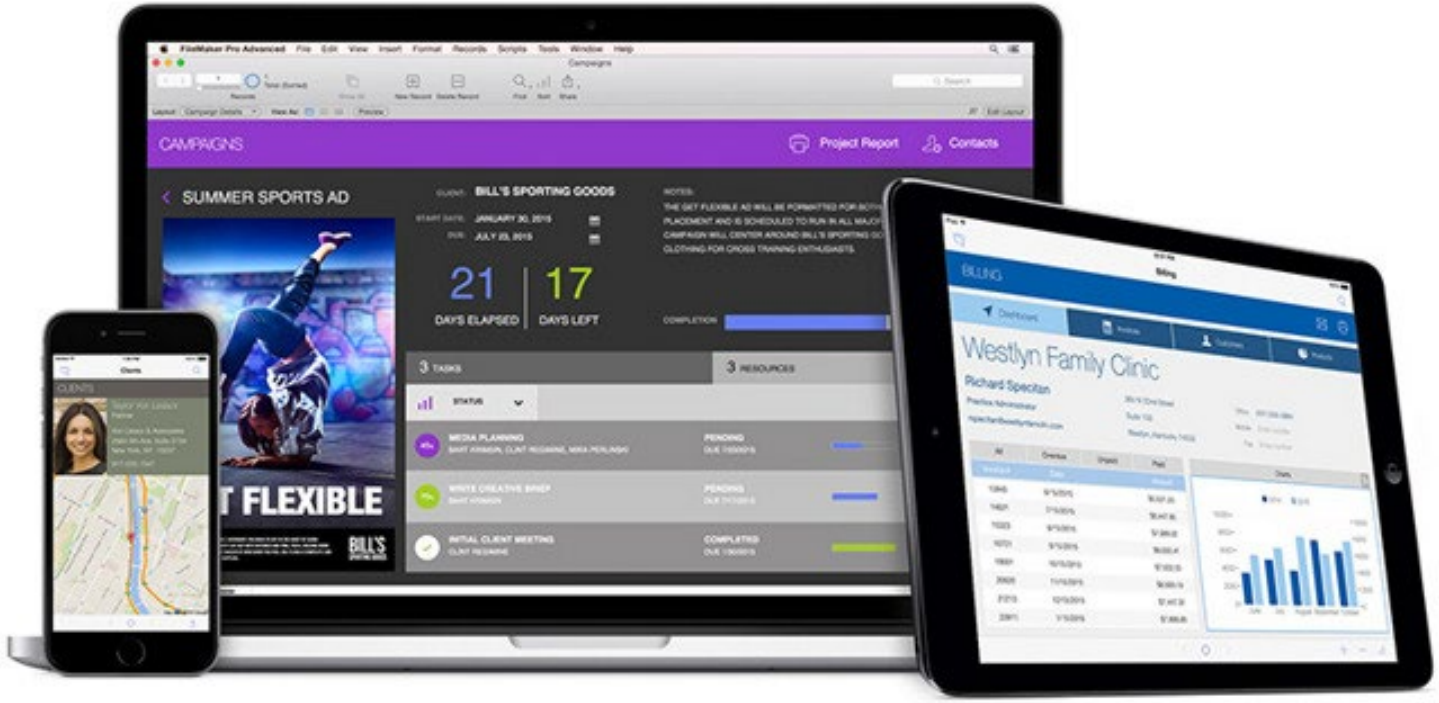
Windows Mobile

OLD!

- Very rugged
- Not really connected devices
- Windows Mobile support ended a long time ago
- Morphed into other products – like Windows Phone – that never took off
- Build apps in .NET Compact Framework

FileMaker Pro / Go

- Easyish development
- Deploy to iOS devices
- Works disconnected
- Challenging scripting language
- Takes some effort to retrieve data



More Modern Solutions

Survey 123 (from Esri)

- Very configurable
- Works disconnected
- Integrated with GIS
- Deploys to iOS, Android
- TOO Simple!

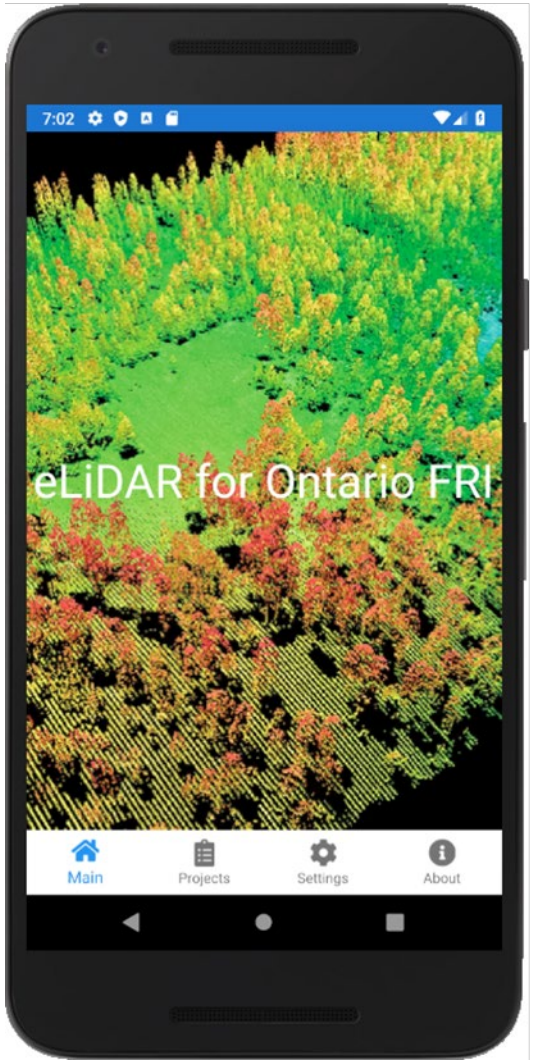
Xamarin Forms

- Cross-Platform
- Develop in C# and XAML
- One set of code
- Deploy to iOS, Android, UWP devices
- **Ability to have the app be whatever you want**

What did we do initially?

eVSN

- Built in Xamarin.Forms, C#, SQLite and Azure SQL
- Deployable to iOS 13+ or Android 9+
- Works fully disconnected
- Collects data for Plot Types A, B, C
- Multi-device/multi-user



Common App Patterns

- Lists
- Details
- Add Buttons

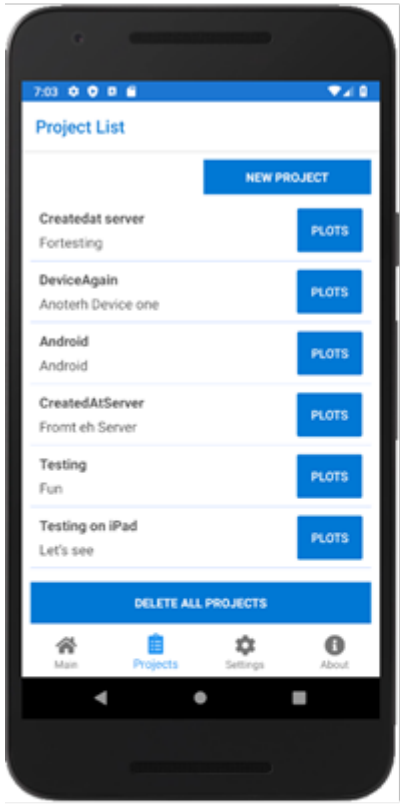


Figure 1 Project Screen. A list of plot projects will appear here. If no project already exists, then a user can Add a New Project. THIS IS THE UPDATED STYLING IN THIS SCREEN SHOT. IT IS CONSISTENT BETWEEN ANDROID AND iOS

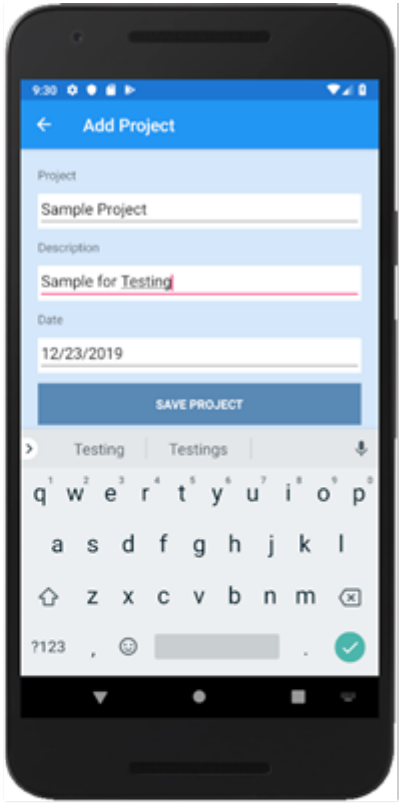


Figure 2 Project Details screen. For entering project attributes. At least one project must exist to add plot data to.

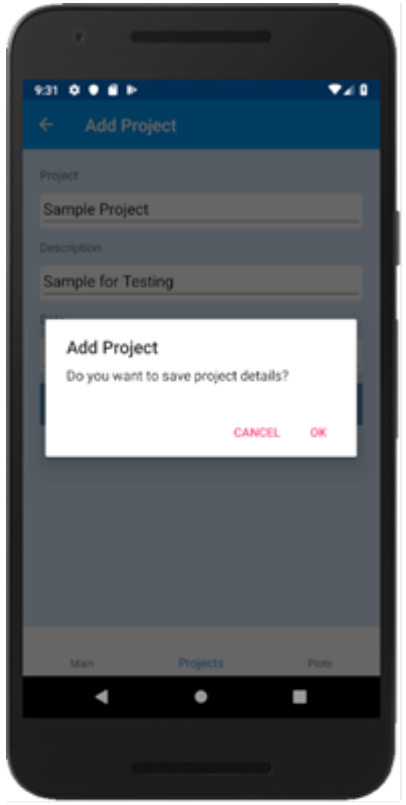
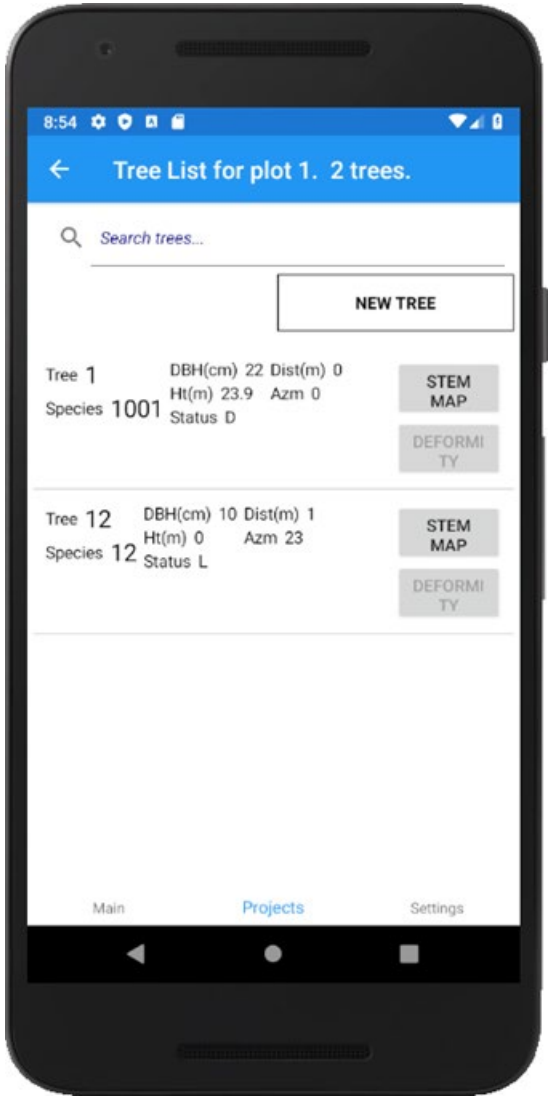


Figure 1 All screens feature a 'Save' utility to save changes to the SQLite database on the device. The device and database always operates disconnected. Data is pushed to the cloud when the user requests it. The data stored on device on SQLite will sync up to an Azure SQL version of the same database when the user has connectivity.

Understands Plot Types

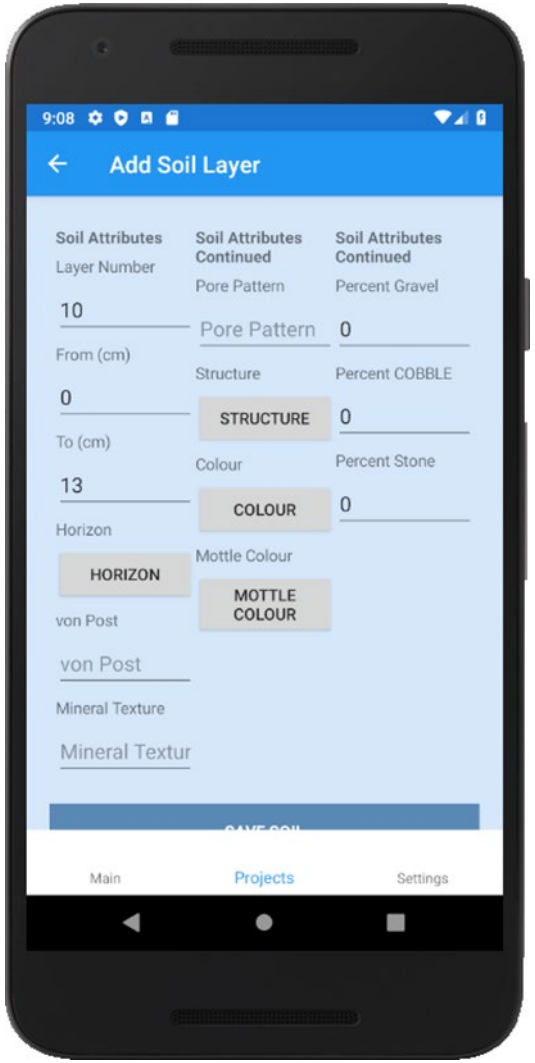
- Only let you enter the screens associated with the plot type

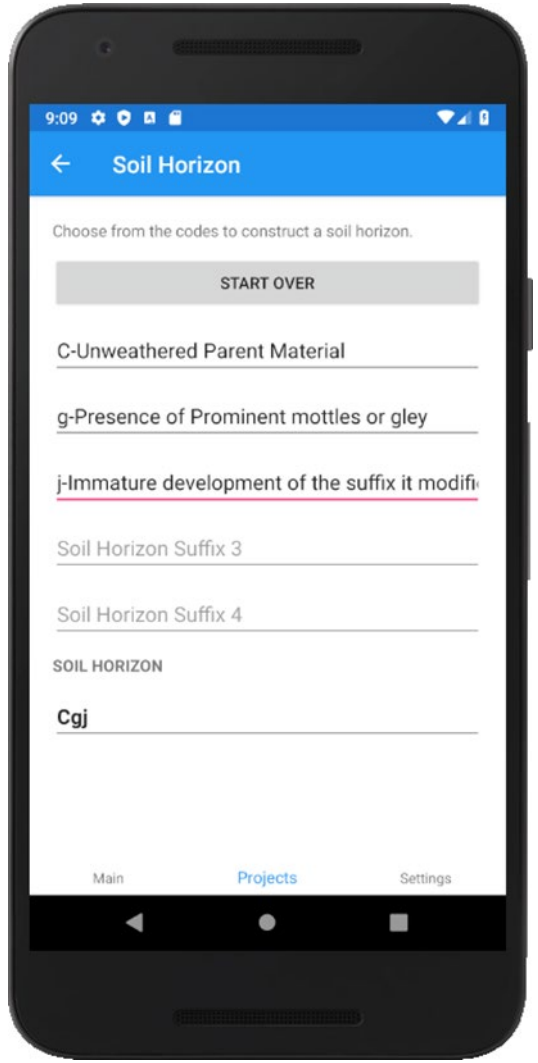


Helpers

Complex Types

- Soil Horizons
- Ecosites

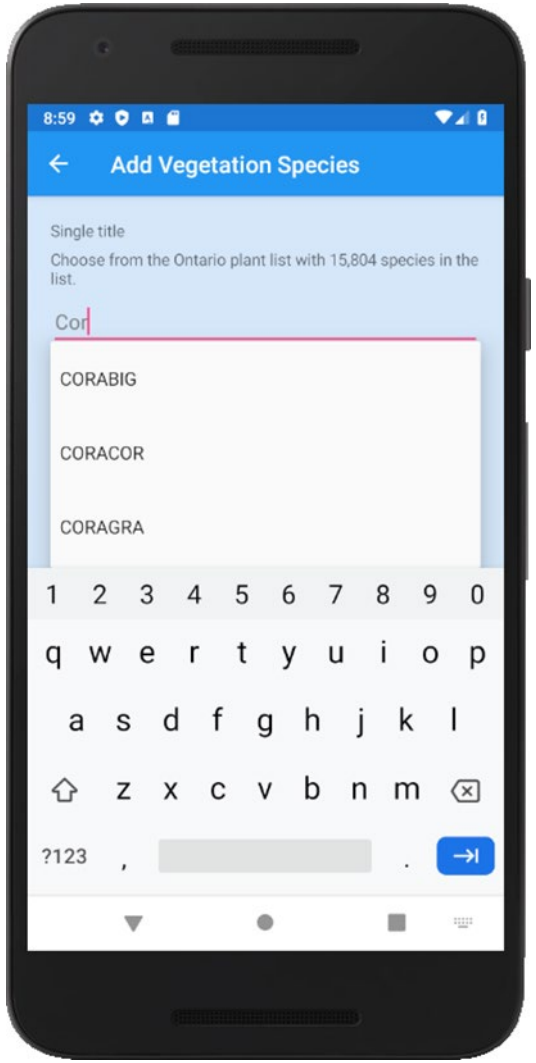


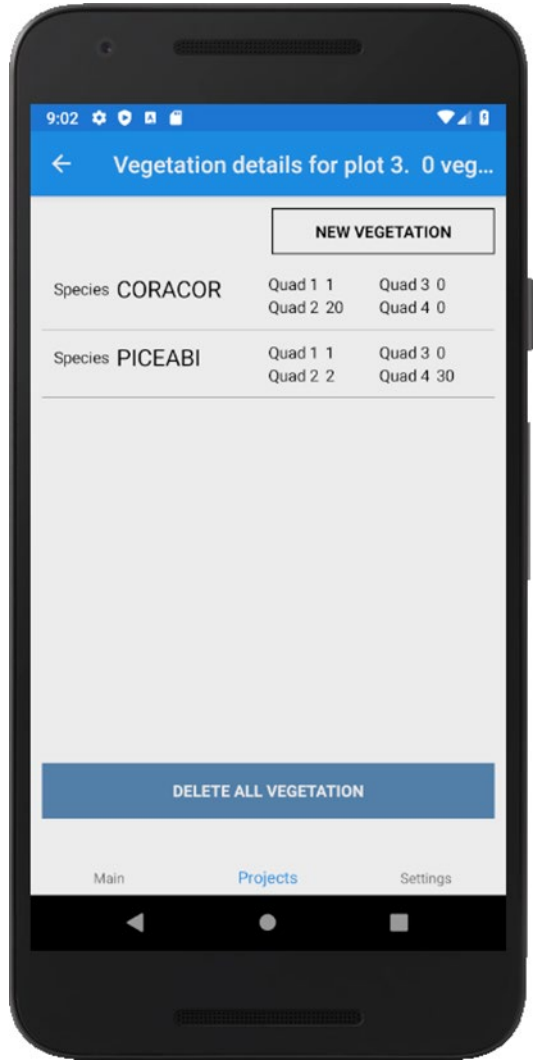


Helpers

Really Big Lists

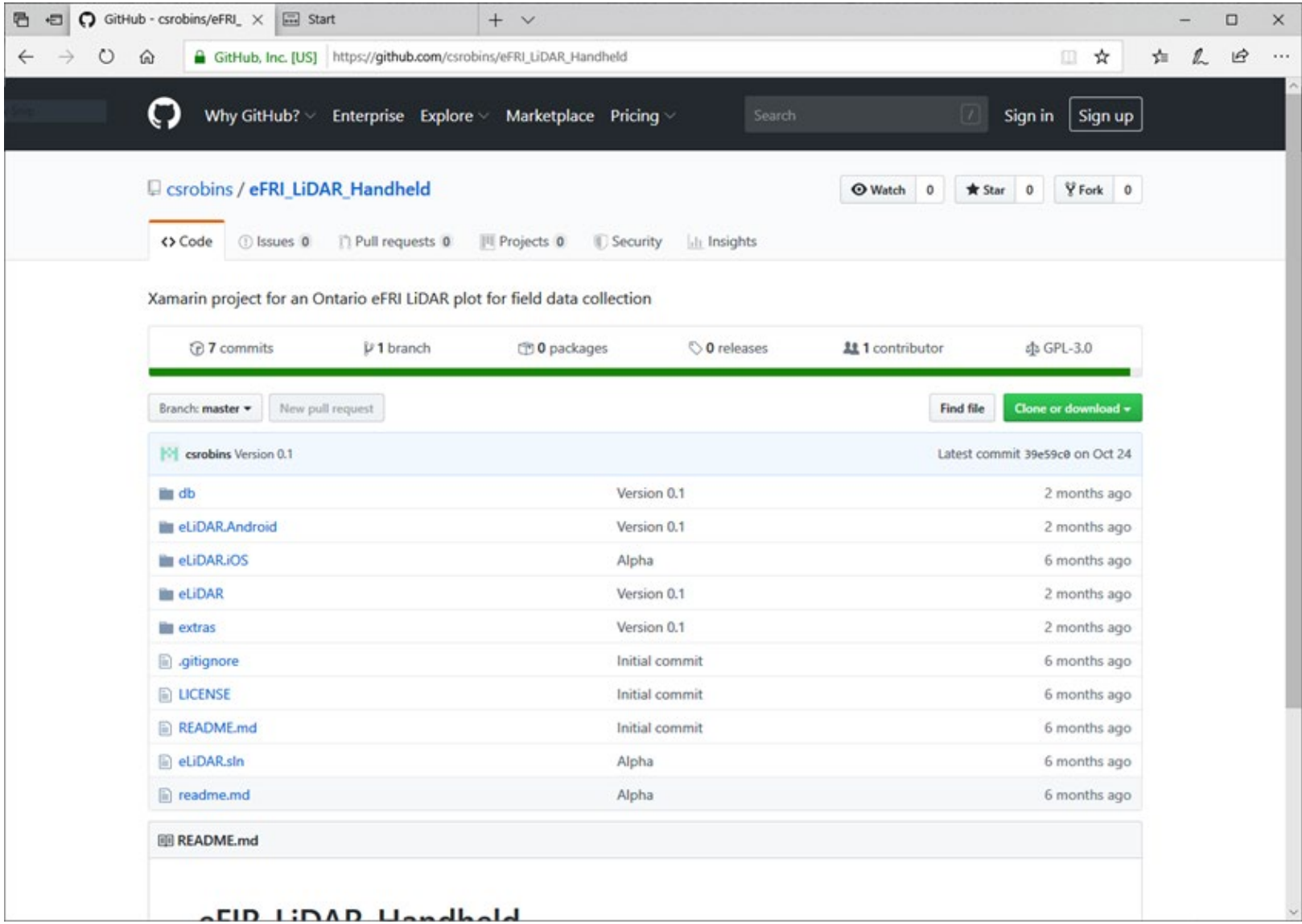
- Over 15,000 understory species in the understory vegetation plot





Github

- Open Source!!!

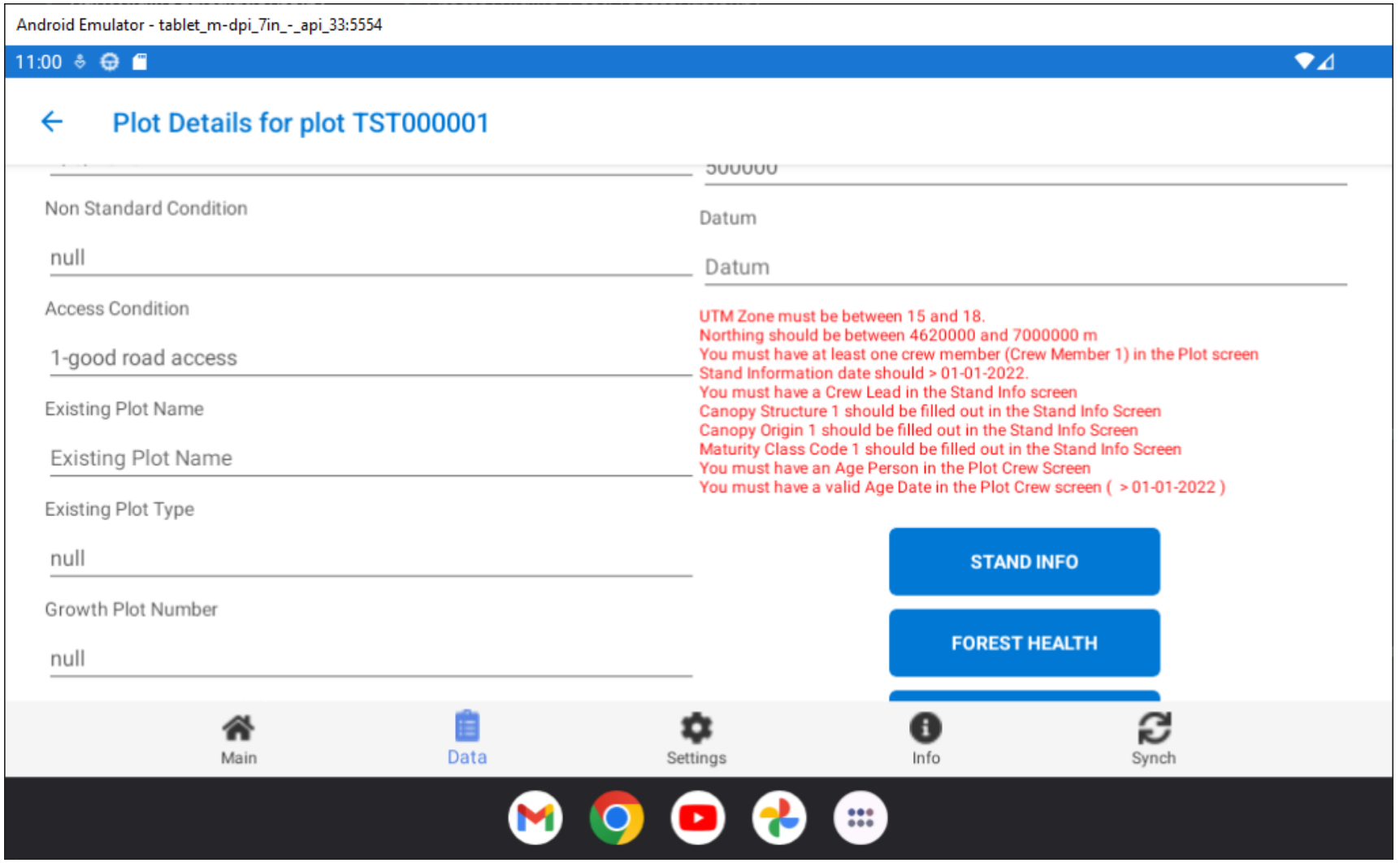


For the 2021 and 2022 Field Seasons

Enhanced Error Checking

Real Time

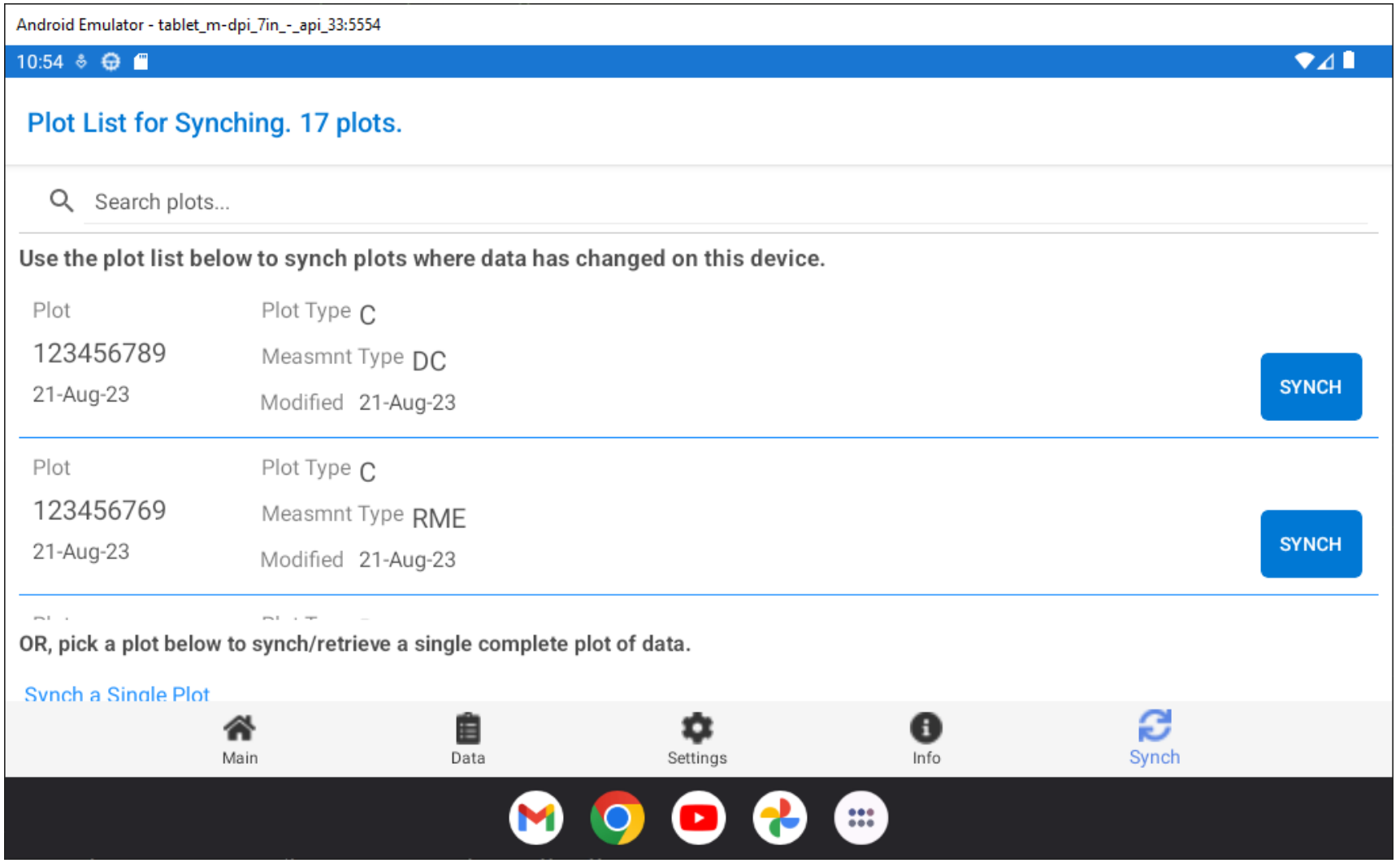
- Error checking more comprehensive and in real time for user



Enhanced Synching

Targeted

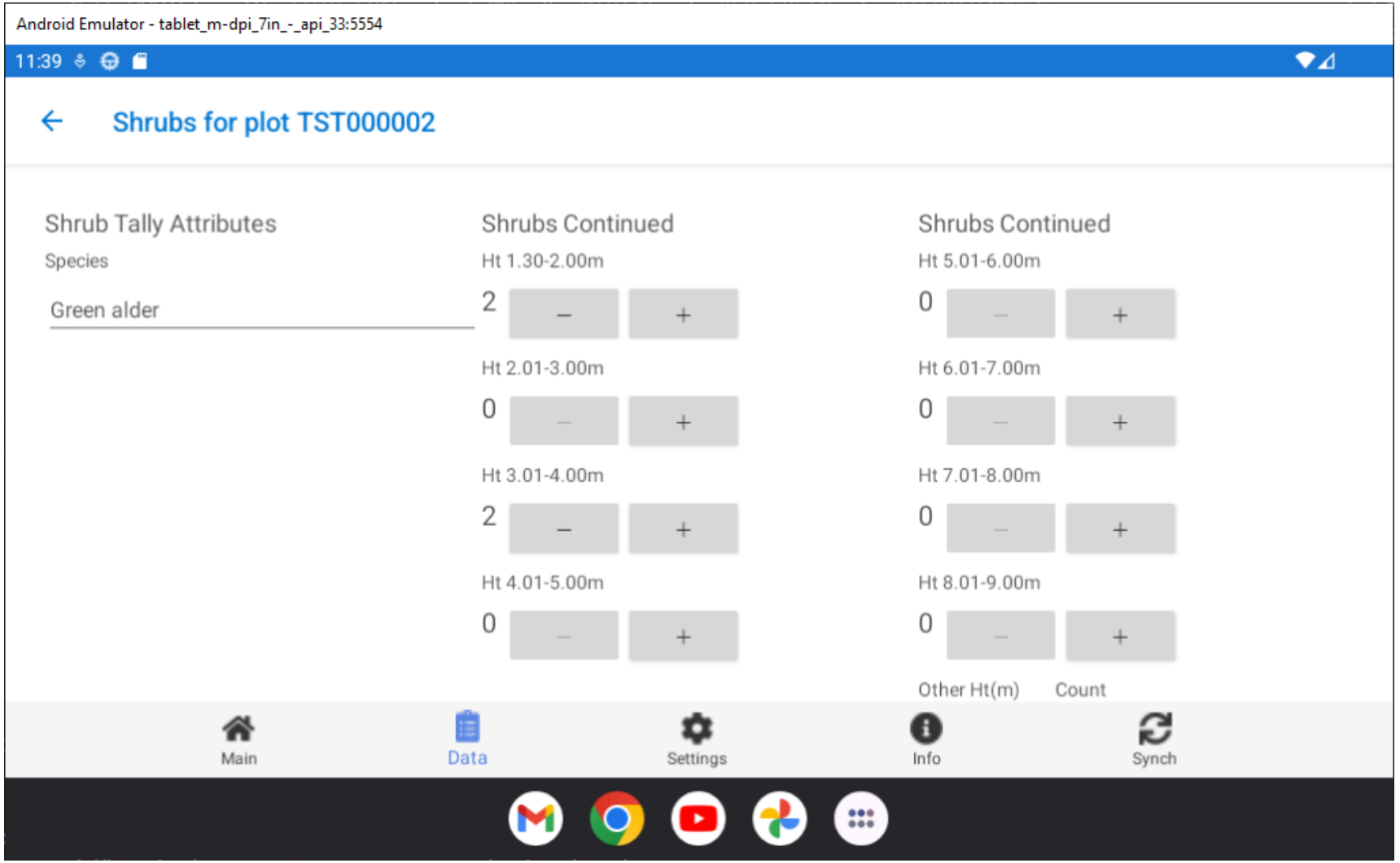
- More efficient synching of plot data



Keeping up with Procedural Changes

Shrubs

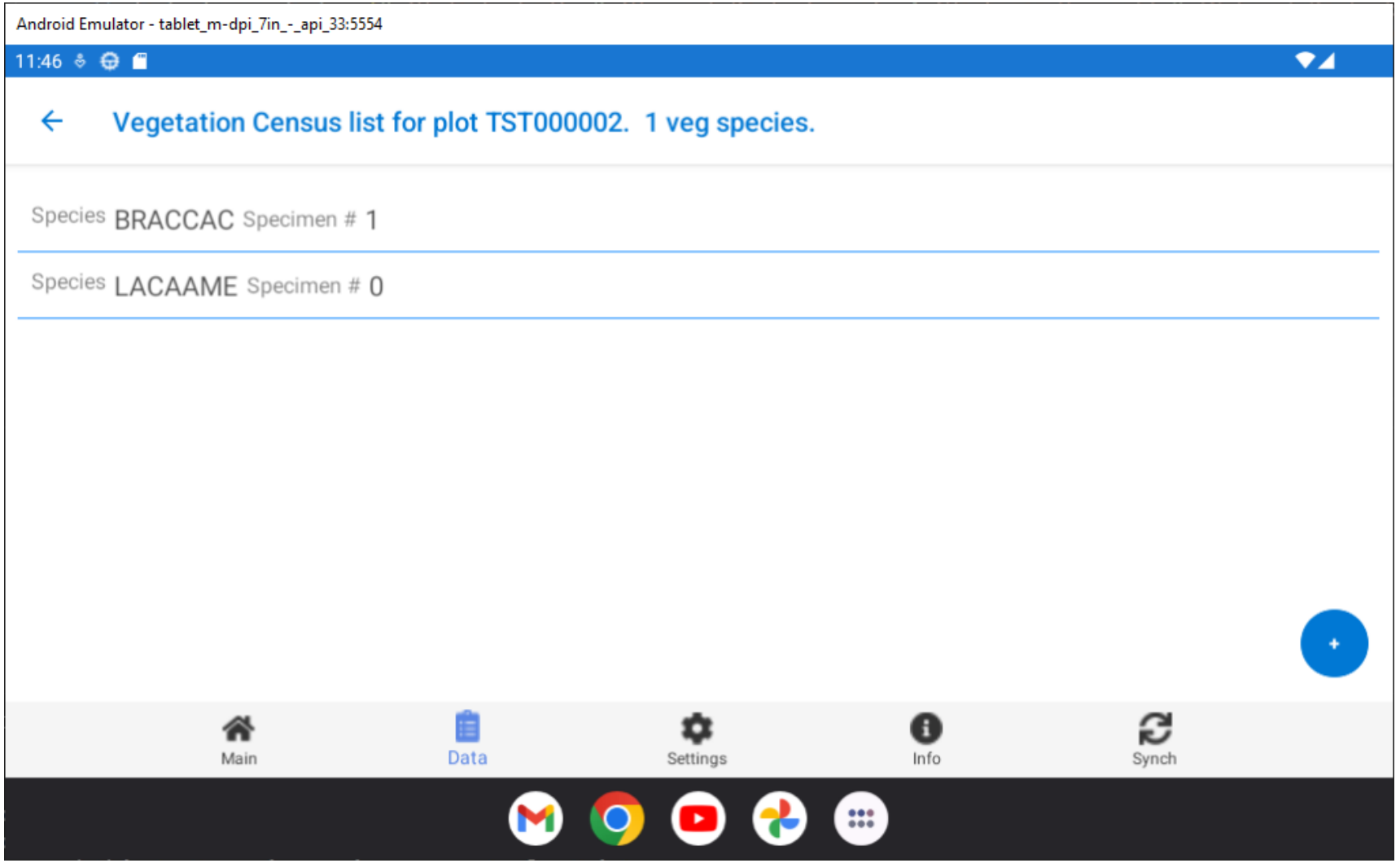
- New screens for new data types were added



Keeping up with Procedural Changes

Census

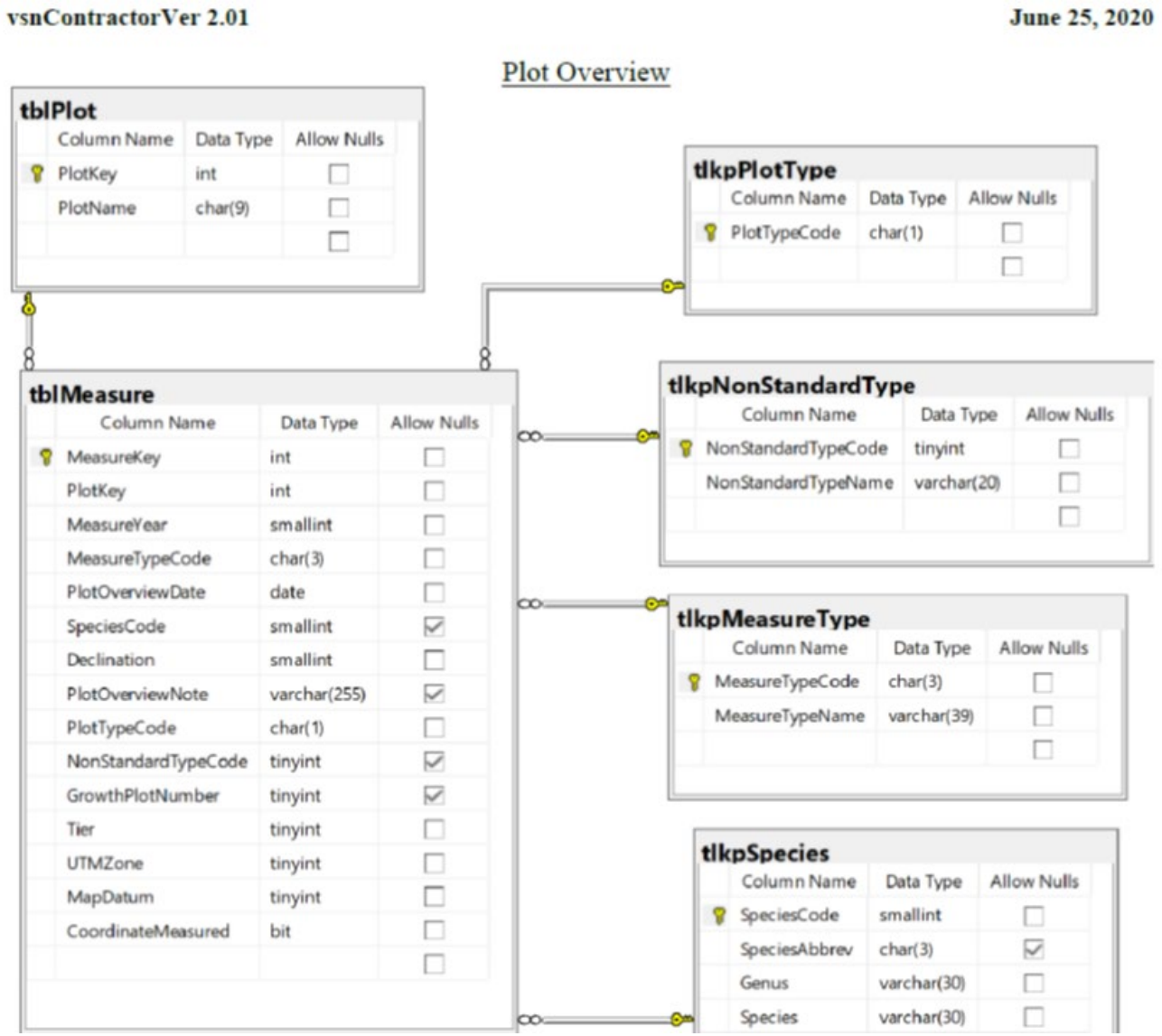
- New screens for new data types were added



Delivering Data

VSN Contractor

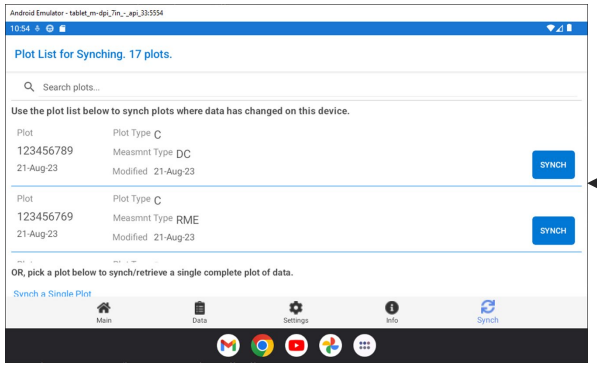
- Worked with the existing VSN Contractor format to deliver data to the OMNRF
- Was challenging and complex

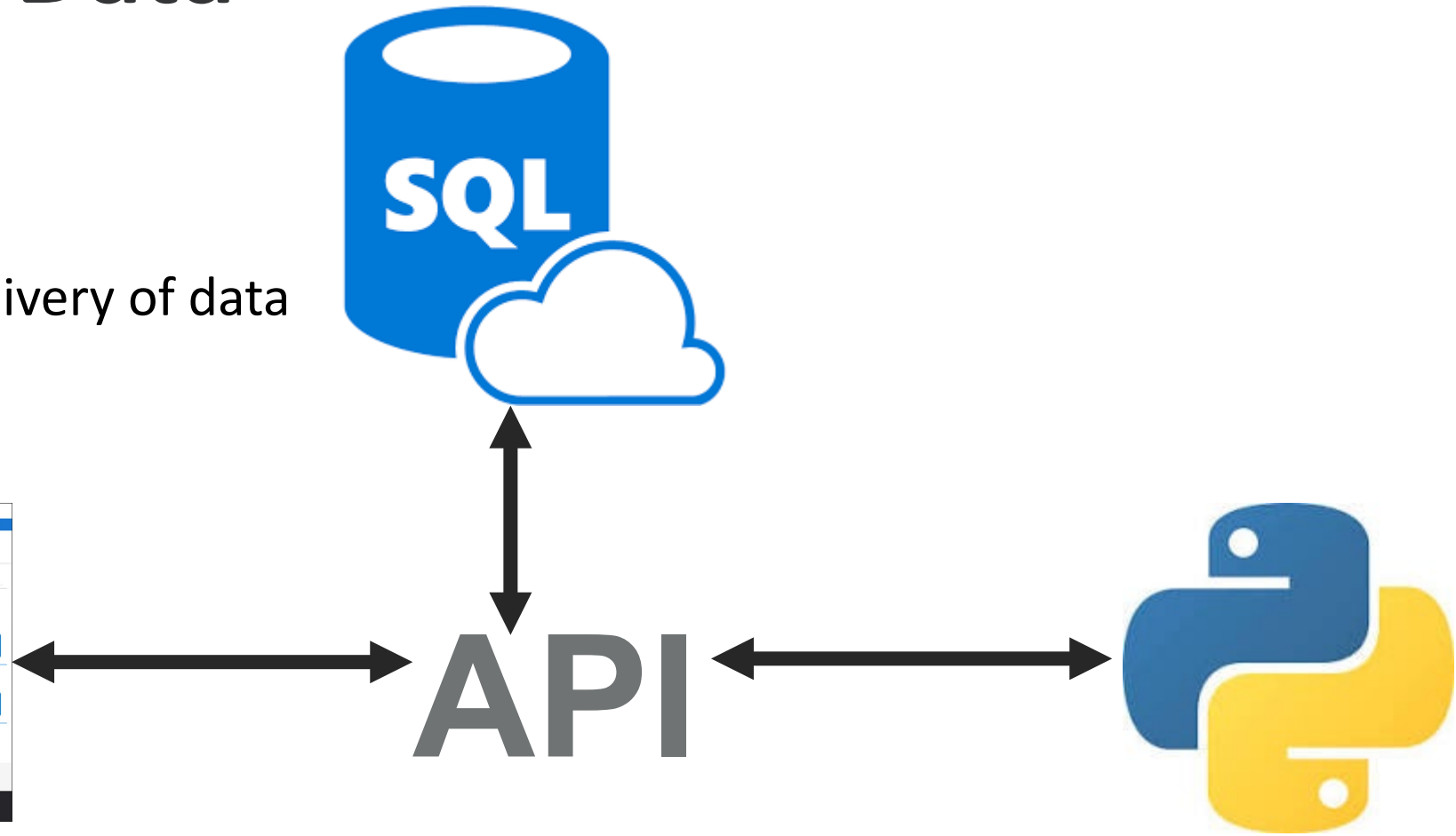


Delivering Data

Using an API

- By 2022 – the delivery of data simplified





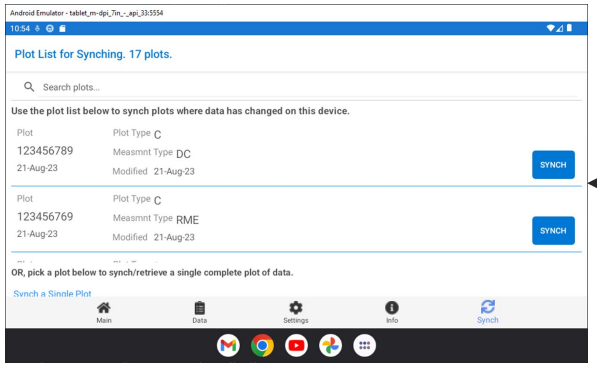
For 2023 Field Season

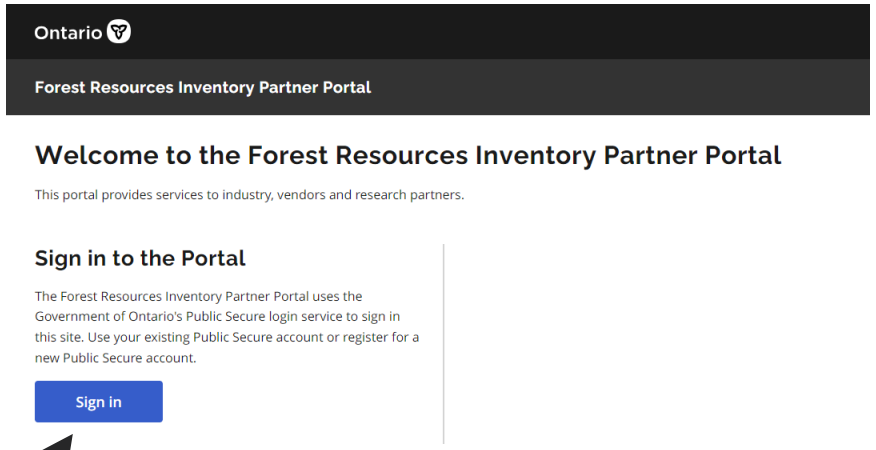
It went Enterprise!

- LRC took the app inside the Ontario government
- Made many improvements to the backend
- Enhanced security
- Simplified deployment

For 2023 Field Season

It went Enterprise





API

For 2023 Field Season

It went Enterprise

Many Parties Involved

It went Enterprise

Ontario

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Microsoft

RESOURCES GROUP

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Next Steps

Ongoing Maintenance

- 1400 VSN plots to be completed next year
- Continue to evolve to keep pace with procedure changes
- Find ways to make it more efficient, so crews can work efficiently

Questions?

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