

# CONTxT App for Efficient Metadata Capture

Alex Layton, Dennis Buckmaster, and Dharmendra Saraswat

## Motivation, or why Metadata is important

Data such as yield, geo-referenced NDVI values, plant trait measurements, etc. only have value to machine learning or artificial intelligence algorithm development if the fuller context is known.

- Example 1: Unmanned Aerial Vehicle image data, to be useful for machine learning, should have tags identifying soil type, previous weather, plant population, crop type, etc.
- Example 2: Yield data is much more valuable for algorithm development if nutrient applications, plant population, plant and harvest dates, etc. are documented.

## Who has time for that?

- When UAV operators get ready to fly...
- When machine operators get ready to plant, spray, or harvest ...
- When crop scouts identify pests...

They don't have the time to fill out a form or take a survey. This is an ideal application for a mobile application which uses **autofill** and **smart form filling** based on **previous entries** and specifics of the **device and location**.

Place

5. Grower (or Client)  
Farmer Frank

6. Farm (or Operation)  
Frank Farms

7. Field (or Site)  
East Field

8. Crop  
corn

9. Previous Crop  
beans

Weather

GET CURRENT WEATHER

10. Temperature  
60 F

11. Wind Speed  
10 mph

12. Wind Direction  
35 deg



## con·text

*/ˈkæntɛkst/*

*noun*

the circumstances that form the setting for an event, statement, or idea, and in terms of which it can be fully understood and assessed.

"the decision was taken within the context of planned cuts in spending"

*synonyms:* circumstances, conditions, factors, state of affairs, **situation**, background, scene, setting

[More](#)

## A simple, but enabling tool

Our metadata app will be a tool for quickly capturing context of activities and data files. With date/time/location identity, alignment of other files with common attributes will be simpler and more robust. For example ...

- Where are images of 45 day old corn on sand for which there has been no rain for 10 days
- Tally the acres chisel plowed during November of each year
- Tally fields covered by Schmutz McGillicuddy in April
- Sort out the fields that are corn after corn with fall applied N

General

1. Purpose  
UAV

2. Date/Time of data  
Date: 02/19/2019  
Time: 1:31:06 PM

3. Collection locations

Location #1

\* Latitude  
Please answer the question.

\* Longitude  
Please answer the question.

Add Location

ADD CURRENT LOCATION

## Google Sheets

- Controlled by the person collecting the data
- Sharable easily in collaboration
- Easily editable in Google Sheets

## Prototype App

- Offline-first web app works on both mobile and desktop
- Initial roll-out focused on UAV metadata
- Phase 2 to include cropping system data
- Extendable to many contexts for pictures, videos, data files, or data platforms