fieldkit

fieldkit.org

everyone@fieldkit.org

conservify

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@conservify

FieldKit lets everyone everywhere monitor the world around them with low-cost, reliable sensors and easy-to-use tools for storing, sharing and telling stories with data.

Easy-to-use environmental sensing

FieldKit sensors are designed to be accurate, durable and extensible. Our mobile app makes configuration, testing and deployment easy for amateurs and professionals alike.

For sensor projects, big and small

FieldKit's low per-unit cost makes deploying networks of several, dozens, even hundreds of sensors possible - no matter how small the budget.

Easily explore and share your data

The FieldKit platform securely stores and manages your data, and lets you share and tell stories with it.

FieldKit is for everyone

We're building FieldKit because we believe everyone should be able to understand and advocate for the world they live in. FieldKit is a tool for field scientists, environmental advocates, naturalists, students and teachers, and most importantly… it's for you!

fieldkit

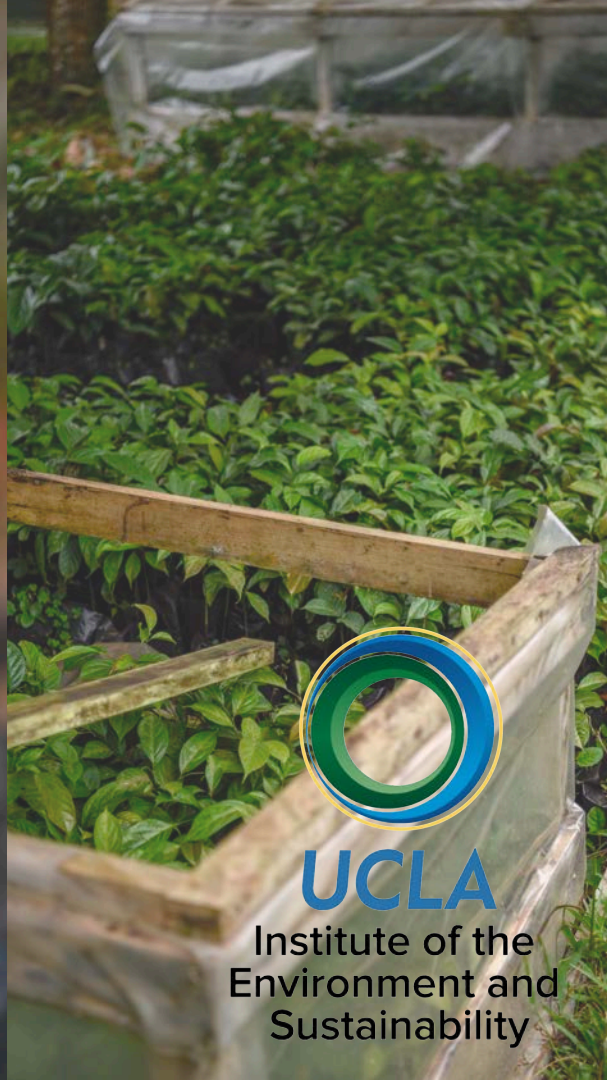
To give people the tools to measure the world around them and to empower everyone to advocate for the environment.

FieldKit aims to dramatically reduce the cost of research-grade environmental sensors, and to simplify the processes of data management, visualization and sharing.

Users

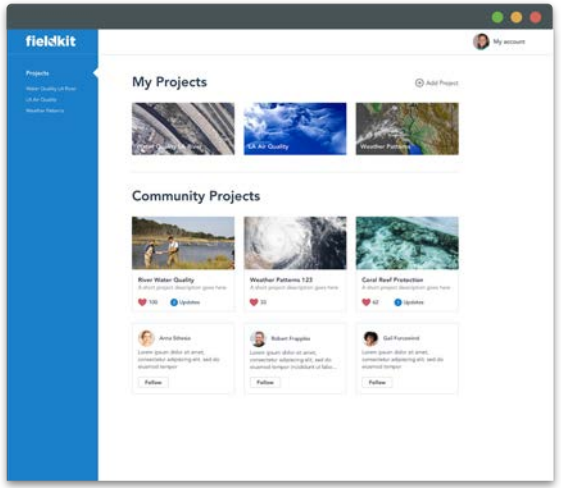
Field Scientists **Conservationists** **Citizen Scientists** **Educators** **Environmental Justice**

CITIZEN SCIENCE
FOR THE AMAZON



UCLA
Institute of the Environment and Sustainability

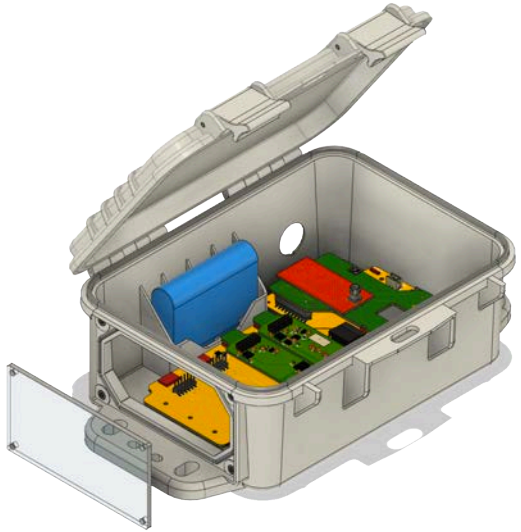
FieldKit Ecosystem



FieldKit.org

FieldKit App

(iOS & Android)



FieldKit Hardware

With support from:

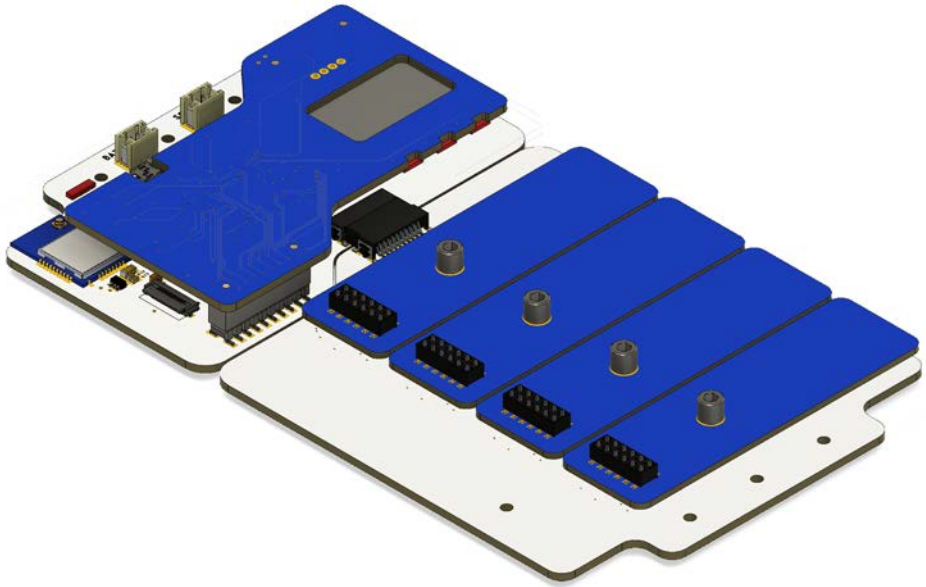
GORDON AND BETTY MOORE FOUNDATION

NATIONAL GEOGRAPHIC

NOAA

NSF

Hardware “Darwin”



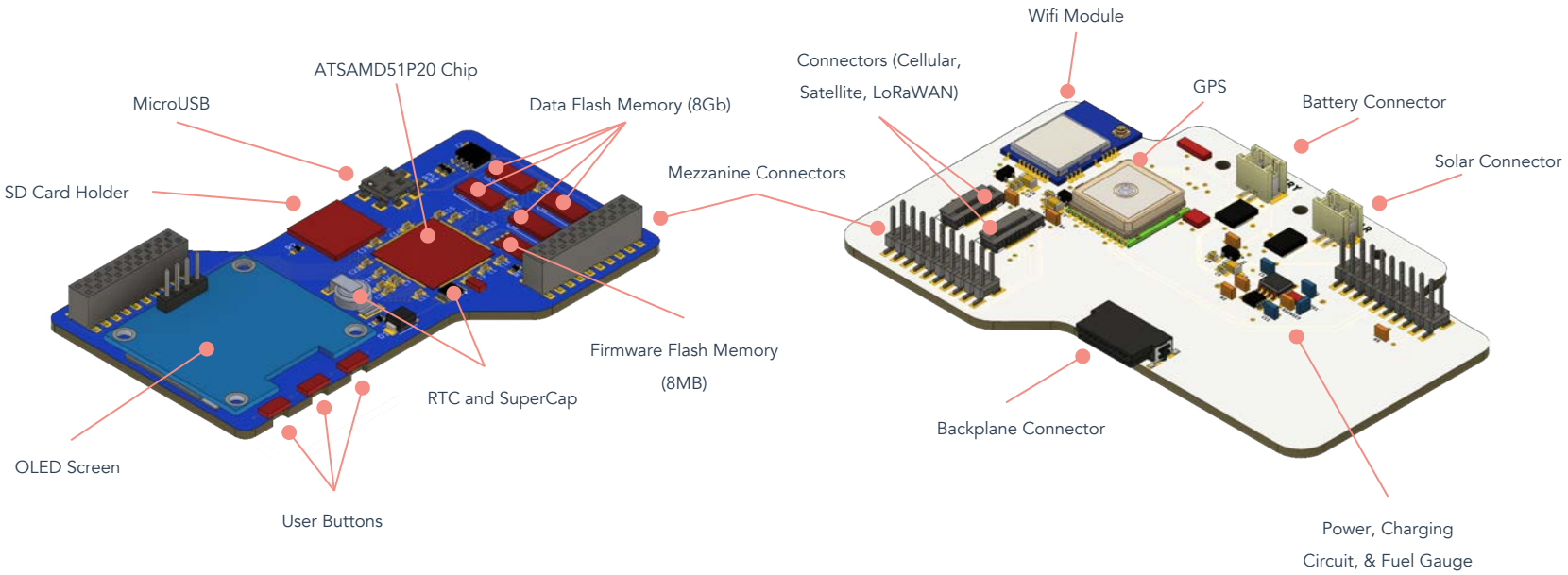
Details:

- Fully open source hardware and firmware, designed at Conservify
- Modular hardware architecture (upgradable radios, power, etc.)
- Offer both microcontroller and Linux SoC top board
- Support integration of cellular, satellite, and LoRa connectivity
- Suite of available sensor modules and user-defined modules, that are automatically recognized and support hot-swapping
- Backplane in both 4- and 8-sensor module configurations

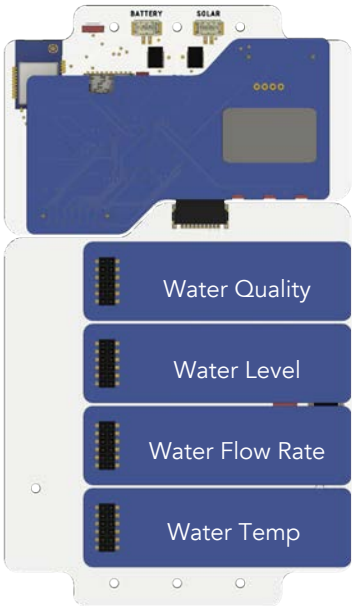
Technology:

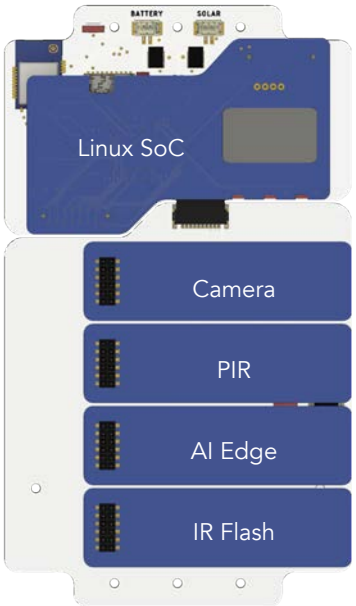
- Firmware: C/C++, Arduino IDE Compatible
- Working to support the Dat protocol on the hardware

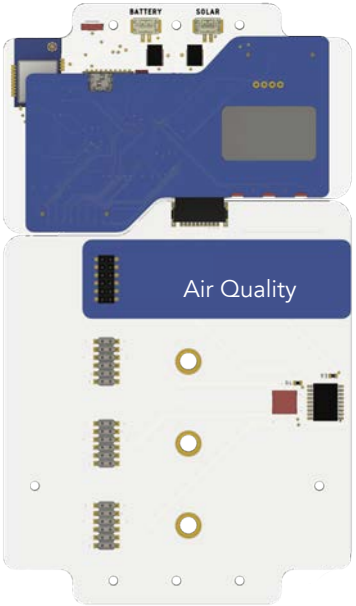
Hardware (Core and Radio)



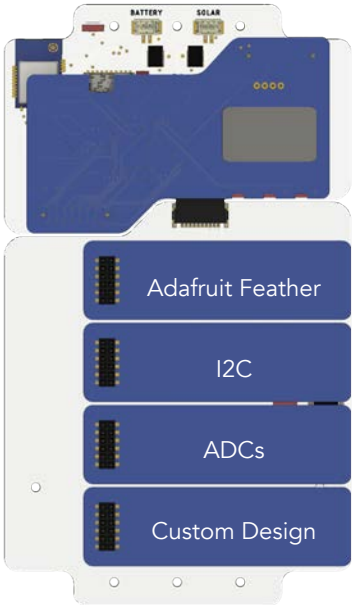
Hardware Configurations (examples)







Hardware (User Designed Options)

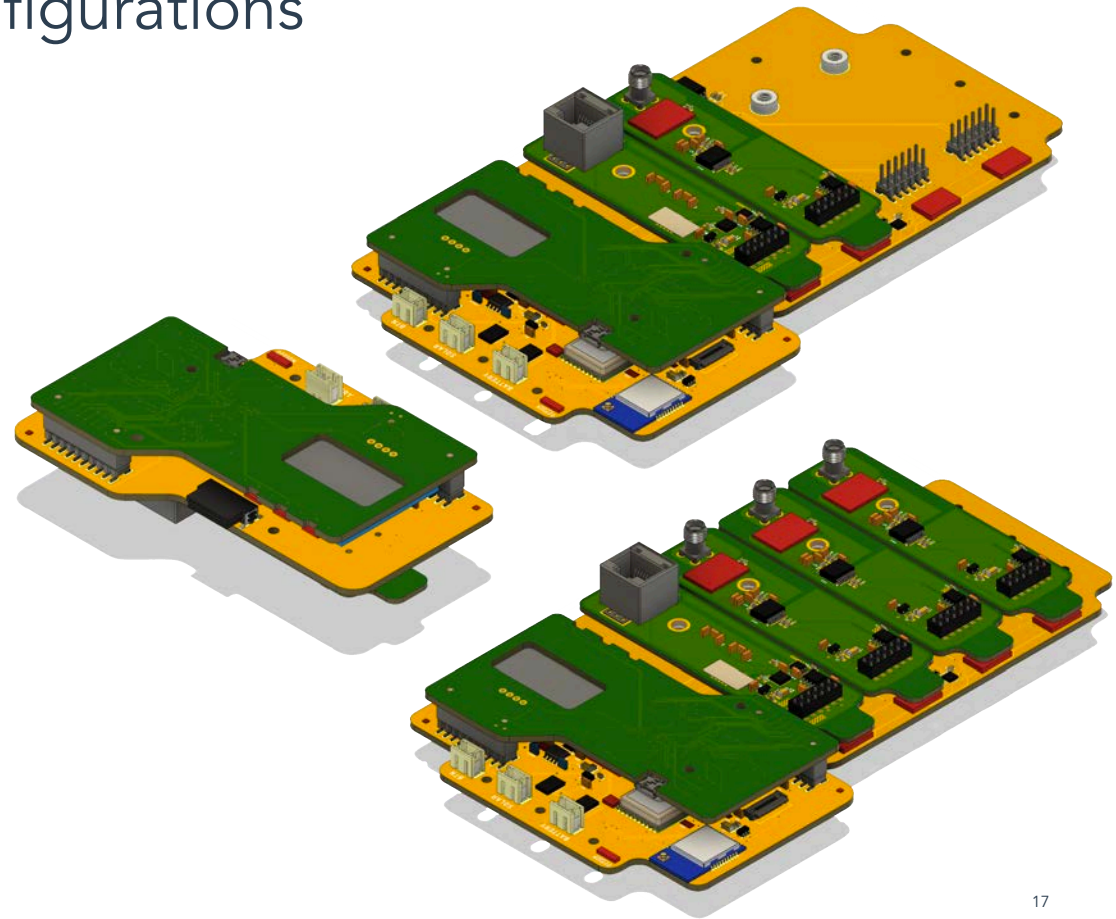


Approach:

- We will provide user module boards that include things like Adafruit Feather footprint, I2C headers, multiple ADCs, or general module design framework.
- Users will be able to clone an Arduino-like module template and provide small sections of code to sample their own sensors.
- This compiled firmware can then be used in a library-like fashion by the main FieldKit firmware for extensible behavior/sensors

Different Hardware Configurations

- Sensor modules can be deployed in various configurations, with firmware automatically detecting different sensor types and changing configuration and app details accordingly
- Backplane offers the opportunity to connect from one to four sensors, with the possibility of expanding as needed
- An additional sensor module can be plugged into the back of the Radio board, offering the ability to deploy in small locations or pipes
    - This configuration is used in our CTD

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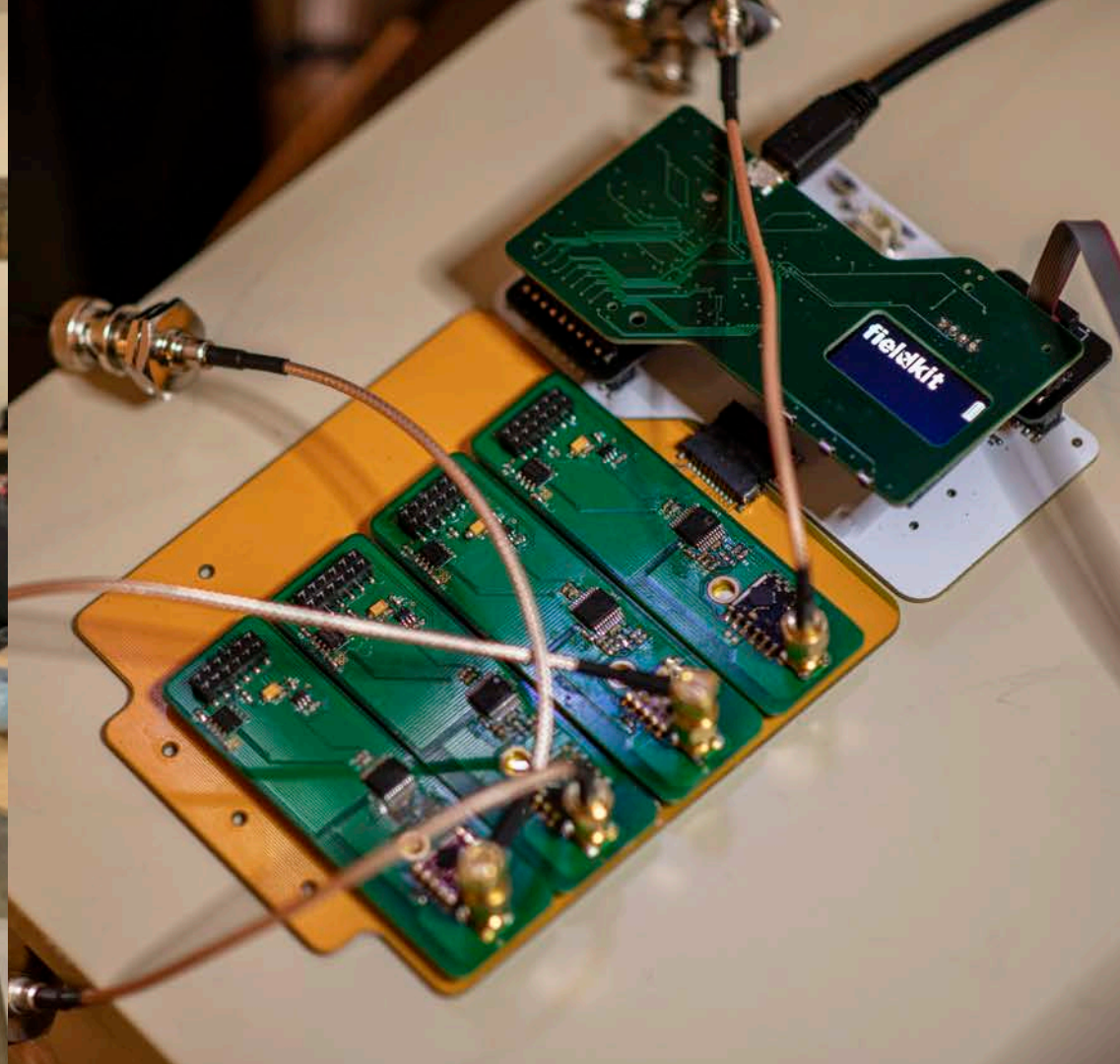
Ambient Ozone #1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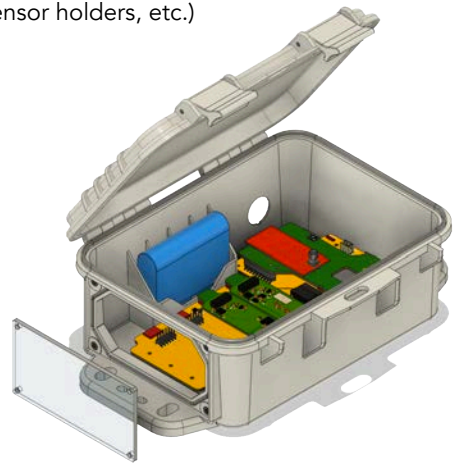
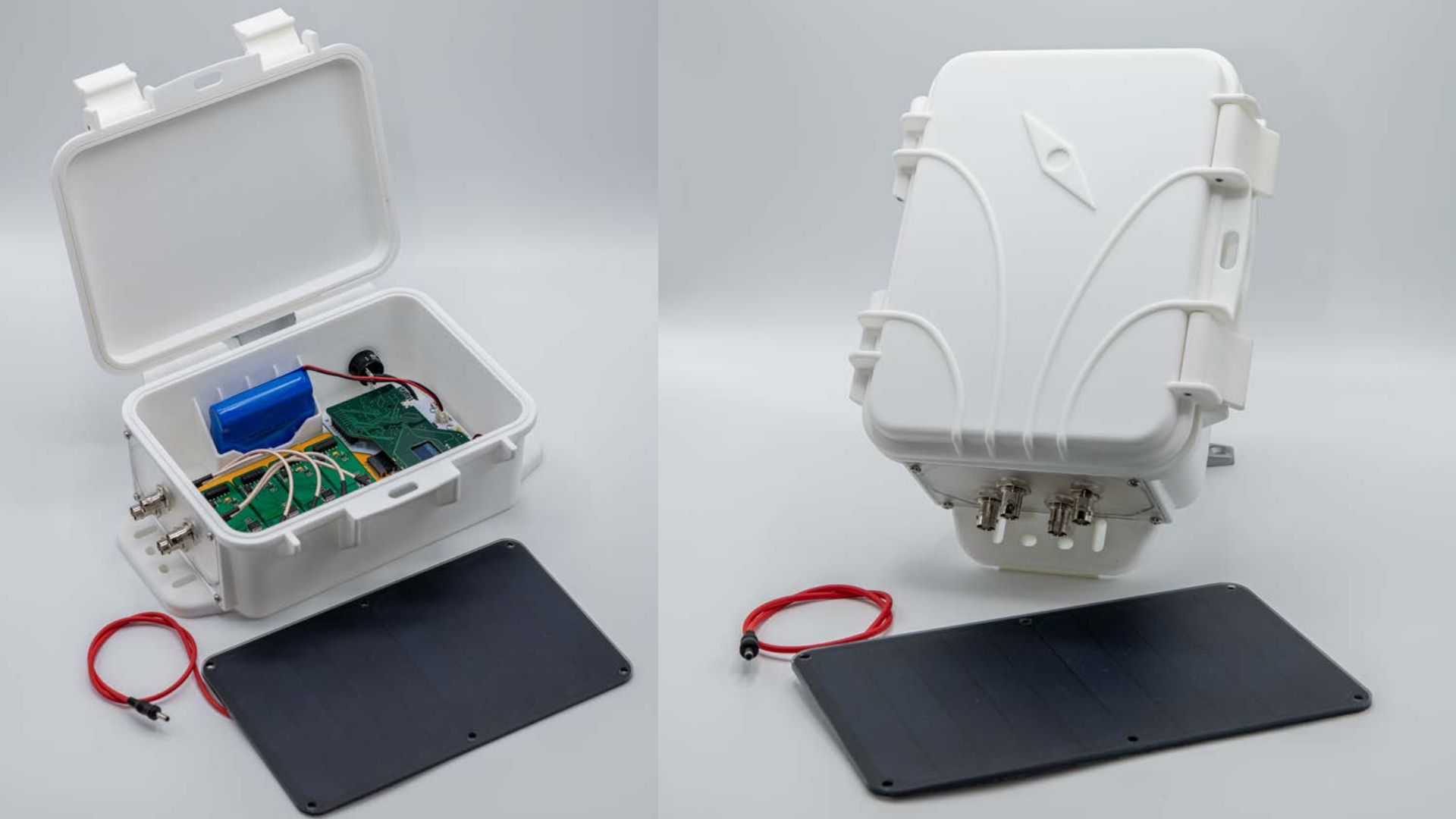
Hardware Enclosure

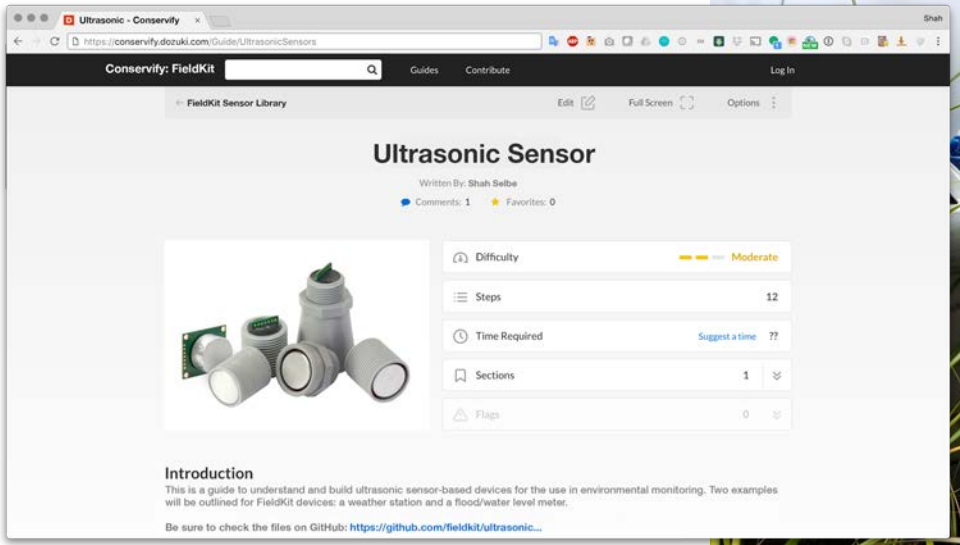
Details:

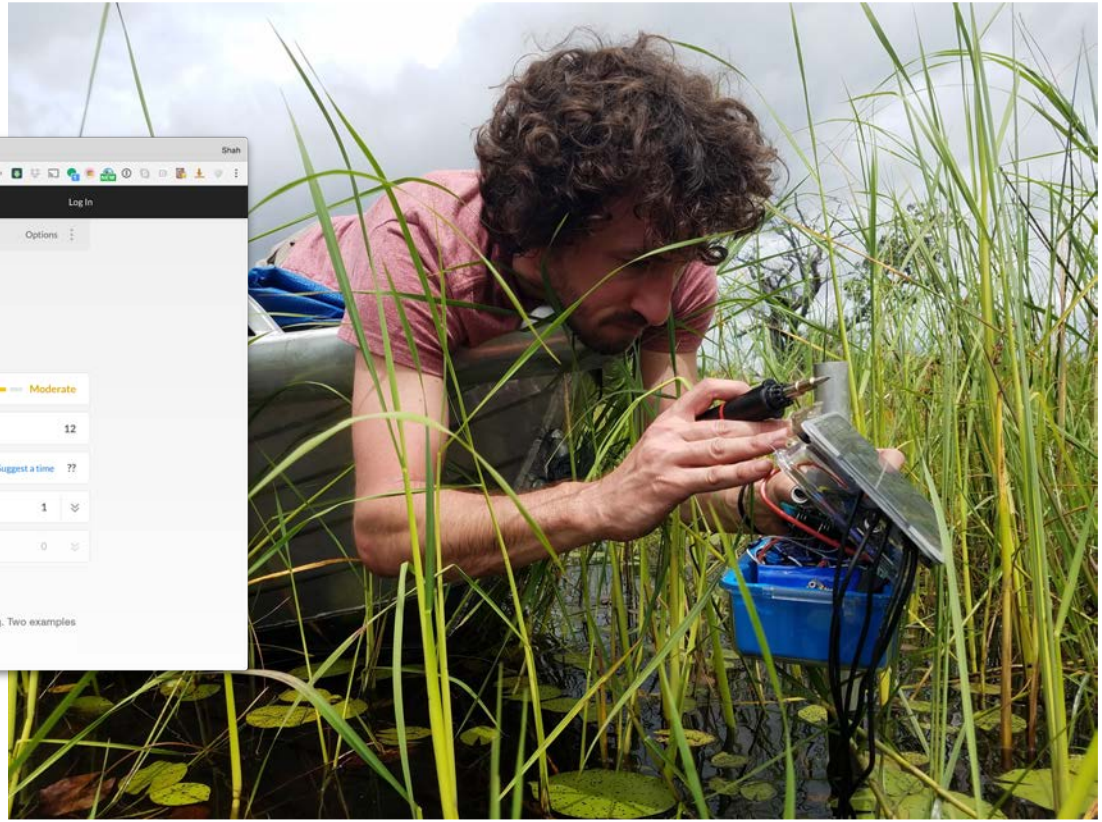
- Custom designed case, made to be 3D printed or injection molded
- Allow various mounting configurations and installation positions
- Create customizable flat stock or laser cut acrylic passthrough plate
    - Allows for specific cable gland configurations to be mass produced and quickly swapped out
    - Create a place for user-designed add-ons for the enclosure (things like Stephenson screens, custom mounts, specialty sensor holders, etc.)



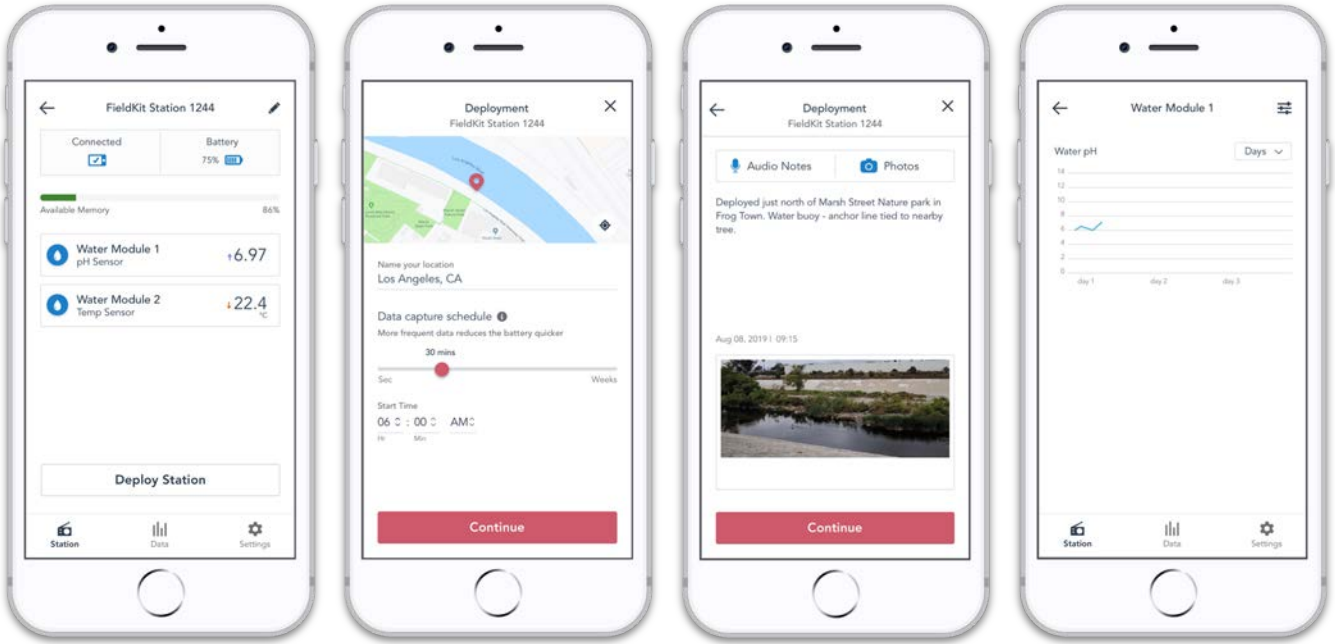


Open Sensor Library





App

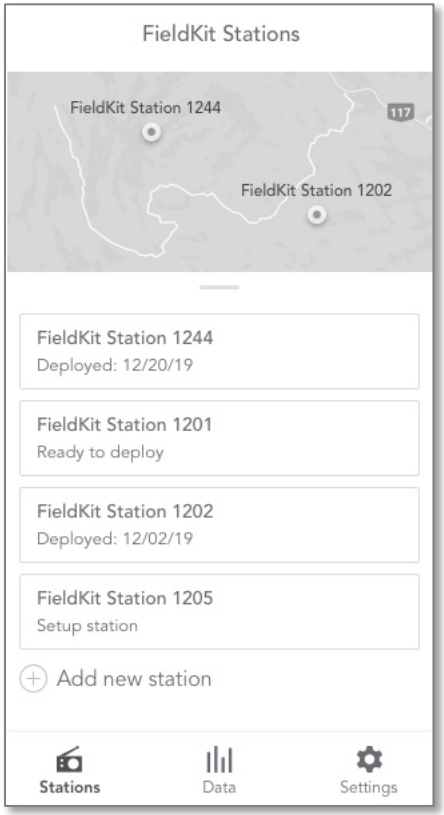


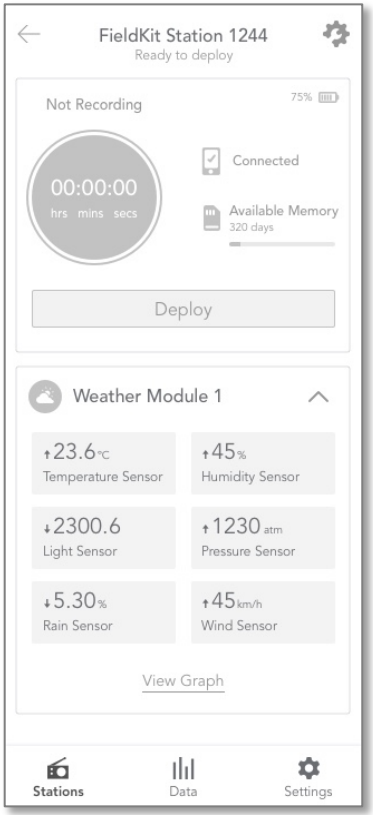
Supports:

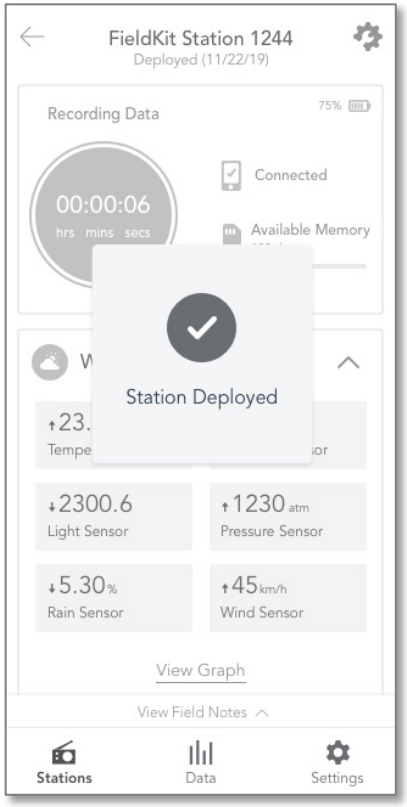
- Management of sensor fleet
- Connect and download data from device
- Data visualization capabilities
- Sensor configuration and calibration
- Drives best practices around scientifically relevant deployments and metadata
- Sensor firmware upgrades

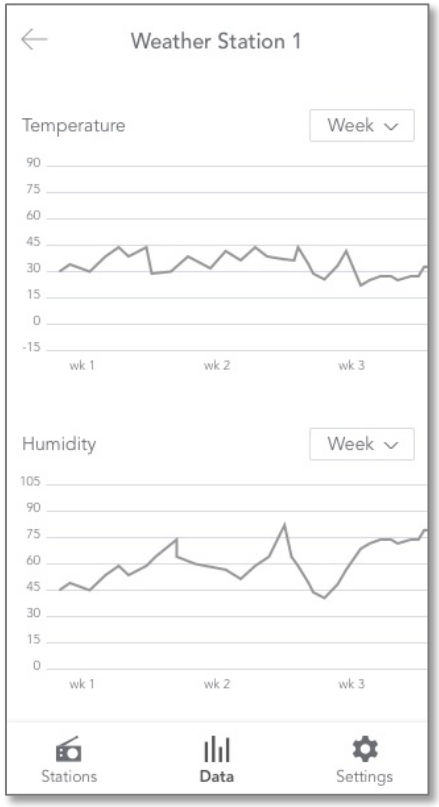
Technology:

- Built in NativeScript and Vue
- Supports the Dat protocol

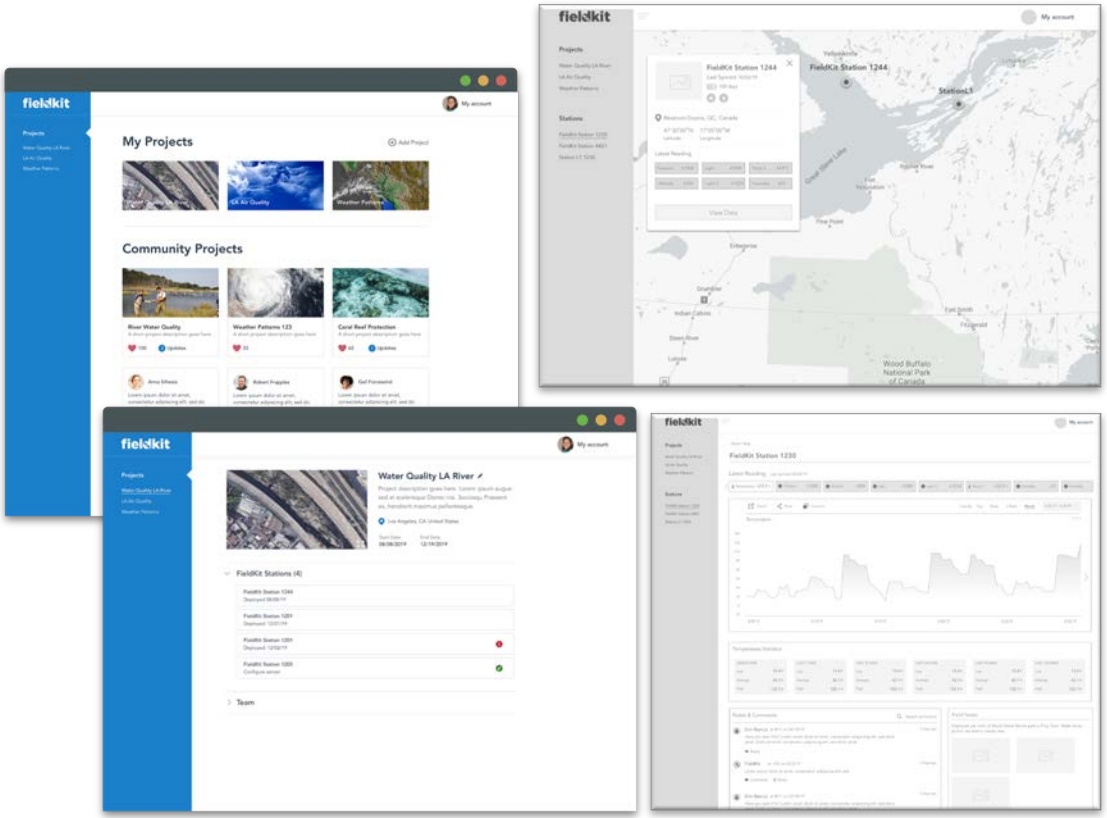

FieldKit Stations
FieldKit Station 1244
117
FieldKit Station 1202
FieldKit Station 1244
Deployed: 12/20/19
FieldKit Station 1201
Ready to deploy
FieldKit Station 1202
Deployed: 12/02/19
FieldKit Station 1205
Setup station
Add new station
Stations
Data
Settings


FieldKit Station 1244
Ready to deploy
Not Recording
75%
00:00:00
hrs mins secs
Connected
Available Memory
320 days
Deploy
Weather Module 1
23.6°C
Temperature Sensor
45%
Humidity Sensor
2300.6
Light Sensor
1230 atm
Pressure Sensor
5.30%
Rain Sensor
45 km/h
Wind Sensor
View Graph
Stations
Data
Settings


FieldKit Station 1244
Deployed (11/22/19)
Recording Data
75%
00:00:06
hrs mins secs
Connected
Available Memory
Station Deployed
2300.6
Light Sensor
1230 atm
Pressure Sensor
5.30%
Rain Sensor
45 km/h
Wind Sensor
View Graph
View Field Notes
Stations
Data
Settings


Weather Station 1
Temperature
Week
90
75
60
45
30
15
0
-15
wk 1
wk 2
wk 3
Humidity
Week
105
90
75
60
45
30
15
0
wk 1
wk 2
wk 3
Stations
Data
Settings

Website

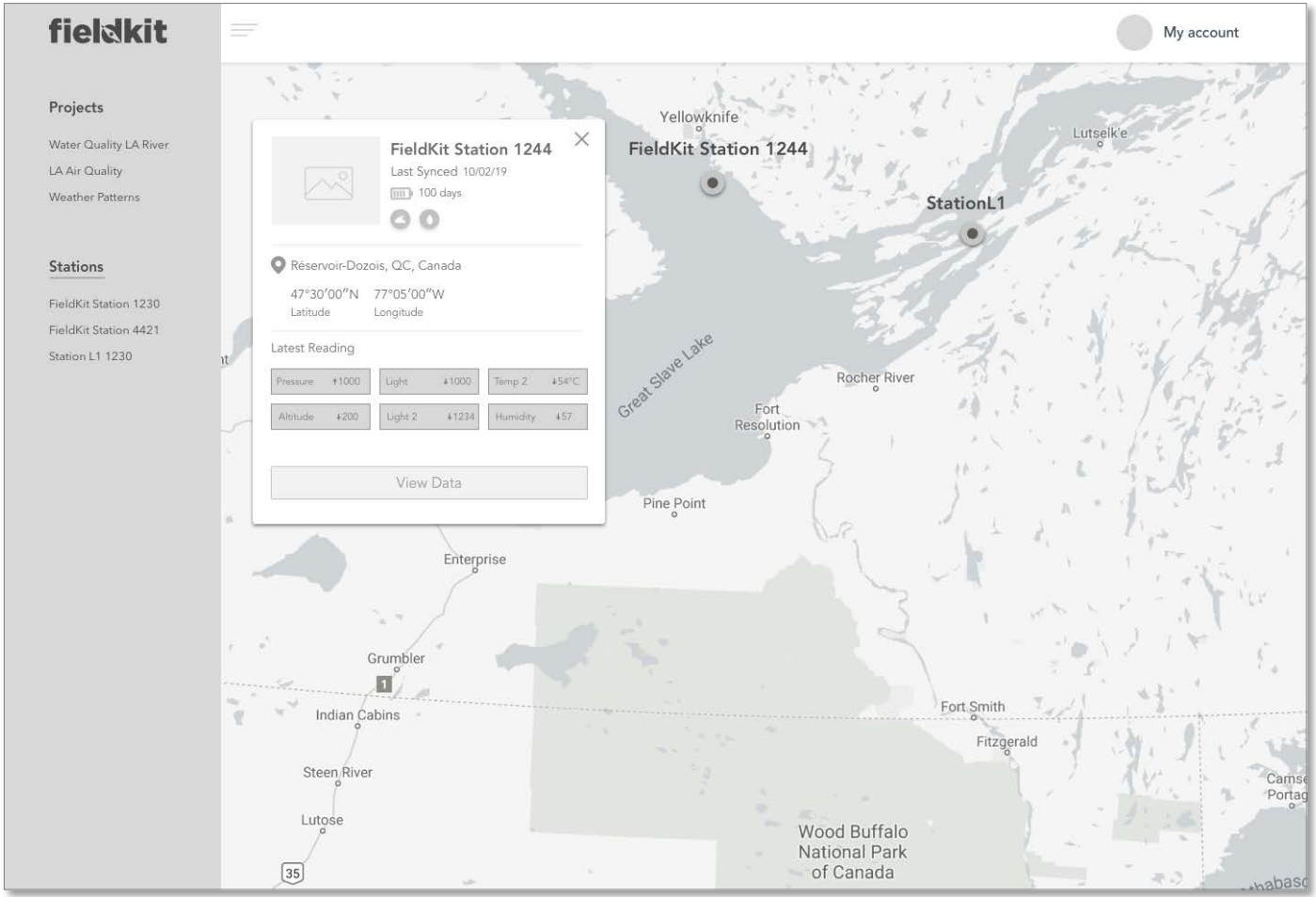


Supports:

- Project, organization, and deployment administration
- Advanced sensor configuration, diagnostics, and management
- Innovative map- and chart-based data visualization capabilities
- Social integration, including sharing of data points and ranges
- Data annotations, metadata, privacy, and embargo
- Custom data export templates (CSV, JSON, XML, Jupyter Notebook, PDF report)

Technology:

- Front-end: Javascript and Vue, D3/SVG
- Back-end: Golang, PostgreSQL, AWS (Terraform)
- Supports the Dat protocol
- Mobile-first to support smooth app experience


fieldkit
My account
Projects
Water Quality LA River
LA Air Quality
Weather Patterns
Stations
FieldKit Station 1230
FieldKit Station 4421
Station L1 1230
FieldKit Station 1244
Last Synced 10/02/19
100 days
Réservoir-Dozois, QC, Canada
47°30′00″N
Latitude
77°05′00″W
Longitude
Latest Reading
Pressure ↑1000
Light ↓1000
Temp 2 ↓54°C
Altitude ↓200
Light 2 ↓1234
Humidity ↓57
View Data
Yellowknife
FieldKit Station 1244
Lutselk'e
StationL1
Great Slave Lake
Rocher River
Fort Resolution
Pine Point
Enterprise
Grumbler
1
Indian Cabins
Steen River
Lutose
35
Fort Smith
Fitzgerald
Wood Buffalo National Park of Canada

My account

‹ Station Map

FieldKit Station 1230

Latest Reading Last synced 08/28/19

Temperature ▾23.4°F | Pressure ▾1000 | Altitude ▾200 | Light ▾1000 | Light 2 ▾1234 | Temp 2 ▾22.4°C | Humidity ▾57 | Humidity

Temperature Statistics

SELECTED VIEW		LAST 7 DAYS		LAST 30 DAYS		LAST 60 DAYS		LAST 90 DAYS		LAST 120 DAYS	
Low	13.4°F	Low	13.4°F	Low	13.4°F	Low	13.4°F	Low	13.4°F	Low	13.4°F
Average	43.1°F	Average	43.1°F	Average	43.1°F	Average	43.1°F	Average	43.1°F	Average	43.1°F
High	122.1°F	High	122.1°F	High	122.1°F	High	122.1°F	High	122.1°F	High	122.1°F

Notes & Comments

Search comments

Erin Ramos at 45°F on 04/19/19 — 2 days ago

Have you seen this? Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed dolor amet. Dolor sit amet, consectetur adipiscing elit, sed dolor amet

Reply

FieldKit at 10°F on 03/2/19 — 3 days ago

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed

Comment Share

Erin Ramos at 45°F on 02/10/19 — 5 days ago

Have you seen this? Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed dolor amet. Dolor sit amet, consectetur adipiscing elit, sed dolor amet

Alex Gandy

Yes, we are looking into why this is happening. Reviewing in excel

Reply

Alex Gandy at 65.3°F on 01/23/19

orem ipsum dolor sit amet, consectetur adipiscing elit, sed dolor amet. Dolor sit amet, consectetur adipiscing elit, sed dolor amet

Reply

Field Notes

Share

Deployed just north of Marsh Street Nature park in Frog Town. Water buoy - anchor line tied to nearby tree.

Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.

Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.

Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum."

Last edited by Erin Ramos - 08/1219

My account

‹ Station Map

FieldKit Station 1230

Latest Reading Last synced 08/28/19

Temp ▾22.4°C | Pressure ▾1000 | Altitude ▾200 | Light ▾1000 | Light 2 ▾1234 | Temp 2 ▾22.4°C | Humidity ▾57 | Humidity

Temperature Statistics

GRAPH VIEW		LAST 7 DAYS		LAST 30 DAYS		LAST 60 DAYS		LAST 90 DAYS		LAST 120 DAYS	
Low	13.4°F	Low	13.4°F	Low	13.4°F	Low	13.4°F	Low	13.4°F	Low	13.4°F
Average	43.1°F	Average	43.1°F	Average	43.1°F	Average	43.1°F	Average	43.1°F	Average	43.1°F
High	122.1°F	High	122.1°F	High	122.1°F	High	122.1°F	High	122.1°F	High	122.1°F

Humidity Statistics

GRAPH VIEW		LAST 7 DAYS		LAST 30 DAYS		LAST 60 DAYS		LAST 90 DAYS		LAST 120 DAYS	
Low	13.4°F	Low	13.4°F	Low	13.4°F	Low	13.4°F	Low	13.4°F	Low	13.4°F
Average	43.1°F	Average	43.1°F	Average	43.1°F	Average	43.1°F	Average	43.1°F	Average	43.1°F
High	122.1°F	High	122.1°F	High	122.1°F	High	122.1°F	High	122.1°F	High	122.1°F

Notes & Comments

Search comments

Erin Ramos at 45°F on 04/19/19 — 2 days ago

Have you seen this? Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed dolor amet. Dolor sit amet, consectetur adipiscing elit, sed dolor amet

Field Notes

Share

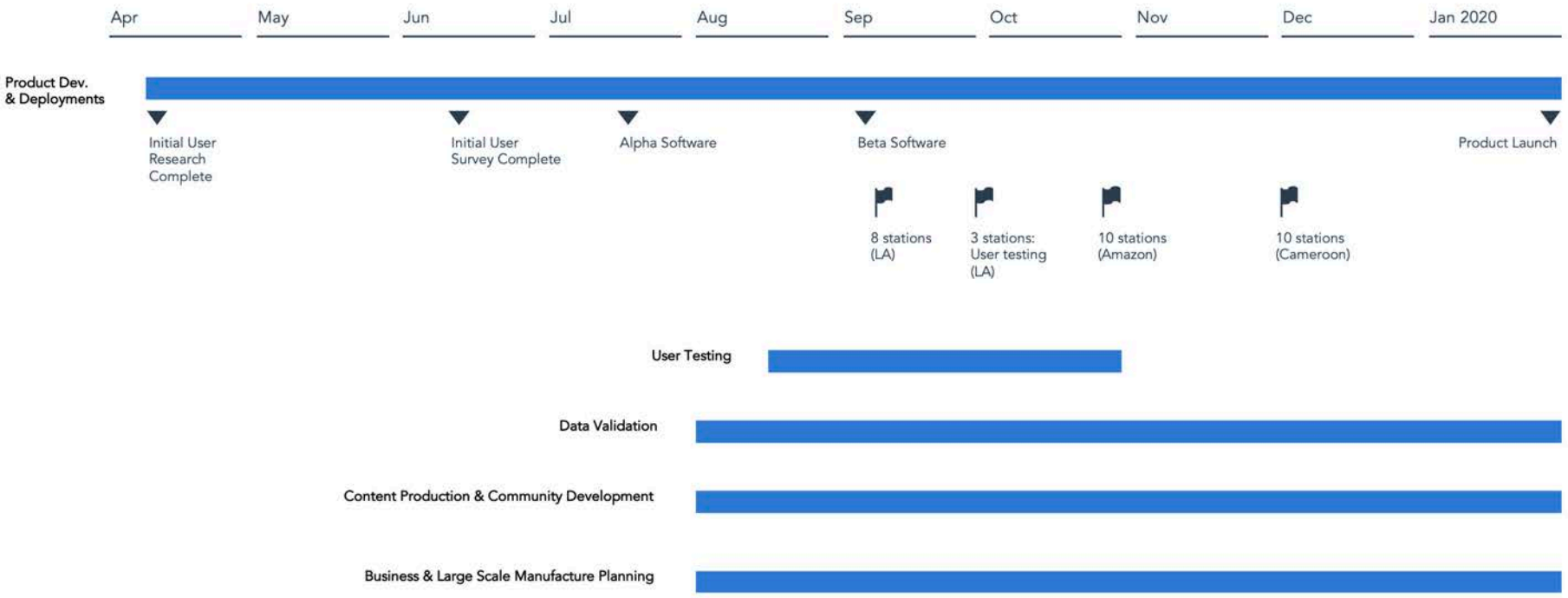
Deployed just north of Marsh Street Nature park in Frog Town. Water buoy - anchor line tied to nearby tree

Data Approach

Open	Knowable
Accessible	Shareable
Reliable	Stable
Legible	Trustable
Responsible	Secure

- Data is always available through in-app and web visualizations and innovative data exploration, sharing, and annotation features
- FieldKit is built on the Dat Protocol, providing version histories and distributed web functionality from the hardware, app, and website
- Data can be exported using RAW, JSON (GeoJSON, JSON Lines), .CSV, .PDF data report, R, D3, Jupyter Notebook projects with working code examples
- FieldKit metadata contains provenance information, including verified calibrations, and links to details of station installations
- Data can be independently verified and approved by members of the FK community through consensus
- FieldKit users can control permissions on who can access their data and that data is stored securely and sharing operations are encrypted end-to-end

Looking Forward



Upcoming Deployments

- Numerous internal and external Conservify pilots
- Amazon Rainforest - WCS/FIU Citizen Science for the Amazon (Moore/Tinker)
- Dja Reserve, Cameroon - UCLA IoES (NSF)
- American Prairie Reserve, Montana - APR (National Geographic Society)
- Galapagos/Antarctica/Arctic - Grosvenor Teacher Fellows (National Geographic Education)
- Wind Wolves Preserve, CA - Wildlands Conservancy (Moore)
- Sacramento Delta, CA - Students Tracking Plastics to the sea (NGS/Jim Bentley)
- Wild and Scenic Rivers across the United States - Adventure Scientists (USGS)

FieldKit will be available for purchase in 2020

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