# S1 MOBILE MAPPER APPLICATION for Android

Field User Training 2023

ORWA Mobile Team

# Training & Field Data Collection Outline

**Introduction:** Name and Location

**Exercise 1:** Device Set Up and AGOL Group Membership

**Exercise 2:** Download Basemaps

**Exercise 3:** Download Web Map Data

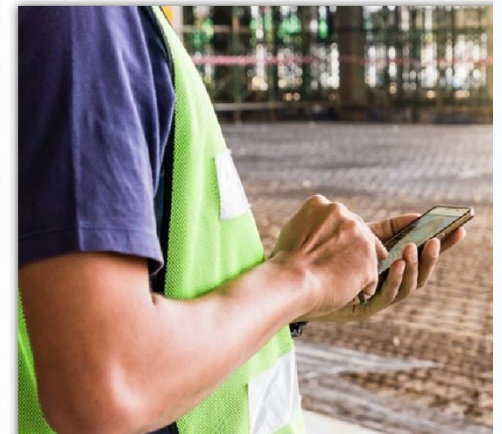**Outside Demo:** Create New Features (GPS & Digitize)-Virtual class

**Exercise 4:** Create New Features (student hands-on time)

**Lunch:** 12:15pm – 1:00pm

**Exercise 5:** Sync Collected Data and Interact with it in AGOL

**Discussion & Demo:** ArcGIS Online (AGOL)-quick overview

**Instructor Q&A:** Follow Up Discussions, Where to Find Help, & the Training Survey

# The S1 Mobile Mapper GIS Program Mission:

- To create an easy to use, integrated **Mobile** GIS data collection platform.

- To **support agency personnel** in facilitating viewing, capturing and editing of geospatial resource data.

- To use **Modern** mobile devices in a **Disconnected** network environment.

Oregon/Washington BLM

# S1 Mobile Mapper App Overview

- **ArcGIS Online (AGOL) for Organizations account access is the <u>backbone</u> of data collection**
  - S1 Mobile Mapper App and other mobile data collection apps.
  - Internet access: Download data and sync collected data back to AGOL.

- **Offline workflows for field data collection** (no internet connection).
  - Collect points, line and polygons in the field and add attribute information.

- **Downloads, Displays, and Advantages:**
  - Supports a variety of basemap file types: .tpk, .tpkx, .vtpk and GeoTiff.
  - Supports many basemap downloads (only limited by storage space) in addition to the Default basemap.
  - Supports managing S1 content on the mobile device.
  - S1 Mobile Mapper has some advanced tools: Nested features, buffer, navigation tools, etc.
  - Hosted or On-Premise Feature Services, Web Maps and Mobile Map Packages (.mmpk are read only).
  - Supports some Field Maps smart forms functionality, for example, conditional statements using Arcade expressions, attribute field grouping, and subtitle text.
  - **Advantage:** Custom workflows to edit corporate themes with QA/QC capability (Sync & Submit).
  - **Advantage:** In-house app customization-Driven by S1 Mobile Mapper Feedback & Ideas Page submitted by app users. This allows flexible content management that can address user issues quickly.
  - **Advantage: Ad Hoc data collection options** (allows for unplanned data capture): Waypoints, Tracklogs, GeoTagged Photos, Sketches

# Common Terms to Know

**Feature Class** (ArcGIS Pro)

- Same spatial representation, such as all points, lines, or polygons. For example, "a feature class of points or a feature class of polygons".

- Each feature class has its own set of attribute columns.

**Feature Service - or Feature Layer (Hosted) Service** (AGOL)

- Essentially this is the "editable data" available in the S1 Mobile Mapper app. Can be a standalone service or be included within a web map.

- Makes your data available for use in web clients, desktop apps, and field apps. Hosted on AGOL.

**Layer**

- Visual representation of a geographic dataset in any digital map environment. Examples: imagery layer (basemap), a point feature class layer, hosted web map layer, tile layer, etc.
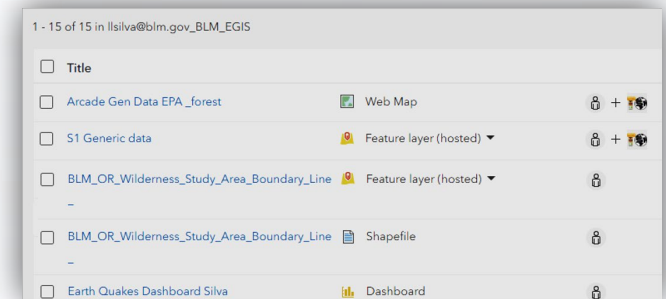
**Basemap**

- Serves as a bottom reference map. The S1 Mobile Mapper app allows users to layer basemaps on top of each other with on-the-fly transparency adjustment functionality.

- Can be created by users as a TPK, TPKX, VTPK or GeoTiff file (published from ArcMap or ArcGIS Pro).

- Basemaps are the foundation for your maps and provide context for your work.
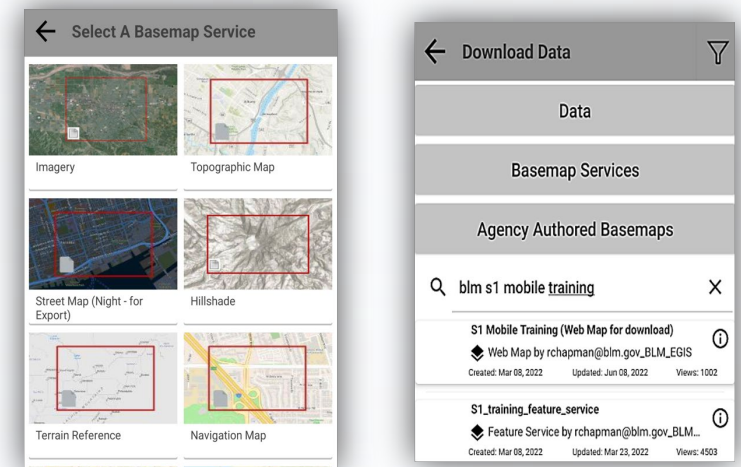
**Web Map**

- Online maps created with ArcGIS Online, published from ArcMap or ArcGIS Pro, that provide a way to work and interact with geographic content organized as layers.

- **Shared on the web and across smartphones and tablets**. Each web map contains a basemap along with a set of additional data layers.
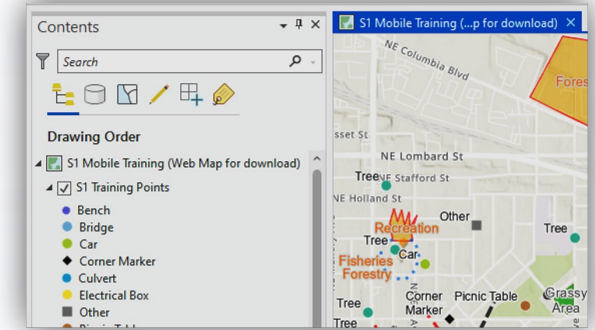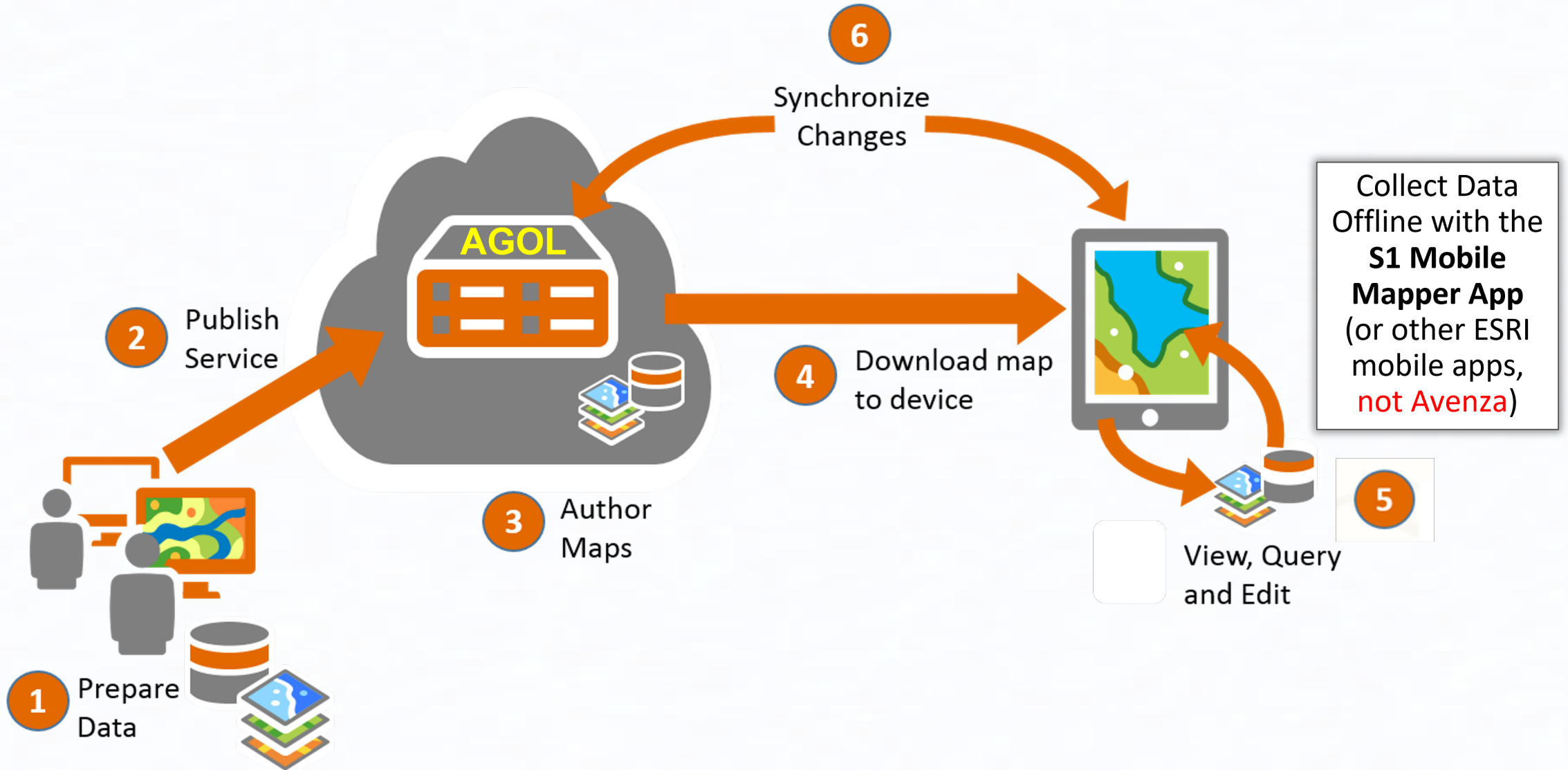

*ArcGIS Pro - Feature Class with Subtypes*


*ArcGIS Online (AGOL) – Feature Layer & Web Map Hosted*


*S1 Mobile Mapper App – Basemaps & Web Map Downloads*

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# How we use ArcGIS Online (AGOL)



**AGOL**

**6** Synchronize Changes

Collect Data Offline with the **S1 Mobile Mapper App** (or other ESRI mobile apps, not Avenza)

**2** Publish Service

**4** Download map to device

**3** Author Maps

**1** Prepare Data

**5** View, Query and Edit

# Hosted Feature Service -vs- S1 Ad-Hoc Options

**Concept:** Publish a hosted service that covers any potential basic data capture types, and always keep a copy on the mobile device for unforeseen data collection needs. Essentially, a hosted service instead with one button sync and immediate availability and access vs using Ad-Hoc data collection and manual process to get into GIS.

## S1 Ad-Hoc Data
(waypoints, tracklogs, geotagged photos, sketches)

- Only resides on device unless user manually converts file.

- Limited attribute info: Name, Description, Lat-Long locations only. Add notes later?

- Quick to collect, long to process.
  1. Copy file off device
  2. Convert to useable data format for sharing or mapping
  3. Edit/add attributes
  4. Share to final location
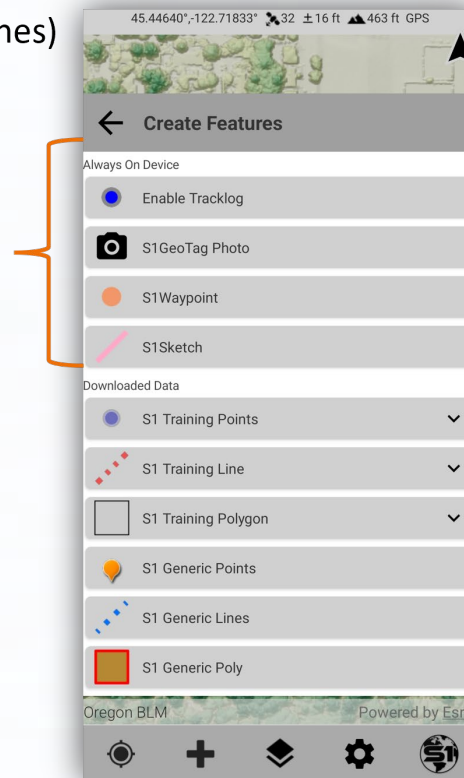
## ArcGIS Online Feature Service

- Download edit area to mobile device.

- Data syncs back to AGOL.

- Allows access to those that need it.

- Once setup, many ways to use the data.

- Always have access to collect unforeseen data types.

- No need to convert Json files.

- **Less steps with more detail and instant access once synced**.



45.44640°,-122.71833°   32   ±16 ft   463 ft GPS

←   Create Features

Always On Device

- Enable Tracklog
- S1GeoTag Photo
- S1Waypoint
- S1Sketch

Downloaded Data

- S1 Training Points
- S1 Training Line
- S1 Training Polygon
- S1 Generic Points
- S1 Generic Lines
- S1 Generic Poly

Oregon BLM   Powered by Esri

# Where to Find Information

https://www.blm.gov/services/geospatial/mobile-GIS/s1mobile





S1 Mobile Mapper Agency
User Guide download in
the App-Help Button

# BREAK TIME
# (10 MINS)
## Back @ 9:25am

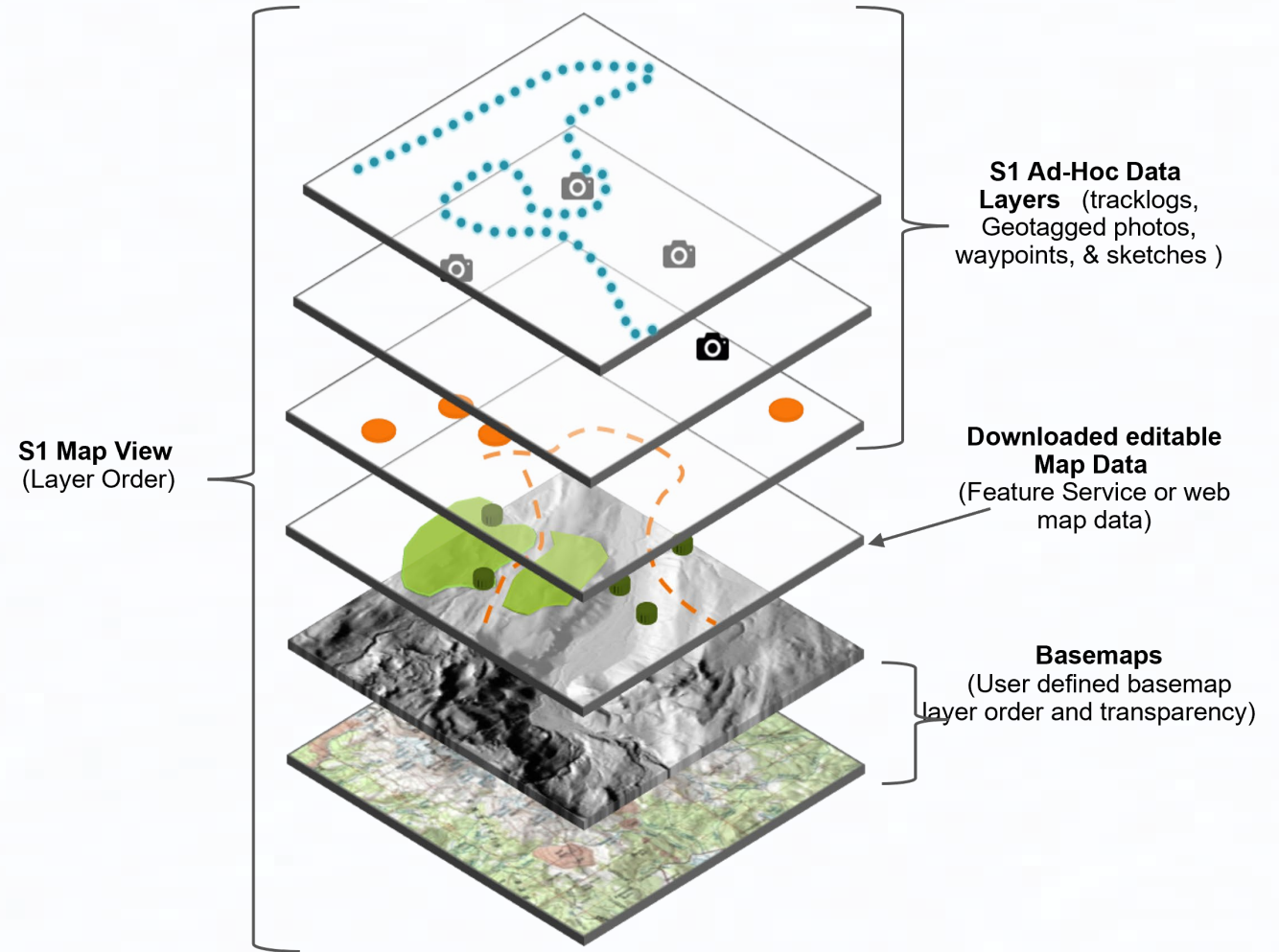# S1 Mobile Mapper Workflow – Downloads and Field Data Collections

**After device setup and creating services (Hosted on AGOL; web maps and feature layers, etc.)**

1.  Download and install the S1 Mobile Mapper app.

2.  Download one or more basemaps or use the Default basemap.

3.  Download data (internet service): download a feature service or a web map (editable) to use in the field.

4.  Collect data <u>offline</u> in the field via GPS or digitizing.

5.  Useful tools in the S1 Mobile Mapper App.

6.  Sync data back to ArcGIS Online (AGOL).

# S1 Mobile Mapper Layer Hierarchy & Key Concepts

## Key S1 Concepts

- User can have multiple different editable databases downloaded to the device *(only limited by storage space).*

  - **Only one** editable database can be displayed in the active map view at a time.

- Editable data in S1 can be either from standalone feature service downloads or packaged with other feature services via a web map (basemaps can also be downloaded with web maps if desired).

- Every layer (ad-hoc data, editable services & basemaps) can be toggled on/off or removed from the active map view as needed.

- User can have as many basemaps downloaded as they like (*only limited by storage space*)

- User can have as many basemaps layered in the active map view as they like and can adjust the basemap layer order & transparency as needed.

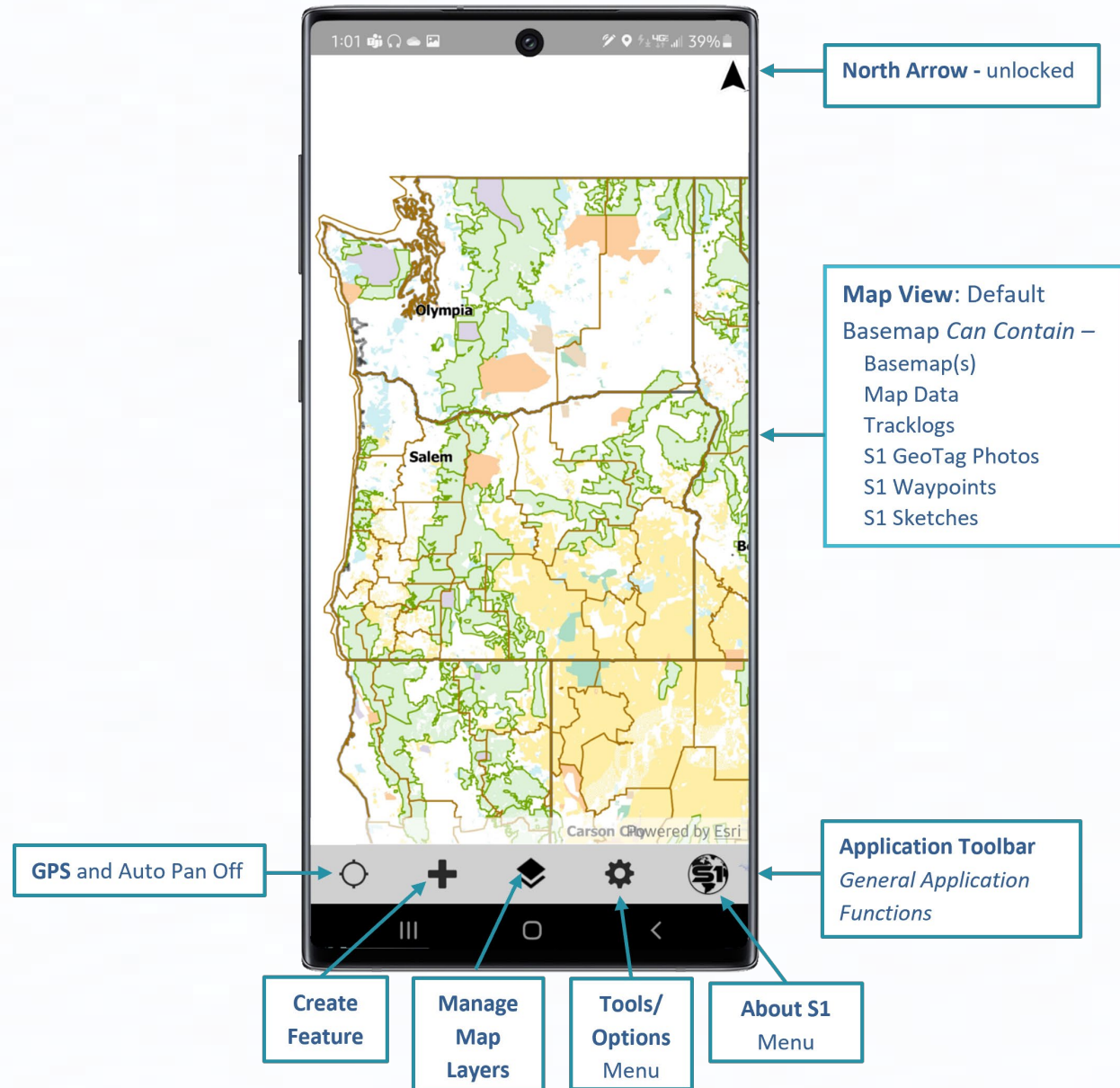- The S1 Default basemap cannot be deleted from the device.



**S1 Ad-Hoc Data Layers** (tracklogs, Geotagged photos, waypoints, & sketches )

**S1 Map View** (Layer Order)

**Downloaded editable Map Data** (Feature Service or web map data)

**Basemaps** (User defined basemap layer order and transparency)

# 1. Exercise 1: Install & Confirm Login to the S1 Mobile Mapper Application

- **Download S1 Mobile Mapper App v5.3.023**
  - Google Play Store
    **or**
  - Maas360 app catalog

- **Confirm Login and Training Group Membership**
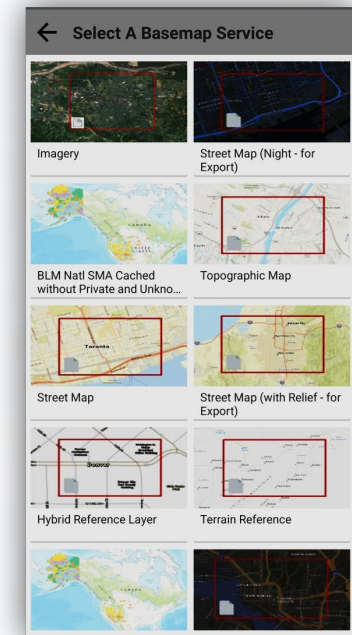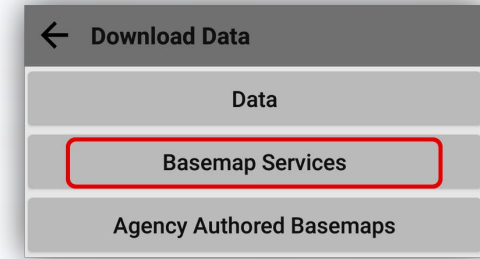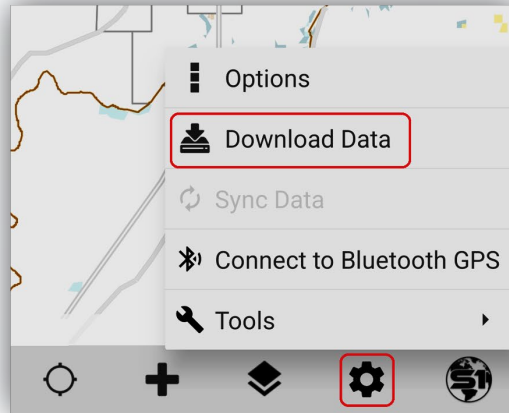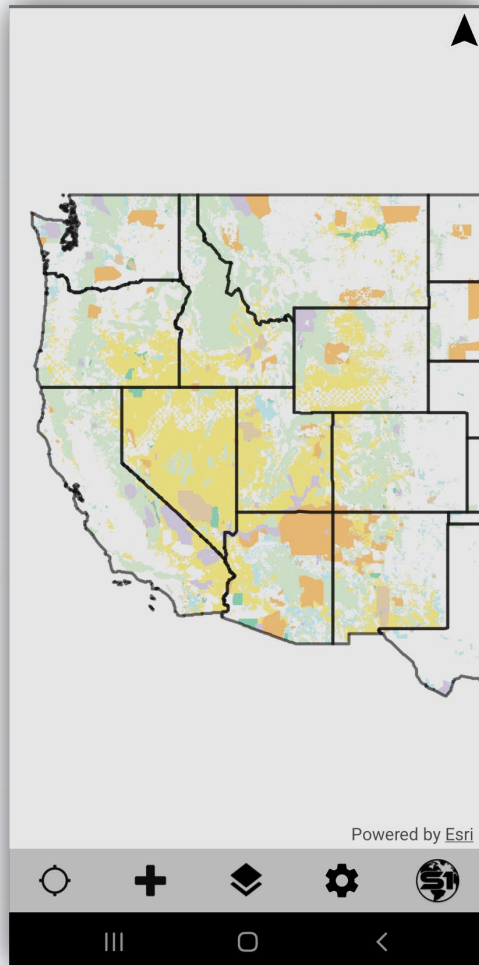  **with an ArcGIS Mobile Editor Account**

  **Demo & Hands-on**

# The S1 Mobile Mapper Interface



**North Arrow -** unlocked

**Map View**: Default
Basemap *Can Contain –*
Basemap(s)
Map Data
Tracklogs
S1 GeoTag Photos
S1 Waypoints
S1 Sketches

**Application Toolbar**
*General Application Functions*

**GPS** and Auto Pan Off

**Create Feature**

**Manage Map Layers**

**Tools/ Options** Menu

**About S1** Menu

# 2. Download One or More Basemaps



**Multiple Basemap Downloads**

**Note:** Basemaps can also be added as a Data download via web map or from a .tpkx file.

# Exercise 2:  Downloading and Managing Basemaps
30 minutes

**Demo Hands-On:**

- Download Agency basemap for user's location.

- Download an ESRI Imagery basemap (Raster)

- Download Terrain with Labels (Vector Tile Package .vtpk)

- Basemap UI - delete map , zoom to map, long press to reorder, transparency and toggle on/off.
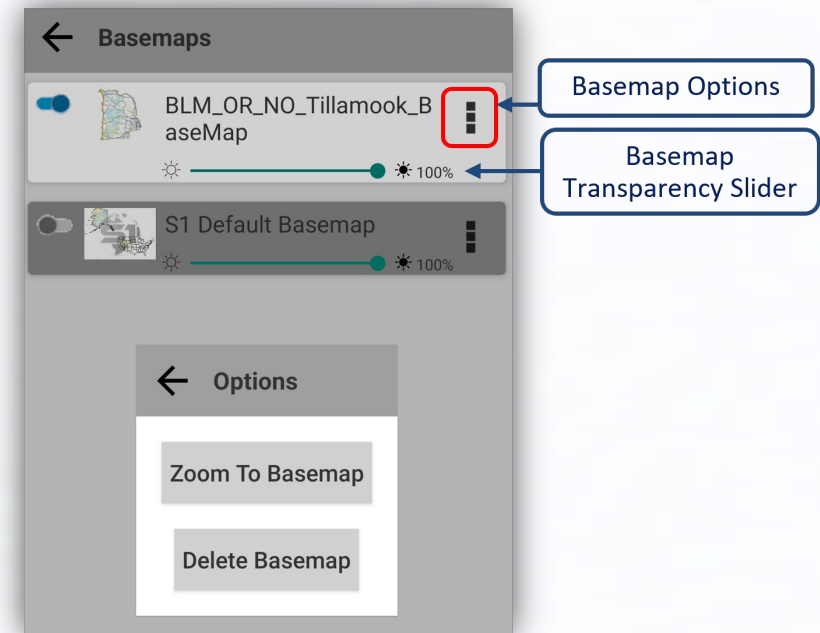
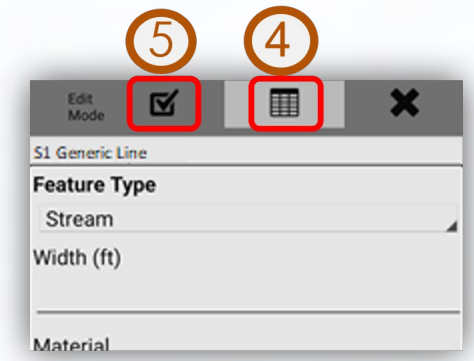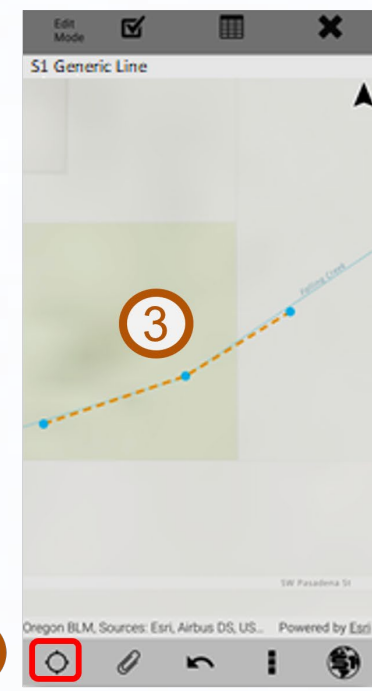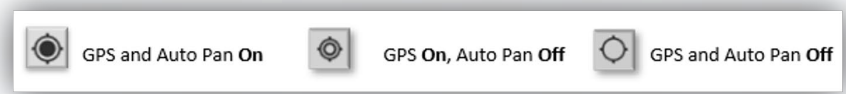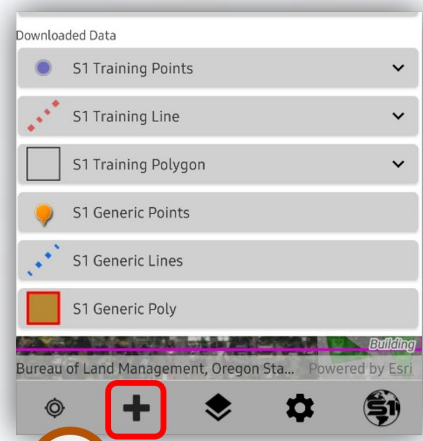# Collect Feature via Digitizing - Interface

**What is Digitizing?**

- Digitizing is adding a new feature with the GPS Off. Essentially drawing a point, line or polygon on the map and filling out the appropriate attributes.

**When to Digitize?**

- Poor satellite signal

- Can't reach a location by foot

- Need to transcribe data from another format

**How to digitize in the S1 Mobile Mapper app:**

1. Select the **Collect Feature b**utton
2. Confirm that GPS is turned off
3. Tap on map to digitize feature
4. Edit the attribute table
5. Submit feature

An example, can't reach a location by foot



Downloaded Data
- S1 Training Points
- S1 Training Line
- S1 Training Polygon
- S1 Generic Points
- S1 Generic Lines
- S1 Generic Poly

Bureau of Land Management, Oregon Sta... Powered by Esri

①

GPS and Auto Pan **On**    GPS **On**, Auto Pan **Off**    GPS and Auto Pan **Off**

Edit Mode    S1 Generic Line

③

Oregon BLM, Sources: Esri, Airbus DS, US... Powered by Esri

②

⑤ ④

Edit Mode    S1 Generic Line

**Feature Type**
Stream

Width (ft)

Material

# Select Mode - Interface

- Edit Feature > Edit Mode
- Manage Attachments
- Copy Geometry
- Delete Feature
- Navigate to Selected Feature
- Route to Selected Feature
- Feature Info Pop Up (blue bar & map popup)

- Tap blue bar
  - Tap arrow to see features if multiple features are selected
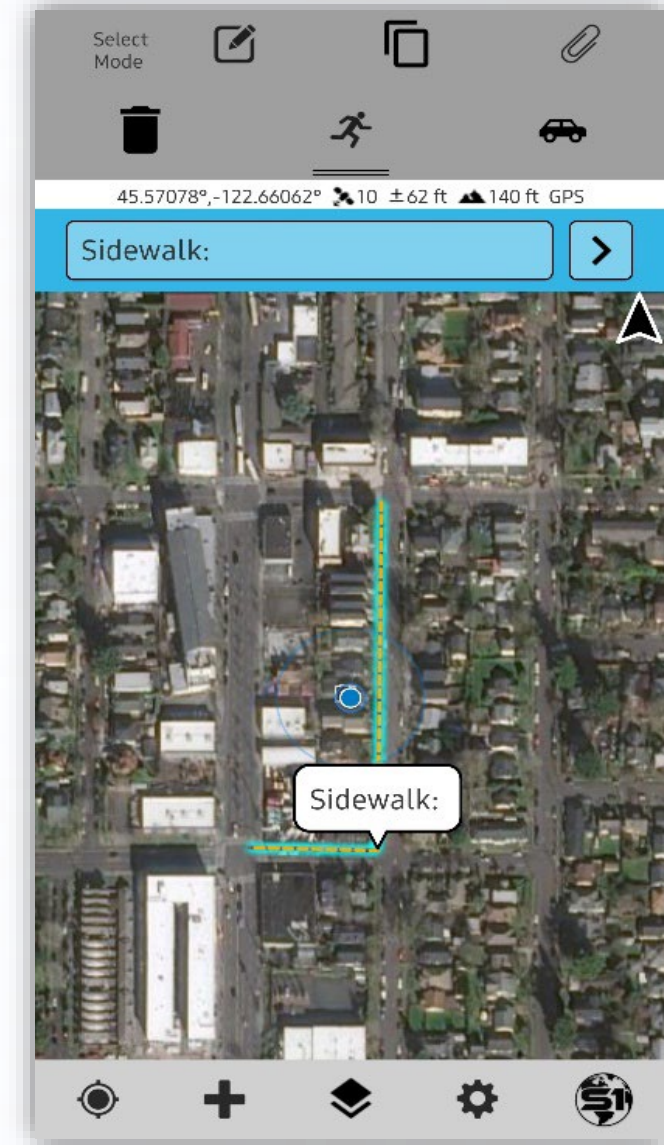
# Collect lines or polygons via either Streaming or Averaging

**When to use one over the other?**
- Speed vs. Accuracy
- Feature outline type
- Can Mix & Match Methods

**Streaming;** Captures vertices at a user defined interval (time or distance) based on the GPS information at the time "no averaging". Better for capturing data that does not have hard corners; trails, recreation areas, parking lots, etc.

**Averaging;** Uses a user defined number of vertices to average a final location coordinate. Best for features with straight lines and hard corners; property boundaries, building footprints, (inherently more accurate than streaming).
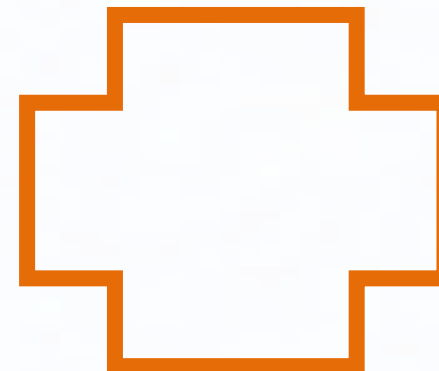
# 3. Download Data in S1 Mobile Mapper
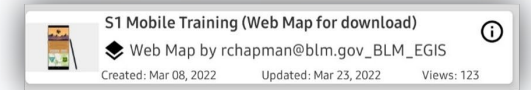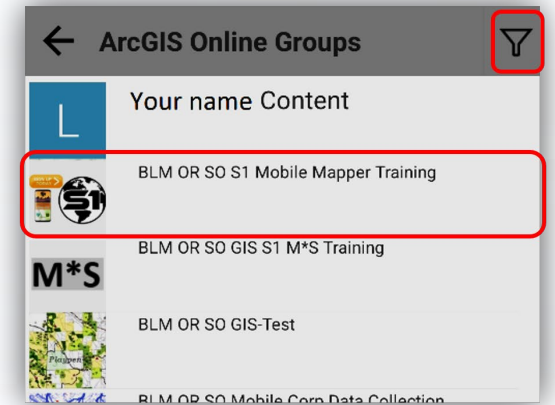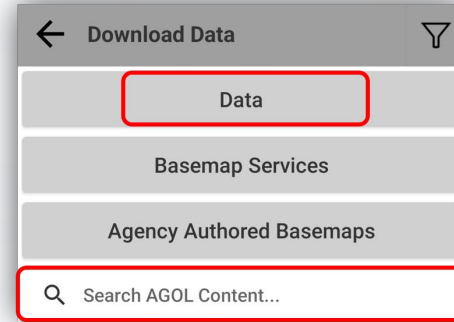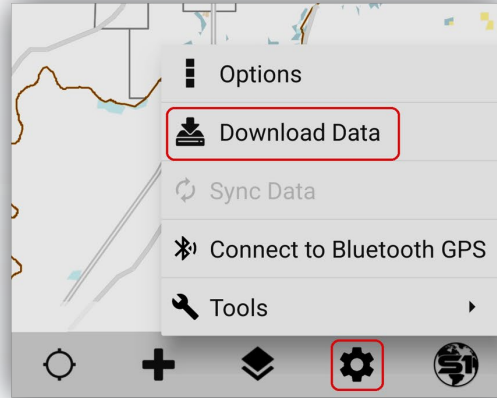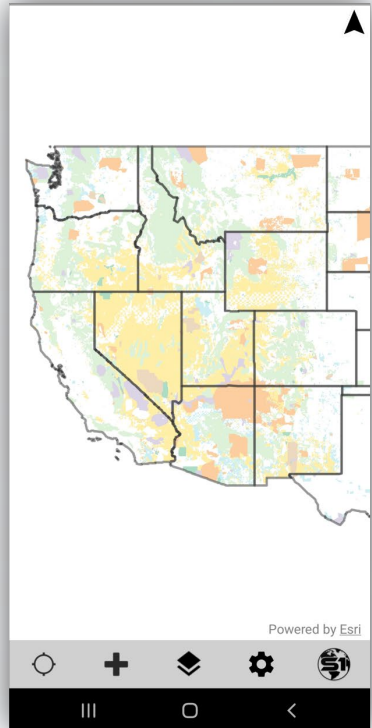


**Exercise 3: Download a Web Map**

- Download **S1 Mobile Training (Web Map for Download)** for creating new features in the S1 Mobile Mapper app.

- Discussion includes filter, search, and download **options** of basemaps with the web map.
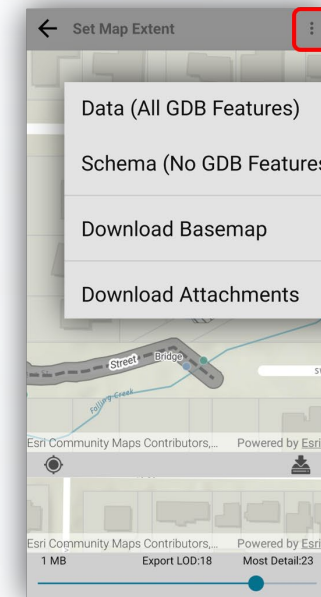
# Managing Map Layers



Toggle on/off all map data labels

Name of the selected map data layer

Select Map Data thumbnail link to the list of downloaded data map(s)

Blue highlighted boundary indicates the currently displayed map data

Checkbox for options Remove, Delete or Recover map data

Link to map data symbology pulldown list

Toggle on/off layer visibility in the map

Link to symbology description for layer

# Before You Head Out Into the Field

✓ Verify device is **fully charged**.

✓ Verify that all maps and data have been **downloaded**.

✓ Test your dataset prior to first offline field visit.

✓ Set device to **airplane mode** (conserve battery).

✓ Set location to **GPS ONLY**.

✓ Review **S1 Option** settings in office/in the field.

# BREAK TIME

Back @

# Demo:  Collect Data Offline in the Field with GPS or Digitize

**Instructor Demo – Outside Virtual Training**

- Enable Tracklog
- Configure S1 Options to improve GPS data collection.
- Show the GPS on/off tool.
- Collect a point (PT) feature via GPS Averaging.
- Offset feature data collection.
- Buffer features (existing feature & GPS location).
- Collect a line (LN) feature via GPS Streaming/Averaging.
- Nested Point data collection.
- Collect a Polygon (PG) Feature via GPS Averaging/Streaming.
- Add Photo Attachments
- Interacting with map features – select existing features, edit attributes, and delete features.
- Digitize a point and line (as appropriate).
- Create an S1 Sketch
- Navigate to a Map Target (discuss how this might be used to get distance and direction to or from a feature) azimuth/bearing etc.

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# 4.  Collect Data Offline in the Field with GPS or Digitize
## Student Hands-on Time

✓ Enable Tracklogs

✓ Configure S1 Options

✓ Collect points via GPS Averaging

✓ Offset feature data collection

✓ Collect lines via Streaming/Averaging

✓ Nest a point feature

✓ Collect polygons via Streaming/Averaging

✓ Collect Photo Attachments

✓ Navigate to a Map Target

✓ Play around with S1 tools and interface…..

# COLLECT DATA
# &
# LUNCH

Back @

# 5. Useful Tools in the S1 Mobile Mapper App

Step-by-step directions for all S1 tools are in the Agency User Guide on the S1 Mobile Mapper Website or can be downloaded from the **Help option** in the S1 Mobile Mapper App.

- Buffer Features
- Smart Form Support
- Laser Rangefinder Integration
- Feature Offsets
- Nest Features

- Configurable Repeat Attributes
- Required Fields Honored
- Advanced Navigation
- Measure Tool
- Custom Auto Populate Fields

- Navigation Alerts
- Video Attachments
- Basemap Transparency
- Toggle Labels On/Off
- Attachments and more….

# 6. Sync Data Back to the Group in ArcGIS Online (AGOL)

**Exercise 5:  Sync Collected Data and Interact with that Data in AGOL**

- Sync settings – Sync direction in the Options.

- Sync data back to the **S1 Mobile Training (Web Map for download)**.

- Review how student data collection hands-on time went and answer any specific S1 data collection questions.

- Access AGOL and explore the student's synced data.

- Check out some other examples of Web Apps in AGOL and why they might be useful (Dashboard, Attachment viewer, Web Scene and more).

# Demo ArcGIS Online
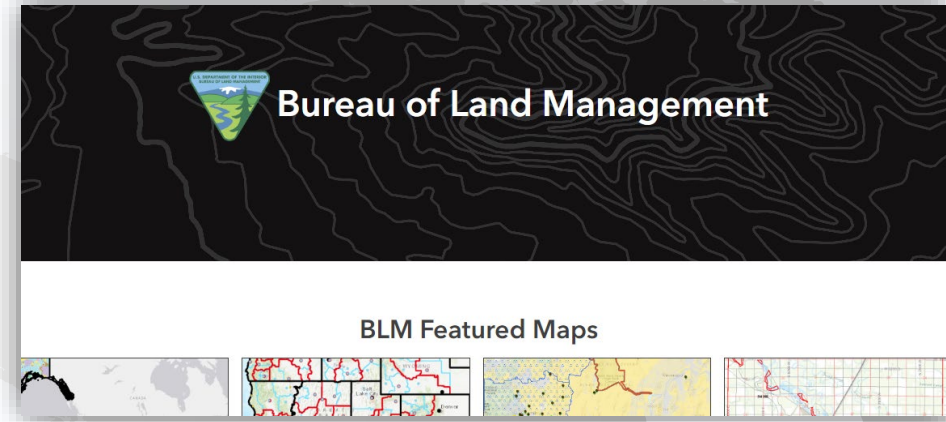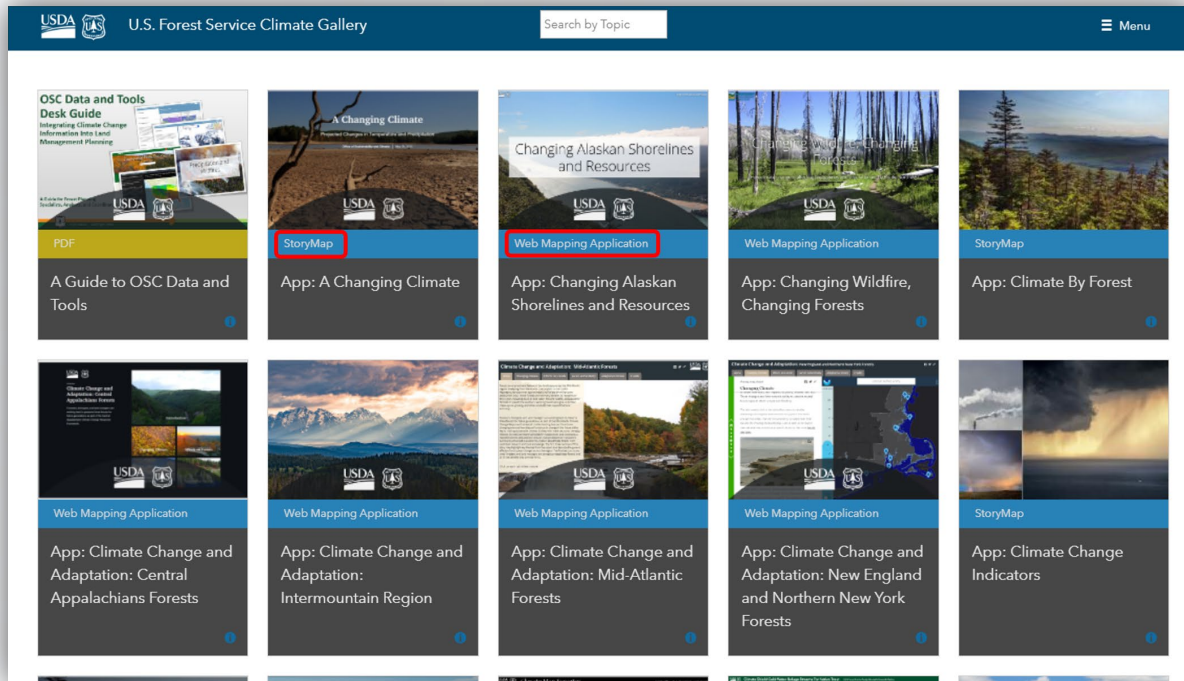


[ArcGIS.com](ArcGIS.com)

- Brief ArcGIS Online overview of contents: Feature Services and Web Maps

- Demo the Training web map in Map Viewer

- ArcGIS Online training resources: -DOI Talent, ex. [Online ArcGIS (AGOL) for GIS Professionals](...)

  -Esri Free Courses, ex. [ArcGIS Online Basics web course](...)

  -[S1 Mobile Mapper Training Exercises](...), Training Demo 1: Build in AGOL

# Web App Examples for Inspiration



Pacific Northwest Research Station — USDA
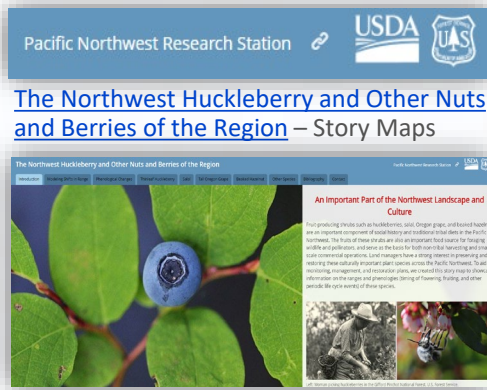
[The Northwest Huckleberry and Other Nuts and Berries of the Region](#) – Story Maps

**Story Maps** integrates maps, legends, text, photos, and video and provides functionality, such as swipe, pop-ups, and time sliders, that helps users explore the story and content. Is a linear narrative. [Story Maps Tutorial](#)

**Web Mapping Applications (Web Apps)** are more geared toward being browsing and searching exploratory interfaces. Widgets allow you to customize the WebApp to provide custom search, filter, and view options. But the format is structured more as a dashboard than a linear narrative. [Web Apps Tutorial](#)

[U.S. Forest Service Climate Gallery](#)

[BLM Public Web Apps](#)
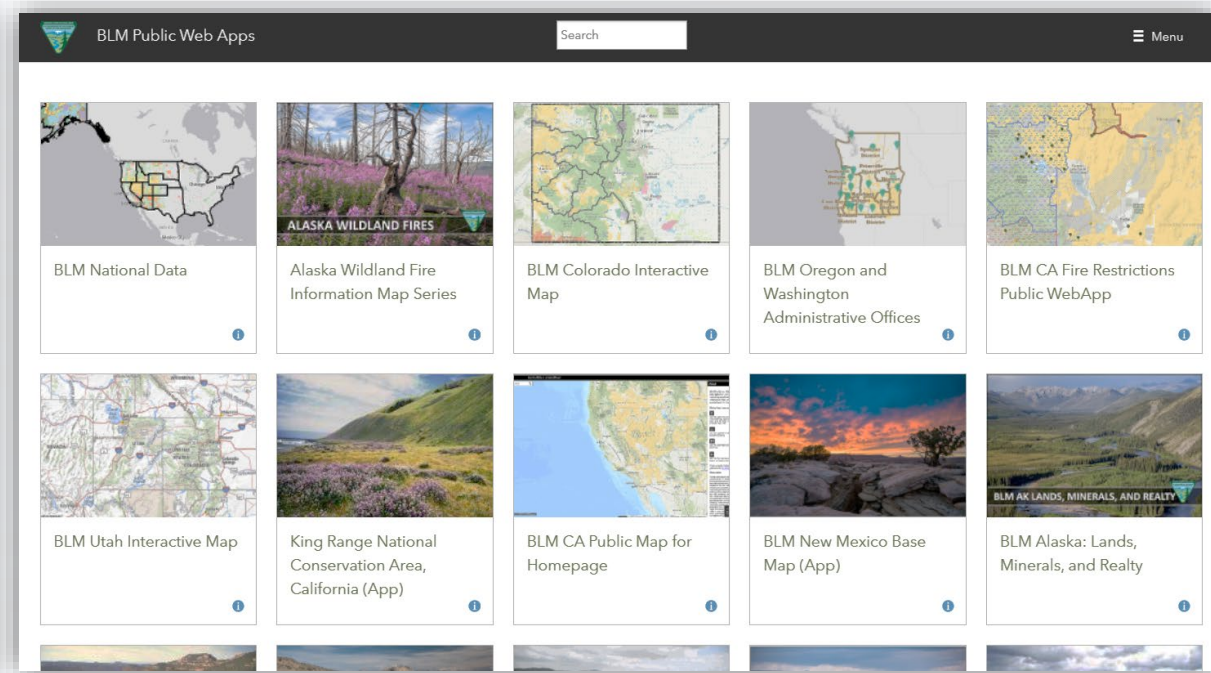
# Example Dashboards For Inspiration

[ArcGIS Dashboards](#) **-authored in ArcGIS Online (AGOL)**
- Enables users to convey information by presenting location-based analytics.
- Displays multiple, interactive visualizations that work together on a single screen.
- Allows you to monitor events, make decisions, inform others, and see trends.
- Insights for at-a-glance decision-making. [Dashboard Tutorial](#)

## S1 Mobile Theme Sync and Submits 2021
Number of S1 Mobile Versions Submitted by Theme and District
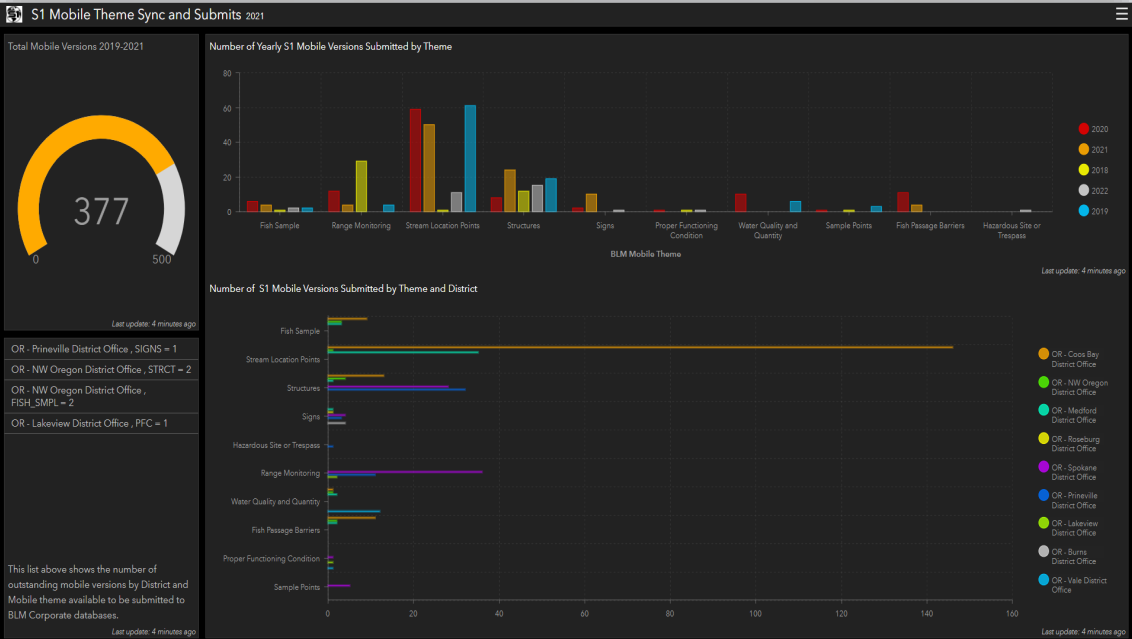
## [Covid-19 Dashboard](#) by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU)
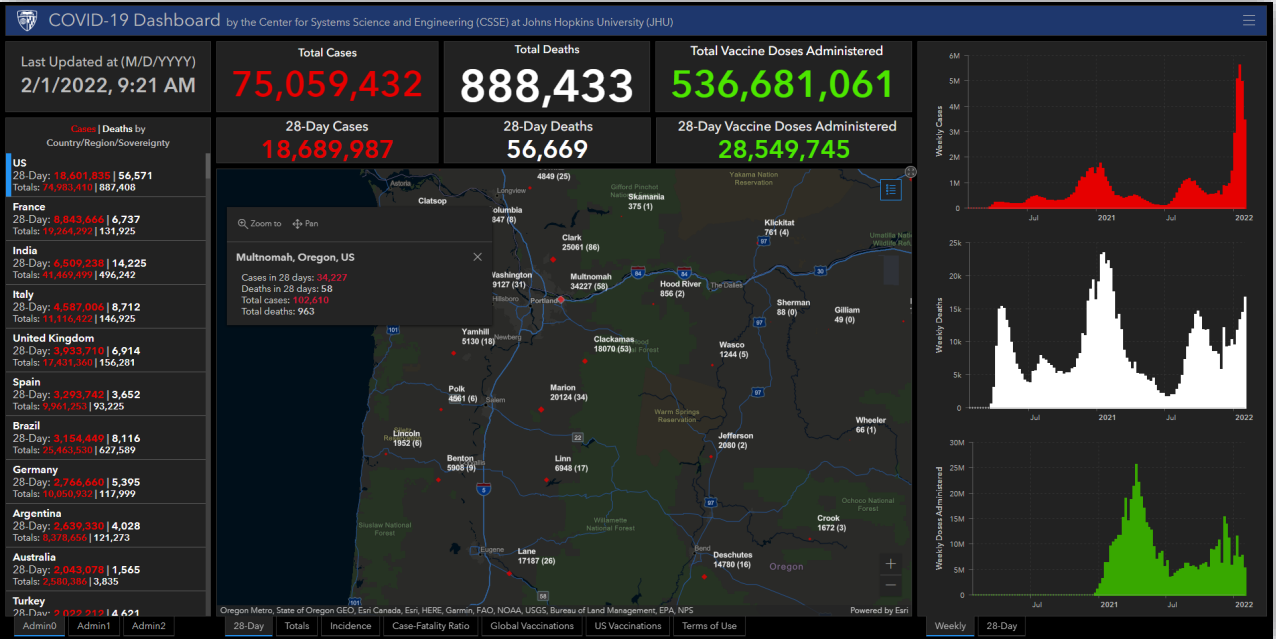
# LIVE DEMO VIEW OF TRAINING DATA
## SOME EXAMPLE LINKS OF WHAT CAN BE DONE WITH THE DATA IN AGOL

- [S1 Basic Web Map with training data](#)

- [S1 Attachment Viewer (Web App)](#)

- [S1 Training Data Dashboard (Web App)](#)

- [S1 3D Basic Scene Viewer (Not web app/no widgets)](#)

- [S1 3D Scene Viewer (Web App with Widgets)](#)

# Service First (S1) Mobile Mapper Team

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# MOBILE GIS SUPPORT (BLM)

| Office | Primary Contacts |
| --- | --- |
| Salem | Andrew Jensen/Michelle Davis |
| Eugene | Bernadette Hoffman |
| Roseburg | Mike Hubbard/Kim Gray |
| Coos Bay | Tristan Holland/John Guetterman |
| Medford | ??/Steve Haney |
| Lakeview | Shannon Theall |
| Klamath Falls | Vacant? |
| Prineville | Vacant? |
| Burns | Linda Watts |
| Vale | Marissa Russell |
| Spokane | Pete Sargent |
| Grants Pass | Shawn Thornton |
| Baker City | Jeff Jager |
| Tillamook | David Tyler |

# ADDITIONAL RESOURCES

- S1 Mobile Website

- S1 User Guide

- S1 Mobile FAQ

- S1 Help Videos


Good luck.

# Tell Us What You Think
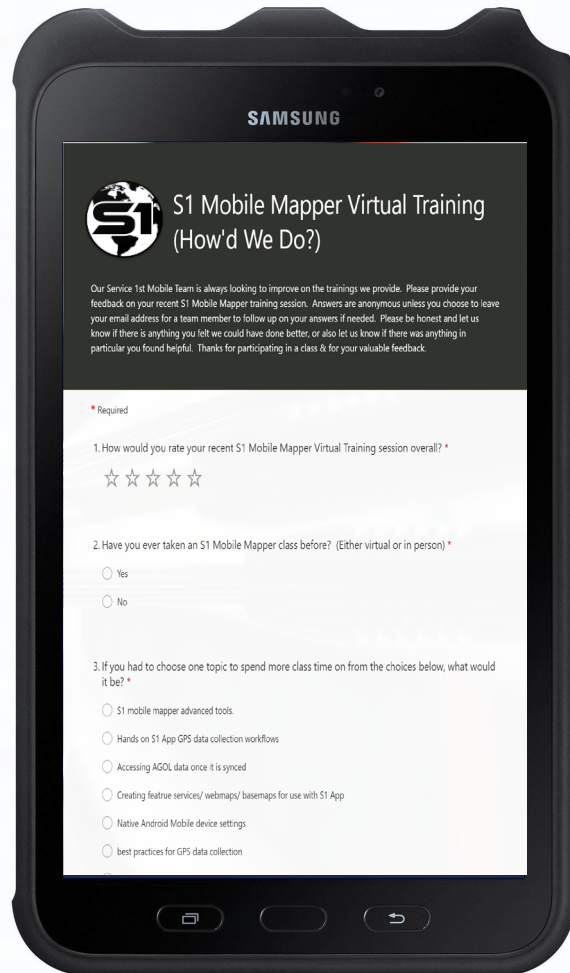
Please fill out the [S1 Training Survey](S1 Training Survey) to help us continue to improve S1 Mobile Mapping trainings moving forward.

# Any Questions?