Disseminating Remotely Sensed Products Using the Android Team Awareness Kit App

Brad Schmidt

Center of Excellence for Advanced Technology Aerial Firefighting

COLORADO

Center of Excellence for Advanced Technology Aerial Firefighting

Department of Public Safety

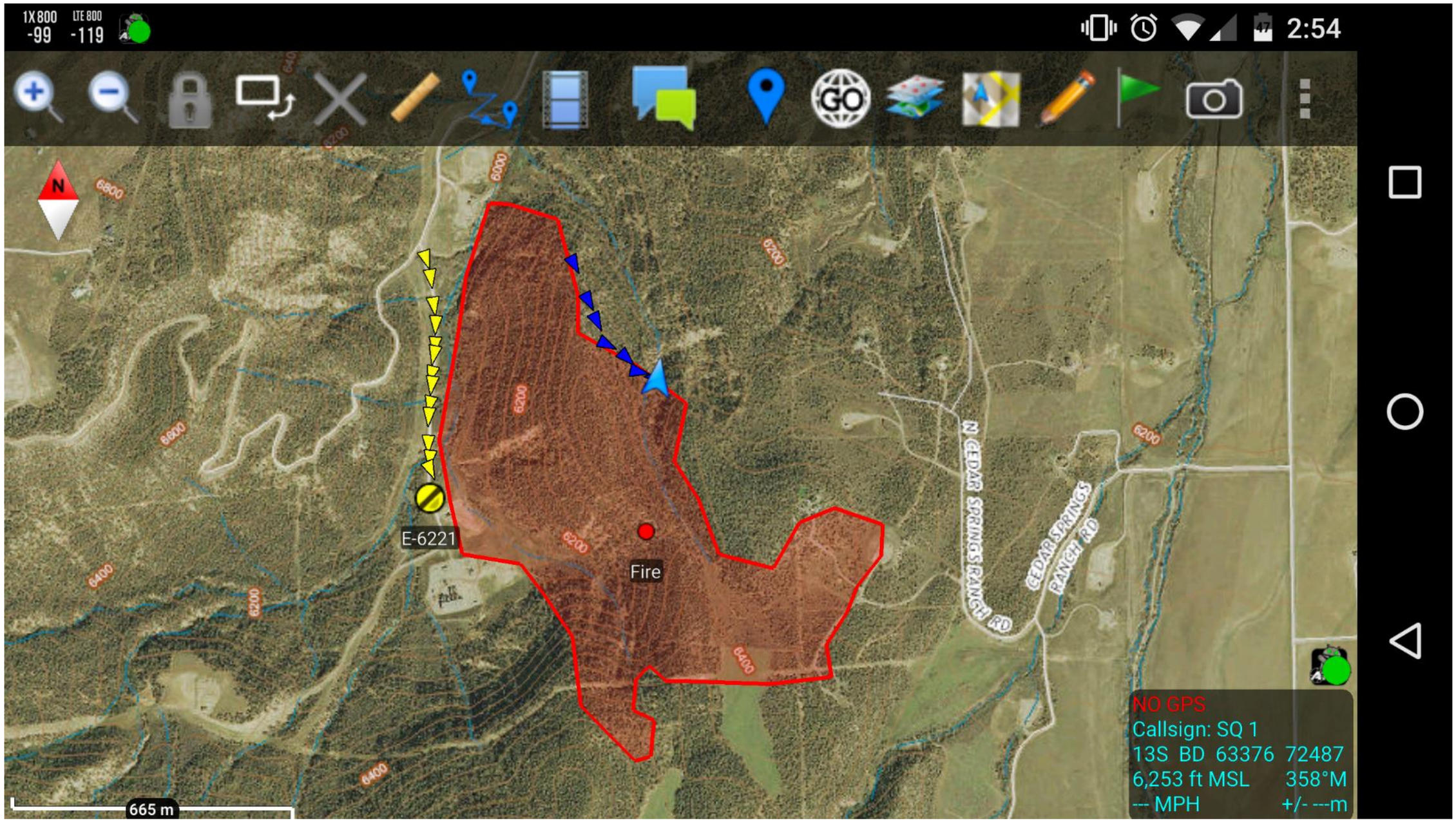
ATAK: Android Team Awareness Kit

- ATAK is a Mobile, Extensible, Map-Based, Situational Awareness (SA) Software Application for Android that Provides Blue Force Tracking (BFT) and Tactical Capabilities to “Digitize” the DoD.

CoE Interest in ATAK

- The lack of Internet connectivity on many wildland fires, especially during the early operational periods, prevents fire managers from accessing CO-WIMS or other client-server model platforms.
- Products such as written IAPs and Avenza PDFs are typically updated on a 24-hour cycle, delaying the flow of information.
- While aircraft are universally tracked on fires, ground-based firefighters rarely (if ever) receive automatic GPS location tracking.

ATAK Fireline Example

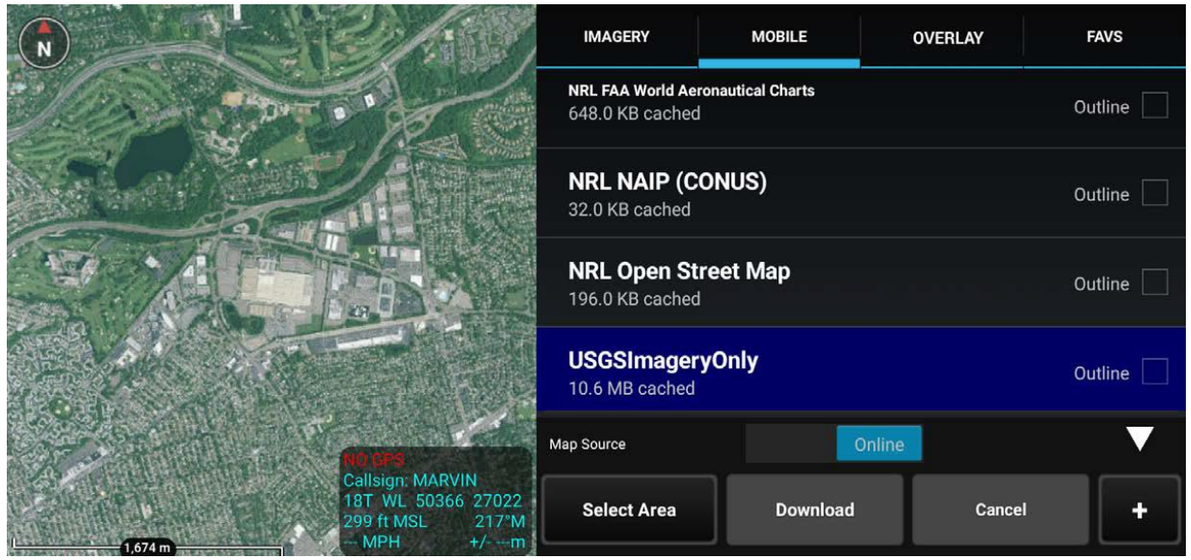


Remote Sensing Data Sources

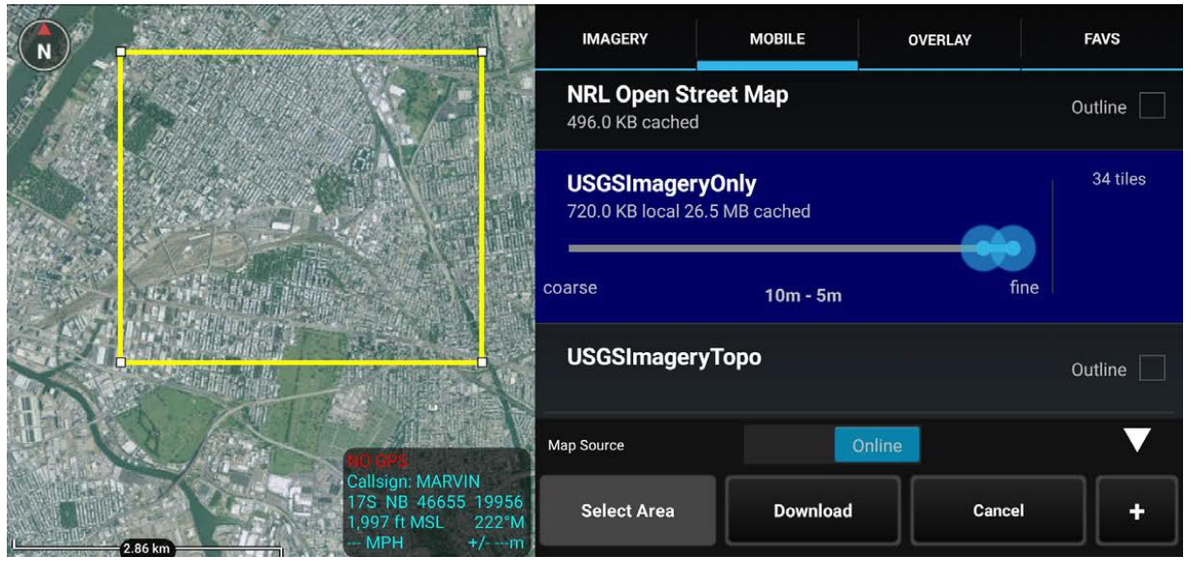
- ATAK can display a variety of remotely sensed spatial data types including:
- Web map/web map tile service (WMS/WMTS) maps & imagery
- Raster files including GeoTIFF, MrSID, and NITF
- DTED elevation data
- MISB compliant full motion video streams
- Georeferenced images and video from ground cameras and sUAS

WMS Maps and Imagery

- ATAK natively offers a selection of WMS data sources, and additional servers can be added by pointing the app to their URLs.

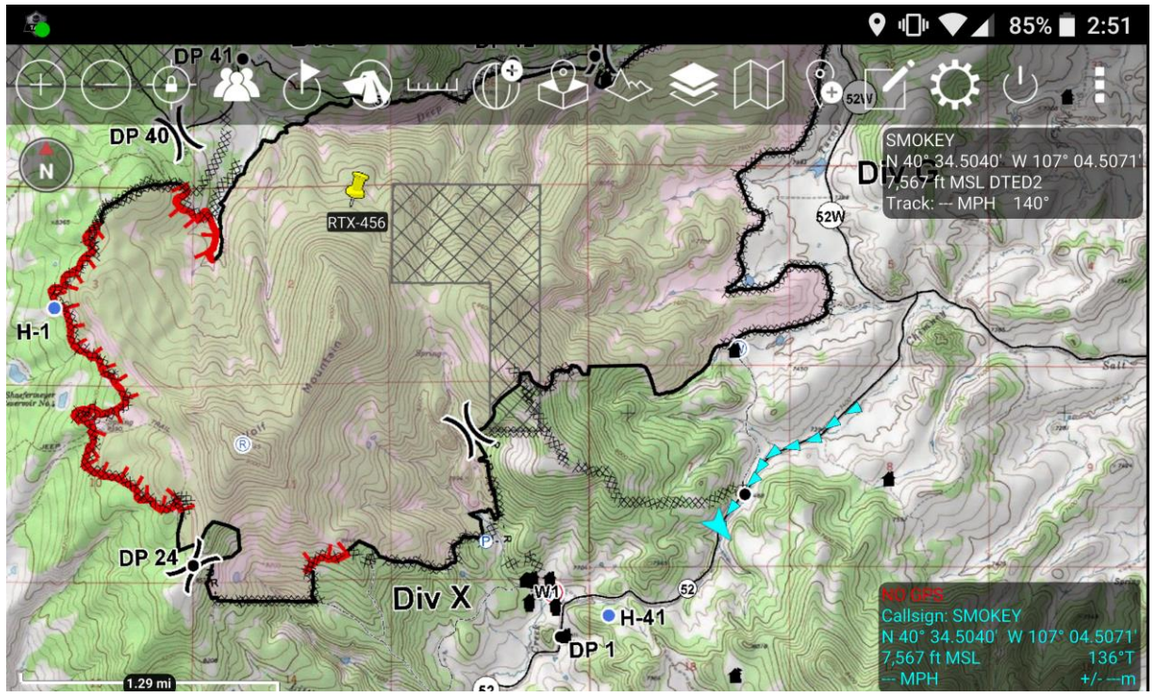


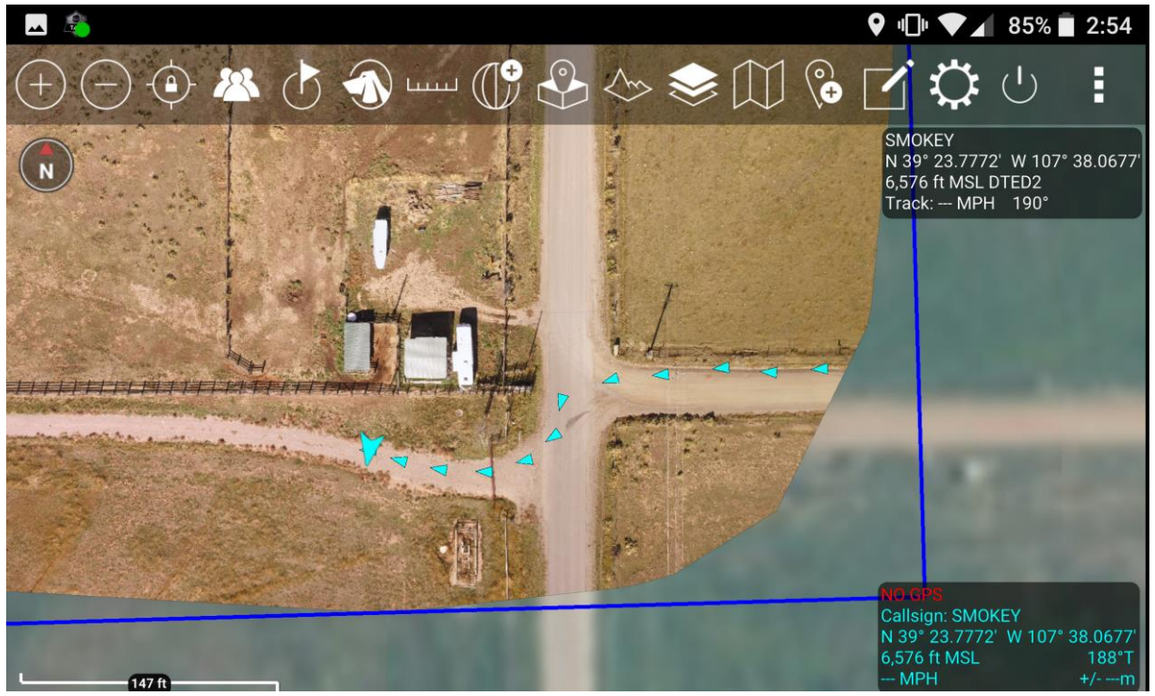
- Users can download map tiles for offline use á la Gaia / Backcountry Navigator by selecting an area and specifying the desired resolution of tiles to be downloaded.



Raster Imagery for Offline Use

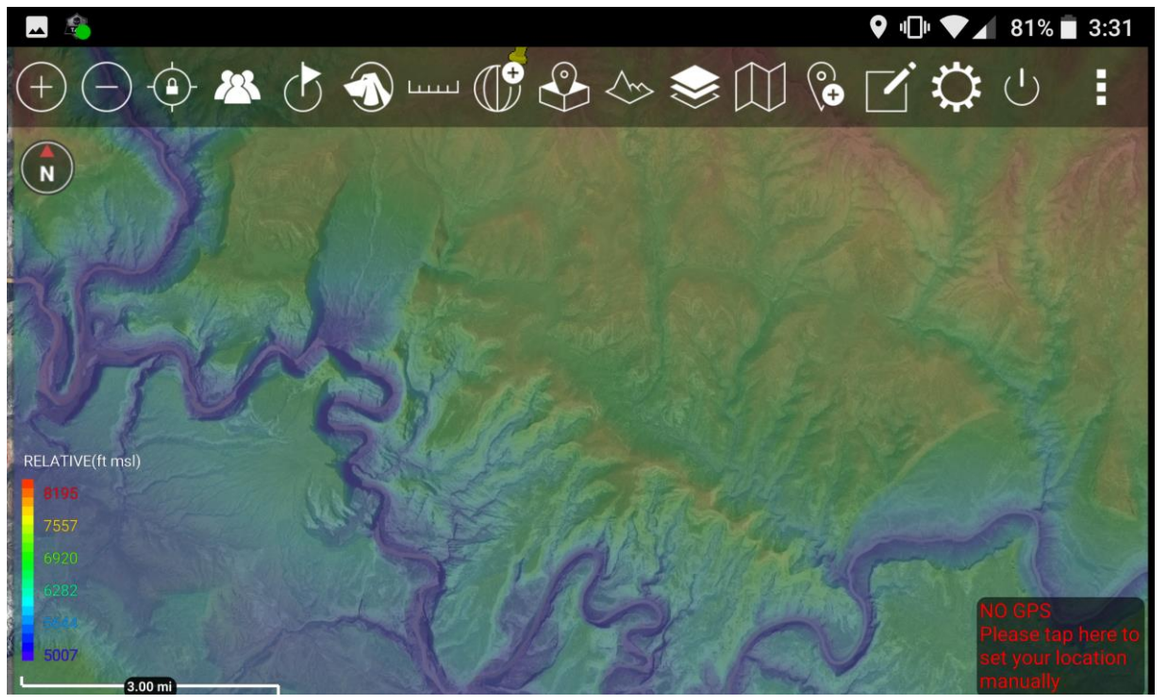
- Users can load various types of raster imagery into ATAK, including GeoTIFF and MrSID.
- Geospatial PDFs are notably incompatible with ATAK currently, making conversion with GIS software necessary to display IAP maps in ATAK.
- Orthophotos, including products created by sUAS can be displayed in ATAK.

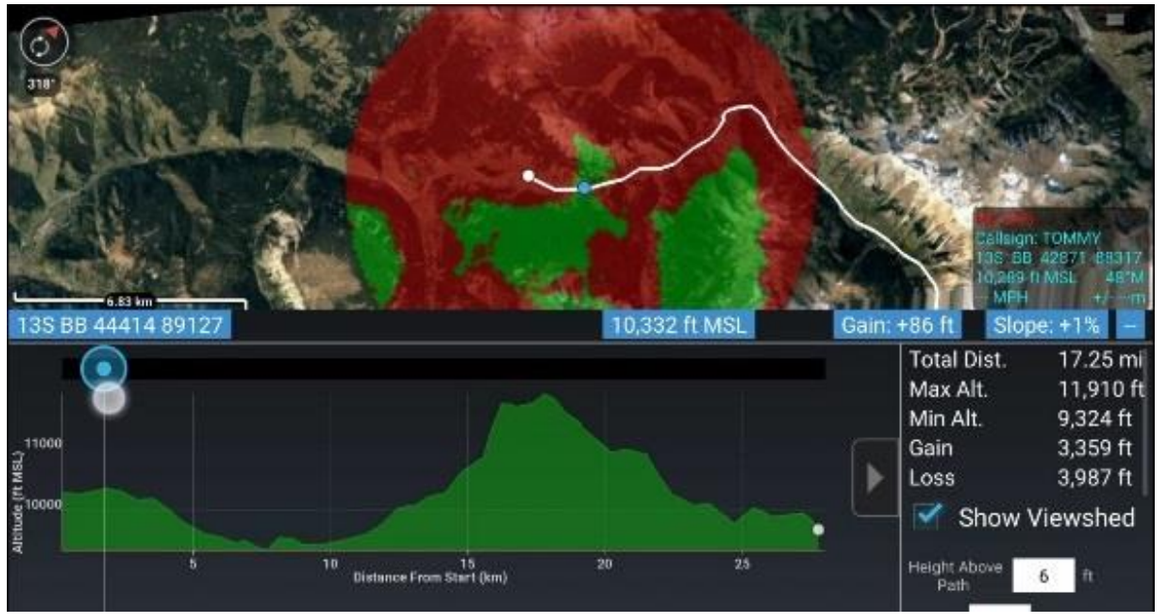




Elevational Data

- ATAK can ingest DTED elevation data to enable a variety to elevation-related function including:
- Heatmap overlay on any map
- Elevation profile calculated along a route or measured distance, including statistics on max/min elevation, and gain/loss.
- Viewshed creation, including a live updating viewshed when a user scrolls along a route.

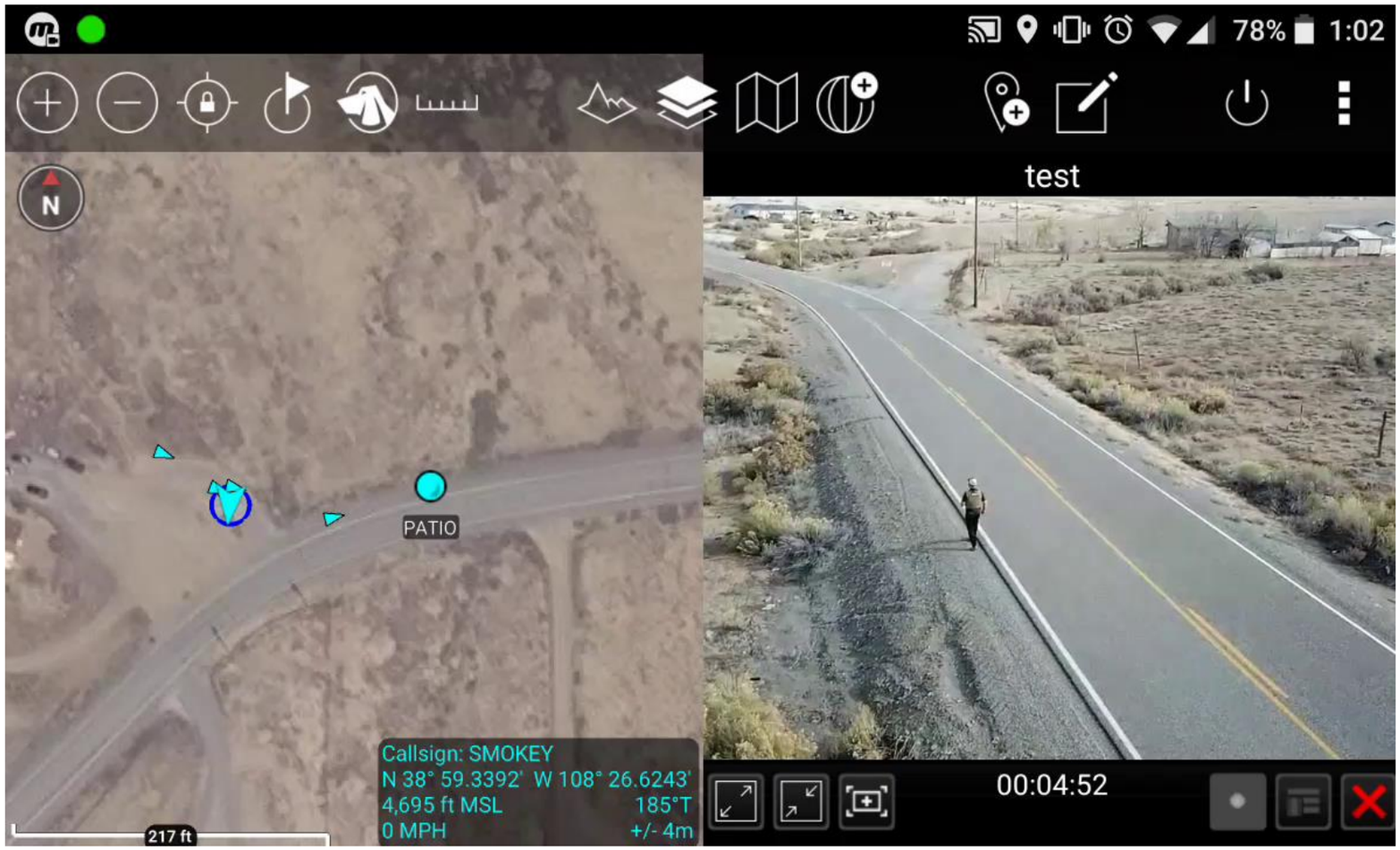




Full Motion Video

- ATAK can display live video via downlink or internet-based stream.
- ATAK can also display video clips loaded onto the device.
- If the video meets MISB full-motion video standards the location of the aircraft and sensor point of interest will be displayed, and the video can optionally be overlaid on the map in real-time.

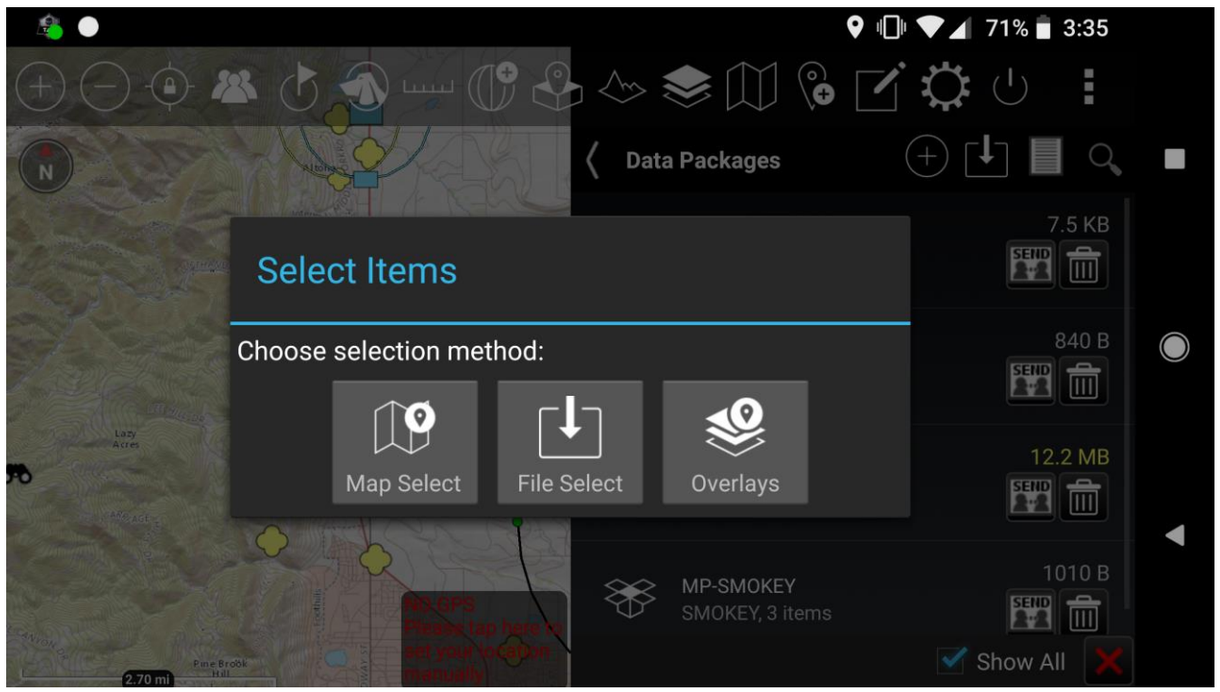
sUAS Video Streaming Over a LAN

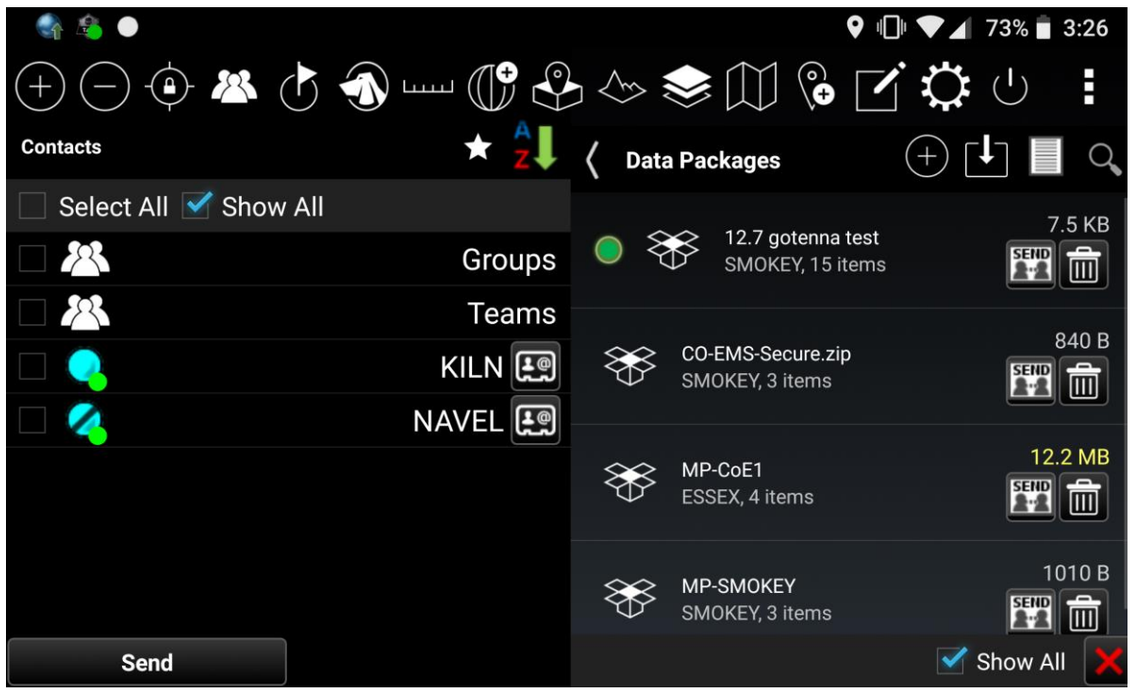


WOWZA STREAMING ENGINE™

Sending Imagery Between Users

- With a connection to a TAK server over the internet or on a local network users can consolidate multiple map sets and vector geospatial objects into one mission package file, which can be pushed onto the devices of users on the network.
- Options for physically ferrying data when no network connection exists will be discussed in the Michigan Tech presentation.





Next Steps

- The CoE is working with a team of cadets from the US Air Force Academy to research options for customizing GPS and mapping icons for wildland fire and the Incident Command System.
- We are working with the Air Force, US Department of Homeland Security, City of Boulder Fire Rescue, and others to conduct additional testing on ATAK, radio systems that extend the app's functionality beyond cellular service, and other related technologies.
- Our current goal is to develop a testbed of devices, radios, and server equipment to deploy and assess ATAK on prescribed and wildland fires, and to advocate for its continued development for first responders.

Questions?

colorado.gov/dfpc/coe

Brad Schmidt
brad.schmidt@state.co.us
970-665-0038