Team Awareness Kit for Android

(ATAK)

Version 4.1

Change Log

29 July 2020

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1 INTRODUCTION

This document represents the changes that have occurred in the Team Awareness Kit for Android (ATAK) from version 4.0 to 4.1. For information on specific core functionality please refer to the ATAK Software User's Guide or plug-in specific documentation.

1.1 Version Description

ATAK provides tactical maps and situational awareness (SA) on Android mobile devices. ATAK also provides an extensible framework on which user specific tools are built to provide additional functionality. Plug-ins are available based on the needs of the user and are released incrementally with the ATAK baseline. ATAK 4.1 advances SA capabilities by enhancing existing toolsets and introducing new features.

1.2 Added Features

The following subsections provide a brief overview of features that are new or have been enhanced in ATAK 4.1

1.2.1 Bloodhound Integration with route planners

ATAK 4.1 now provides the ability to generate an on-road aligned, turn-by-turn Route for a bloodhound track if a plug-in such as the Vehicle Navigation System (VNS) which supplies route planners has been installed. The user defines a bloodhound (see ATAK software user manual) and will now see the routing icon displayed in the bloodhound widget (depicted in Figure 1).

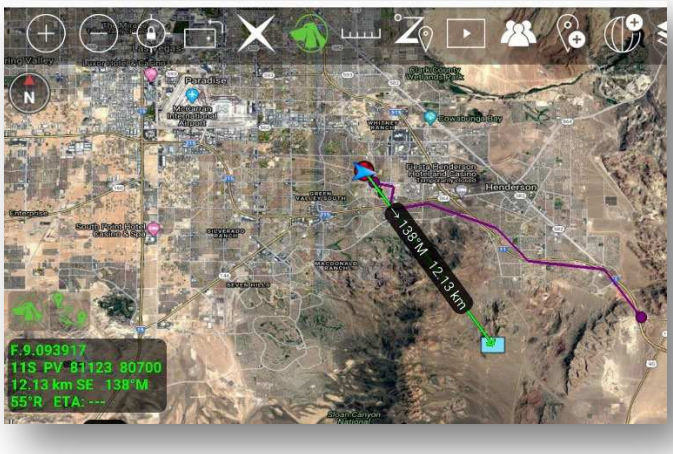

Figure 1- Bloodhound with Routing Option

When the user selects the route icon, the available routing options are presented (Figure 2).

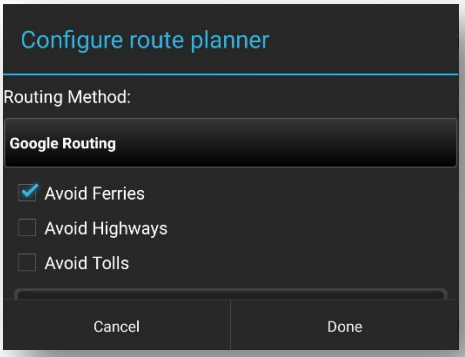

Figure 2 - Routing Options

The route is computed using the specified method/route engine and then displayed on the map (Figure 3). The route will continue to update as the bloodhound and the user marker moves.

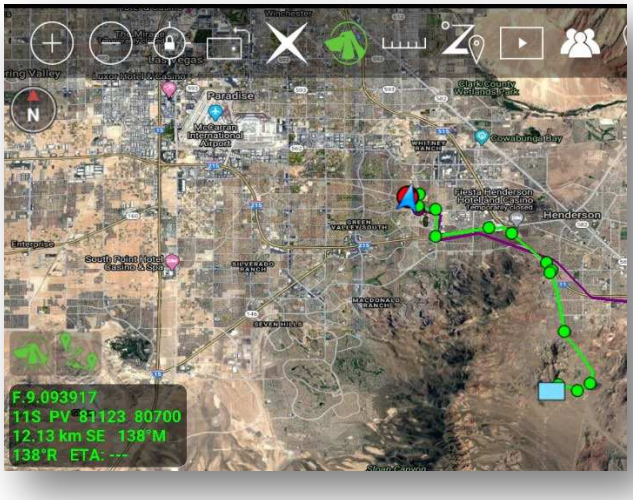

Figure 3 - VNS Calculated Route Display

1.2.2 ATAK Shapes with Vehicle Navigation System (VNS) Plug-in

In 4.1 ATAK, the VNS offline route planner now features a route around region capability whereby users can predefine an ATAK core region (either circular or polygonal) on the moving map that the user wishes the VNS route solver to route around.

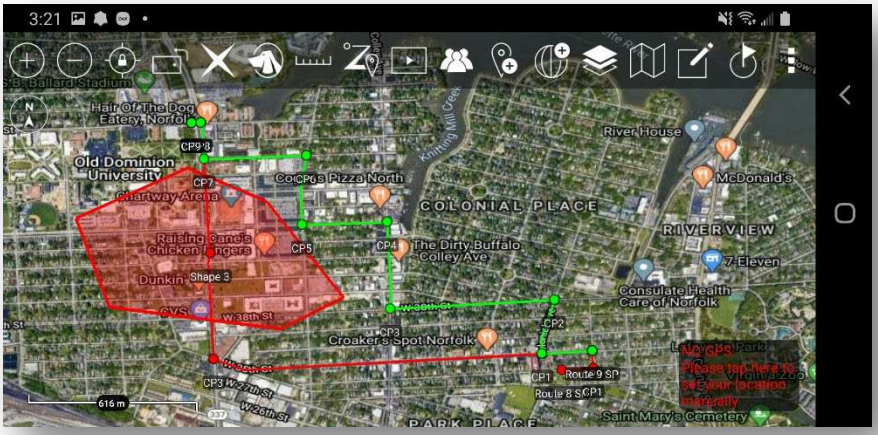

Figure 4 Example routes with an avoidance region.

1.2.3 Data Packages Now sent via HTTPS

ATAK 4.1 now sends Data Packages via HTTPS as the default. When an older client is detected, ATAK automatically defaults back to using HTTP. The default HTTPS port is 8443. The user may specify a different port in the DP preferences screen. See Figure 5.

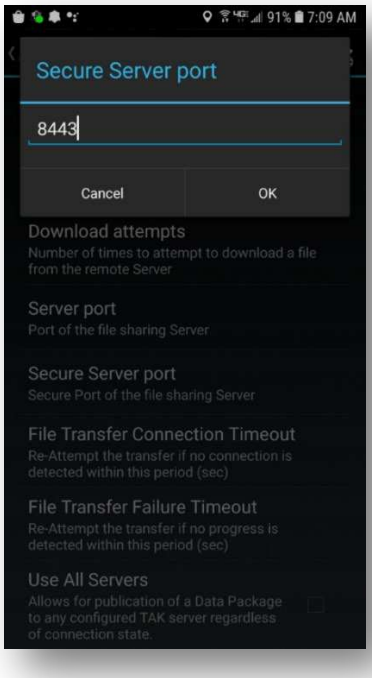

Figure 5 - Data Package HTTPS Setting

1.2.4 3D Vehicle Icons

ATAK 4.1 now provides a set of 3D vehicle icons that may be placed on the map using the Point Dropper tool. The user selects the Vehicle Models option (Figure 6) from the Point Dropper menu. With the addition of new 3D vehicle icons, the user also gets new 2D variants as well.

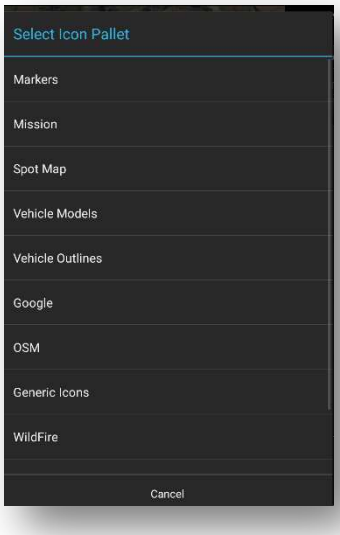

Figure 6 - CoT Icon Menu

The user selects the Vehicle Models option, Models are available in the following categories; Aircraft, Automobiles, Maritime and Other. Figure 7 shows the available Aircraft models.

Figure 7 - Aircraft Models

Figure 8 shows the selected model displayed on the map.

Figure 8- 3D Model on Map

1.2.5 3D Support for Routes

ATAK 4.1 now provides support for display of routes in both 3D mode and traditional clamped to the ground. When 3D mode is enabled, lollipops are displayed connecting the SP/CP/TGT points to the ground. Figure 9 shows a route being displayed with 3D mode active.

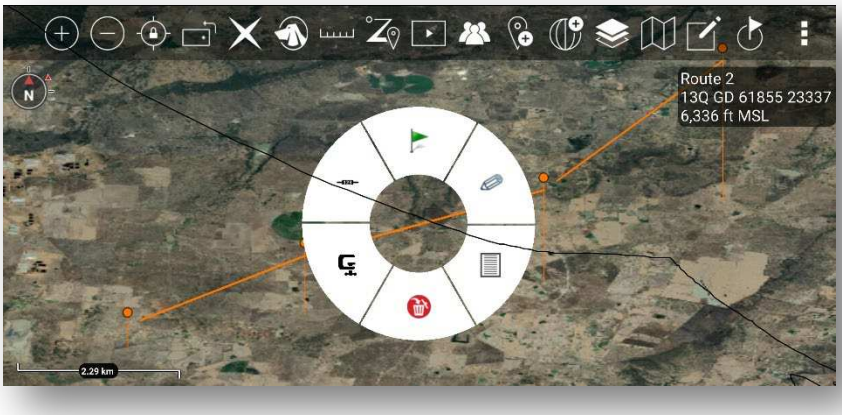

Figure 9 – Route Display in 3D Mode

The user can choose to clamp the route to the ground by selecting the route radial and activating the ground clamp option, as shown in Figure 10.

Figure 10 - Route Radial with Ground Clamp Selected

1.3 SDK Improvements

The SDK received updated documentation, a general ATAK Application Programming Interface (API) cleanup and ongoing code cleanup of Coverity and Fortify identified issues:

- Migrated to Android 29 SDK with a minimum of Android 21.
- Migrated to AndroidX for core and plug-ins.
- Migrated FeatureDataStoreMapOverlay from using FeatureDataStore to FeatureDataStore2. Updated example code to make use of FeatureDataStore2.
- Resolved ATAK-12554 allowing minimum/maximum rendering values to be set for features.
- Expose AltitudeMode and Extrude at the Java side for the insertFeature.
- New Dynamic radial menu API.
- Updated Video libraries to address maintenance fixes. Fixes included adding SRT support and fast forwarding a User Datagram Protocol (UDP) stream no longer results in playback at a normal speed to be choppy.
- Added the ability to gather metrics based on the touch location of any of the ATAK activities.

1.4 Plug-ins

1.4.1 Cloud/FTPS - Delete Option

ATAK 4.1 extends the existing OwnCloud capability by incorporating support for deleting files and folders from an OwnCloud or FTP/S server.

The user is now presented with a delete option when they launch the Cloud/FTP plug-in as shown in Figure 11.

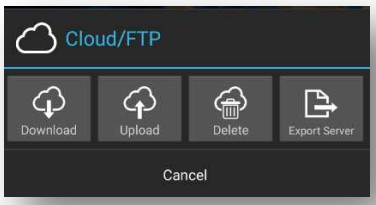

Figure 11 - Cloud/FTP Initial Screen

After selecting the Delete option, the user is connected to the server and the directory is displayed. The user can select an entire directory to be deleted (Figure 12).

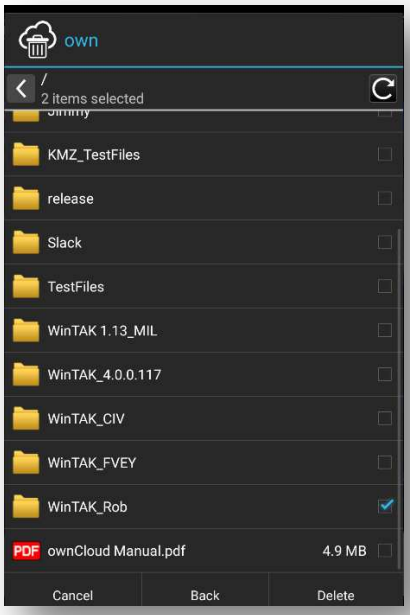

Figure 12 - Delete a Directory

The user can also select individual file(s) from within a directory to be deleted, as shown in Figure 13.

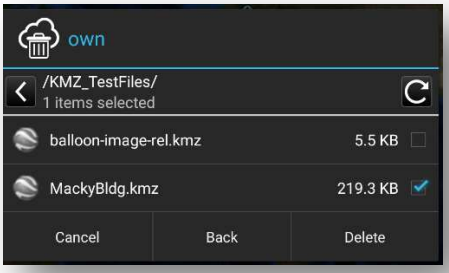

Figure 13 - Delete Individual File(s)

1.4.2 Data Sync - Auto Publish Feature

ATAK 4.1 now provides the user the ability to automatically publish items dropped on the map (CoT markers, Drawing Shapes, etc.), Quick Pics and new Video Aliases to a subscribed feed. The user enables this feature by selecting the Auto Publish checkbox located on the Feed Overview (settings) page. Figure 14 shows the Feed Settings page.

Figure 14 – Data Sync Auto Publish

1.4.3 GvLF - Streaming DTED Improvements

ATAK 4.1 has improved both the User Interface and the performance of the GvLF plug-in used to stream Digital Terrain Elevation Data (DTED) data. The difference between this and quantized mesh data is that the original DTED elevation data is preserved and not approximated.

When the plug-in is first launched, the user configures the server information for the source of the streaming DTED (Figure 15).

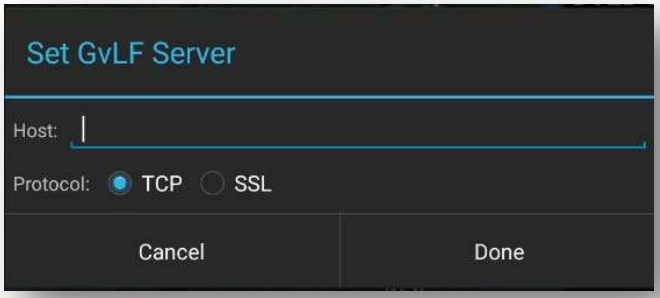

Figure 15 - Configure Streaming Server

Just like with WMS sources, the data starts to download as soon as you enter a region. Additionally, GvLF allows for users to check the coverage provided by a server. From the GvLF screen, the user can click on the check availability button. The map will be updated showing a series of red squares where DTED is available. Inside each cell, the levels of DTED information available for that area will be displayed as shown in Figure 16.

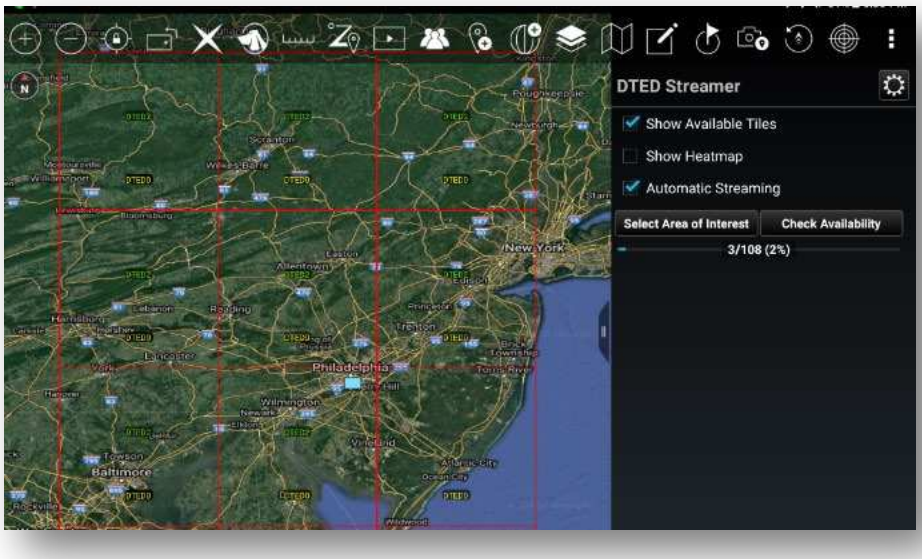

Figure 16 - Available DTED Cells

The user selects their area of interest on the map and download of the DTED data commences (depicted in Figure 17).

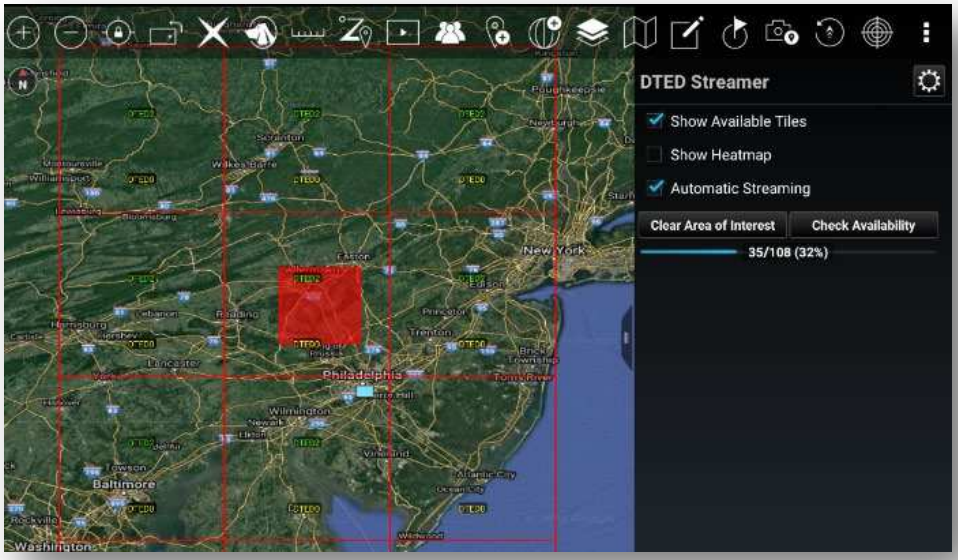

Figure 17 - Area of Interest Selected

While the DTED is being downloaded, the user may continue to interact with the map or other ATAK tools.

1.4.4 QM Elevation - Support for Cesium Quantized Mesh Elevation Data

ATAK 4.1 introduces support for Cesium Quantized Mesh Elevation data via the QM Elevation plug-in. When the user launches QM Elevation, they are presented with a list of installed data sources (Figure 18).

Figure 18 - Layer List

From this screen the user can add another layer, download data from the layers defined, send layer information to other users or delete it.

Add A Layer

Select the "+" icon to open the Add Layer screen (Figure 19).

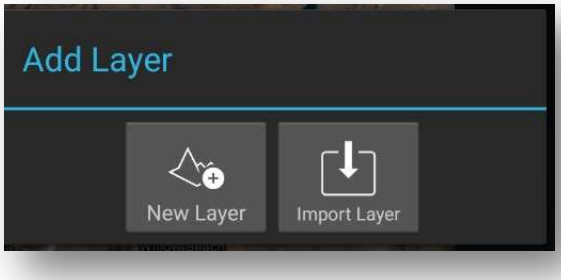

Figure 19- Add a Layer

Select the [**New Layer]** icon to display the New Layer screen. (Depicted in Figure 20.) The user provides a Name, Description and the URL to the server.

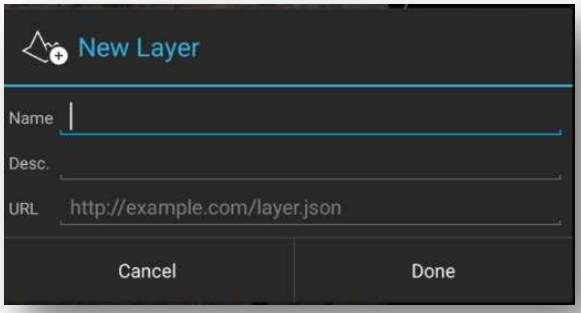

Figure 20- Define New Layer

Once the layer has been defined the user selects the download option and selects the area to be downloaded (shown in Figure 21), then select **[Start]** to begin the download.

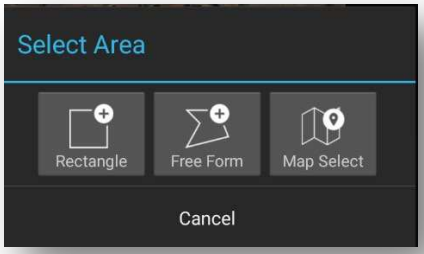

Figure 21 - Select Download Area

Place Map Item

After the elevation data has been downloaded, the user interacts with the Cesium data just as regular DTED. Figure 22 shows an example of a point placed on the map, the Map widget and the item details page showing the elevation of the point. Note that Cesium data is identified as QME on the display.

Figure 22- CoT with QME

Share QME Definition

An ATAK user can share the QME information with other users on the network by selecting the SEND option. The user is presented with the standard ATAK send menu as depicted in Figure 23.

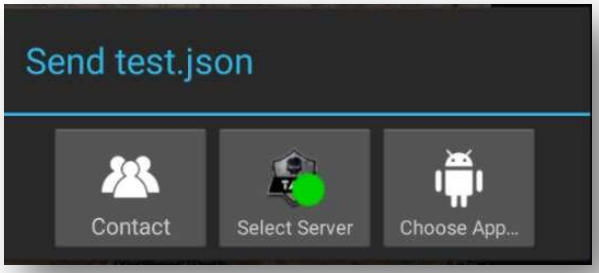

Figure 23- Send QME Definition

The user selects the recipients and sends the JavaScript Object Notation (JSON). The receiving user will see the new layer definition in the list of available layers.

1.4.5 SSE Tool

ATAK 4.1 now provides an interface between the SSE Tool plug-in and a separate, non-TAK related Facial Recognition Software application on the ATAK end-user device (EUD). If the Facial Recognition application is installed and licensed correctly on the EUD, then when the user adds a Person Under Custody (PUC) item within the SSE Tool plug-in, the user is exposed to new interfaces and capabilities. The user takes a facial photo or selects an existing facial photo for the PUC.

The user first selects PUC from the SSE Options (shown in Figure 24).

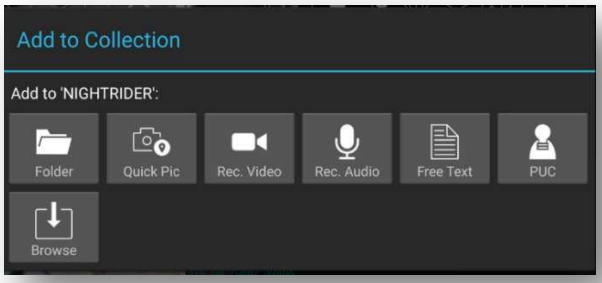

Figure 24 - SSE Options

The user is then prompted to enter data about the PUC Collection (Figure 25).

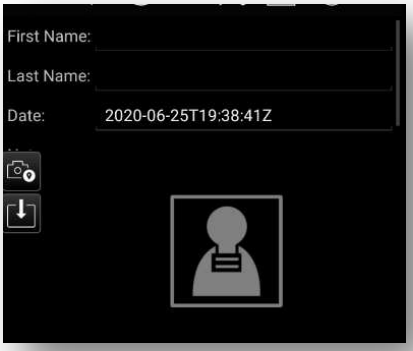

Figure 25 - PUC Collection Info

The user then captures picture(s) of the PUC (Figure 26).

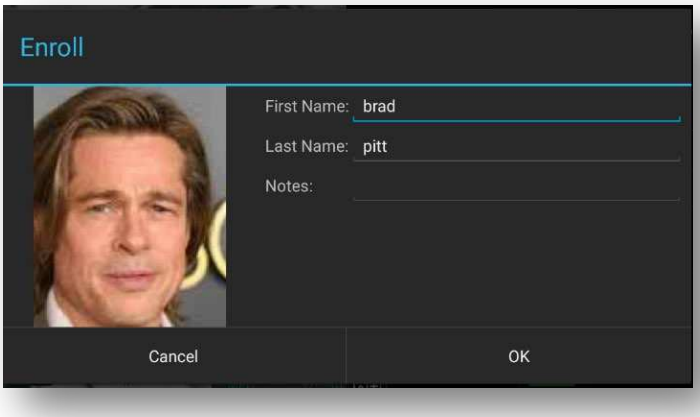

Figure 26 - PUC Photo

After capturing the photo, the user is presented with the PUC options (shown in Figure 27).

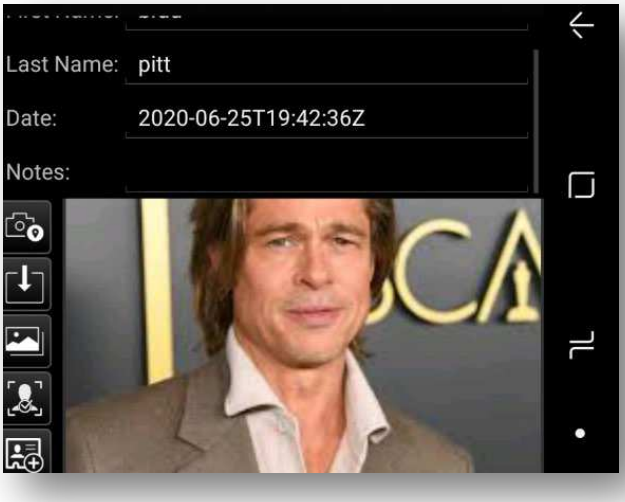

Figure 27 - PUC Options

Selecting the box with the figure outline initiates the Facial Recognition process (Figure 28). The captured photo is compared to the separate Facial Recognition application's galleries/ databases and matching images with a high probability match are displayed (Figure X, Y). The user can also enroll a PUC image back into the gallery/database of the standalone Facial Recognition application using the rolodex icon on the bottom of Figure 29.

Figure 28 - Photo Comparison 1

Figure 29 - Photo Comparison 2

The user chooses which results to add into PUC (Figure 30).

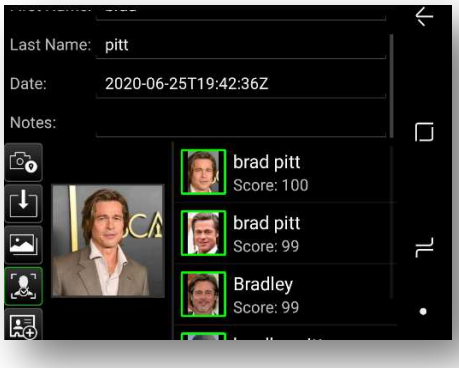

Figure 30- Facial Recognition Results

After results have been accepted, the updated SSE listing is displayed (Figure 31).

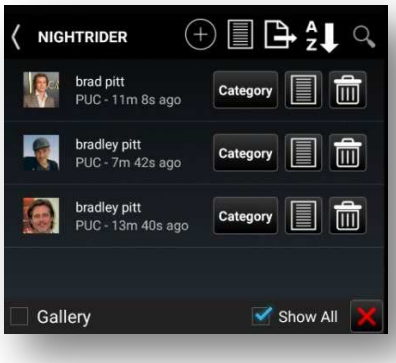

Figure 31 - All Results

1.4.6 ATAK UAS Tool Plug-in

For a comprehensive list of changes for 4.1 ATAK UAS Tool see the embedded plug-in's change log. For further training on the UAS Tool see takmaps.com and the hosted training videos and the software user manual.

- ATAK UAS Tool plug-in feature updates include:
  - New Quick Flight Mode (Fly with No Controller).
  - Added MAVLink specific settings.
  - Rework UAS status UI.
  - New UAS status summary data list.
  - Added task progress bars.
  - Added height above launch (HAL) as an altitude setting.
  - Added UAS sorting.
  - Added task sorting.
  - Added gimbal azimuth text and line to OSD.
  - Added a preference to change OSD background color.
  - Added speed, altitude, and ETA labels to routes on map.
  - New "Follow Me" functionality.
  - Added radial menus to UAS Route points.
  - Added DJI settings for choosing the joystick mode.
  - Added ability to move active routes.
  - Added ability to drag sensor point of interest (SPoI)/move gimbal during route tasks.
  - Added ability to Pinch Zoom Observer FMV in UAS Tool Video Player.
  - Reworked preferences UI.

1.4.7 Additional Plug-ins and Features

1.4.7.1 Drifter

ATAK 4.1 saw additional development work performed on the Drifter plug-in. The Drifter plug-in now features a play and pause feature that quickly and easily plays and pauses a marker from "drifting" on the moving map, as shown in Figure 32. This allows the user to either individually play/pause specific drifters, to play/pause all drifters globally. To provide a larger utility to mission planning and execution times, the Drifter plug-in now features a capability to have a map marker follow a given route along the moving map at a specified speed. A relative time estimation of completion of the route is given to the user. Again, the play and pause capability can be used in conjunction with a marker even traversing a given route.

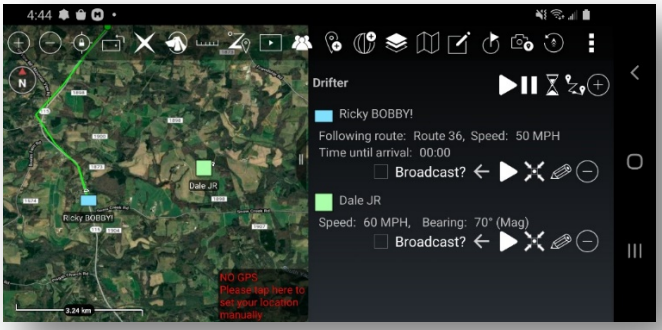

Figure 32 - Drifter Plug-in

The Drifter plug-in now has the capability to simulate moving drifters forward and backwards in time by clicking on the hourglass icon and entering how long the time simulation should be run. This also allows for "backwards" simulations, by specifying a negative time differential, which will move all drifters back to the position that they were a specific amount of time ago. This is Depicted in Figure 33.

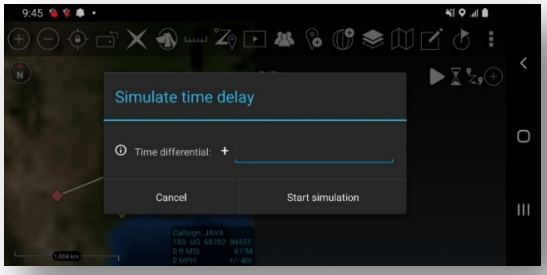

Figure 33 - Drifter Simulate Time Delay Capability

1.5 List of Available Plug-ins and Applications

There is more documentation and information that describes plug-ins available for ATAK on takmaps.com or Confluence (https://confluence.takmaps.com/display/TPC/ATAK+Plugins+Master+List) from the TAK Product Center.

1.6 Additional Changes/Discrepancy Resolution

ATAK 4.1 includes the following additional changes:

- Updated the bundled tools (Serial Monitor/Network Monitor) to make use of newer Android SDK versions.

- Fixed issue where files on an external SD card are not loaded when ATAK is run for the first time.
- Received SPI now can be color coded from the radial menu.
- Various performance improvements.
- Tested and verified working against Android 10.
- Support for SRT video within ATAK
- Support for recording of RTSP streams.
- Updated all bundled applications to be compliant with Android 29.
- Updated allowable units of measure for user created shapes.
- Introduced translation for French speaking users. The French translation is enabled by setting the device's language to French and launching ATAK. Figure 34 shows the ATAK additional tools menu in French.

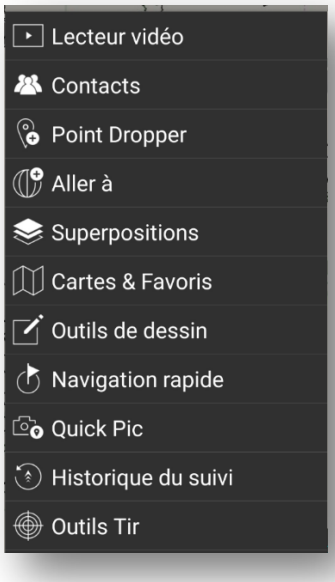

Figure 34 - ATAK with French Translation