IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

AGIS SOFTWARE DEVELOPMENT LLC,	§	Case No. 2:24-cv-00598-RWS-RSP
Plaintiff,	§	**JURY TRIAL DEMANDED**
v.	§	
RAYTHEON TECHNOLOGIES CORP. and RTX CORPORATION,	§	
Defendants.	§	

PLAINTIFF'S FIRST AMENDED COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff AGIS Software Development LLC ("AGIS Software" or "Plaintiff") files this Amended Complaint against Defendants Raytheon Technologies Corporation and RTX Corporation (collectively, "Raytheon" or "Defendants") for patent infringement under 35 U.S.C. § 271 and alleges as follows:

THE PARTIES

1. Plaintiff AGIS Software is a limited liability company, organized and existing under the laws of the State of Texas, and maintains its principal place of business at 100 W. Houston Street, Marshall, Texas 75670. AGIS Software is the owner of all right, title, and interest in and to U.S. Patent Nos. 9,445,251, 9,467,838, 9,820,123, and 9,749,829 (the "Patents-in-Suit").

2. On information and belief, Defendant Raytheon Technologies Corporation ("Raytheon Technologies") is a corporation organized and existing under the laws of the State of Delaware and maintains a place of business in this District, at 2501 West University Drive, McKinney, Texas 75701. Raytheon is registered to conduct business in the State of Texas and has a registered agent, CT Corporation System, 1999 Bryan Street, Suite 900, Dallas, Texas 75201.

3. On information and belief, Defendant RTX Corporation ("RTX") is a corporation organized and existing under the laws of the State of Delaware and maintains a place of business in this District, at 2501 West University Drive, McKinney, Texas 75701. RTX is registered to conduct business in the State of Texas and has a registered agent, CT Corporation System, 1999 Bryan Street, Suite 900, Dallas, Texas 75201.

4. On information and belief, Defendants directly and/or indirectly develop, design, manufacture, distribute, market, offer for sale, and/or sell infringing products and services in the United States, including in the Eastern District of Texas, and otherwise directs infringing activities to this District in connection with its products and services.

JURISDICTION AND VENUE

5. This is an action for patent infringement arising under the patent laws of the United States, 35 U.S.C. §§ 1, *et seq*. This Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331, 1338(a), and 1367.

6. This Court has specific and personal jurisdiction over Defendants in this action because Defendants have committed acts within this Judicial District giving rise to this action and has established minimum contacts with this forum, such that the exercise of jurisdiction over Defendants would not offend traditional notions of fair play and substantial justice. Defendants conduct business and have committed acts of patent infringement and/or have induced acts of patent infringement by others in this Judicial District and/or have contributed to patent infringement by others in this Judicial District, the State of Texas, and elsewhere in the United States by, among other things, offering to sell and selling products and/or services that infringe the Patents-in-Suit.

7. Venue is proper in this Judicial District pursuant to 28 U.S.C. §§ 1391 and 1400(b) because Defendants have regular and established places of business in this Judicial District. Defendants, through their own acts and/or through the acts of others, make, use, sells distribute, export from, import, and/or offer to sell infringing products within this Judicial District, regularly do and solicit business in this Judicial District, and have the requisite minimum contacts with this Judicial District, such that this venue is a fair and reasonable one.

PATENTS-IN-SUIT

8. On September 13, 2016, the United States and Trademark Office duly and legally issued U.S. Patent No. 9,445,251 (the "'251 Patent") entitled "Method to Provide Ad Hoc and Password Protected Digital and Voice Networks." On June 8, 2021, the United States Patent and Trademark Office issued an *Ex Parte* Reexamination Certificate of the '251 Patent determining claims 1-35 to be valid and patentable. A true and correct copy of the '251 Patent, which includes the June 8, 2021 Ex Parte Reexamination Certificate, is attached hereto as Exhibit A.

9. On October 11, 2016, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 9,467,838 (the "'838 Patent") entitled "Method to Provide Ad Hoc and Password Protected Digital and Voice Networks." On May 27, 2021, the United States Patent and Trademark Office issued an Ex Parte Reexamination Certificate of the '838 Patent determining claims 1-84 to be valid and patentable. A true and correct copy of the '838 Patent, which includes the May 27, 2021 Ex Parte Reexamination Certificate, is attached hereto as Exhibit B.

10. On November 14, 2017, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 9,820,123 (the "'123 Patent") entitled "Method to Provide Ad Hoc and Password Protected Digital and Voice Networks." On September 24, 2021, the United States Patent and Trademark Office issued an *Ex Parte* Reexamination Certificate for the '123 Patent

confirming the validity and patentability of claims 1-48. A true and correct copy of the '123 Patent, which includes the September 24, 2021 Ex Parte Reexamination Certificate, is attached hereto as Exhibit C.

11. On August 29, 2017, the United States and Trademark Office duly and legally issued U.S. Patent No. 9,749,829 (the "'829 Patent") entitled "Method to Provide Ad Hoc and Password Protected Digital and Voice Networks." On August 16, 2021, the United States Patent and Trademark Office issued an Ex Parte Reexamination Certificate for the '829 Patent confirming the validity and patentability of claims 1-68. A true and correct copy of the '829 Patent, which includes the August 16, 2021 Ex Parte Reexamination Certificate, is attached hereto as Exhibit D.

12. AGIS Software is the sole and exclusive owner of all rights, title, and interest in the Patents-in-Suit, and holds the exclusive right to take all actions necessary to enforce its rights to the Patents-in-Suit, including the filing of this patent infringement lawsuit. AGIS Software also has the right to recover all damages for past, present, and future infringement of the Patents-in-Suit and to seek injunctive relief as appropriate under the law.

FACTUAL ALLEGATIONS

13. Malcolm K. "Cap" Beyer, Jr., a graduate of the United States Naval Academy and a former U.S. Marine, is the CEO of AGIS Software and a named inventor of the AGIS Software patent portfolio. Mr. Beyer founded Advanced Ground Information Systems, Inc. ("AGIS, Inc.") shortly after the September 11, 2001 terrorist attacks because he believed that many first responder and civilian lives could have been saved through the implementation of a better communication system. He envisioned and developed a new communication system that would use integrated software and hardware components on mobile devices to give users situational awareness superior to systems provided by conventional military and first responder radio systems.

14. AGIS, Inc. developed prototypes that matured into its LifeRing system. LifeRing provides first responders, law enforcement, and military personnel with what is essentially a tactical operations center built into hand-held mobile devices. Using GPS-based location technology and existing or special-purpose cellular communication networks, LifeRing users can exchange location, heading, speed, and other information with other members of a group, view each other's locations on maps and satellite images, and rapidly communicate and coordinate their efforts.

15. AGIS Software was formed in 2017 and has since opened two offices in Texas, including one office located at 2226 Washington Avenue, #2, Waco, Texas 76702. AGIS Software also maintains a data center in Texas.

16. Mr. Beyer has maintained longstanding ties to Texas and the Eastern District. In 1987, Mr. Beyer founded Advanced Programming Concepts, an Austin-based company focused on real-time tactical command and control systems. Advanced Programming Concepts was later acquired by Ultra Electronics, Inc. and is now the Advanced Tactical Systems unit of Ultra Electronics, Inc., which is still based in Austin, Texas.

17. AGIS Software licenses its patent portfolio, including the'251, '838, '123, and '829 Patents, to AGIS, Inc. AGIS, Inc. has marked its products accordingly. AGIS Software and all previous assignees of the Patents-in-Suit have complied with the requirements of 35 U.S.C. § 287(a).

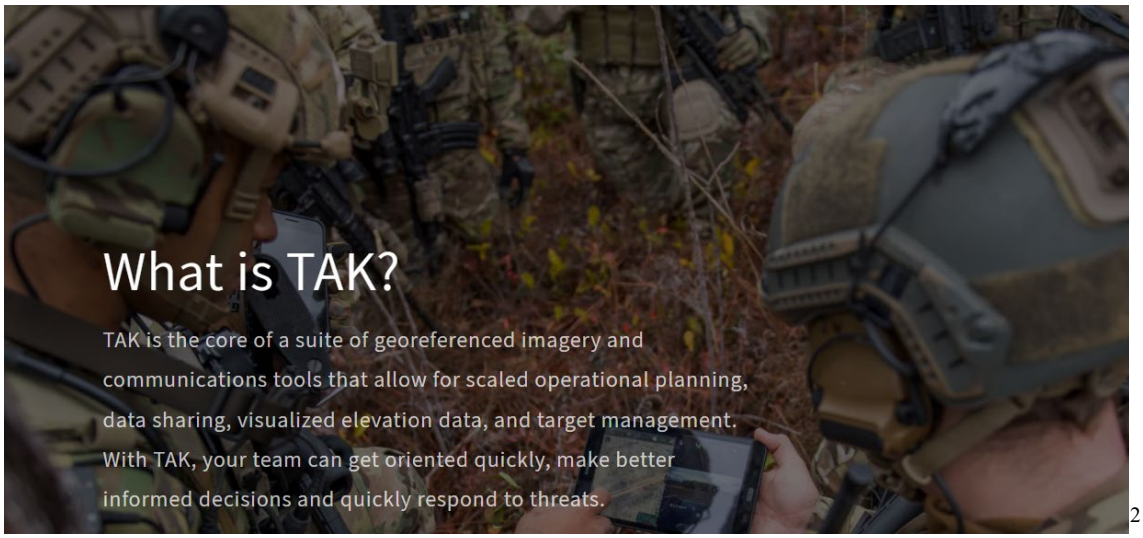
18. Defendants have infringed and continue to infringe the Patents-in-Suit by making, using, selling, offering to sell, distributing, exporting from the United States, and/or importing to the United States, and by actively inducing others to make, use, sell, offer to sell, distribute, export from, and/or import products that infringe the Patents-in-Suit. Such products include at least the

Raytheon TAK, TAK Server, ATAK, WebTAK, CivTAK, WinTAK, Airport Surface Awareness System, Pro Line Fusion, Surface Management System, Ascend, OpsCore, ARINCDirect, ARINC Global Network, ARINC Integrator, ARINC Hermes, FasTAK, and Rosetta Technology applications, solutions, and servers (the "Accused Products").[1] The Accused Products infringe each of the Asserted Patents. Each of the Accused Products has civilian, commercial, and other non-federal customers, uses, and sales, and each of the Accused Products are not exclusively "for the Government." For example, Raytheon's terms of use for TAK products expressly identifies "Civilian Subscribers," and Raytheon publishes commercial prices for civilian, commercial, and non-federal subscribers. *See, e.g.*, https://bbn-tak.myshopify.com/pages/terms-of-use; https://bbn-tak.myshopify.com/products/tak-server-subscription-service-basic; https://bbn-tak.myshopify.com/products/bbn-tak-server-standard; https://bbn-tak.myshopify.com/products/tak-server-subscription-service; https://bbn-tak.myshopify.com/pages/privacy-statement; https://www.rtx.com/privacy; https://bbn-tak.myshopify.com/pages/terms-conditions.

19. The Accused Products include functionalities that allow users to form and/or join networks or groups, share and view locations with other users, display symbols corresponding to locations (including locations of other users) on a map, and communicate with other users via text, voice, and multimedia-based communication. Additionally, the Accused Products include functionalities to allow users to form and/or join networks or groups. Additionally, the users may form groups that include their own devices in order to track their own lost or stolen devices, as shown below; to send and receive communications from their own lost or stolen Accused Products; and to remotely control the lost or stolen Accused Products. The Accused Products include the

[1] *See, e.g.*, https://bbn-tak.myshopify.com/; https://bbn-tak.myshopify.com/pages/tak-academy

functionalities to display map information, including symbols corresponding with users, entities, and locations. Additionally, the Accused Products include functionalities to form groups that include their own devices in order to track, remotely monitor, and control, and/or communicate with other users' devices. The Accused Products include functionalities to enable communications, such as voice calls between users. The Accused Products practice the claims of the Asserted Patents to improve user experiences and to improve Defendants' position in the market.



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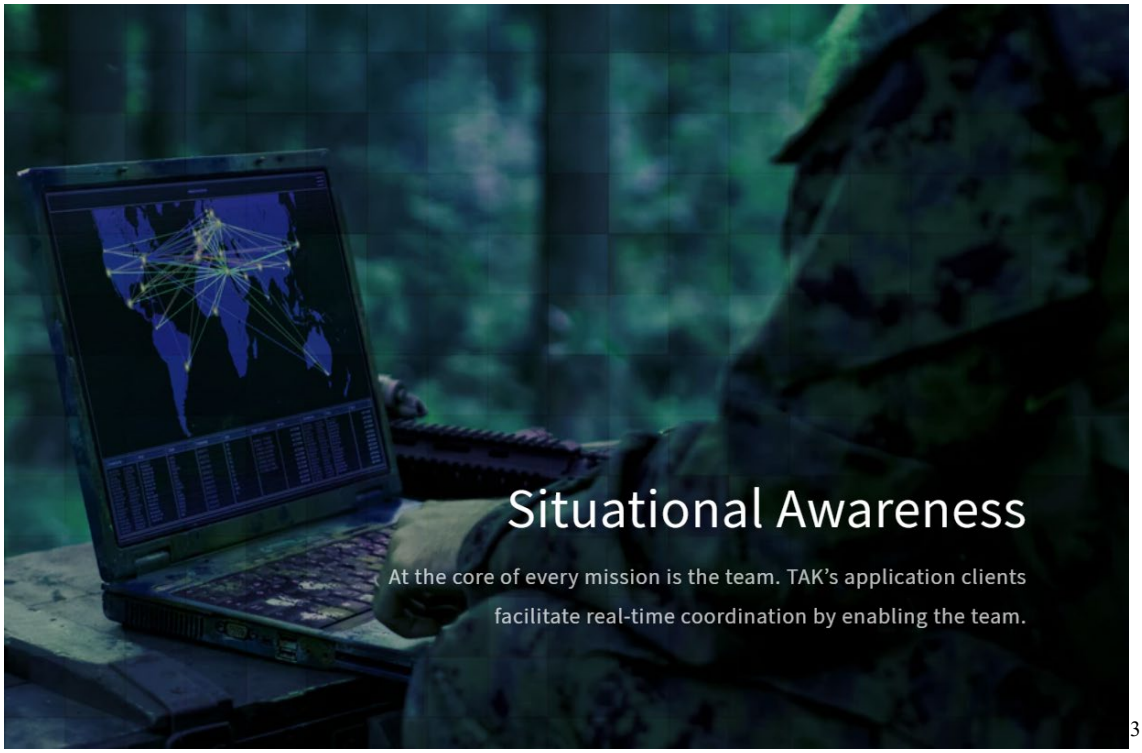
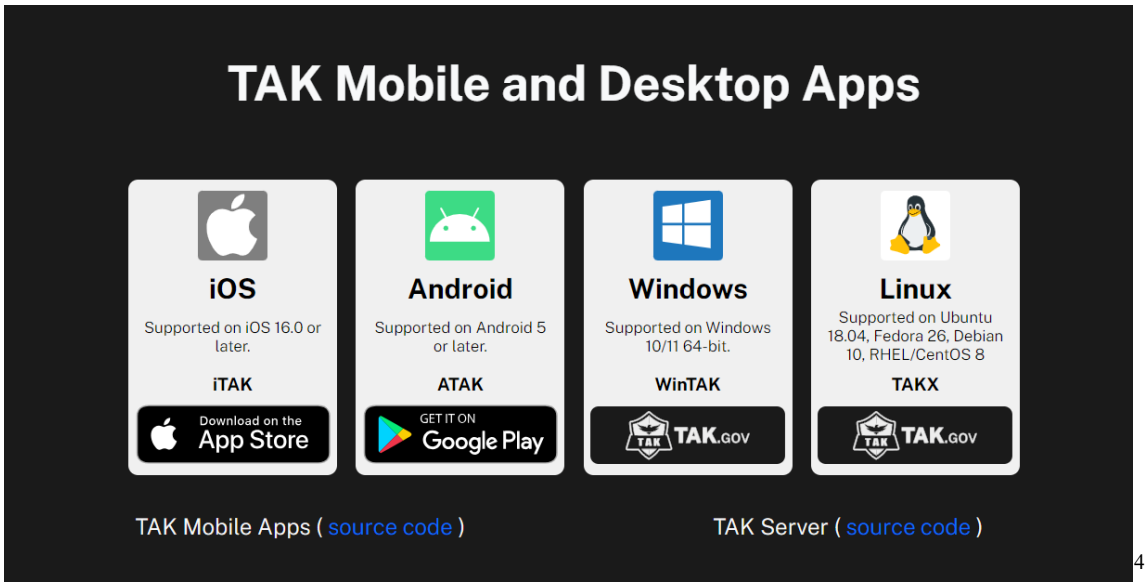


[3]

[2] https://bbn-tak.myshopify.com/
[3] https://bbn-tak.myshopify.com/


[4]

[4] https://tak.gov/

Android Team Awareness Kit – ATAK-civ or CivTAK

The Team Awareness Kit (TAK), for civilian uses, or Tactical Assault Kit (also TAK) for military uses is a suite of software that provides geospatial information and allows user collaboration over geography. There are numerous TAK Products in the TAK family, all developed at government expense

The Team Awareness Kit for Android (ATAK, also known as CivTAK) was originally developed by the Air Force Research Laboratory (AFRL) and is now maintained by a Joint Product Center.

ATAK (including CivTAK) is an Android smartphone geospatial infrastructure and situational awareness app. It allows for precision targeting, surrounding land formation intelligence, situational awareness, navigation, and data sharing.

All the Android variants of TAK are virtually identical and all are interoperable with each other and with other TAK products. There are small, military-specific additions in military versions of ATAK. [5]

WHAT IS TAK?

The Android Team Awareness Kit (ATAK), for civilian use, or Android Tactical Assault Kit (also ATAK) for military use - is a suite of software that provides geospatial information and allows user collaboration over geography.

ATAK was originally developed by the Air Force Research Laboratory (AFRL) and is now maintained by the TAK Product Center (TPC).

[6]

[5] https://www.civtak.org/atak-about/
[6] https://www.civtak.org/atak-about/

COUNT I
(Infringement of the ’251 Patent)

20. Paragraphs 1 through 19 are incorporated herein by reference as if fully set forth in their entireties.

21. AGIS Software has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, distribute, export from, or import any Accused Products and/or products that embody the inventions of the ’251 Patent.

22. Defendants infringe, contribute to the infringement of, and/or induce infringement of the ’251 Patent by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States products and/or methods covered by one or more claims of the ’251 Patent including, but not limited to, the Accused Products.

23. Defendants have and continue to directly infringe at least claim 24 of the ’251 Patent, either literally or under the doctrine of equivalents, by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States the Accused Products without authority and in violation of 35 U.S.C. § 271(a).

24. Defendants have and continue to indirectly infringe at least claim 24 of the ’251 Patent by actively, knowingly, and intentionally inducing others to directly infringe, either literally or under the doctrine of equivalents, by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States the Accused Products and by instructing users of the Accused Products to perform methods claimed in the ’251 Patent. For example, Defendants, with knowledge that the Accused Products infringe the ’251 Patent at least as of the date of this Complaint, actively, knowingly, and intentionally induced, and continue to actively, knowingly, and intentionally induce direct infringement of the ’251 Patent. Alternatively,

Defendants believed there was a high probability that others would infringe the '251 Patent but remained willfully blind to the infringing nature of others' actions.

25. For example, Defendants have indirectly infringed and continue to indirectly infringe at least claim 24 of the '251 Patent in the United States because Defendants' customers use the Accused Products, including at least Raytheon TAK, TAK Server, ATAK, WebTAK, CivTAK, and WinTAK solutions, and servers, alone or in conjunction with additional Accused Products, in accordance with Defendants' instructions and thereby directly infringe at least claim 24 of the '251 Patent in violation of 35 U.S.C. § 271. Defendants directly and/or indirectly intentionally instruct their customers to infringe through training videos, demonstrations, brochures, installations, and/or user guides, such as those located at one or more of the following: https://bbn-tak.myshopify.com/; https://www.civtak.org/atak-about/; https://www.civtak.org/documentation/; https://wiki.civtak.org/index.php?title=ATAK_Manual; and through Raytheon's agents and representatives located within this Judicial District. Defendant is thereby liable for infringement of the '251 Patent under 35 U.S.C. § 271(b). Alternatively, Defendants believed there was a high probability that others would infringe the '251 Patent but remained willfully blind to the infringing nature of others' actions.

26. For example, Defendants' Accused Products allow users to share their locations and view other users' locations on a map and to communicate with those users via the Raytheon TAK, TAK Server, ATAK, WebTAK, CivTAK, and WinTAK applications and solutions:

The Team Awareness Kit (TAK), for civilian uses, or Tactical Assault Kit (also TAK) for military uses is a suite of software that provides geospatial information and allows user collaboration over geography. There are numerous TAK Products in the TAK family, all developed at government expense

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All the Android variants of TAK are virtually identical and all are interoperable with each other and with other TAK products. There are small, military-specific additions in military versions of ATAK.

7

Unclassified

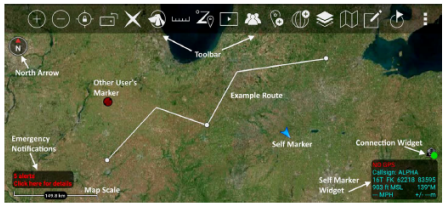
ATAK Civilian Overview

The Civilian Team Awareness Kit for Android (ATAK Civilian) is a Government-off-the-Shelf (GOTS) software application and mapping framework for mobile devices. ATAK Civilian has been designed and developed to run on Android smart devices used in a first responder environment. The ATAK Civilian software application is an extensible moving map display that integrates imagery, map and overlay information to provide enhanced collaboration and Situational Awareness (SA) over a tactical meshed network. ATAK Civilian promotes information flow and communications from the field environment to command enterprise locations.

The first time ATAK Civilian is opened, or after a Clear Content, a passphrase is auto-generated to activate data encryption. The user can supply their own passphrase by using Settings > Show All Preferences > Device Preferences > Change Encryption Passphrase. Following this step, ATAK Civilian's End User License Agreement (EULA) must be accepted. Next, the user will be prompted to change their callsign and/or import preferences or data from a Mission Package. All changes/imports can always be updated later. Finally, the user can place their self-marker by following the instructions located in the lower right corner.

The toolbar runs along the top of the map display. The features whose icons form the center portion of the toolbar are discussed in individual sections of this guide. The three dots at the right of the toolbar provide additional menu items that appear in a drop-down menu. A Long Press on the map will toggle the toolbar between hidden and visible.

The North Arrow appears in the upper left and is used to control map orientation. It has two primary modes: North Up/Track Up (default) and Manual Map Rotation/Lock. While in North Up/Track Up Mode, single press on the [**North Arrow**] icon to cycle between the North Up and Track Up map orientation. Long press the [**North Arrow**] to call out the additional controls menu where the Manual Rotation/Lock and 3D features are available. Select the [**Rotation**] button to enter Manual Map Rotation/Lock Mode. When in Manual Map Rotation/Lock Mode, rotate the map orientation by pressing on the map with two fingers and pivoting them in the desired direction. Single press on the [**North Arrow**] to lock the screen orientation, signified by the appearance of the lock icon, and again to unlock the orientation for further adjustment. 3D controls are discussed in a separate section.



Select the [**Magnifier**] buttons to zoom in or out on the map. The map can also be zoomed by using two fingers on the screen to pinch and spread the map. Select the [**Back**] button to center the screen on the Self Marker or the [**Padlock**] icon to lock the center of the screen to the Self Marker. Select the [**Orientation**] icon to toggle the screen position between portrait and landscape.

The optional connection widget indicates whether or not the user is connected to a TAK Server. This has a corresponding Android notification that provides the same information. Toggle this display on at Settings > Network Connections > Network Connections > Display Connection Widget.

Alerts and notifications are displayed in the lower left of the map interface.

The Map Scale displays a 1 inch to X mi/km reference on the map. The scale adjusts with the map when zoomed in and out. Hint windows are available to alert users to changes or make suggestions about the use of tools the first time they are opened.

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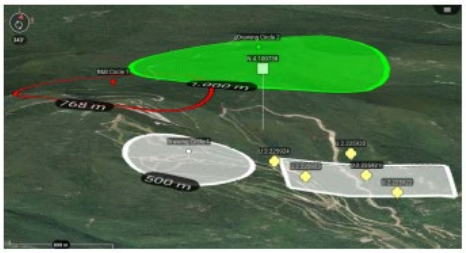
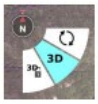
[7] https://www.civtak.org/documentation/

3D View

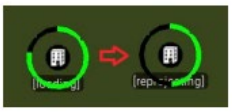




ATAK Civilian features 3D viewing of terrain and map items (DTED required). To enable 3D view, long press on the **[North Arrow]** to call out the additional controls menu and select [**3D**]. A tilt angle indicator will appear around the edge of the [**North Arrow**] when 3D view is active. Touch the screen with two fingers and simultaneously swipe up or down on the screen to tilt the view angle. Once the appropriate viewing angle is set, select the [**3D Lock**] button to retain this view while panning the map. While viewing the map from an angle, some map items will appear raised above the map surface if they have defined elevations.

3D Models

ATAK Civilian supports the use of 3D models. OBJ models and other types from products such as Pix4D can be imported via the Import Manager or can be manually placed in the atak/overlays folder prior to startup. If using Import Manager browse to the .OBJ file and import only that file, or browse to a .ZIP file that contains the .OBJ file (and others) and import only that file. If using manual placement to the atak/overlays folder, place a .ZIP file containing the .OBJ file (and others) into the directory and they will be imported on startup.



Once imported, a 3D Model icon will appear on the map. Zoom into the area of the icon until a loading ring appears. After the loading process has finished, the 3D model will be projected onto the map. Enable the map 3D View and tilt the view angle to see the 3D modeling. Loaded 3D models will appear as their own category in Overlay Manager and can be toggled on/off or removed from there.

Placement

The user can enter locations of interest using the Point Dropper tool. Select the [**Point Dropper**] icon to place internationally standardized markers and other icons on the map, edit the data and share the markers with other network members.

Self-Marker

The Self-Marker is displayed as a blue arrowhead at the user's current location. The options available on the Self-Marker radial are: Compass Rose, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, GPS Error, Range & Bearing Line, GPS Lock to Self, Tracking Breadcrumbs, Place a Marker at the user's current location and Details. Other TAK users appear on the display as a colored circle. The color of the circle represents the user's Team affiliation, with additional lettering inside the circle to identify the role the user on the team. Team Member markers that include a diagonal line indicate that the GPS location is not available. A solid icon indicated that the team member has GPS reception.

Available roles include: Team Member, Team Lead (designated by a TL in the center of the marker), Headquarters (HQ in center), Sniper (S), Medic (+), Forward Observer (FO), RTO (R) or K9 (K9). The options available when another user's Self-Marker is selected are: Inner Ring – Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, GPS Lock on Friendly, Video Player (if available), Communication Options (if configured by that user), Custom Threat Rings, Tracking Breadcrumbs and Details.

Outer Ring (Communication Options) – Data Package, Email, SMS Messaging, GeoChat, VOIP and Cellular Phone, when available.

Point Dropper

Selecting the [**Point Dropper**] icon will open the Point Dropper menu, containing marker symbology with one or more icon sets, a Recently Added button and an Iconset Manager button.

The Markers symbology affiliations are: Unknown, Neutral, Red and Friendly. Select the affiliation, then a location on the map interface to drop the marker. To add a marker by manually entering coordinates, long press on the map interface and enter the MGRS location. Change the standard naming convention by entering values into the custom prefix and index fields or leave blank to use the defaults. If values are entered, the next marker will be dropped with the prefix name and starting number(s) or letter(s) and every subsequent marker will be assigned the next consecutive number(s) or letter(s).

The user can select the mission specific pallet to open point options including Waypoint (WP), Sensor or Observation Point (OP).

The user can move between icon sets by either swiping in the icon set area or selecting on the [**Iconset Name**] field to bring up the Icon Pallet drop-down.

The last point placed is shown at the bottom of the Point Dropper window. The information for all recently placed points can be accessed by selecting the [**Clock**] icon. This displays the marker icon, name, coordinates, elevation and range & bearing information. The user can send, rename or remove any recently added markers by selecting the [**Arrows**] next to the marker to reveal [**SEND**], [**RENAME**] or [**DEL**] buttons.

Select the [**Iconset Manager**] (gear) button to add or delete icon sets or to set the default Marker Mapping.

Radial Menus

Unknown Object | **Neutral Object** | **Red Object** | **Friendly Object** | **Spot Object**

The options available for Unknown Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Neutral Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Red Object Markers are: Delete, Polar Coordinate Entry, Compass Rose/Bullseye, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Friendly Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Video, Contact Card, Custom Threat Rings, Tracking Breadcrumbs and Details. The Video radial will activate if a properly formatted packet that includes the link to the video feed is included. Select the video radial to open the associated video. The Contact Card can be selected to display additional communication options, including GeoChat, Email, VoIP, SMS Messaging and Cellular Phone, when available.

The options available for Spot Map are: Delete, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Nav-To, Custom Threat Rings, Labels and Details.

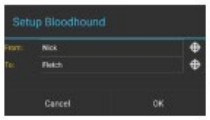
The options for User Defined Iconsets are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings. Tracking Breadcrumbs and Details.

Select [**Details**] on the marker radial to make desired modifications, including: Coordinate, Elevation, Name, Type and Remarks. Selecting Marker Type opens a dialog box with extra categories. File attachments, including images, can be associated with the object by selecting the [**Paperclip**] icon. Once all the desired modifications have been made, the Marker can be sent to other network members using [**Send**]. The information can be broadcast to all members or sent to specific recipients. Select the [**Auto Send**] option to broadcast the marker to other TAK users on the network, with updates automatically sent about once every 60 seconds.

Bloodhound Tool

The Bloodhound Tool provides support for tracking and intercepting a map item. It allows the user to select two points on the map and/or map objects and display range & bearing information between the chosen tracker and the target.

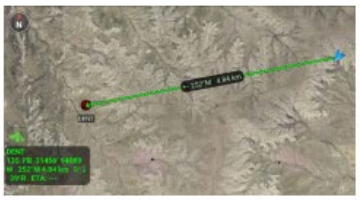
Select the [**Bloodhound**] icon to open the Bloodhound Tool. A window will open, prompting the user to choose where to start by tapping the [**From Reticle**] (default = user's self marker) and where to bloodhound (track) to by tapping the [**To Reticle**].



Targets include map objects like other User's Self Markers, DPs, Markers, Shape center points, Range & Bearing endpoints and any other map objects. If the user selects a map location instead of an object as the target, Bloodhound will place a waypoint marker there. The self marker will then track towards the waypoint.

Select [**OK**] and Bloodhound will be activated.

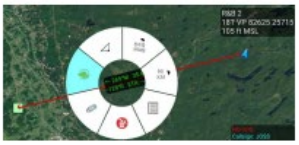
If either point moves, the green widget in the lower left will show the updated information. As the tracking object begins to navigate toward the target, the Estimated Time of Arrival (ETA) will update accordingly.



The green line showing the direct path from the tracker to the target will flash when the user-defined ETA outer threshold is reached (default = 6 minutes from target). The line will flash as the tracker continues toward the target until the next ETA threshold is reached (default = 3 minutes). The line will turn a flashing yellow until the final ETA threshold (default = 1 minute) is reached. The line then flashes red until the target is reached. Colors and thresholds can be modified in Settings > Tool Preferences > Bloodhound Preferences.

Selecting the green Bloodhound icon on the map will pan the map to the Bloodhound Range & Bearing Line. Disengage the Bloodhound Tool by selecting the [**Bloodhound**] icon on the toolbar.

Multiple Bloodhound



To create multiple bloodhounds, selecting the Range and Bearing Tool and select the [**R&B Line**] icon. Select two markers on the map and once the R&B line is created, select the line to bring up the radial. Select the [**Bloodhound**] radial, and the bloodhound information will be displayed on the R&B Line itself.

If either point moves, the Bloodhound information shown on the R&B Line will be updated. As the tracking object begins to navigate toward the target, the Estimated Time of Arrival (ETA) will update accordingly.

Go To

Select the [**Go To**] icon to enter details and navigate to a specific location on the map.

Select from the [**MGRS**] (military grid reference system), [**DD**] (decimal degrees), [**DM**] (degrees - minutes), [**DMS**] (degrees-minutes-seconds), [**UTM**] (Universal Transverse Mercator) or [**ADDR**] tabs on the Go To interface and enter the location data of interest. The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

The user can enter the Latitude, Longitude and Elevation in the space provided for [**MGRS**] , [**DD**], [**D-M**] or [**D-M-S**] searches. If DTED is installed, the elevation value can be automatically populated by tapping the [**Pull From DTED**] button.The user can select a desired marker type (Spot, Unknown, Neutral, Red, or Friendly) to be placed at the entered coordinates. If [**No Point**] is selected, the map will pan to the location but will not add a point.

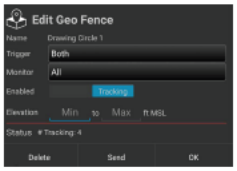
Note: The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

The Address Lookup provider used for the ADDR tab can be configured in the Settings > Tool Preferences > Address Lookup Preferences.

32

Geofencing

The Geo Fence tool allows users to create a virtual fence that triggers entry/exit notifications if map items of interest cross the virtual boundary lines. The Geo Fence options are added to the existing drawing tools. After a shape has been added, the Geo Fence Tool can be accessed either by selecting the [**Geo Fence**] icon from the menu items or selecting it from the radial.

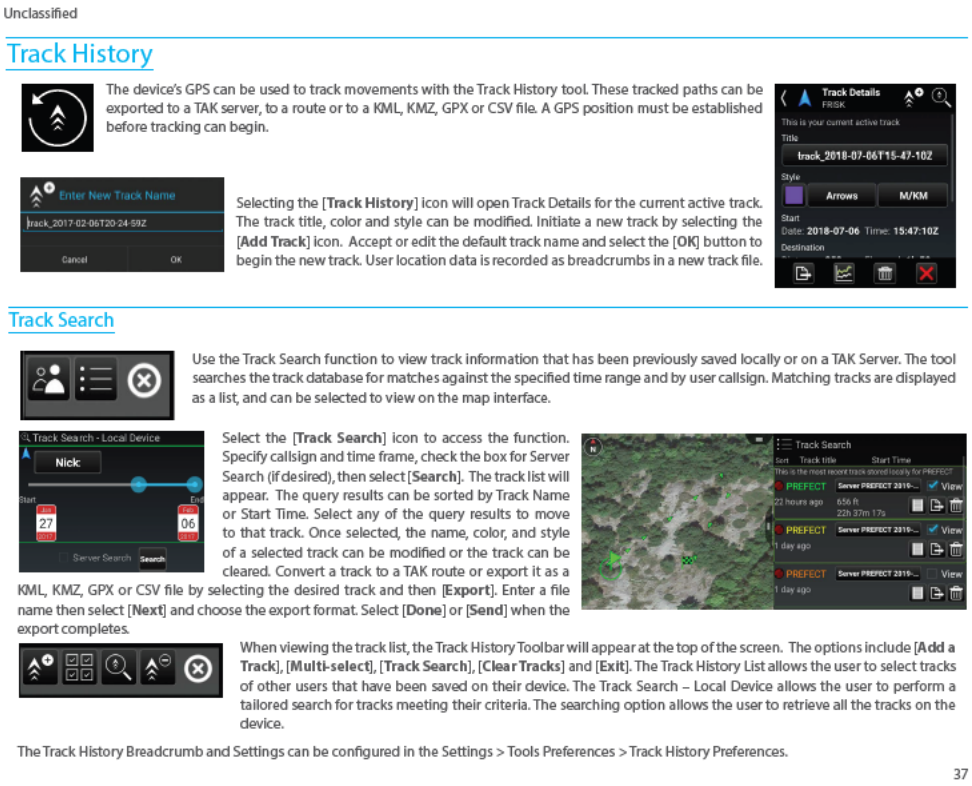


The Enabled Field slider will move to Tracking by default when a new Geo Fence window is created. Toggle the slider between Tracking and Off to enable/disable the Geo Fence. Use the Trigger field to define which types of Geo Fence breach to monitor. Choose between Entry, Exit or Both. Use the Monitor field to define which entities the Geo Fence will track.

Choose between TAK Users, Friendly, Hostile, Custom or All. Check the [**Specify Elevation**] box to enable the Elevation field, where elevation boundaries for the entities being tracked can be defined. Select the [**OK**] button to finish creating the fence. Select the [**Send**] button to create the fence and send it to another user. Select [**Delete**] to close the Create Geo Fence window and discard changes.

Alerts appear on the map interface. Selecting the [**Alert Notification**] will open the alerts menu, detailing the activity monitored in the user defined region. The default radius for monitoring users (filtered within the "Monitor" field) outside the Geo Fence is set at 75 km. This means the total area monitored begins at the farthest point from the center of the shape plus 75 km. If the user wishes to keep the Geo Fence, but disable tracking, the user can set the tracking [**Enabled**] to off in the Edit Window.

35


Unclassified

Track History

The device's GPS can be used to track movements with the Track History tool. These tracked paths can be exported to a TAK server, to a route or to a KML, KMZ, GPX or CSV file. A GPS position must be established before tracking can begin.

Selecting the [**Track History**] icon will open Track Details for the current active track. The track title, color and style can be modified. Initiate a new track by selecting the [**Add Track**] icon. Accept or edit the default track name and select the [**OK**] button to begin the new track. User location data is recorded as breadcrumbs in a new track file.

Track Search

Use the Track Search function to view track information that has been previously saved locally or on a TAK Server. The tool searches the track database for matches against the specified time range and by user callsign. Matching tracks are displayed as a list, and can be selected to view on the map interface.

Select the [**Track Search**] icon to access the function. Specify callsign and time frame, check the box for Server Search (if desired), then select [**Search**]. The track list will appear. The query results can be sorted by Track Name or Start Time. Select any of the query results to move to that track. Once selected, the name, color, and style of a selected track can be modified or the track can be cleared. Convert a track to a TAK route or export it as a KML, KMZ, GPX or CSV file by selecting the desired track and then [**Export**]. Enter a file name then select [**Next**] and choose the export format. Select [**Done**] or [**Send**] when the export completes.

When viewing the track list, the Track History Toolbar will appear at the top of the screen. The options include [**Add a Track**], [**Multi-select**], [**Track Search**], [**Clear Tracks**] and [**Exit**]. The Track History List allows the user to select tracks of other users that have been saved on their device. The Track Search – Local Device allows the user to perform a tailored search for tracks meeting their criteria. The searching option allows the user to retrieve all the tracks on the device.

The Track History Breadcrumb and Settings can be configured in the Settings > Tools Preferences > Track History Preferences.

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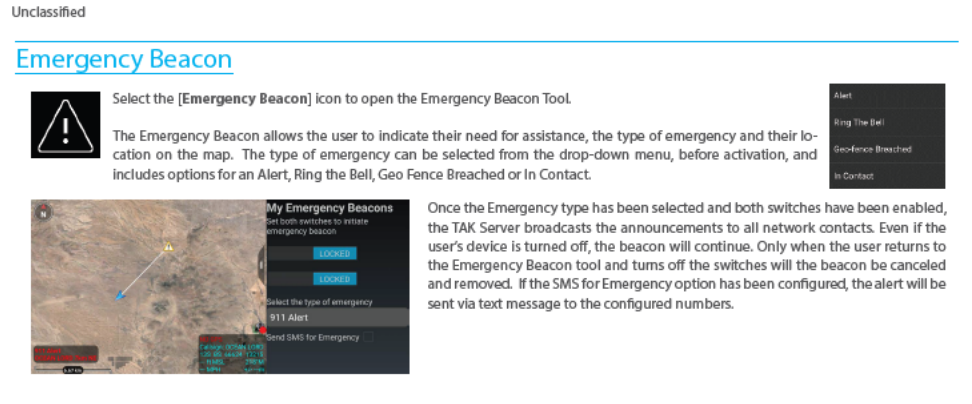

Unclassified

Emergency Beacon

Select the [**Emergency Beacon**] icon to open the Emergency Beacon Tool.

The Emergency Beacon allows the user to indicate their need for assistance, the type of emergency and their location on the map. The type of emergency can be selected from the drop-down menu, before activation, and includes options for an Alert, Ring the Bell, Geo Fence Breached or In Contact.

Once the Emergency type has been selected and both switches have been enabled, the TAK Server broadcasts the announcements to all network contacts. Even if the user's device is turned off, the beacon will continue. Only when the user returns to the Emergency Beacon tool and turns off the switches will the beacon be canceled and removed. If the SMS for Emergency option has been configured, the alert will be sent via text message to the configured numbers.

8

27. For example, the exemplary Accused Products allow users to establish groups and to exchange messages via interaction with servers which provide the Raytheon TAK, TAK Server, ATAK, WebTAK, CivTAK, and WinTAK services, among other relevant services. The exemplary Accused Products further allow users to retrieve map information from multiple sources, including street-view maps.

[8] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view

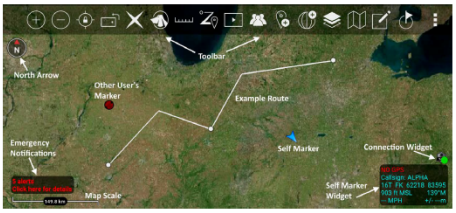
ATAK Civilian Overview

The Civilian Team Awareness Kit for Android (ATAK Civilian) is a Government-off-the-Shelf (GOTS) software application and mapping framework for mobile devices. ATAK Civilian has been designed and developed to run on Android smart devices used in a first responder environment. The ATAK Civilian software application is an extensible moving map display that integrates imagery, map and overlay information to provide enhanced collaboration and Situational Awareness (SA) over a tactical meshed network. ATAK Civilian promotes information flow and communications from the field environment to command enterprise locations.

The first time ATAK Civilian is opened, or after a Clear Content, a passphrase is auto-generated to activate data encryption. The user can supply their own passphrase by using Settings > Show All Preferences > Device Preferences > Change Encryption Passphrase. Following this step, ATAK Civilian's End User License Agreement (EULA) must be accepted. Next, the user will be prompted to change their callsign and/or import preferences or data from a Mission Package. All changes/imports can always be updated later. Finally, the user can place their self-marker by following the instructions located in the lower right corner.

The toolbar runs along the top of the map display. The features whose icons form the center portion of the toolbar are discussed in individual sections of this guide. The three dots at the right of the toolbar provide additional menu items that appear in a drop-down menu. A Long Press on the map will toggle the toolbar between hidden and visible.

The North Arrow appears in the upper left and is used to control map orientation. It has two primary modes: North Up/Track Up (default) and Manual Map Rotation/Lock. While in North Up/Track Up Mode, single press on the [**North Arrow**] icon to cycle between the North Up and Track Up map orientation. Long press the [**North Arrow**] to call out the additional controls menu where the Manual Rotation/Lock and 3D features are available. Select the [**Rotation**] button to enter Manual Map Rotation/Lock Mode. When in Manual Map Rotation/Lock Mode, rotate the map orientation by pressing on the map with two fingers and pivoting them in the desired direction. Single press on the [**North Arrow**] to lock the screen orientation, signified by the appearance of the lock icon, and again to unlock the orientation for further adjustment. 3D controls are discussed in a separate section.



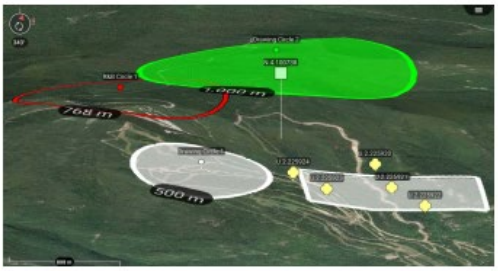
Select the [**Magnifier**] buttons to zoom in or out on the map. The map can also be zoomed by using two fingers on the screen to pinch and spread the map. Select the [**Back**] button to center the screen on the Self Marker or the [**Padlock**] icon to lock the center of the screen to the Self Marker. Select the [**Orientation**] icon to toggle the screen position between portrait and landscape.

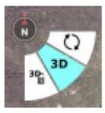
The optional connection widget indicates whether or not the user is connected to a TAK Server. This has a corresponding Android notification that provides the same information. Toggle this display on at Settings > Network Connections > Network Connections > Display Connection Widget.

Alerts and notifications are displayed in the lower left of the map interface.

The Map Scale displays a 1 inch to X mi/km reference on the map. The scale adjusts with the map when zoomed in and out. Hint windows are available to alert users to changes or make suggestions about the use of tools the first time they are opened.

3D View





ATAK Civilian features 3D viewing of terrain and map items (DTED required). To enable 3D view, long press on the [**North Arrow**] to call out the additional controls menu and select [**3D**]. A tilt angle indicator will appear around the edge of the [**North Arrow**] when 3D view is active. Touch the screen with two fingers and simultaneously swipe up or down on the screen to tilt the view angle. Once the appropriate viewing angle is set, select the [**3D Lock**] button to retain this view while panning the map. While viewing the map from an angle, some map items will appear raised above the map surface if they have defined elevations.

3D Models

ATAK Civilian supports the use of 3D models. OBJ models and other types from products such as Pix4D can be imported via the Import Manager or can be manually placed in the atak/overlays folder prior to startup. If using Import Manager browse to the .OBJ file and import only that file, or browse to a .ZIP file that contains the .OBJ file (and others) and import only that file. If using manual placement to the atak/overlays folder, place a .ZIP file containing the .OBJ file (and others) into the directory and they will be imported on startup.

Once imported, a 3D Model icon will appear on the map. Zoom into the area of the icon until a loading ring appears. After the loading process has finished, the 3D model will be projected onto the map. Enable the map 3D View and tilt the view angle to see the 3D modeling. Loaded 3D models will appear as their own category in Overlay Manager and can be toggled on/off or removed from there.

Unclassified

Placement

The user can enter locations of interest using the Point Dropper tool. Select the [**Point Dropper**] icon to place internationally standardized markers and other icons on the map, edit the data and share the markers with other network members.

Self-Marker

The Self-Marker is displayed as a blue arrowhead at the user's current location. The options available on the Self-Marker radial are: Compass Rose, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, GPS Error, Range & Bearing Line, GPS Lock to Self, Tracking Breadcrumbs, Place a Marker at the user's current location and Details. Other TAK users appear on the display as a colored circle. The color of the circle represents the user's Team affiliation, with additional lettering inside the circle to identify the role the user on the team. Team Member markers that include a diagonal line indicate that the GPS location is not available. A solid icon indicated that the team member has GPS reception.

Available roles include: Team Member, Team Lead (designated by a TL in the center of the marker), Headquarters (HQ in center), Sniper (S), Medic (+), Forward Observer (FO), RTO (R) or K9 (K9). The options available when another user's Self-Marker is selected are: Inner Ring – Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, GPS Lock on Friendly, Video Player (if available), Communication Options (if configured by that user), Custom Threat Rings, Tracking Breadcrumbs and Details.

Outer Ring (Communication Options) – Data Package, Email, SMS Messaging, GeoChat, VOIP and Cellular Phone, when available.

Unclassified

Radial Menus

Unknown Object | **Neutral Object** | **Red Object** | **Friendly Object** | **Spot Object**

The options available for Unknown Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Neutral Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Red Object Markers are: Delete, Polar Coordinate Entry, Compass Rose/Bullseye, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Friendly Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Video, Contact Card, Custom Threat Rings, Tracking Breadcrumbs and Details. The Video radial will activate if a properly formatted packet that includes the link to the video feed is included. Select the video radial to open the associated video. The Contact Card can be selected to display additional communication options, including GeoChat, Email, VoIP, SMS Messaging and Cellular Phone, when available.

The options available for Spot Map are: Delete, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Nav-To, Custom Threat Rings, Labels and Details.

The options for User Defined Iconsets are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings. Tracking Breadcrumbs and Details.

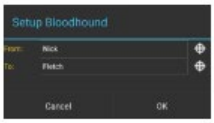
Select [**Details**] on the marker radial to make desired modifications, including: Coordinate, Elevation, Name, Type and Remarks. Selecting Marker Type opens a dialog box with extra categories. File attachments, including images, can be associated with the object by selecting the [**Paperclip**] icon. Once all the desired modifications have been made, the Marker can be sent to other network members using [**Send**]. The information can be broadcast to all members or sent to specific recipients. Select the [**Auto Send**] option to broadcast the marker to other TAK users on the network, with updates automatically sent about once every 60 seconds.

Unclassified

Bloodhound Tool

The Bloodhound Tool provides support for tracking and intercepting a map item. It allows the user to select two points on the map and/or map objects and display range & bearing information between the chosen tracker and the target.

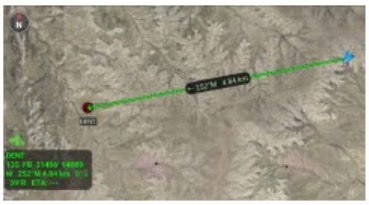
Select the [**Bloodhound**] icon to open the Bloodhound Tool. A window will open, prompting the user to choose where to start by tapping the [**From Reticle**] (default = user's self marker) and where to bloodhound (track) to by tapping the [**To Reticle**].



Targets include map objects like other User's Self Markers, DPs, Markers, Shape center points, Range & Bearing end-points and any other map objects. If the user selects a map location instead of an object as the target, Bloodhound will place a waypoint marker there. The self marker will then track towards the waypoint.

Select [**OK**] and Bloodhound will be activated.

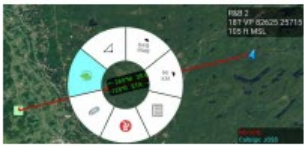
If either point moves, the green widget in the lower left will show the updated information. As the tracking object begins to navigate toward the target, the Estimated Time of Arrival (ETA) will update accordingly.



The green line showing the direct path from the tracker to the target will flash when the user-defined ETA outer threshold is reached (default = 6 minutes from target). The line will flash as the tracker continues toward the target until the next ETA threshold is reached (default = 3 minutes). The line will turn a flashing yellow until the final ETA threshold (default = 1 minute) is reached. The line then flashes red until the target is reached. Colors and thresholds can be modified in Settings > Tool Preferences > Bloodhound Preferences.

Selecting the green Bloodhound icon on the map will pan the map to the Bloodhound Range & Bearing Line. Disengage the Bloodhound Tool by selecting the [**Bloodhound**] icon on the toolbar.

Multiple Bloodhound



To create multiple bloodhounds, selecting the Range and Bearing Tool and select the [**R&B Line**] icon. Select two markers on the map and once the R&B line is created, select the line to bring up the radial. Select the [**Bloodhound**] radial, and the bloodhound information will be displayed on the R&B Line itself.

If either point moves, the Bloodhound information shown on the R&B Line will be updated. As the tracking object begins to navigate toward the target, the Estimated Time of Arrival (ETA) will update accordingly.

Go To

Select the [**Go To**] icon to enter details and navigate to a specific location on the map.

Select from the [**MGRS**] (military grid reference system), [**DD**] (decimal degrees), [**DM**] (degrees - minutes), [**DMS**] (degrees-minutes-seconds), [**UTM**] (Universal Transverse Mercator) or [**ADDR**] tabs on the Go To interface and enter the location data of interest. The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

The user can enter the Latitude, Longitude and Elevation in the space provided for [**MGRS**] , [**DD**], [**D-M**] or [**D-M-S**] searches. If DTED is installed, the elevation value can be automatically populated by tapping the [**Pull From DTED**] button.The user can select a desired marker type (Spot, Unknown, Neutral, Red, or Friendly) to be placed at the entered coordinates. If [**No Point**] is selected, the map will pan to the location but will not add a point.

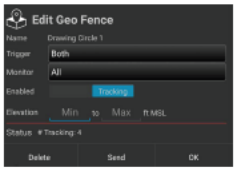
Note: The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

The Address Lookup provider used for the ADDR tab can be configured in the Settings > Tool Preferences > Address Lookup Preferences.

32

Geofencing

The Geo Fence tool allows users to create a virtual fence that triggers entry/exit notifications if map items of interest cross the virtual boundary lines. The Geo Fence options are added to the existing drawing tools. After a shape has been added, the Geo Fence Tool can be accessed either by selecting the [**Geo Fence**] icon from the menu items or selecting it from the radial.



The Enabled Field slider will move to Tracking by default when a new Geo Fence window is created. Toggle the slider between Tracking and Off to enable/disable the Geo Fence. Use the Trigger field to define which types of Geo Fence breach to monitor. Choose between Entry, Exit or Both. Use the Monitor field to define which entities the Geo Fence will track.

Choose between TAK Users, Friendly, Hostile, Custom or All. Check the [**Specify Elevation**] box to enable the Elevation field, where elevation boundaries for the entities being tracked can be defined. Select the [**OK**] button to finish creating the fence. Select the [**Send**] button to create the fence and send it to another user. Select [**Delete**] to close the Create Geo Fence window and discard changes.

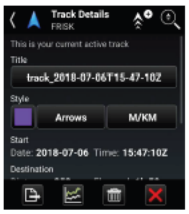
Alerts appear on the map interface. Selecting the [**Alert Notification**] will open the alerts menu, detailing the activity monitored in the user defined region. The default radius for monitoring users (filtered within the "Monitor" field) outside the Geo Fence is set at 75 km. This means the total area monitored begins at the farthest point from the center of the shape plus 75 km. If the user wishes to keep the Geo Fence, but disable tracking, the user can set the tracking [**Enabled**] to off in the Edit Window.

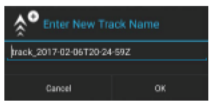
35

Unclassified

Track History

The device's GPS can be used to track movements with the Track History tool. These tracked paths can be exported to a TAK server, to a route or to a KML, KMZ, GPX or CSV file. A GPS position must be established before tracking can begin.



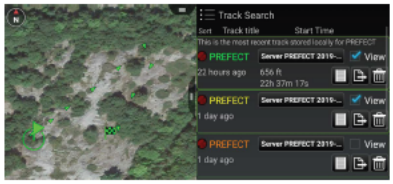


Selecting the [**Track History**] icon will open Track Details for the current active track. The track title, color and style can be modified. Initiate a new track by selecting the [**Add Track**] icon. Accept or edit the default track name and select the [**OK**] button to begin the new track. User location data is recorded as breadcrumbs in a new track file.

Track Search

Use the Track Search function to view track information that has been previously saved locally or on a TAK Server. The tool searches the track database for matches against the specified time range and by user callsign. Matching tracks are displayed as a list, and can be selected to view on the map interface.

Select the [**Track Search**] icon to access the function. Specify callsign and time frame, check the box for Server Search (if desired), then select [**Search**]. The track list will appear. The query results can be sorted by Track Name or Start Time. Select any of the query results to move to that track. Once selected, the name, color, and style of a selected track can be modified or the track can be cleared. Convert a track to a TAK route or export it as a KML, KMZ, GPX or CSV file by selecting the desired track and then [**Export**]. Enter a file name then select [**Next**] and choose the export format. Select [**Done**] or [**Send**] when the export completes.

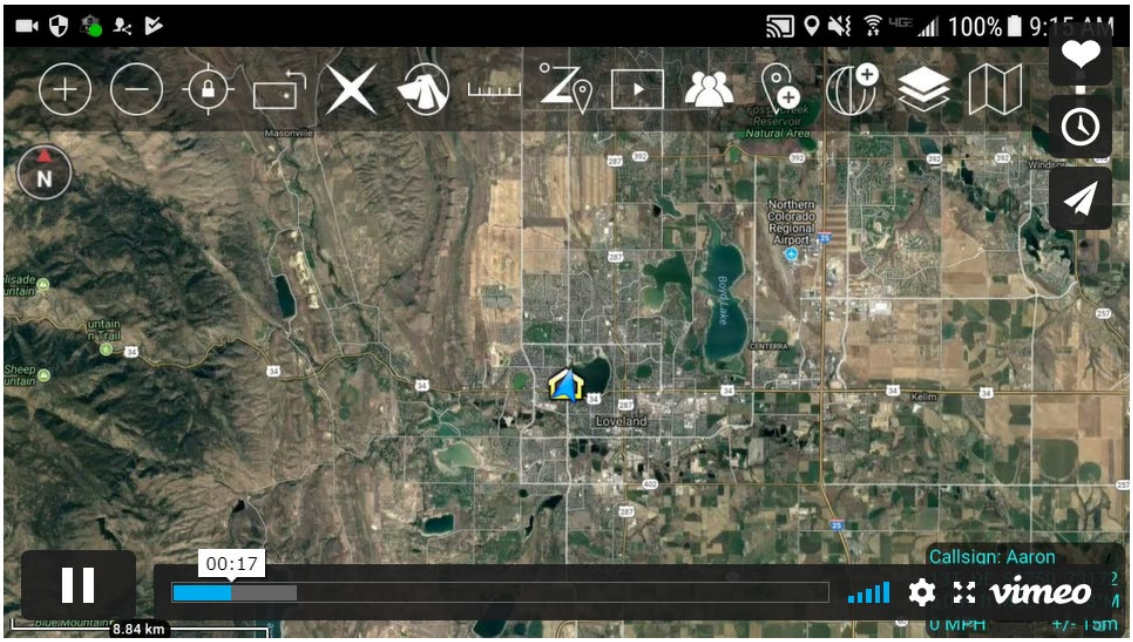


When viewing the track list, the Track History Toolbar will appear at the top of the screen. The options include [**Add a Track**], [**Multi-select**], [**Track Search**], [**Clear Tracks**] and [**Exit**]. The Track History List allows the user to select tracks of other users that have been saved on their device. The Track Search – Local Device allows the user to perform a tailored search for tracks meeting their criteria. The searching option allows the user to retrieve all the tracks on the device.

The Track History Breadcrumb and Settings can be configured in the Settings > Tools Preferences > Track History Preferences.

37 9

[9] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view



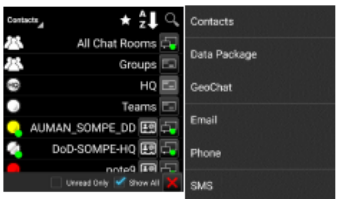
[10]

28. The exemplary Accused Products are programmed to receive messages from other devices where those messages relate to joining groups, as depicted below:

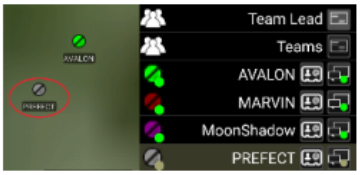
[10] https://wiki.civtak.org/index.php?title=ATAK_Manual

Contacts

The Contacts list includes a variety of ways in which a user may communicate with other users, such as GeoChat (ATAK Civilian's built in Chat capability), Data Packages, Email, Phone, SMS, VoIP and XMPP.



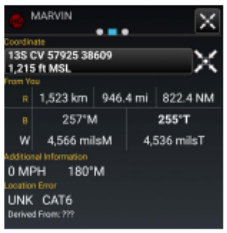
A default communication type (shown in the last column) may be selected and used until another type of communication is selected.



The Contacts list has two filters available at the bottom of the screen. The Unread Only box, when checked, will display only contacts with whom there are unread message waiting. When unchecked (default), all available contacts are displayed. The [**Show All**] box, when checked (default), will display all contacts regardless of their location. When unchecked, only contacts that are visible on current map screen will be displayed.

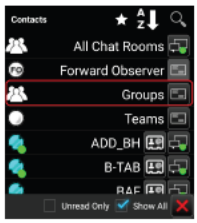
If a contact is no longer online, it will be indicated by changing the contact listing to a yellow color and the marker changes to gray both in the list and on the map.

Profile cards are accessed by selecting the second to last column in the Contacts list and are available for each contact. These contain additional information about that contact including: 1) role, software type and version installed, node type, default connector, last reported time, battery life; 2) location information, and 3) available types of communication.

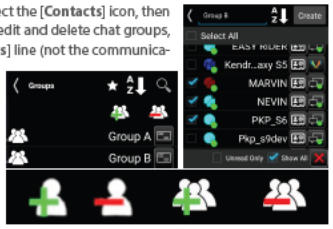


GeoChat Group Management

Text-based Chat messages may be sent to active network members by using the GeoChat function. To enter GeoChat Group Management, select the [**Contacts**] icon and select [**GeoChat**] from the drop-down menu.

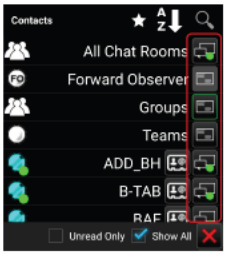


GeoChat Group Management is initiated through Contacts. Select the [**Contacts**] icon, then select GeoChat from the drop-down. The user can now create, edit and delete chat groups, as well as sub-groups. To create a chat group, select the [**Groups**] line (not the communications button). Select the [**Add Group**] icon to create the name of the group and add contacts to the group and then select [**Create**]. If a parent group is being created, no contacts need to be added at this level. To add a nested group, tap the parent group, select the [**Add Group**] icon to create the name of the sub-group and add contacts. Groups may be managed using the options to add/delete contacts or to add/delete GeoChat group.



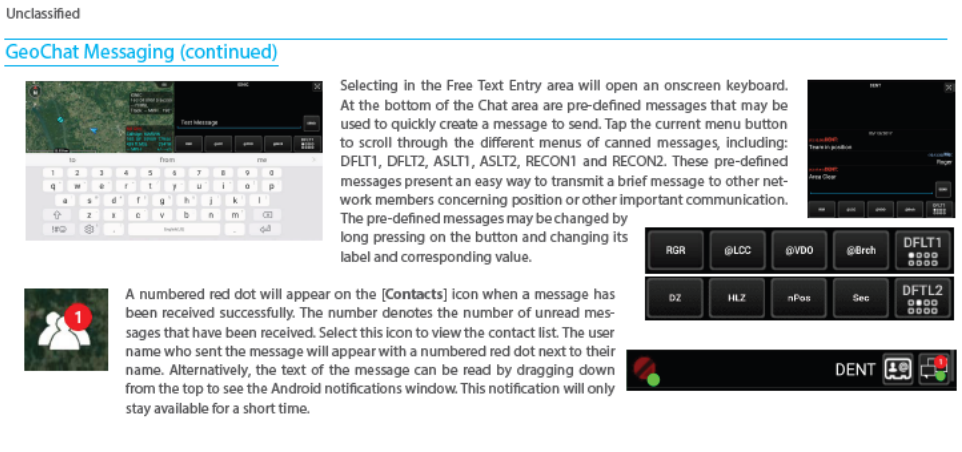
To add users to a group, select the [**Groups**] line (not the communications button), then select the name of the group to add users. Select the [**Add Users**] icon. A window will open allowing the group creater to add users to the selected group. Select the [**Add**] button when all the users to be added are checked.

GeoChat Messaging



Group and person-to-person messaging is available. To view messages from or send messages to an individual, tap on the desired contact's [**Communication**] icon. Selecting the [**Pan To**] icon, located at the top right of the call sign in an individual chat, will pan the map interface to that user's location. Select [**All Chat Rooms**] to view all messages from or send messages to those present on the network or TAK Server. Other groupings available for viewing or sending messages are: Forward Observer, Groups, HQ, K9, Medic, RTO, Sniper, Team Lead and Teams. If the user's current role is Forward Observer, HQ, K9, Medic, RTO, Sniper or Team Lead, that user can view or send messages to all other contacts with the same role. If a GeoChat message is sent from the top level of Teams, it will be sent to all contacts, similar to [**All Chat Rooms**].

When a sub-Team is chosen, messages can only be sent to that user's active (My Team) team color. When a parent group is chosen, messages are sent to all members of the parent group, as well as all of the sub-groups. When a sub-group is chosen, messages are sent only to members of the sub-group. Individuals within GeoChat may be removed from the Contacts menu by toggling the visibility of individuals or groups within Overlay Manager.



11

29. The exemplary Accused Products are further programmed to facilitate participation in the group by communicating with a server and sending to and receiving location information, as depicted below:

[11] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view

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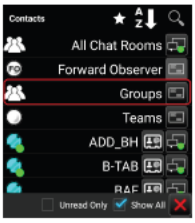

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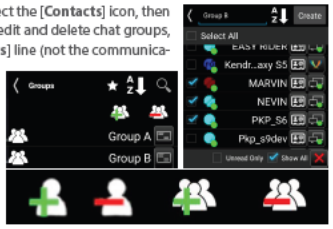

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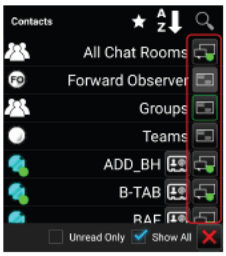
GeoChat Messaging



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GeoChat Messaging (continued)

Selecting in the Free Text Entry area will open an onscreen keyboard. At the bottom of the Chat area are pre-defined messages that may be used to quickly create a message to send. Tap the current menu button to scroll through the different menus of canned messages, including: DFLT1, DFLT2, ASLT1, ASLT2, RECON1 and RECON2. These pre-defined messages present an easy way to transmit a brief message to other network members concerning position or other important communication. The pre-defined messages may be changed by long pressing on the button and changing its label and corresponding value.

A numbered red dot will appear on the [**Contacts**] icon when a message has been received successfully. The number denotes the number of unread messages that have been received. Select this icon to view the contact list. The user name who sent the message will appear with a numbered red dot next to their name. Alternatively, the text of the message can be read by dragging down from the top to see the Android notifications window. This notification will only stay available for a short time.

Go To

Select the [**Go To**] icon to enter details and navigate to a specific location on the map.

Select from the [**MGRS**] (military grid reference system), [**DD**] (decimal degrees), [**DM**] (degrees - minutes), [**DMS**] (degrees-minutes-seconds), [**UTM**] (Universal Transverse Mercator) or [**ADDR**] tabs on the Go To interface and enter the location data of interest. The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

The user can enter the Latitude, Longitude and Elevation in the space provided for [**MGRS**] , [**DD**], [**D-M**] or [**D-M-S**] searches. If DTED is installed, the elevation value can be automatically populated by tapping the [**Pull From DTED**] button.The user can select a desired marker type (Spot, Unknown, Neutral, Red, or Friendly) to be placed at the entered coordinates. If [**No Point**] is selected, the map will pan to the location but will not add a point.

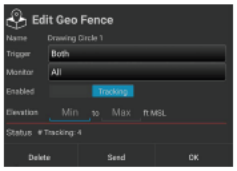
Note: The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

The Address Lookup provider used for the ADDR tab can be configured in the Settings > Tool Preferences > Address Lookup Preferences.

32

Geofencing

The Geo Fence tool allows users to create a virtual fence that triggers entry/exit notifications if map items of interest cross the virtual boundary lines. The Geo Fence options are added to the existing drawing tools. After a shape has been added, the Geo Fence Tool can be accessed either by selecting the [**Geo Fence**] icon from the menu items or selecting it from the radial.

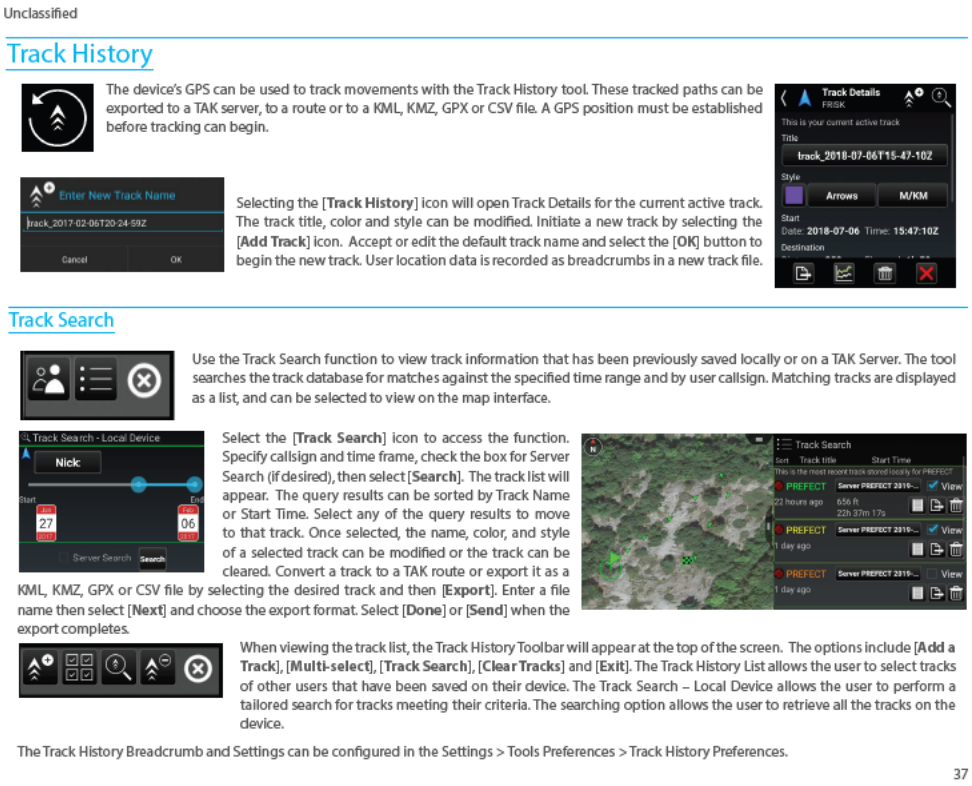


The Enabled Field slider will move to Tracking by default when a new Geo Fence window is created. Toggle the slider between Tracking and Off to enable/disable the Geo Fence. Use the Trigger field to define which types of Geo Fence breach to monitor. Choose between Entry, Exit or Both. Use the Monitor field to define which entities the Geo Fence will track.

Choose between TAK Users, Friendly, Hostile, Custom or All. Check the [**Specify Elevation**] box to enable the Elevation field, where elevation boundaries for the entities being tracked can be defined. Select the [**OK**] button to finish creating the fence. Select the [**Send**] button to create the fence and send it to another user. Select [**Delete**] to close the Create Geo Fence window and discard changes.

Alerts appear on the map interface. Selecting the [**Alert Notification**] will open the alerts menu, detailing the activity monitored in the user defined region. The default radius for monitoring users (filtered within the "Monitor" field) outside the Geo Fence is set at 75 km. This means the total area monitored begins at the farthest point from the center of the shape plus 75 km. If the user wishes to keep the Geo Fence, but disable tracking, the user can set the tracking [**Enabled**] to off in the Edit Window.

35


Unclassified

Track History

The device's GPS can be used to track movements with the Track History tool. These tracked paths can be exported to a TAK server, to a route or to a KML, KMZ, GPX or CSV file. A GPS position must be established before tracking can begin.

Enter New Track Name
track_2017-02-06T20-24-59Z
Cancel OK

Selecting the [**Track History**] icon will open Track Details for the current active track. The track title, color and style can be modified. Initiate a new track by selecting the [**Add Track**] icon. Accept or edit the default track name and select the [**OK**] button to begin the new track. User location data is recorded as breadcrumbs in a new track file.

Track Details
FRISK
This is your current active track
Title
track_2018-07-06T15-47-10Z
Style
Arrows M/KM
Start
Date: 2018-07-06 Time: 15:47:10Z
Destination

Track Search

Use the Track Search function to view track information that has been previously saved locally or on a TAK Server. The tool searches the track database for matches against the specified time range and by user callsign. Matching tracks are displayed as a list, and can be selected to view on the map interface.

Track Search - Local Device
Nick
Start End
Server Search Search

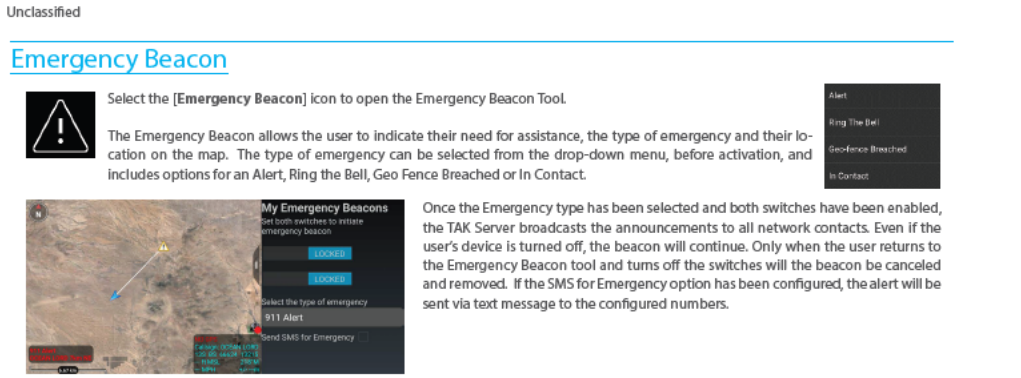
Select the [**Track Search**] icon to access the function. Specify callsign and time frame, check the box for Server Search (if desired), then select [**Search**]. The track list will appear. The query results can be sorted by Track Name or Start Time. Select any of the query results to move to that track. Once selected, the name, color, and style of a selected track can be modified or the track can be cleared. Convert a track to a TAK route or export it as a KML, KMZ, GPX or CSV file by selecting the desired track and then [**Export**]. Enter a file name then select [**Next**] and choose the export format. Select [**Done**] or [**Send**] when the export completes.

Track Search
Sent Track title Start Time
This is the most recent track stored locally for PREFECT
PREFECT Server PREFECT 2019-... View
22 hours ago 656 ft 22h 37m 17s
PREFECT Server PREFECT 2019-... View
1 day ago
PREFECT Server PREFECT 2019-... View
1 day ago

When viewing the track list, the Track History Toolbar will appear at the top of the screen. The options include [**Add a Track**], [**Multi-select**], [**Track Search**], [**Clear Tracks**] and [**Exit**]. The Track History List allows the user to select tracks of other users that have been saved on their device. The Track Search – Local Device allows the user to perform a tailored search for tracks meeting their criteria. The searching option allows the user to retrieve all the tracks on the device.

The Track History Breadcrumb and Settings can be configured in the Settings > Tools Preferences > Track History Preferences.

37


Unclassified

Emergency Beacon

Select the [**Emergency Beacon**] icon to open the Emergency Beacon Tool.

The Emergency Beacon allows the user to indicate their need for assistance, the type of emergency and their location on the map. The type of emergency can be selected from the drop-down menu, before activation, and includes options for an Alert, Ring the Bell, Geo Fence Breached or In Contact.

Alert
Ring The Bell
Geo-fence Breached
In Contact

My Emergency Beacons
Set both switches to initiate emergency beacon
LOCKED
LOCKED
Select the type of emergency
911 Alert
Send SMS for Emergency

Once the Emergency type has been selected and both switches have been enabled, the TAK Server broadcasts the announcements to all network contacts. Even if the user's device is turned off, the beacon will continue. Only when the user returns to the Emergency Beacon tool and turns off the switches will the beacon be canceled and removed. If the SMS for Emergency option has been configured, the alert will be sent via text message to the configured numbers.

12

30. This location information is presented on interactive displays on the exemplary Accused Products which include interactive maps and a plurality of user selectable symbols corresponding to other devices. These symbols are positioned on the map at positions corresponding to the locations of the other devices, as depicted below:

[12] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view

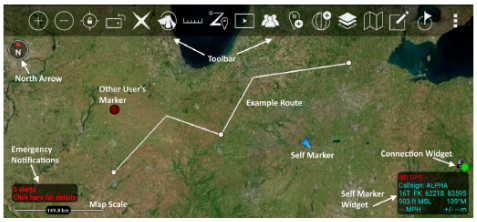
ATAK Civilian Overview

The Civilian Team Awareness Kit for Android (ATAK Civilian) is a Government-off-the-Shelf (GOTS) software application and mapping framework for mobile devices. ATAK Civilian has been designed and developed to run on Android smart devices used in a first responder environment. The ATAK Civilian software application is an extensible moving map display that integrates imagery, map and overlay information to provide enhanced collaboration and Situational Awareness (SA) over a tactical meshed network. ATAK Civilian promotes information flow and communications from the field environment to command enterprise locations.

The first time ATAK Civilian is opened, or after a Clear Content, a passphrase is auto-generated to activate data encryption. The user can supply their own passphrase by using Settings > Show All Preferences > Device Preferences > Change Encryption Passphrase. Following this step, ATAK Civilian's End User License Agreement (EULA) must be accepted. Next, the user will be prompted to change their callsign and/or import preferences or data from a Mission Package. All changes/imports can always be updated later. Finally, the user can place their self-marker by following the instructions located in the lower right corner.

The toolbar runs along the top of the map display. The features whose icons form the center portion of the toolbar are discussed in individual sections of this guide. The three dots at the right of the toolbar provide additional menu items that appear in a drop-down menu. A Long Press on the map will toggle the toolbar between hidden and visible.

The North Arrow appears in the upper left and is used to control map orientation. It has two primary modes: North Up/Track Up (default) and Manual Map Rotation/Lock. While in North Up/Track Up Mode, single press on the [**North Arrow**] icon to cycle between the North Up and Track Up map orientation. Long press the [**North Arrow**] to call out the additional controls menu where the Manual Rotation/Lock and 3D features are available. Select the [**Rotation**] button to enter Manual Map Rotation/Lock Mode. When in Manual Map Rotation/Lock Mode, rotate the map orientation by pressing on the map with two fingers and pivoting them in the desired direction. Single press on the [**North Arrow**] to lock the screen orientation, signified by the appearance of the lock icon, and again to unlock the orientation for further adjustment. 3D controls are discussed in a separate section.



Select the [**Magnifier**] buttons to zoom in or out on the map. The map can also be zoomed by using two fingers on the screen to pinch and spread the map. Select the [**Back**] button to center the screen on the Self Marker or the [**Padlock**] icon to lock the center of the screen to the Self Marker. Select the [**Orientation**] icon to toggle the screen position between portrait and landscape.

The optional connection widget indicates whether or not the user is connected to a TAK Server. This has a corresponding Android notification that provides the same information. Toggle this display on at Settings > Network Connections > Network Connections > Display Connection Widget.

Alerts and notifications are displayed in the lower left of the map interface.

The Map Scale displays a 1 inch to X mi/km reference on the map. The scale adjusts with the map when zoomed in and out. Hint windows are available to alert users to changes or make suggestions about the use of tools the first time they are opened.

Go To

Select the [**Go To**] icon to enter details and navigate to a specific location on the map.

Select from the [**MGRS**] (military grid reference system), [**DD**] (decimal degrees), [**DM**] (degrees- minutes), [**DMS**] (degrees-minutes-seconds), [**UTM**] (Universal Transverse Mercator) or [**ADDR**] tabs on the Go To interface and enter the location data of interest. The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

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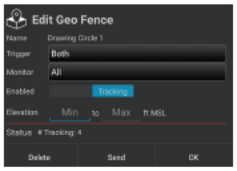

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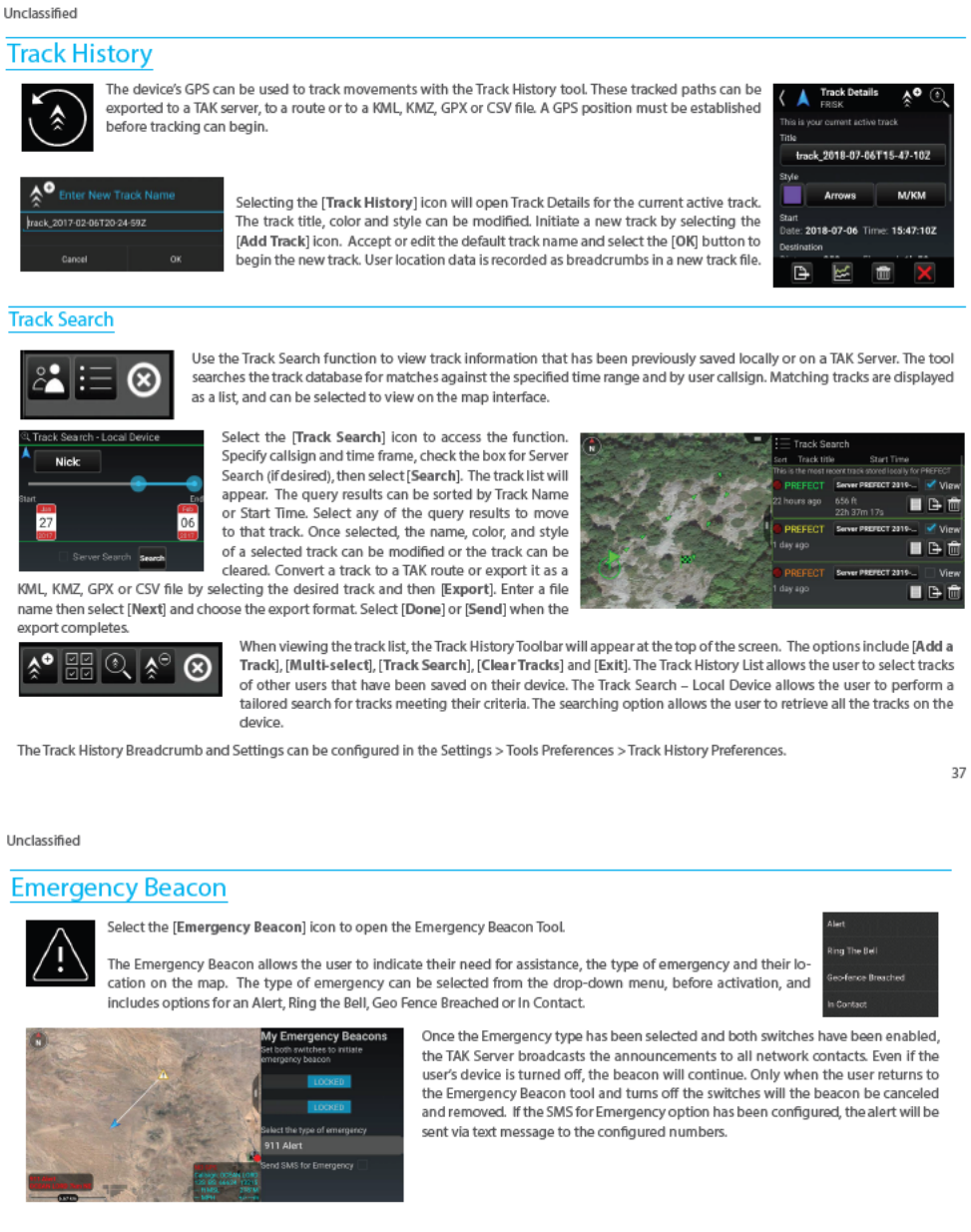

31. The exemplary Accused Products are programmed to permit users to request and display additional maps by, for example, moving the map screen and/or by selecting satellite image maps. The exemplary Accused Products are further programmed to permit interaction with the display where a user may select one or more symbols and where the exemplary Accused Products further permit data to be sent to other devices based on that interaction.

[13] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view

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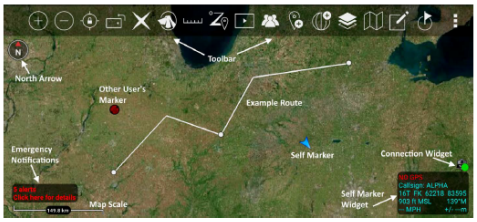

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Alerts and notifications are displayed in the lower left of the map interface.

The Map Scale displays a 1 inch to X mi/km reference on the map. The scale adjusts with the map when zoomed in and out. Hint windows are available to alert users to changes or make suggestions about the use of tools the first time they are opened.

Go To

Select the [**Go To**] icon to enter details and navigate to a specific location on the map.

Select from the [**MGRS**] (military grid reference system), [**DD**] (decimal degrees), [**DM**] (degrees- minutes), [**DMS**] (degrees-minutes-seconds), [**UTM**] (Universal Transverse Mercator) or [**ADDR**] tabs on the Go To interface and enter the location data of interest. The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

The user can enter the Latitude, Longitude and Elevation in the space provided for [**MGRS**] , [**DD**], [**D-M**] or [**D-M-S**] searches. If DTED is installed, the elevation value can be automatically populated by tapping the [**Pull From DTED**] button.The user can select a desired marker type (Spot, Unknown, Neutral, Red, or Friendly) to be placed at the entered coordinates. If [**No Point**] is selected, the map will pan to the location but will not add a point.

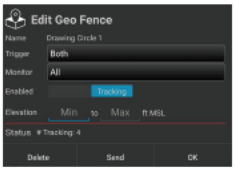
Note: The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

The Address Lookup provider used for the ADDR tab can be configured in the Settings > Tool Preferences > Address Lookup Preferences.

32

Geofencing

The Geo Fence tool allows users to create a virtual fence that triggers entry/exit notifications if map items of interest cross the virtual boundary lines. The Geo Fence options are added to the existing drawing tools. After a shape has been added, the Geo Fence Tool can be accessed either by selecting the [**Geo Fence**] icon from the menu items or selecting it from the radial.



The Enabled Field slider will move to Tracking by default when a new Geo Fence window is created. Toggle the slider between Tracking and Off to enable/disable the Geo Fence. Use the Trigger field to define which types of Geo Fence breach to monitor. Choose between Entry, Exit or Both. Use the Monitor field to define which entities the Geo Fence will track.

Choose between TAK Users, Friendly, Hostile, Custom or All. Check the [**Specify Elevation**] box to enable the Elevation field, where elevation boundaries for the entities being tracked can be defined. Select the [**OK**] button to finish creating the fence. Select the [**Send**] button to create the fence and send it to another user. Select [**Delete**] to close the Create Geo Fence window and discard changes.

Alerts appear on the map interface. Selecting the [**Alert Notification**] will open the alerts menu, detailing the activity monitored in the user defined region. The default radius for monitoring users (filtered within the "Monitor" field) outside the Geo Fence is set at 75 km. This means the total area monitored begins at the farthest point from the center of the shape plus 75 km. If the user wishes to keep the Geo Fence, but disable tracking, the user can set the tracking [**Enabled**] to off in the Edit Window.

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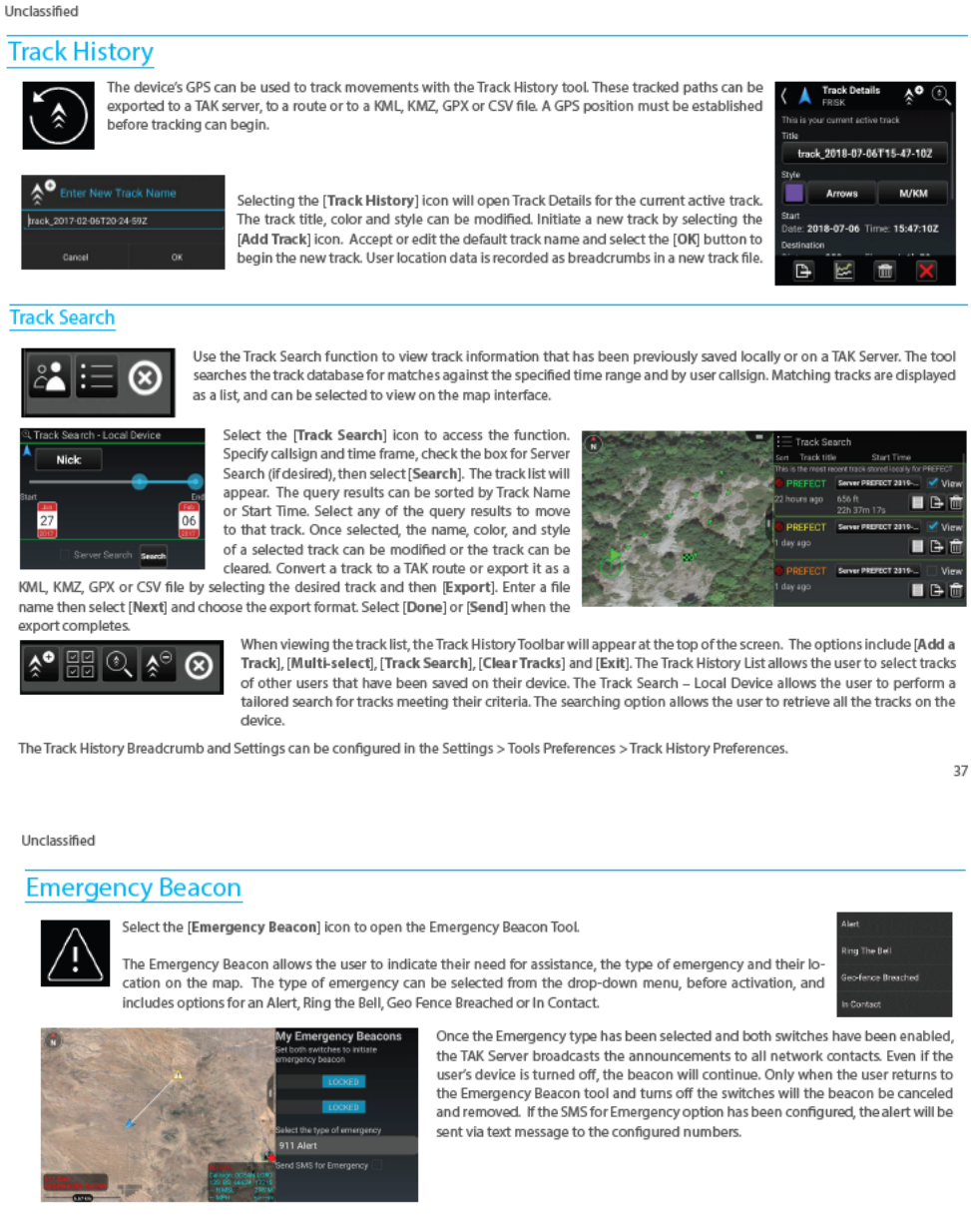

32. The Accused Products, such as Defendants' Airport Surface Awareness System, Pro Line Fusion, Surface Management System, Ascend, OpsCore, ARINCDirect, ARINC Global Network, ARINC Integrator, ARINC Hermes, FasTAK, and Rosetta Technology applications, solutions, and servers further include similar features and functionalities to Raytheon TAK, TAK

[14] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view

Server, ATAK, WebTAK, CivTAK, and WinTAK applications, solutions and servers, and infringe in a substantially similar manner:[15]

16

[15] https://www.collinsaerospace.com/what-we-do/industries/commercial-aviation/flight-operations/message-management; https://www.collinsaerospace.com/what-we-do/industries/commercial-aviation/ground-operations/messaging-data-exchange/arinc-messaging

[16] https://www.rtx.com/news/news-center/2024/05/09/rtx-introduces-the-collins-airport-surface-awareness-system

Moving map

Integrates the terrain database with real-time flight information for greater situational awareness, overlay weather, airways, navaids, and more on the moving map especially in low visibility conditions and unfamiliar territory. All delivered with the enhanced safety of natural, eyes-forward flying.

[17]

[17] https://www.collinsaerospace.com/what-we-do/industries/military-and-defense/targeting/targeting-and-c2/fastak-integrated-targeting-system https://www.rockwellcollins.com/~/media/Files/Unsecure/Products/Product%20Brochures/Integrated%20Systems/Flight%20Deck/Pro%20Line%20Fusion/Pro%20Line%20Fusion%20Gulfstream%20G280.aspx; https://battle-updates.com/update/contract-news-in-brief-837/; https://prd-sc102-cdn.rtx.com/-/media/ca/product-assets/marketing/r/rosetta-technology-data-sheet.pdf?rev=8f6858685dde43b4a432806333f4624b&hash=F0C027F7D9128630CF5CDB243A3FFDCB

Optimized data for faster decision-making

OpsCore pairs Collins' proven messaging, alerting and fleet management capabilities with FlightAware's Firehose™ API and HyperFeed® data aggregation and analysis tools to bring multiple sources of data together into one, single stream of actionable data. This is then delivered to aircrews, flight operators and key airport personnel, keeping them informed at every step of the journey.

This bird's eye view of operations, combined with a high level of data-driven situational awareness, supports better, faster decision-making, as well as reduced costs and delays from IRROPS, fuel and weather impacts.

[18]

[19]

[18] https://prd-sc102-cdn.rtx.com/-/media/ca/product-assets/marketing/o/opscore/opscore-flight-tracking-data-sheet-v4.pdf?rev=a023a17537e34e608801ce915734e749&hash=AC3FA21989AC3122EBDA90B5624338FD

[19] https://www.collinsaerospace.com/what-we-do/industries/military-and-defense/targeting/targeting-and-c2/fastak-integrated-targeting-system

33. AGIS Software has suffered damages as a result of Defendants' direct and indirect infringement of the '251 Patent in an amount to be proved at trial.

34. AGIS Software has suffered, and will continue to suffer, irreparable harm as a result of Defendants' infringement of the '251 Patent for which there is no adequate remedy at law unless Defendants' infringement is enjoined by this Court.

COUNT II
(Infringement of the '838 Patent)

35. Paragraphs 1 through 19 are incorporated herein by reference as if fully set forth in their entireties.

36. AGIS Software has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, distribute, export from, or import any products that embody the inventions of the '838 Patent.

37. Defendants have and continue to directly infringe at least claim 54 of the '838 Patent, either literally or under the doctrine of equivalents, by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States the Accused Products without authority and in violation of 35 U.S.C. § 271(a).

38. Defendants have and continue to directly infringe at least claim 54 of the '838 Patent, either literally or under the doctrine of equivalents, by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States the Accused Products without authority and in violation of 35 U.S.C. § 271(a).

39. Defendants have and continue to indirectly infringe at least claim 54 of the '838 Patent by actively, knowingly, and intentionally inducing others to directly infringe, either literally or under the doctrine of equivalents, by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States the Accused Products and by instructing

users of the Accused Products to perform methods claimed in the '838 Patent. For example, Defendants, with knowledge that the Accused Products infringe the '838 Patent at least as of the date of this Complaint, actively, knowingly, and intentionally induced, and continue to actively, knowingly, and intentionally induce direct infringement of the '838 Patent.

40. For example, Defendants have indirectly infringed and continue to indirectly infringe at least claim 54 of the '838 Patent in the United States because Defendants' customers use the Accused Products, including at least the Raytheon TAK, TAK Server, ATAK, WebTAK, CivTAK, and WinTAK solutions and servers, alone or in conjunction with additional Accused Products, in accordance with Defendants' instructions and thereby directly infringe at least one claim of the '838 Patent in violation of 35 U.S.C. § 271. Defendants directly and/or indirectly intentionally instruct their customers to infringe through training videos, demonstrations, brochures, installations, and/or user guides, such as those located at one or more of the following: https://bbn-tak.myshopify.com/; https://www.civtak.org/atak-about/; https://www.civtak.org/documentation/; https://wiki.civtak.org/index.php?title=ATAK_Manual; and through Raytheon's agents and representatives located within this Judicial District. Defendants are thereby liable for infringement of the '838 Patent under 35 U.S.C. § 271(b).

41. For example, Defendants' Accused Products allow users to share their locations and view other users' locations on a map and to communicate with those users via the Raytheon TAK, TAK Server, ATAK, WebTAK, CivTAK, and WinTAK applications and solutions:

The Team Awareness Kit (TAK), for civilian uses, or Tactical Assault Kit (also TAK) for military uses is a suite of software that provides geospatial information and allows user collaboration over geography. There are numerous TAK Products in the TAK family, all developed at government expense

The Team Awareness Kit for Android (ATAK, also known as CivTAK) was originally developed by the Air Force Research Laboratory (AFRL) and is now maintained by a Joint Product Center.

ATAK (including CivTAK) is an Android smartphone geospatial infrastructure and situational awareness app. It allows for precision targeting, surrounding land formation intelligence, situational awareness, navigation, and data sharing.

All the Android variants of TAK are virtually identical and all are interoperable with each other and with other TAK products. There are small, military-specific additions in military versions of ATAK.

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Unclassified

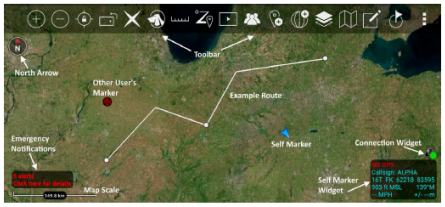
ATAK Civilian Overview

The Civilian Team Awareness Kit for Android (ATAK Civilian) is a Government-off-the-Shelf (GOTS) software application and mapping framework for mobile devices. ATAK Civilian has been designed and developed to run on Android smart devices used in a first responder environment. The ATAK Civilian software application is an extensible moving map display that integrates imagery, map and overlay information to provide enhanced collaboration and Situational Awareness (SA) over a tactical meshed network. ATAK Civilian promotes information flow and communications from the field environment to command enterprise locations.

The first time ATAK Civilian is opened, or after a Clear Content, a passphrase is auto-generated to activate data encryption. The user can supply their own passphrase by using Settings > Show All Preferences > Device Preferences > Change Encryption Passphrase. Following this step, ATAK Civilian's End User License Agreement (EULA) must be accepted. Next, the user will be prompted to change their callsign and/or import preferences or data from a Mission Package. All changes/imports can always be updated later. Finally, the user can place their self-marker by following the instructions located in the lower right corner.

The toolbar runs along the top of the map display. The features whose icons form the center portion of the toolbar are discussed in individual sections of this guide. The three dots at the right of the toolbar provide additional menu items that appear in a drop-down menu. A Long Press on the map will toggle the toolbar between hidden and visible.

The North Arrow appears in the upper left and is used to control map orientation. It has two primary modes: North Up/Track Up (default) and Manual Map Rotation/Lock. While in North Up/Track Up Mode, single press on the [**North Arrow**] icon to cycle between the North Up and Track Up map orientation. Long press the [**North Arrow**] to call out the additional controls menu where the Manual Rotation/Lock and 3D features are available. Select the [**Rotation**] button to enter Manual Map Rotation/Lock Mode. When in Manual Map Rotation/Lock Mode, rotate the map orientation by pressing on the map with two fingers and pivoting them in the desired direction. Single press on the [**North Arrow**] to lock the screen orientation, signified by the appearance of the lock icon, and again to unlock the orientation for further adjustment. 3D controls are discussed in a separate section.



Select the [**Magnifier**] buttons to zoom in or out on the map. The map can also be zoomed by using two fingers on the screen to pinch and spread the map. Select the [**Back**] button to center the screen on the Self Marker or the [**Padlock**] icon to lock the center of the screen to the Self Marker. Select the [**Orientation**] icon to toggle the screen position between portrait and landscape.

The optional connection widget indicates whether or not the user is connected to a TAK Server. This has a corresponding Android notification that provides the same information. Toggle this display on at Settings > Network Connections > Network Connections > Display Connection Widget.

Alerts and notifications are displayed in the lower left of the map interface.

The Map Scale displays a 1 inch to X mi/km reference on the map. The scale adjusts with the map when zoomed in and out. Hint windows are available to alert users to changes or make suggestions about the use of tools the first time they are opened.

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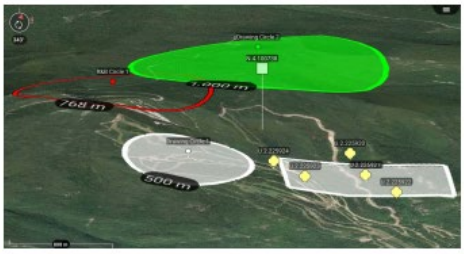
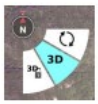
[20] https://www.civtak.org/documentation/

3D View





ATAK Civilian features 3D viewing of terrain and map items (DTED required). To enable 3D view, long press on the **[North Arrow]** to call out the additional controls menu and select [**3D**]. A tilt angle indicator will appear around the edge of the [**North Arrow**] when 3D view is active. Touch the screen with two fingers and simultaneously swipe up or down on the screen to tilt the view angle. Once the appropriate viewing angle is set, select the [**3D Lock**] button to retain this view while panning the map. While viewing the map from an angle, some map items will appear raised above the map surface if they have defined elevations.

3D Models

ATAK Civilian supports the use of 3D models. OBJ models and other types from products such as Pix4D can be imported via the Import Manager or can be manually placed in the atak/overlays folder prior to startup. If using Import Manager browse to the .OBJ file and import only that file, or browse to a .ZIP file that contains the .OBJ file (and others) and import only that file. If using manual placement to the atak/overlays folder, place a .ZIP file containing the .OBJ file (and others) into the directory and they will be imported on startup.

Once imported, a 3D Model icon will appear on the map. Zoom into the area of the icon until a loading ring appears. After the loading process has finished, the 3D model will be projected onto the map. Enable the map 3D View and tilt the view angle to see the 3D modeling. Loaded 3D models will appear as their own category in Overlay Manager and can be toggled on/off or removed from there.

Placement

The user can enter locations of interest using the Point Dropper tool. Select the [**Point Dropper**] icon to place internationally standardized markers and other icons on the map, edit the data and share the markers with other network members.

Self-Marker

The Self-Marker is displayed as a blue arrowhead at the user's current location. The options available on the Self-Marker radial are: Compass Rose, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, GPS Error, Range & Bearing Line, GPS Lock to Self, Tracking Breadcrumbs, Place a Marker at the user's current location and Details. Other TAK users appear on the display as a colored circle. The color of the circle represents the user's Team affiliation, with additional lettering inside the circle to identify the role the user on the team. Team Member markers that include a diagonal line indicate that the GPS location is not available. A solid icon indicated that the team member has GPS reception.

Available roles include: Team Member, Team Lead (designated by a TL in the center of the marker), Headquarters (HQ in center), Sniper (S), Medic (+), Forward Observer (FO), RTO (R) or K9 (K9). The options available when another user's Self-Marker is selected are: Inner Ring – Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, GPS Lock on Friendly, Video Player (if available), Communication Options (if configured by that user), Custom Threat Rings, Tracking Breadcrumbs and Details.

Outer Ring (Communication Options) – Data Package, Email, SMS Messaging, GeoChat, VOIP and Cellular Phone, when available.

Point Dropper

Selecting the [**Point Dropper**] icon will open the Point Dropper menu, containing marker symbology with one or more icon sets, a Recently Added button and an Iconset Manager button.

The Markers symbology affiliations are: Unknown, Neutral, Red and Friendly. Select the affiliation, then a location on the map interface to drop the marker. To add a marker by manually entering coordinates, long press on the map interface and enter the MGRS location. Change the standard naming convention by entering values into the custom prefix and index fields or leave blank to use the defaults. If values are entered, the next marker will be dropped with the prefix name and starting number(s) or letter(s) and every subsequent marker will be assigned the next consecutive number(s) or letter(s).

The user can select the mission specific pallet to open point options including Waypoint (WP), Sensor or Observation Point (OP).

The user can move between icon sets by either swiping in the icon set area or selecting on the [**Iconset Name**] field to bring up the Icon Pallet drop-down.

The last point placed is shown at the bottom of the Point Dropper window. The information for all recently placed points can be accessed by selecting the [**Clock**] icon. This displays the marker icon, name, coordinates, elevation and range & bearing information. The user can send, rename or remove any recently added markers by selecting the [**Arrows**] next to the marker to reveal [**SEND**], [**RENAME**] or [**DEL**] buttons.

Select the [**Iconset Manager**] (gear) button to add or delete icon sets or to set the default Marker Mapping.

Unclassified

Radial Menus

Unknown Object | **Neutral Object** | **Red Object** | **Friendly Object** | **Spot Object**

The options available for Unknown Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Neutral Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Red Object Markers are: Delete, Polar Coordinate Entry, Compass Rose/Bullseye, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Friendly Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Video, Contact Card, Custom Threat Rings, Tracking Breadcrumbs and Details. The Video radial will activate if a properly formatted packet that includes the link to the video feed is included. Select the video radial to open the associated video. The Contact Card can be selected to display additional communication options, including GeoChat, Email, VoIP, SMS Messaging and Cellular Phone, when available.

The options available for Spot Map are: Delete, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Nav-To, Custom Threat Rings, Labels and Details.

The options for User Defined Iconsets are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings. Tracking Breadcrumbs and Details.

Select [**Details**] on the marker radial to make desired modifications, including: Coordinate, Elevation, Name, Type and Remarks. Selecting Marker Type opens a dialog box with extra categories. File attachments, including images, can be associated with the object by selecting the [**Paperclip**] icon. Once all the desired modifications have been made, the Marker can be sent to other network members using [**Send**]. The information can be broadcast to all members or sent to specific recipients. Select the [**Auto Send**] option to broadcast the marker to other TAK users on the network, with updates automatically sent about once every 60 seconds.

Unclassified

Bloodhound Tool

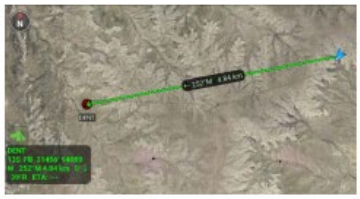
The Bloodhound Tool provides support for tracking and intercepting a map item. It allows the user to select two points on the map and/or map objects and display range & bearing information between the chosen tracker and the target.

Select the [**Bloodhound**] icon to open the Bloodhound Tool. A window will open, prompting the user to choose where to start by tapping the [**From Reticle**] (default = user's self marker) and where to bloodhound (track) to by tapping the [**To Reticle**].

Targets include map objects like other User's Self Markers, DPs, Markers, Shape center points, Range & Bearing endpoints and any other map objects. If the user selects a map location instead of an object as the target, Bloodhound will place a waypoint marker there. The self marker will then track towards the waypoint.

Select [**OK**] and Bloodhound will be activated.

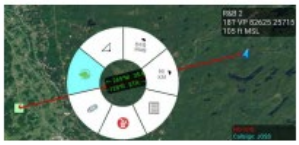
If either point moves, the green widget in the lower left will show the updated information. As the tracking object begins to navigate toward the target, the Estimated Time of Arrival (ETA) will update accordingly.



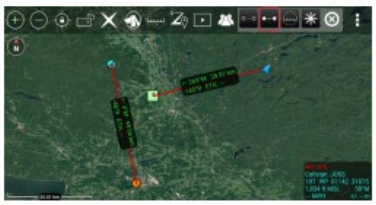
The green line showing the direct path from the tracker to the target will flash when the user-defined ETA outer threshold is reached (default = 6 minutes from target). The line will flash as the tracker continues toward the target until the next ETA threshold is reached (default = 3 minutes). The line will turn a flashing yellow until the final ETA threshold (default = 1 minute) is reached. The line then flashes red until the target is reached. Colors and thresholds can be modified in Settings > Tool Preferences > Bloodhound Preferences.

Selecting the green Bloodhound icon on the map will pan the map to the Bloodhound Range & Bearing Line. Disengage the Bloodhound Tool by selecting the [**Bloodhound**] icon on the toolbar.

Multiple Bloodhound



To create multiple bloodhounds, selecting the Range and Bearing Tool and select the [**R&B Line**] icon. Select two markers on the map and once the R&B line is created, select the line to bring up the radial. Select the [**Bloodhound**] radial, and the bloodhound information will be displayed on the R&B Line itself.



If either point moves, the Bloodhound information shown on the R&B Line will be updated. As the tracking object begins to navigate toward the target, the Estimated Time of Arrival (ETA) will update accordingly.

Go To

Select the [**Go To**] icon to enter details and navigate to a specific location on the map.

Select from the [**MGRS**] (military grid reference system), [**DD**] (decimal degrees), [**DM**] (degrees - minutes), [**DMS**] (degrees-minutes-seconds), [**UTM**] (Universal Transverse Mercator) or [**ADDR**] tabs on the Go To interface and enter the location data of interest. The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

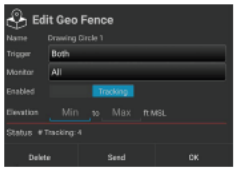
The user can enter the Latitude, Longitude and Elevation in the space provided for [**MGRS**] , [**DD**], [**D-M**] or [**D-M-S**] searches. If DTED is installed, the elevation value can be automatically populated by tapping the [**Pull From DTED**] button.The user can select a desired marker type (Spot, Unknown, Neutral, Red, or Friendly) to be placed at the entered coordinates. If [**No Point**] is selected, the map will pan to the location but will not add a point.

Note: The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

The Address Lookup provider used for the ADDR tab can be configured in the Settings > Tool Preferences > Address Lookup Preferences.

Geofencing

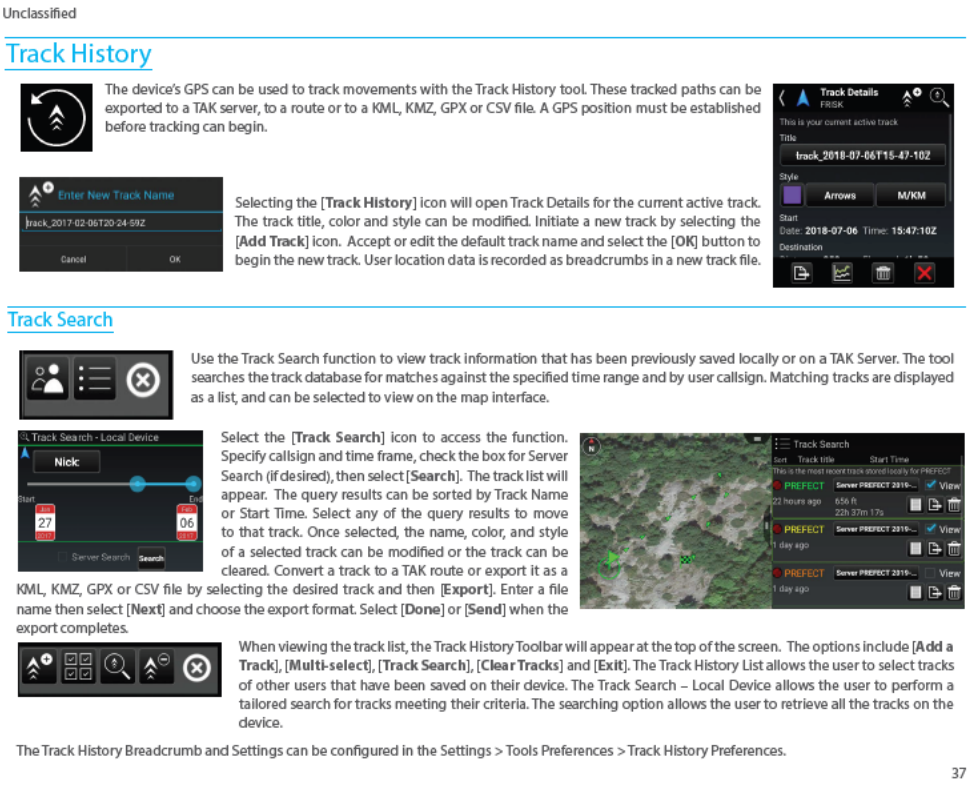
The Geo Fence tool allows users to create a virtual fence that triggers entry/exit notifications if map items of interest cross the virtual boundary lines. The Geo Fence options are added to the existing drawing tools. After a shape has been added, the Geo Fence Tool can be accessed either by selecting the [**Geo Fence**] icon from the menu items or selecting it from the radial.



The Enabled Field slider will move to Tracking by default when a new Geo Fence window is created. Toggle the slider between Tracking and Off to enable/disable the Geo Fence. Use the Trigger field to define which types of Geo Fence breach to monitor. Choose between Entry, Exit or Both. Use the Monitor field to define which entities the Geo Fence will track.

Choose between TAK Users, Friendly, Hostile, Custom or All. Check the [**Specify Elevation**] box to enable the Elevation field, where elevation boundaries for the entities being tracked can be defined. Select the [**OK**] button to finish creating the fence. Select the [**Send**] button to create the fence and send it to another user. Select [**Delete**] to close the Create Geo Fence window and discard changes.

Alerts appear on the map interface. Selecting the [**Alert Notification**] will open the alerts menu, detailing the activity monitored in the user defined region. The default radius for monitoring users (filtered within the "Monitor" field) outside the Geo Fence is set at 75 km. This means the total area monitored begins at the farthest point from the center of the shape plus 75 km. If the user wishes to keep the Geo Fence, but disable tracking, the user can set the tracking [**Enabled**] to off in the Edit Window.


Unclassified

Track History

The device's GPS can be used to track movements with the Track History tool. These tracked paths can be exported to a TAK server, to a route or to a KML, KMZ, GPX or CSV file. A GPS position must be established before tracking can begin.

Selecting the [**Track History**] icon will open Track Details for the current active track. The track title, color and style can be modified. Initiate a new track by selecting the [**Add Track**] icon. Accept or edit the default track name and select the [**OK**] button to begin the new track. User location data is recorded as breadcrumbs in a new track file.

Track Search

Use the Track Search function to view track information that has been previously saved locally or on a TAK Server. The tool searches the track database for matches against the specified time range and by user callsign. Matching tracks are displayed as a list, and can be selected to view on the map interface.

Select the [**Track Search**] icon to access the function. Specify callsign and time frame, check the box for Server Search (if desired), then select [**Search**]. The track list will appear. The query results can be sorted by Track Name or Start Time. Select any of the query results to move to that track. Once selected, the name, color, and style of a selected track can be modified or the track can be cleared. Convert a track to a TAK route or export it as a KML, KMZ, GPX or CSV file by selecting the desired track and then [**Export**]. Enter a file name then select [**Next**] and choose the export format. Select [**Done**] or [**Send**] when the export completes.

When viewing the track list, the Track History Toolbar will appear at the top of the screen. The options include [**Add a Track**], [**Multi-select**], [**Track Search**], [**Clear Tracks**] and [**Exit**]. The Track History List allows the user to select tracks of other users that have been saved on their device. The Track Search – Local Device allows the user to perform a tailored search for tracks meeting their criteria. The searching option allows the user to retrieve all the tracks on the device.

The Track History Breadcrumb and Settings can be configured in the Settings > Tools Preferences > Track History Preferences.

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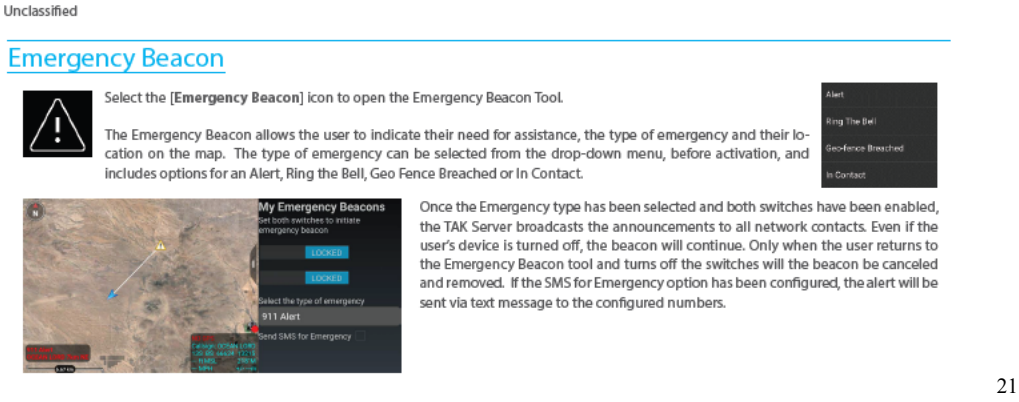

Unclassified

Emergency Beacon

Select the [**Emergency Beacon**] icon to open the Emergency Beacon Tool.

The Emergency Beacon allows the user to indicate their need for assistance, the type of emergency and their location on the map. The type of emergency can be selected from the drop-down menu, before activation, and includes options for an Alert, Ring the Bell, Geo Fence Breached or In Contact.

Once the Emergency type has been selected and both switches have been enabled, the TAK Server broadcasts the announcements to all network contacts. Even if the user's device is turned off, the beacon will continue. Only when the user returns to the Emergency Beacon tool and turns off the switches will the beacon be canceled and removed. If the SMS for Emergency option has been configured, the alert will be sent via text message to the configured numbers.

21

42. For example, the exemplary Accused Products allow users to establish groups and to exchange messages via interaction with servers which provide the Raytheon TAK, TAK Server, ATAK, WebTAK, CivTAK, and WinTAK services, among other relevant services. The exemplary Accused Products further allow users to retrieve map information from multiple sources, including street-view maps.

[21] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view

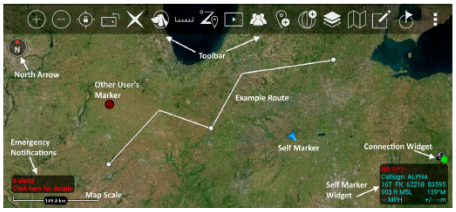
ATAK Civilian Overview

The Civilian Team Awareness Kit for Android (ATAK Civilian) is a Government-off-the-Shelf (GOTS) software application and mapping framework for mobile devices. ATAK Civilian has been designed and developed to run on Android smart devices used in a first responder environment. The ATAK Civilian software application is an extensible moving map display that integrates imagery, map and overlay information to provide enhanced collaboration and Situational Awareness (SA) over a tactical meshed network. ATAK Civilian promotes information flow and communications from the field environment to command enterprise locations.

The first time ATAK Civilian is opened, or after a Clear Content, a passphrase is auto-generated to activate data encryption. The user can supply their own passphrase by using Settings > Show All Preferences > Device Preferences > Change Encryption Passphrase. Following this step, ATAK Civilian's End User License Agreement (EULA) must be accepted. Next, the user will be prompted to change their callsign and/or import preferences or data from a Mission Package. All changes/imports can always be updated later. Finally, the user can place their self-marker by following the instructions located in the lower right corner.

The toolbar runs along the top of the map display. The features whose icons form the center portion of the toolbar are discussed in individual sections of this guide. The three dots at the right of the toolbar provide additional menu items that appear in a drop-down menu. A Long Press on the map will toggle the toolbar between hidden and visible.

The North Arrow appears in the upper left and is used to control map orientation. It has two primary modes: North Up/Track Up (default) and Manual Map Rotation/Lock. While in North Up/Track Up Mode, single press on the [**North Arrow**] icon to cycle between the North Up and Track Up map orientation. Long press the [**North Arrow**] to call out the additional controls menu where the Manual Rotation/Lock and 3D features are available. Select the [**Rotation**] button to enter Manual Map Rotation/Lock Mode. When in Manual Map Rotation/Lock Mode, rotate the map orientation by pressing on the map with two fingers and pivoting them in the desired direction. Single press on the [**North Arrow**] to lock the screen orientation, signified by the appearance of the lock icon, and again to unlock the orientation for further adjustment. 3D controls are discussed in a separate section.



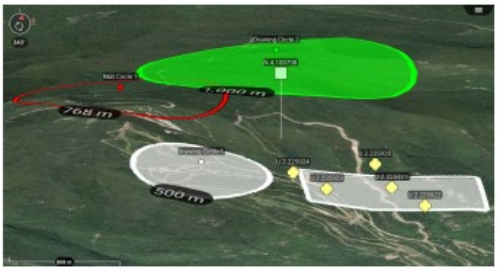
Select the [**Magnifier**] buttons to zoom in or out on the map. The map can also be zoomed by using two fingers on the screen to pinch and spread the map. Select the [**Back**] button to center the screen on the Self Marker or the [**Padlock**] icon to lock the center of the screen to the Self Marker. Select the [**Orientation**] icon to toggle the screen position between portrait and landscape.

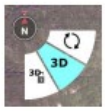
The optional connection widget indicates whether or not the user is connected to a TAK Server. This has a corresponding Android notification that provides the same information. Toggle this display on at Settings > Network Connections > Network Connections > Display Connection Widget.

Alerts and notifications are displayed in the lower left of the map interface.

The Map Scale displays a 1 inch to X mi/km reference on the map. The scale adjusts with the map when zoomed in and out. Hint windows are available to alert users to changes or make suggestions about the use of tools the first time they are opened.

3D View

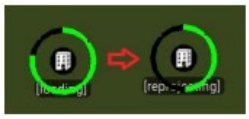




ATAK Civilian features 3D viewing of terrain and map items (DTED required). To enable 3D view, long press on the **[North Arrow]** to call out the additional controls menu and select [**3D**]. A tilt angle indicator will appear around the edge of the [**North Arrow**] when 3D view is active. Touch the screen with two fingers and simultaneously swipe up or down on the screen to tilt the view angle. Once the appropriate viewing angle is set, select the [**3D Lock**] button to retain this view while panning the map. While viewing the map from an angle, some map items will appear raised above the map surface if they have defined elevations.

3D Models

ATAK Civilian supports the use of 3D models. OBJ models and other types from products such as Pix4D can be imported via the Import Manager or can be manually placed in the atak/overlays folder prior to startup. If using Import Manager browse to the .OBJ file and import only that file, or browse to a .ZIP file that contains the .OBJ file (and others) and import only that file. If using manual placement to the atak/overlays folder, place a .ZIP file containing the .OBJ file (and others) into the directory and they will be imported on startup.



Once imported, a 3D Model icon will appear on the map. Zoom into the area of the icon until a loading ring appears. After the loading process has finished, the 3D model will be projected onto the map. Enable the map 3D View and tilt the view angle to see the 3D modeling. Loaded 3D models will appear as their own category in Overlay Manager and can be toggled on/off or removed from there.

Unclassified

Placement

The user can enter locations of interest using the Point Dropper tool. Select the [**Point Dropper**] icon to place internationally standardized markers and other icons on the map, edit the data and share the markers with other network members.

Self-Marker

The Self-Marker is displayed as a blue arrowhead at the user's current location. The options available on the Self-Marker radial are: Compass Rose, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, GPS Error, Range & Bearing Line, GPS Lock to Self, Tracking Breadcrumbs, Place a Marker at the user's current location and Details. Other TAK users appear on the display as a colored circle. The color of the circle represents the user's Team affiliation, with additional lettering inside the circle to identify the role the user on the team. Team Member markers that include a diagonal line indicate that the GPS location is not available. A solid icon indicated that the team member has GPS reception.

Available roles include: Team Member, Team Lead (designated by a TL in the center of the marker), Headquarters (HQ in center), Sniper (S), Medic (+), Forward Observer (FO), RTO (R) or K9 (K9). The options available when another user's Self-Marker is selected are: Inner Ring – Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, GPS Lock on Friendly, Video Player (if available), Communication Options (if configured by that user), Custom Threat Rings, Tracking Breadcrumbs and Details.

Outer Ring (Communication Options) – Data Package, Email, SMS Messaging, GeoChat, VOIP and Cellular Phone, when available.

Unclassified

Radial Menus

Unknown Object **Neutral Object** **Red Object** **Friendly Object** **Spot Object**

The options available for Unknown Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Neutral Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Red Object Markers are: Delete, Polar Coordinate Entry, Compass Rose/Bullseye, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Friendly Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Video, Contact Card, Custom Threat Rings, Tracking Breadcrumbs and Details. The Video radial will activate if a properly formatted packet that includes the link to the video feed is included. Select the video radial to open the associated video. The Contact Card can be selected to display additional communication options, including GeoChat, Email, VoIP, SMS Messaging and Cellular Phone, when available.

The options available for Spot Map are: Delete, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Nav-To, Custom Threat Rings, Labels and Details.

The options for User Defined Iconsets are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings. Tracking Breadcrumbs and Details.

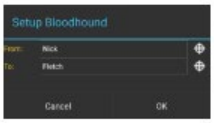
Select [**Details**] on the marker radial to make desired modifications, including: Coordinate, Elevation, Name, Type and Remarks. Selecting Marker Type opens a dialog box with extra categories. File attachments, including images, can be associated with the object by selecting the [**Paperclip**] icon. Once all the desired modifications have been made, the Marker can be sent to other network members using [**Send**]. The information can be broadcast to all members or sent to specific recipients. Select the [**Auto Send**] option to broadcast the marker to other TAK users on the network, with updates automatically sent about once every 60 seconds.

Unclassified

Bloodhound Tool

The Bloodhound Tool provides support for tracking and intercepting a map item. It allows the user to select two points on the map and/or map objects and display range & bearing information between the chosen tracker and the target.

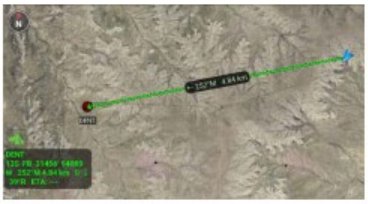
Select the [**Bloodhound**] icon to open the Bloodhound Tool. A window will open, prompting the user to choose where to start by tapping the [**From Reticle**] (default = user's self marker) and where to bloodhound (track) to by tapping the [**To Reticle**].



Targets include map objects like other User's Self Markers, DPs, Markers, Shape center points, Range & Bearing end-points and any other map objects. If the user selects a map location instead of an object as the target, Bloodhound will place a waypoint marker there. The self marker will then track towards the waypoint.

Select [**OK**] and Bloodhound will be activated.

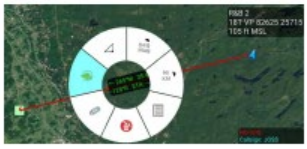
If either point moves, the green widget in the lower left will show the updated information. As the tracking object begins to navigate toward the target, the Estimated Time of Arrival (ETA) will update accordingly.



The green line showing the direct path from the tracker to the target will flash when the user-defined ETA outer threshold is reached (default = 6 minutes from target). The line will flash as the tracker continues toward the target until the next ETA threshold is reached (default = 3 minutes). The line will turn a flashing yellow until the final ETA threshold (default = 1 minute) is reached. The line then flashes red until the target is reached. Colors and thresholds can be modified in Settings > Tool Preferences > Bloodhound Preferences.

Selecting the green Bloodhound icon on the map will pan the map to the Bloodhound Range & Bearing Line. Disengage the Bloodhound Tool by selecting the [**Bloodhound**] icon on the toolbar.

Multiple Bloodhound



To create multiple bloodhounds, selecting the Range and Bearing Tool and select the [**R&B Line**] icon. Select two markers on the map and once the R&B line is created, select the line to bring up the radial. Select the [**Bloodhound**] radial, and the bloodhound information will be displayed on the R&B Line itself.

If either point moves, the Bloodhound information shown on the R&B Line will be updated. As the tracking object begins to navigate toward the target, the Estimated Time of Arrival (ETA) will update accordingly.

Go To

Select the [**Go To**] icon to enter details and navigate to a specific location on the map.

Select from the [**MGRS**] (military grid reference system), [**DD**] (decimal degrees), [**DM**] (degrees- minutes), [**DMS**] (degrees-minutes-seconds), [**UTM**] (Universal Transverse Mercator) or [**ADDR**] tabs on the Go To interface and enter the location data of interest. The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

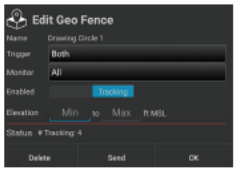
The user can enter the Latitude, Longitude and Elevation in the space provided for [**MGRS**] , [**DD**], [**D-M**] or [**D-M-S**] searches. If DTED is installed, the elevation value can be automatically populated by tapping the [**Pull From DTED**] button.The user can select a desired marker type (Spot, Unknown, Neutral, Red, or Friendly) to be placed at the entered coordinates. If [**No Point**] is selected, the map will pan to the location but will not add a point.

Note: The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

The Address Lookup provider used for the ADDR tab can be configured in the Settings > Tool Preferences > Address Lookup Preferences.

Geofencing

The Geo Fence tool allows users to create a virtual fence that triggers entry/exit notifications if map items of interest cross the virtual boundary lines. The Geo Fence options are added to the existing drawing tools. After a shape has been added, the Geo Fence Tool can be accessed either by selecting the [**Geo Fence**] icon from the menu items or selecting it from the radial.



The Enabled Field slider will move to Tracking by default when a new Geo Fence window is created. Toggle the slider between Tracking and Off to enable/disable the Geo Fence. Use the Trigger field to define which types of Geo Fence breach to monitor. Choose between Entry, Exit or Both. Use the Monitor field to define which entities the Geo Fence will track.

Choose between TAK Users, Friendly, Hostile, Custom or All. Check the [**Specify Elevation**] box to enable the Elevation field, where elevation boundaries for the entities being tracked can be defined. Select the [**OK**] button to finish creating the fence. Select the [**Send**] button to create the fence and send it to another user. Select [**Delete**] to close the Create Geo Fence window and discard changes.

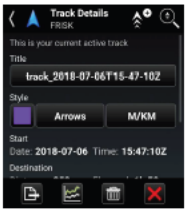
Alerts appear on the map interface. Selecting the [**Alert Notification**] will open the alerts menu, detailing the activity monitored in the user defined region. The default radius for monitoring users (filtered within the "Monitor" field) outside the Geo Fence is set at 75 km. This means the total area monitored begins at the farthest point from the center of the shape plus 75 km. If the user wishes to keep the Geo Fence, but disable tracking, the user can set the tracking [**Enabled**] to off in the Edit Window.

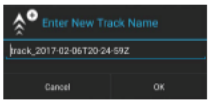
35

Unclassified

Track History

The device's GPS can be used to track movements with the Track History tool. These tracked paths can be exported to a TAK server, to a route or to a KML, KMZ, GPX or CSV file. A GPS position must be established before tracking can begin.

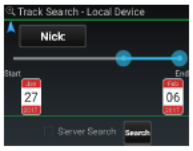




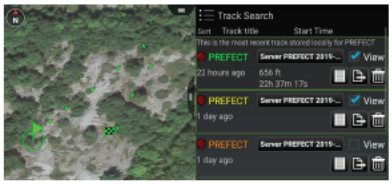
Selecting the [**Track History**] icon will open Track Details for the current active track. The track title, color and style can be modified. Initiate a new track by selecting the [**Add Track**] icon. Accept or edit the default track name and select the [**OK**] button to begin the new track. User location data is recorded as breadcrumbs in a new track file.

Track Search

Use the Track Search function to view track information that has been previously saved locally or on a TAK Server. The tool searches the track database for matches against the specified time range and by user callsign. Matching tracks are displayed as a list, and can be selected to view on the map interface.



Select the [**Track Search**] icon to access the function. Specify callsign and time frame, check the box for Server Search (if desired), then select [**Search**]. The track list will appear. The query results can be sorted by Track Name or Start Time. Select any of the query results to move to that track. Once selected, the name, color, and style of a selected track can be modified or the track can be cleared. Convert a track to a TAK route or export it as a KML, KMZ, GPX or CSV file by selecting the desired track and then [**Export**]. Enter a file name then select [**Next**] and choose the export format. Select [**Done**] or [**Send**] when the export completes.

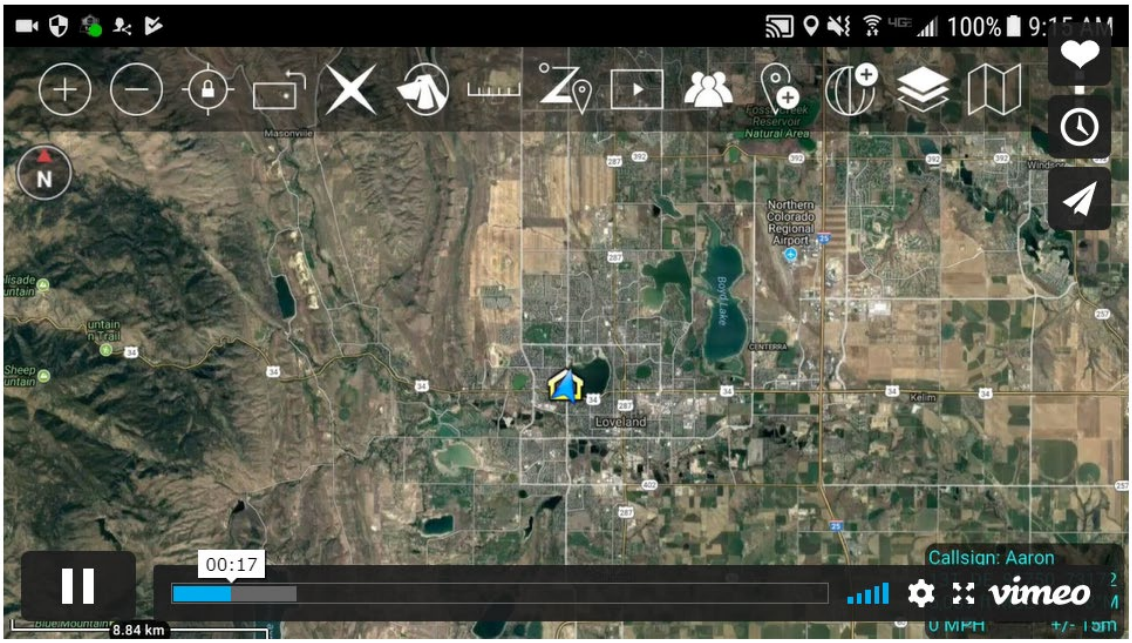


When viewing the track list, the Track History Toolbar will appear at the top of the screen. The options include [**Add a Track**], [**Multi-select**], [**Track Search**], [**Clear Tracks**] and [**Exit**]. The Track History List allows the user to select tracks of other users that have been saved on their device. The Track Search – Local Device allows the user to perform a tailored search for tracks meeting their criteria. The searching option allows the user to retrieve all the tracks on the device.

The Track History Breadcrumb and Settings can be configured in the Settings > Tools Preferences > Track History Preferences.

37 22

[22] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view



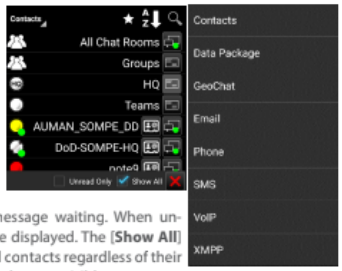
[23]

43. The exemplary Accused Products are programmed to receive messages from other devices where those messages relate to joining groups, as depicted below:

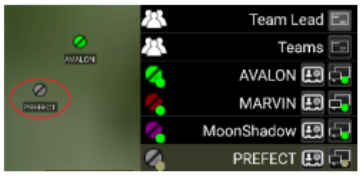
[23] https://wiki.civtak.org/index.php?title=ATAK_Manual

Contacts

The Contacts list includes a variety of ways in which a user may communicate with other users, such as GeoChat (ATAK Civilian's built in Chat capability), Data Packages, Email, Phone, SMS, VoIP and XMPP.



A default communication type (shown in the last column) may be selected and used until another type of communication is selected.



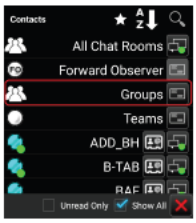
The Contacts list has two filters available at the bottom of the screen. The Unread Only box, when checked, will display only contacts with whom there are unread message waiting. When unchecked (default), all available contacts are displayed. The [**Show All**] box, when checked (default), will display all contacts regardless of their location. When unchecked, only contacts that are visible on current map screen will be displayed.

If a contact is no longer online, it will be indicated by changing the contact listing to a yellow color and the marker changes to gray both in the list and on the map.

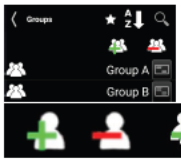
Profile cards are accessed by selecting the second to last column in the Contacts list and are available for each contact. These contain additional information about that contact including: 1) role, software type and version installed, node type, default connector, last reported time, battery life; 2) location information, and 3) available types of communication.

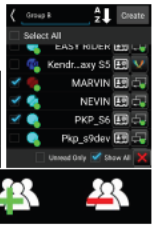
GeoChat Group Management

Text-based Chat messages may be sent to active network members by using the GeoChat function. To enter GeoChat Group Management, select the [**Contacts**] icon and select [**GeoChat**] from the drop-down menu.



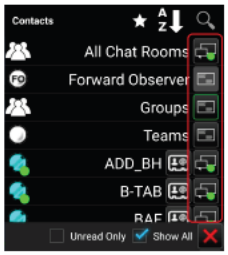
GeoChat Group Management is initiated through Contacts. Select the [**Contacts**] icon, then select GeoChat from the drop-down. The user can now create, edit and delete chat groups, as well as sub-groups. To create a chat group, select the [**Groups**] line (not the communications button). Select the [**Add Group**] icon to create the name of the group and add contacts to the group and then select [**Create**]. If a parent group is being created, no contacts need to be added at this level. To add a nested group, tap the parent group, select the [**Add Group**] icon to create the name of the sub-group and add contacts. Groups may be managed using the options to add/delete contacts or to add/delete GeoChat group.





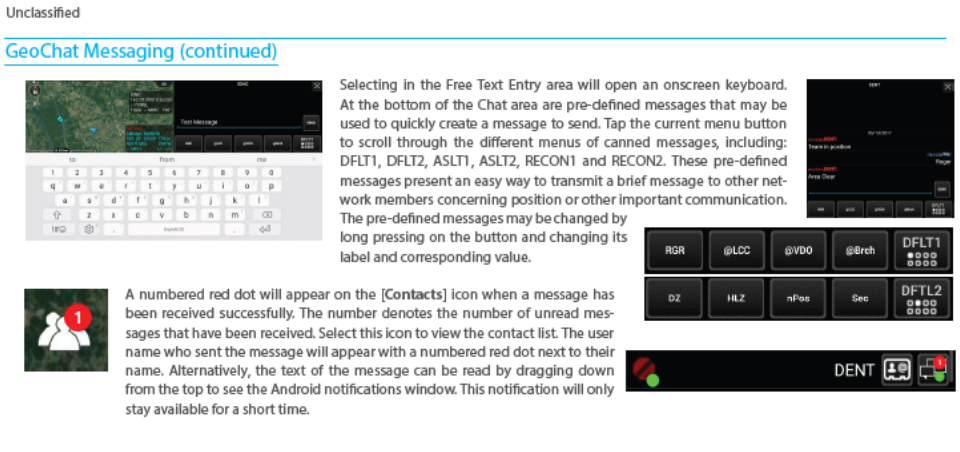
To add users to a group, select the [**Groups**] line (not the communications button), then select the name of the group to add users. Select the [**Add Users**] icon. A window will open allowing the group creater to add users to the selected group. Select the [**Add**] button when all the users to be added are checked.

GeoChat Messaging

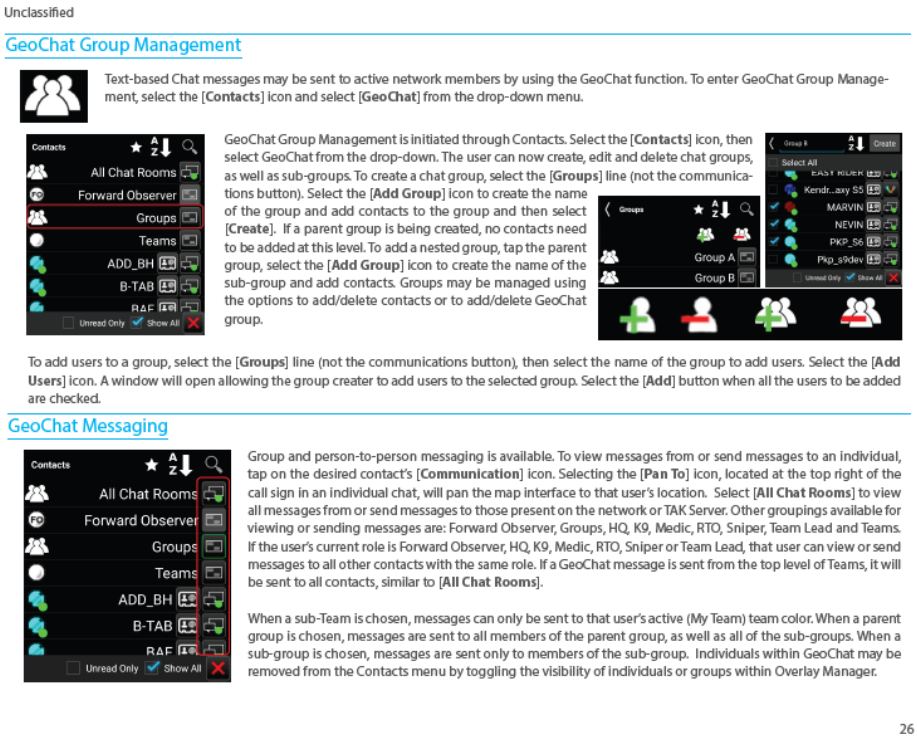


Group and person-to-person messaging is available. To view messages from or send messages to an individual, tap on the desired contact's [**Communication**] icon. Selecting the [**Pan To**] icon, located at the top right of the call sign in an individual chat, will pan the map interface to that user's location. Select [**All Chat Rooms**] to view all messages from or send messages to those present on the network or TAK Server. Other groupings available for viewing or sending messages are: Forward Observer, Groups, HQ, K9, Medic, RTO, Sniper, Team Lead and Teams. If the user's current role is Forward Observer, HQ, K9, Medic, RTO, Sniper or Team Lead, that user can view or send messages to all other contacts with the same role. If a GeoChat message is sent from the top level of Teams, it will be sent to all contacts, similar to [**All Chat Rooms**].

When a sub-Team is chosen, messages can only be sent to that user's active (My Team) team color. When a parent group is chosen, messages are sent to all members of the parent group, as well as all of the sub-groups. When a sub-group is chosen, messages are sent only to members of the sub-group. Individuals within GeoChat may be removed from the Contacts menu by toggling the visibility of individuals or groups within Overlay Manager.



44. The exemplary Accused Products are further programmed to facilitate participation in the group by communicating with a server and sending to and receiving location information, as depicted below:



[24] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view

GeoChat Messaging (continued)

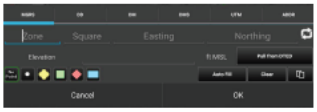
Selecting in the Free Text Entry area will open an onscreen keyboard. At the bottom of the Chat area are pre-defined messages that may be used to scroll through the different menus of canned messages, including: DFLT1, DFLT2, ASLT1, ASLT2, RECON1 and RECON2. These pre-defined messages present an easy way to transmit a brief message to other network members concerning position or other important communication. The pre-defined messages may be changed by long pressing on the button and changing its label and corresponding value.

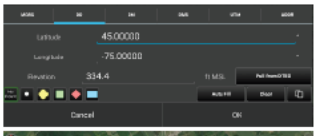
A numbered red dot will appear on the [**Contacts**] icon when a message has been received successfully. The number denotes the number of unread messages that have been received. Select this icon to view the contact list. The user name who sent the message will appear with a numbered red dot next to their name. Alternatively, the text of the message can be read by dragging down from the top to see the Android notifications window. This notification will only stay available for a short time.

Go To

Select the [**Go To**] icon to enter details and navigate to a specific location on the map.

Select from the [**MGRS**] (military grid reference system), [**DD**] (decimal degrees), [**DM**] (degrees - minutes), [**DMS**] (degrees-minutes-seconds), [**UTM**] (Universal Transverse Mercator) or [**ADDR**] tabs on the Go To interface and enter the location data of interest. The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.





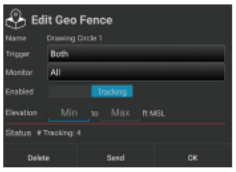
The user can enter the Latitude, Longitude and Elevation in the space provided for [**MGRS**] , [**DD**], [**D-M**] or [**D-M-S**] searches. If DTED is installed, the elevation value can be automatically populated by tapping the [**Pull From DTED**] button.The user can select a desired marker type (Spot, Unknown, Neutral, Red, or Friendly) to be placed at the entered coordinates. If [**No Point**] is selected, the map will pan to the location but will not add a point.

Note: The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

The Address Lookup provider used for the ADDR tab can be configured in the Settings > Tool Preferences > Address Lookup Preferences.

Geofencing

The Geo Fence tool allows users to create a virtual fence that triggers entry/exit notifications if map items of interest cross the virtual boundary lines. The Geo Fence options are added to the existing drawing tools. After a shape has been added, the Geo Fence Tool can be accessed either by selecting the [**Geo Fence**] icon from the menu items or selecting it from the radial.



The Enabled Field slider will move to Tracking by default when a new Geo Fence window is created. Toggle the slider between Tracking and Off to enable/disable the Geo Fence. Use the Trigger field to define which types of Geo Fence breach to monitor. Choose between Entry, Exit or Both. Use the Monitor field to define which entities the Geo Fence will track.

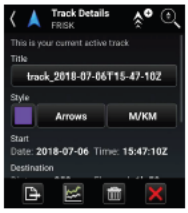
Choose between TAK Users, Friendly, Hostile, Custom or All. Check the [**Specify Elevation**] box to enable the Elevation field, where elevation boundaries for the entities being tracked can be defined. Select the [**OK**] button to finish creating the fence. Select the [**Send**] button to create the fence and send it to another user. Select [**Delete**] to close the Create Geo Fence window and discard changes.

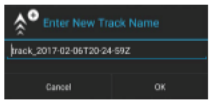
Alerts appear on the map interface. Selecting the [**Alert Notification**] will open the alerts menu, detailing the activity monitored in the user defined region. The default radius for monitoring users (filtered within the "Monitor" field) outside the Geo Fence is set at 75 km. This means the total area monitored begins at the farthest point from the center of the shape plus 75 km. If the user wishes to keep the Geo Fence, but disable tracking, the user can set the tracking [**Enabled**] to off in the Edit Window.

Unclassified

Track History

The device's GPS can be used to track movements with the Track History tool. These tracked paths can be exported to a TAK server, to a route or to a KML, KMZ, GPX or CSV file. A GPS position must be established before tracking can begin.

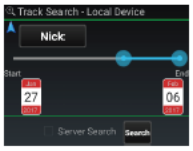




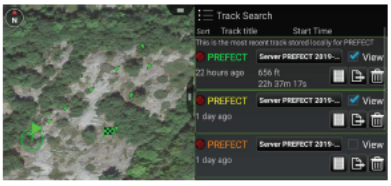
Selecting the [**Track History**] icon will open Track Details for the current active track. The track title, color and style can be modified. Initiate a new track by selecting the [**Add Track**] icon. Accept or edit the default track name and select the [**OK**] button to begin the new track. User location data is recorded as breadcrumbs in a new track file.

Track Search

Use the Track Search function to view track information that has been previously saved locally or on a TAK Server. The tool searches the track database for matches against the specified time range and by user callsign. Matching tracks are displayed as a list, and can be selected to view on the map interface.

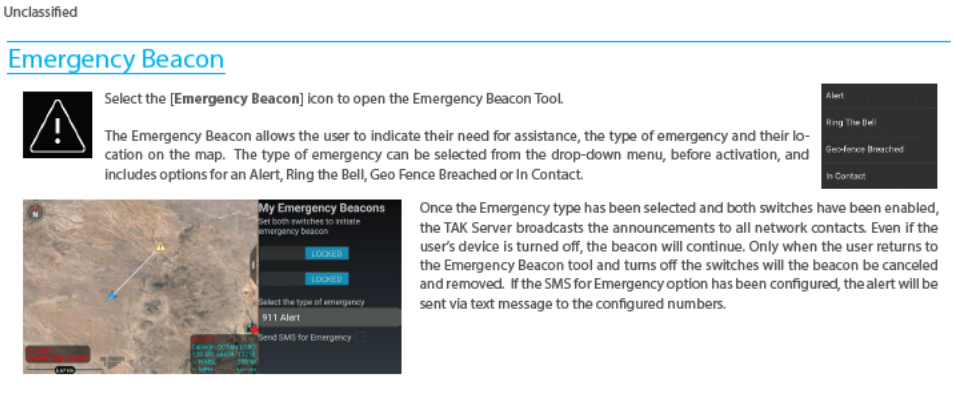


Select the [**Track Search**] icon to access the function. Specify callsign and time frame, check the box for Server Search (if desired), then select [**Search**]. The track list will appear. The query results can be sorted by Track Name or Start Time. Select any of the query results to move to that track. Once selected, the name, color, and style of a selected track can be modified or the track can be cleared. Convert a track to a TAK route or export it as a KML, KMZ, GPX or CSV file by selecting the desired track and then [**Export**]. Enter a file name then select [**Next**] and choose the export format. Select [**Done**] or [**Send**] when the export completes.



When viewing the track list, the Track History Toolbar will appear at the top of the screen. The options include [**Add a Track**], [**Multi-select**], [**Track Search**], [**Clear Tracks**] and [**Exit**]. The Track History List allows the user to select tracks of other users that have been saved on their device. The Track Search – Local Device allows the user to perform a tailored search for tracks meeting their criteria. The searching option allows the user to retrieve all the tracks on the device.

The Track History Breadcrumb and Settings can be configured in the Settings > Tools Preferences > Track History Preferences.


Unclassified

Emergency Beacon

Select the [**Emergency Beacon**] icon to open the Emergency Beacon Tool.

The Emergency Beacon allows the user to indicate their need for assistance, the type of emergency and their location on the map. The type of emergency can be selected from the drop-down menu, before activation, and includes options for an Alert, Ring the Bell, Geo Fence Breached or In Contact.

Alert
Ring The Bell
Geo-fence Breached
In Contact

My Emergency Beacons
Set both switches to initiate emergency beacon
LOCKED
LOCKED
Select the type of emergency
911 Alert
Send SMS for Emergency

Once the Emergency type has been selected and both switches have been enabled, the TAK Server broadcasts the announcements to all network contacts. Even if the user's device is turned off, the beacon will continue. Only when the user returns to the Emergency Beacon tool and turns off the switches will the beacon be canceled and removed. If the SMS for Emergency option has been configured, the alert will be sent via text message to the configured numbers.

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45. This location information is presented on interactive displays on the exemplary Accused Products which include interactive maps and a plurality of user selectable symbols corresponding to other devices. These symbols are positioned on the map at positions corresponding to the locations of the other devices, as depicted below:


Unclassified

ATAK Civilian Overview

The Civilian Team Awareness Kit for Android (ATAK Civilian) is a Government-off-the-Shelf (GOTS) software application and mapping framework for mobile devices. ATAK Civilian has been designed and developed to run on Android smart devices used in a first responder environment. The ATAK Civilian software application is an extensible moving map display that integrates imagery, map and overlay information to provide enhanced collaboration and Situational Awareness (SA) over a tactical meshed network. ATAK Civilian promotes information flow and communications from the field environment to command enterprise locations.

The first time ATAK Civilian is opened, or after a Clear Content, a passphrase is auto-generated to activate data encryption. The user can supply their own passphrase by using Settings > Show All Preferences > Device Preferences > Change Encryption Passphrase. Following this step, ATAK Civilian's End User License Agreement (EULA) must be accepted. Next, the user will be prompted to change their callsign and/or import preferences or data from a Mission Package. All changes/imports can always be updated later. Finally, the user can place their self-marker by following the instructions located in the lower right corner.

The toolbar runs along the top of the map display. The features whose icons form the center portion of the toolbar are discussed in individual sections of this guide. The three dots at the right of the toolbar provide additional menu items that appear in a drop-down menu. A Long Press on the map will toggle the toolbar between hidden and visible.

The North Arrow appears in the upper left and is used to control map orientation. It has two primary modes: North Up/Track Up (default) and Manual Map Rotation/Lock. While in North Up/Track Up Mode, single press on the [**North Arrow**] icon to cycle between the North Up and Track Up map orientation. Long press the [**North Arrow**] to call out the additional controls menu where the Manual Rotation/Lock and 3D features are available. Select the [**Rotation**] button to enter Manual Map Rotation/Lock Mode. When in Manual Map Rotation/Lock Mode, rotate the map orientation by pressing on the map with two fingers and pivoting them in the desired direction. Single press on the [**North Arrow**] to lock the screen orientation, signified by the appearance of the lock icon, and again to unlock the orientation for further adjustment. 3D controls are discussed in a separate section.

Toolbar
North Arrow
Other User's Marker
Example Route
Emergency Notifications
Self Marker
Connection Widget
Map Scale
Self Marker Widget

Select the [**Magnifier**] buttons to zoom in or out on the map. The map can also be zoomed by using two fingers on the screen to pinch and spread the map. Select the [**Back**] button to center the screen on the Self Marker or the [**Padlock**] icon to lock the center of the screen to the Self Marker. Select the [**Orientation**] icon to toggle the screen position between portrait and landscape.

The optional connection widget indicates whether or not the user is connected to a TAK Server. This has a corresponding Android notification that provides the same information. Toggle this display on at Settings > Network Connections > Network Connections > Display Connection Widget.

Alerts and notifications are displayed in the lower left of the map interface.

The Map Scale displays a 1 inch to X mi/km reference on the map. The scale adjusts with the map when zoomed in and out. Hint windows are available to alert users to changes or make suggestions about the use of tools the first time they are opened.

5

[25] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view

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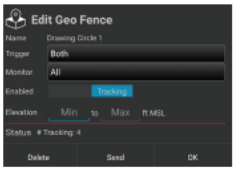
Geofencing

The Geo Fence tool allows users to create a virtual fence that triggers entry/exit notifications if map items of interest cross the virtual boundary lines. The Geo Fence options are added to the existing drawing tools. After a shape has been added, the Geo Fence Tool can be accessed either by selecting the [**Geo Fence**] icon from the menu items or selecting it from the radial.



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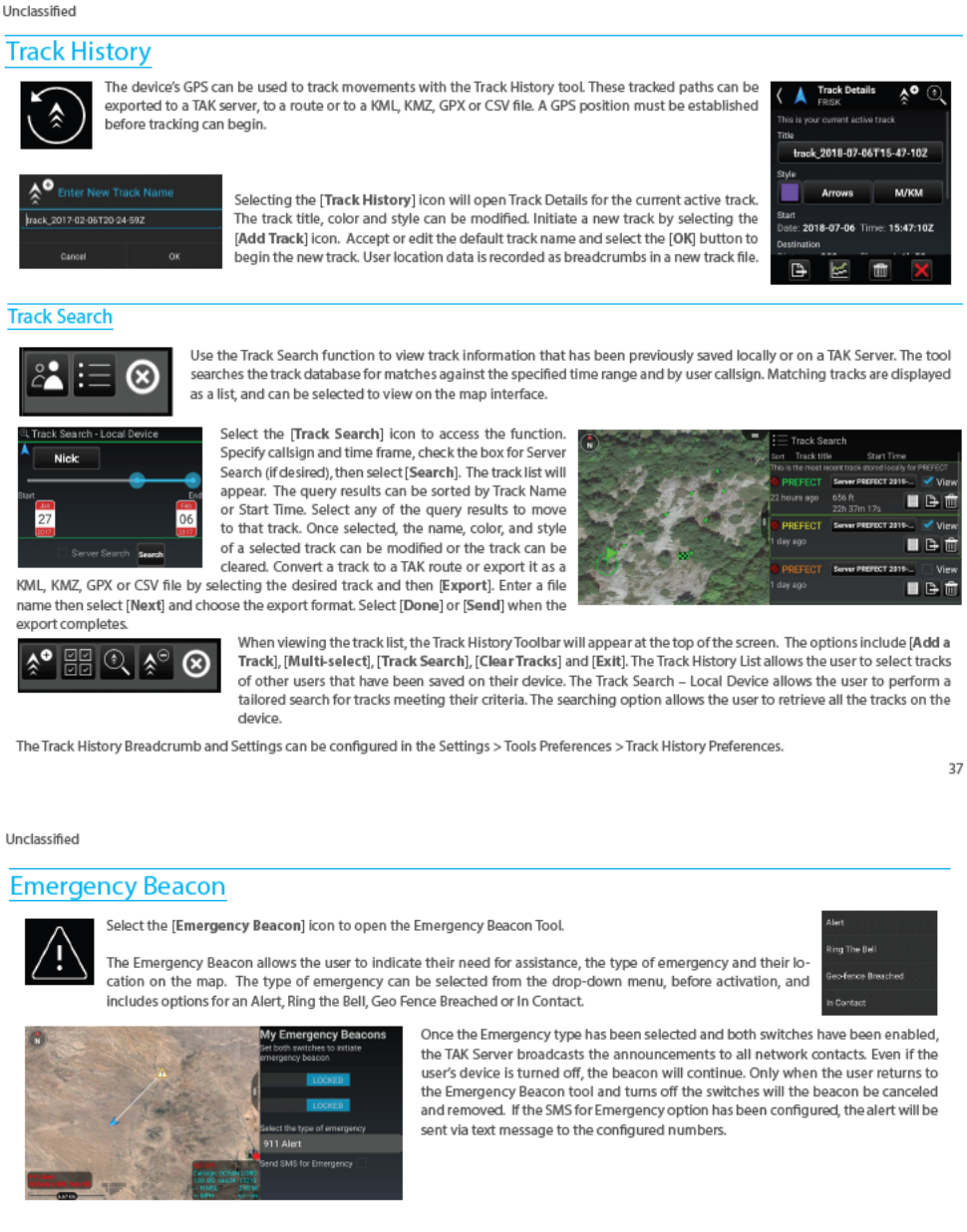
35



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37

Unclassified

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26

46. The exemplary Accused Products are programmed to permit users to request and display additional maps by, for example, moving the map screen and/or by selecting satellite image maps. The exemplary Accused Products are further programmed to permit interaction with the display where a user may select one or more symbols and where the exemplary Accused Products further permit data to be sent to other devices based on that interaction.

[26] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view

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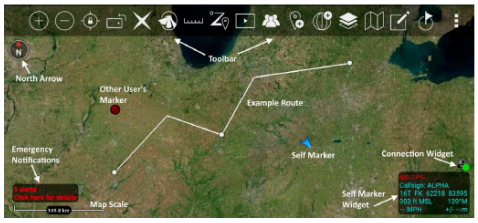

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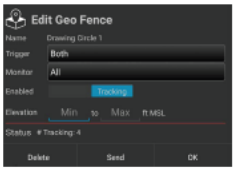

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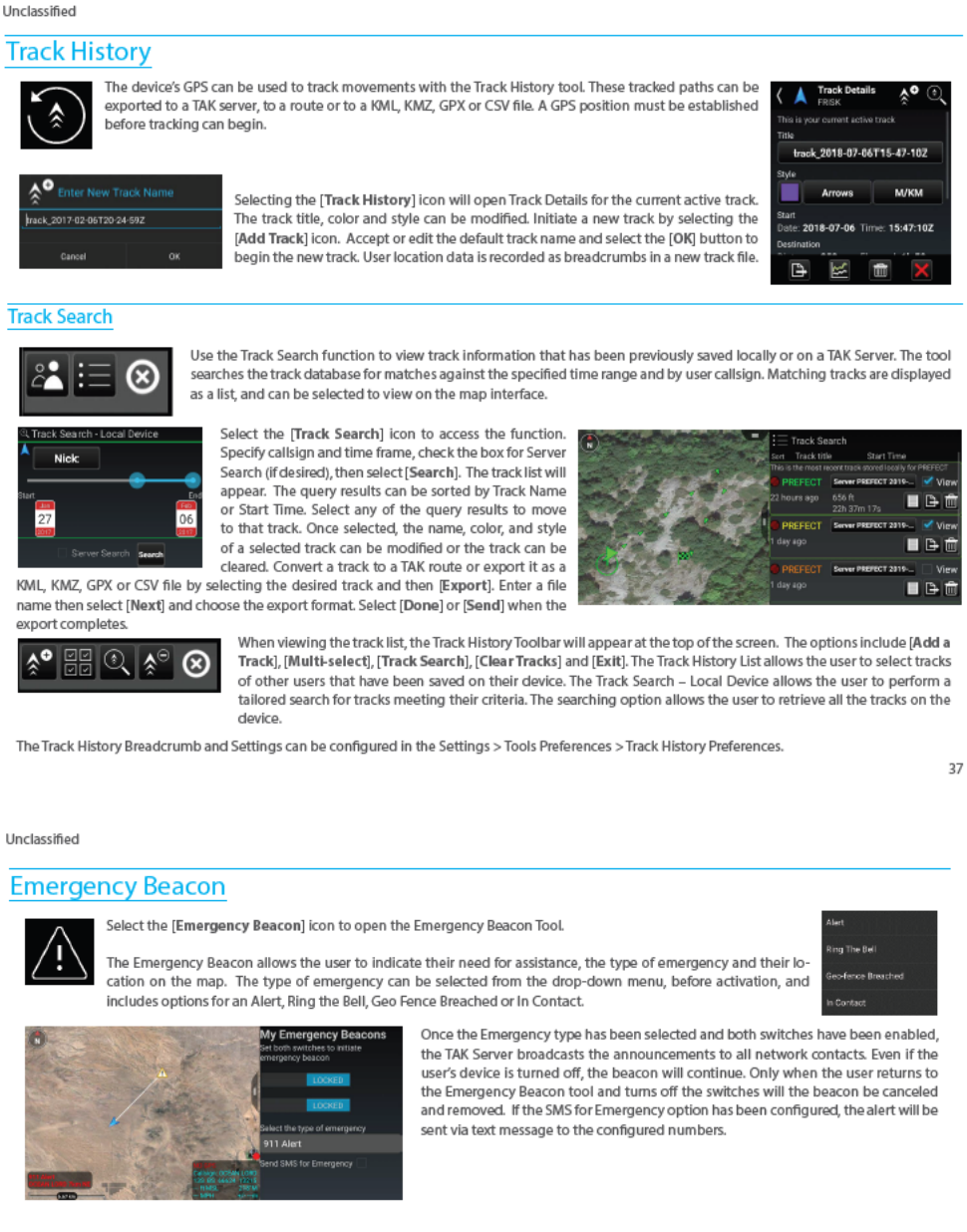

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Once the Emergency type has been selected and both switches have been enabled, the TAK Server broadcasts the announcements to all network contacts. Even if the user's device is turned off, the beacon will continue. Only when the user returns to the Emergency Beacon tool and turns off the switches will the beacon be canceled and removed. If the SMS for Emergency option has been configured, the alert will be sent via text message to the configured numbers.

27

47. The Accused Products, such as Defendants' Airport Surface Awareness System, Pro Line Fusion, Surface Management System, Ascend, OpsCore, ARINCDirect, ARINC Global Network, ARINC Integrator, ARINC Hermes, FasTAK, and Rosetta Technology applications, solutions, and servers further include similar features and functionalities to Raytheon TAK, TAK

[27] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view

Server, ATAK, WebTAK, CivTAK, and WinTAK applications, solutions and servers, and infringe in a substantially similar manner:[28]

[29]

[28] https://www.collinsaerospace.com/what-we-do/industries/commercial-aviation/flight-operations/message-management; https://www.collinsaerospace.com/what-we-do/industries/commercial-aviation/ground-operations/messaging-data-exchange/arinc-messaging

[29] https://www.rtx.com/news/news-center/2024/05/09/rtx-introduces-the-collins-airport-surface-awareness-system

Moving map

Integrates the terrain database with real-time flight information for greater situational awareness, overlay weather, airways, navaids, and more on the moving map especially in low visibility conditions and unfamiliar territory. All delivered with the enhanced safety of natural, eyes-forward flying.

[30]

[30] https://www.collinsaerospace.com/what-we-do/industries/military-and-defense/targeting/targeting-and-c2/fastak-integrated-targeting-system https://www.rockwellcollins.com/~/media/Files/Unsecure/Products/Product%20Brochures/Integrated%20Systems/Flight%20Deck/Pro%20Line%20Fusion/Pro%20Line%20Fusion%20Gulfstream%20G280.aspx; https://battle-updates.com/update/contract-news-in-brief-837/; https://prd-sc102-cdn.rtx.com/-/media/ca/product-assets/marketing/r/rosetta-technology-data-sheet.pdf?rev=8f6858685dde43b4a432806333f4624b&hash=F0C027F7D9128630CF5CDB243A3FFDCB

Optimized data for faster decision-making

OpsCore pairs Collins' proven messaging, alerting and fleet management capabilities with FlightAware's Firehose™ API and HyperFeed® data aggregation and analysis tools to bring multiple sources of data together into one, single stream of actionable data. This is then delivered to aircrews, flight operators and key airport personnel, keeping them informed at every step of the journey.

This bird's eye view of operations, combined with a high level of data-driven situational awareness, supports better, faster decision-making, as well as reduced costs and delays from IRROPS, fuel and weather impacts.

[31]

[32]

[31] https://prd-sc102-cdn.rtx.com/-/media/ca/product-assets/marketing/o/opscore/opscore-flight-tracking-data-sheet-v4.pdf?rev=a023a17537e34e608801ce915734e749&hash=AC3FA21989AC3122EBDA90B5624338FD

[32] https://www.collinsaerospace.com/what-we-do/industries/military-and-defense/targeting/targeting-and-c2/fastak-integrated-targeting-system

48. AGIS Software has suffered damages as a result of Defendants' direct and indirect infringement of the '838 Patent in an amount to be proved at trial.

49. AGIS Software has suffered, and will continue to suffer, irreparable harm as a result of Defendants' infringement of the '838 Patent for which there is no adequate remedy at law unless Defendants' infringement is enjoined by this Court.

COUNT III
(Infringement of the '123 Patent)

50. Paragraphs 1 through 19 are incorporated herein by reference as if fully set forth in their entireties.

51. AGIS Software has not licensed or otherwise authorized Defendants to make, use, offer for sale, sell, distribute, export from, or import any products that embody the inventions of the '123 Patent.

52. Defendants have and continue to directly infringe at least claim 23 of the '123 Patent, either literally or under the doctrine of equivalents, by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States the Accused Products without authority and in violation of 35 U.S.C. § 271(a).

53. Defendants have and continue to indirectly infringe at least claim 23 of the '123 Patent by actively, knowingly, and intentionally inducing others to directly infringe, either literally or under the doctrine of equivalents, by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States the infringing Accused Products and by instructing users of the Accused Products to perform at least the method of claim 23 in the '123 Patent. For example, Defendants, with knowledge that the Accused Products infringe the '123 Patent at least as of the date of this Complaint, actively, knowingly, and intentionally induced, and continue to actively, knowingly, and intentionally induce direct infringement of at least claim 23

of the ’123 Patent in violation of 35 U.S.C. § 271(b). Alternatively, Defendants believed there was a high probability that others would infringe the ’123 Patent but remained willfully blind to the infringing nature of others’ actions.

54. For example, Defendants have indirectly infringed and continue to indirectly infringe at least claim 23 of the ’123 Patent in the United States because Defendants’ customers use the Accused Products, including at least the Raytheon TAK, TAK Server, ATAK, WebTAK, CivTAK, and WinTAK solutions and servers, alone or in conjunction with additional Accused Products, in accordance with Defendants’ instructions and thereby directly infringe at least one claim of the ’123 Patent in violation of 35 U.S.C. § 271. Defendants directly and/or indirectly intentionally instruct their customers to infringe through training videos, demonstrations, brochures, installations, and/or user guides, such as those located at one or more of the following: https://bbn-tak.myshopify.com/; https://www.civtak.org/atak-about/; https://www.civtak.org/documentation/; https://wiki.civtak.org/index.php?title=ATAK_Manual; and through Raytheon’s agents and representatives located within this Judicial District. Defendants are thereby liable for infringement of the ’123 Patent under 35 U.S.C. § 271(b).

55. Alternatively, Defendants believed there was a high probability that others would infringe the ’123 Patent but remained willfully blind to the infringing nature of others’ actions. For example, Defendants directly infringe and/or indirectly infringe by instructing their customers to infringe by a system comprising: a first device programmed to perform operations comprising: receiving a message sent by a second device, wherein the message relates to joining a group; based on receipt of the message sent by the second device, sending first location information to a first server and receiving second location information from the first server, the first location information comprising a location of the first device, the second location information comprising

one or more locations of one or more respective second devices included in the group; sending, from the first device to a second server, a request for georeferenced map data; receiving, from the second server, the georeferenced map data; presenting, via an interactive display of the first device, a georeferenced map and one or more user-selectable symbols corresponding to one or more of the second devices, wherein the symbols are positioned on the georeferenced map at respective positions corresponding to the locations of the second devices represented by the symbols, and wherein the georeferenced map data relate positions on the georeferenced map to spatial coordinates; and identifying user interaction with the interactive display selecting a particular user-selectable symbol corresponding to a particular second device and user interaction with the display specifying an action and, based thereon, using an Internet Protocol to send data to the particular second device, wherein identifying the user interaction selecting the particular user-selectable symbol comprises: detecting user selection of a portion of the interactive display corresponding to a position on the georeferenced map, and identifying the particular user-selectable symbol based, at least in part, on coordinates of the selected position, comprising: searching a set of symbols for a symbol located nearest to the coordinates of the selected position, wherein the set of symbols includes the user-selectable symbols corresponding to the second devices in the group, and wherein data associated with the set of symbols include coordinates of portions of the display corresponding to the symbols in the set, and based on a result of searching the set of symbols, identifying the particular user-selectable symbol as the symbol located nearest to the coordinates of the selected position, wherein the particular user-selectable symbol corresponds to the particular second device. For example, the Accused Products include features, as shown below.

56. For example, Defendants' Accused Products allow users to share their locations and view other users' locations on a map and to communicate with those users via the Raytheon TAK, TAK Server, ATAK, WebTAK, CivTAK, and WinTAK applications and solutions:

> The Team Awareness Kit (TAK), for civilian uses, or Tactical Assault Kit (also TAK) for military uses is a suite of software that provides geospatial information and allows user collaboration over geography. There are numerous TAK Products in the TAK family, all developed at government expense
>
> The Team Awareness Kit for Android (ATAK, also known as CivTAK) was originally developed by the Air Force Research Laboratory (AFRL) and is now maintained by a Joint Product Center.
>
> ATAK (including CivTAK) is an Android smartphone geospatial infrastructure and situational awareness app. It allows for precision targeting, surrounding land formation intelligence, situational awareness, navigation, and data sharing.
>
> All the Android variants of TAK are virtually identical and all are interoperable with each other and with other TAK products. There are small, military-specific additions in military versions of ATAK.
>
> 33

Unclassified

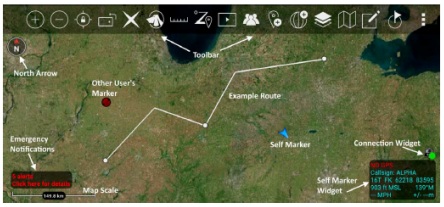
ATAK Civilian Overview

The Civilian Team Awareness Kit for Android (ATAK Civilian) is a Government-off-the-Shelf (GOTS) software application and mapping framework for mobile devices. ATAK Civilian has been designed and developed to run on Android smart devices used in a first responder environment. The ATAK Civilian software application is an extensible moving map display that integrates imagery, map and overlay information to provide enhanced collaboration and Situational Awareness (SA) over a tactical meshed network. ATAK Civilian promotes information flow and communications from the field environment to command enterprise locations.

The first time ATAK Civilian is opened, or after a Clear Content, a passphrase is auto-generated to activate data encryption. The user can supply their own passphrase by using Settings > Show All Preferences > Device Preferences > Change Encryption Passphrase. Following this step, ATAK Civilian's End User License Agreement (EULA) must be accepted. Next, the user will be prompted to change their callsign and/or import preferences or data from a Mission Package. All changes/imports can always be updated later. Finally, the user can place their self-marker by following the instructions located in the lower right corner.

The toolbar runs along the top of the map display. The features whose icons form the center portion of the toolbar are discussed in individual sections of this guide. The three dots at the right of the toolbar provide additional menu items that appear in a drop-down menu. A Long Press on the map will toggle the toolbar between hidden and visible.

The North Arrow appears in the upper left and is used to control map orientation. It has two primary modes: North Up/Track Up (default) and Manual Map Rotation/Lock. While in North Up/Track Up Mode, single press on the [**North Arrow**] icon to cycle between the North Up and Track Up map orientation. Long press the [**North Arrow**] to call out the additional controls menu where the Manual Rotation/Lock and 3D features are available. Select the [**Rotation**] button to enter Manual Map Rotation/Lock Mode. When in Manual Map Rotation/Lock Mode, rotate the map orientation by pressing on the map with two fingers and pivoting them in the desired direction. Single press on the [**North Arrow**] to lock the screen orientation, signified by the appearance of the lock icon, and again to unlock the orientation for further adjustment. 3D controls are discussed in a separate section.



Select the [**Magnifier**] buttons to zoom in or out on the map. The map can also be zoomed by using two fingers on the screen to pinch and spread the map. Select the [**Back**] button to center the screen on the Self Marker or the [**Padlock**] icon to lock the center of the screen to the Self Marker. Select the [**Orientation**] icon to toggle the screen position between portrait and landscape.

The optional connection widget indicates whether or not the user is connected to a TAK Server. This has a corresponding Android notification that provides the same information. Toggle this display on at Settings > Network Connections > Network Connections > Display Connection Widget.

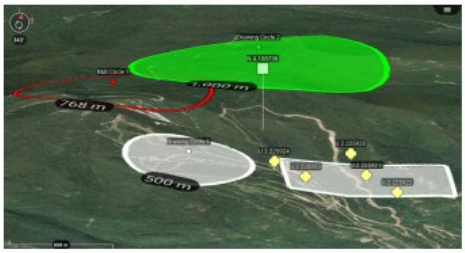
Alerts and notifications are displayed in the lower left of the map interface.

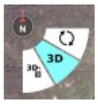
The Map Scale displays a 1 inch to X mi/km reference on the map. The scale adjusts with the map when zoomed in and out. Hint windows are available to alert users to changes or make suggestions about the use of tools the first time they are opened.

5

[33] https://www.civtak.org/documentation/

3D View

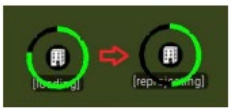




ATAK Civilian features 3D viewing of terrain and map items (DTED required). To enable 3D view, long press on the **[North Arrow]** to call out the additional controls menu and select [**3D**]. A tilt angle indicator will appear around the edge of the [**North Arrow**] when 3D view is active. Touch the screen with two fingers and simultaneously swipe up or down on the screen to tilt the view angle. Once the appropriate viewing angle is set, select the [**3D Lock**] button to retain this view while panning the map. While viewing the map from an angle, some map items will appear raised above the map surface if they have defined elevations.

3D Models

ATAK Civilian supports the use of 3D models. OBJ models and other types from products such as Pix4D can be imported via the Import Manager or can be manually placed in the atak/overlays folder prior to startup. If using Import Manager browse to the .OBJ file and import only that file, or browse to a .ZIP file that contains the .OBJ file (and others) and import only that file. If using manual placement to the atak/overlays folder, place a .ZIP file containing the .OBJ file (and others) into the directory and they will be imported on startup.



Once imported, a 3D Model icon will appear on the map. Zoom into the area of the icon until a loading ring appears. After the loading process has finished, the 3D model will be projected onto the map. Enable the map 3D View and tilt the view angle to see the 3D modeling. Loaded 3D models will appear as their own category in Overlay Manager and can be toggled on/off or removed from there.

Placement

The user can enter locations of interest using the Point Dropper tool. Select the [**Point Dropper**] icon to place internationally standardized markers and other icons on the map, edit the data and share the markers with other network members.

Self-Marker

The Self-Marker is displayed as a blue arrowhead at the user's current location. The options available on the Self-Marker radial are: Compass Rose, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, GPS Error, Range & Bearing Line, GPS Lock to Self, Tracking Breadcrumbs, Place a Marker at the user's current location and Details. Other TAK users appear on the display as a colored circle. The color of the circle represents the user's Team affiliation, with additional lettering inside the circle to identify the role the user on the team. Team Member markers that include a diagonal line indicate that the GPS location is not available. A solid icon indicated that the team member has GPS reception.

Available roles include: Team Member, Team Lead (designated by a TL in the center of the marker), Headquarters (HQ in center), Sniper (S), Medic (+), Forward Observer (FO), RTO (R) or K9 (K9). The options available when another user's Self-Marker is selected are: Inner Ring – Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, GPS Lock on Friendly, Video Player (if available), Communication Options (if configured by that user), Custom Threat Rings, Tracking Breadcrumbs and Details.

Outer Ring (Communication Options) – Data Package, Email, SMS Messaging, GeoChat, VOIP and Cellular Phone, when available.

Point Dropper

Selecting the [**Point Dropper**] icon will open the Point Dropper menu, containing marker symbology with one or more icon sets, a Recently Added button and an Iconset Manager button.

The Markers symbology affiliations are: Unknown, Neutral, Red and Friendly. Select the affiliation, then a location on the map interface to drop the marker. To add a marker by manually entering coordinates, long press on the map interface and enter the MGRS location. Change the standard naming convention by entering values into the custom prefix and index fields or leave blank to use the defaults. If values are entered, the next marker will be dropped with the prefix name and starting number(s) or letter(s) and every subsequent marker will be assigned the next consecutive number(s) or letter(s).

The user can select the mission specific pallet to open point options including Waypoint (WP), Sensor or Observation Point (OP).

The user can move between icon sets by either swiping in the icon set area or selecting on the [**Iconset Name**] field to bring up the Icon Pallet drop-down.

The last point placed is shown at the bottom of the Point Dropper window. The information for all recently placed points can be accessed by selecting the [**Clock**] icon. This displays the marker icon, name, coordinates, elevation and range & bearing information. The user can send, rename or remove any recently added markers by selecting the [**Arrows**] next to the marker to reveal [**SEND**], [**RENAME**] or [**DEL**] buttons.

Select the [**Iconset Manager**] (gear) button to add or delete icon sets or to set the default Marker Mapping.

Radial Menus

Unknown Object | **Neutral Object** | **Red Object** | **Friendly Object** | **Spot Object**

The options available for Unknown Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Neutral Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Red Object Markers are: Delete, Polar Coordinate Entry, Compass Rose/Bullseye, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Friendly Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Video, Contact Card, Custom Threat Rings, Tracking Breadcrumbs and Details. The Video radial will activate if a properly formatted packet that includes the link to the video feed is included. Select the video radial to open the associated video. The Contact Card can be selected to display additional communication options, including GeoChat, Email, VoIP, SMS Messaging and Cellular Phone, when available.

The options available for Spot Map are: Delete, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Nav-To, Custom Threat Rings, Labels and Details.

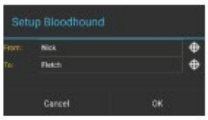
The options for User Defined Iconsets are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings. Tracking Breadcrumbs and Details.

Select [**Details**] on the marker radial to make desired modifications, including: Coordinate, Elevation, Name, Type and Remarks. Selecting Marker Type opens a dialog box with extra categories. File attachments, including images, can be associated with the object by selecting the [**Paperclip**] icon. Once all the desired modifications have been made, the Marker can be sent to other network members using [**Send**]. The information can be broadcast to all members or sent to specific recipients. Select the [**Auto Send**] option to broadcast the marker to other TAK users on the network, with updates automatically sent about once every 60 seconds.

Bloodhound Tool

The Bloodhound Tool provides support for tracking and intercepting a map item. It allows the user to select two points on the map and/or map objects and display range & bearing information between the chosen tracker and the target.

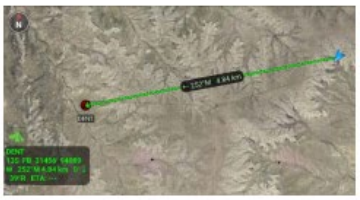
Select the [**Bloodhound**] icon to open the Bloodhound Tool. A window will open, prompting the user to choose where to start by tapping the [**From Reticle**] (default = user's self marker) and where to bloodhound (track) to by tapping the [**To Reticle**].



Targets include map objects like other User's Self Markers, DPs, Markers, Shape center points, Range & Bearing endpoints and any other map objects. If the user selects a map location instead of an object as the target, Bloodhound will place a waypoint marker there. The self marker will then track towards the waypoint.

Select [**OK**] and Bloodhound will be activated.

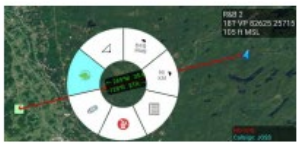
If either point moves, the green widget in the lower left will show the updated information. As the tracking object begins to navigate toward the target, the Estimated Time of Arrival (ETA) will update accordingly.



The green line showing the direct path from the tracker to the target will flash when the user-defined ETA outer threshold is reached (default = 6 minutes from target). The line will flash as the tracker continues toward the target until the next ETA threshold is reached (default = 3 minutes). The line will turn a flashing yellow until the final ETA threshold (default = 1 minute) is reached. The line then flashes red until the target is reached. Colors and thresholds can be modified in Settings > Tool Preferences > Bloodhound Preferences.

Selecting the green Bloodhound icon on the map will pan the map to the Bloodhound Range & Bearing Line. Disengage the Bloodhound Tool by selecting the [**Bloodhound**] icon on the toolbar.

Multiple Bloodhound



To create multiple bloodhounds, selecting the Range and Bearing Tool and select the [**R&B Line**] icon. Select two markers on the map and once the R&B line is created, select the line to bring up the radial. Select the [**Bloodhound**] radial, and the bloodhound information will be displayed on the R&B Line itself.

If either point moves, the Bloodhound information shown on the R&B Line will be updated. As the tracking object begins to navigate toward the target, the Estimated Time of Arrival (ETA) will update accordingly.

Go To

Select the [**Go To**] icon to enter details and navigate to a specific location on the map.

Select from the [**MGRS**] (military grid reference system), [**DD**] (decimal degrees), [**DM**] (degrees - minutes), [**DMS**] (degrees-minutes-seconds), [**UTM**] (Universal Transverse Mercator) or [**ADDR**] tabs on the Go To interface and enter the location data of interest. The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

The user can enter the Latitude, Longitude and Elevation in the space provided for [**MGRS**] , [**DD**], [**D-M**] or [**D-M-S**] searches. If DTED is installed, the elevation value can be automatically populated by tapping the [**Pull From DTED**] button.The user can select a desired marker type (Spot, Unknown, Neutral, Red, or Friendly) to be placed at the entered coordinates. If [**No Point**] is selected, the map will pan to the location but will not add a point.

Note: The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

The Address Lookup provider used for the ADDR tab can be configured in the Settings > Tool Preferences > Address Lookup Preferences.

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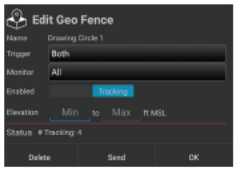
Geofencing

The Geo Fence tool allows users to create a virtual fence that triggers entry/exit notifications if map items of interest cross the virtual boundary lines. The Geo Fence options are added to the existing drawing tools. After a shape has been added, the Geo Fence Tool can be accessed either by selecting the [**Geo Fence**] icon from the menu items or selecting it from the radial.



The Enabled Field slider will move to Tracking by default when a new Geo Fence window is created. Toggle the slider between Tracking and Off to enable/disable the Geo Fence. Use the Trigger field to define which types of Geo Fence breach to monitor. Choose between Entry, Exit or Both. Use the Monitor field to define which entities the Geo Fence will track.

Choose between TAK Users, Friendly, Hostile, Custom or All. Check the [**Specify Elevation**] box to enable the Elevation field, where elevation boundaries for the entities being tracked can be defined. Select the [**OK**] button to finish creating the fence. Select the [**Send**] button to create the fence and send it to another user. Select [**Delete**] to close the Create Geo Fence window and discard changes.

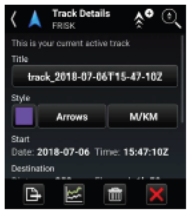
Alerts appear on the map interface. Selecting the [**Alert Notification**] will open the alerts menu, detailing the activity monitored in the user defined region. The default radius for monitoring users (filtered within the "Monitor" field) outside the Geo Fence is set at 75 km. This means the total area monitored begins at the farthest point from the center of the shape plus 75 km. If the user wishes to keep the Geo Fence, but disable tracking, the user can set the tracking [**Enabled**] to off in the Edit Window.

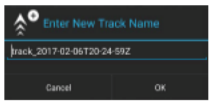
35

Unclassified

Track History

The device's GPS can be used to track movements with the Track History tool. These tracked paths can be exported to a TAK server, to a route or to a KML, KMZ, GPX or CSV file. A GPS position must be established before tracking can begin.

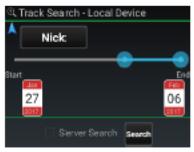


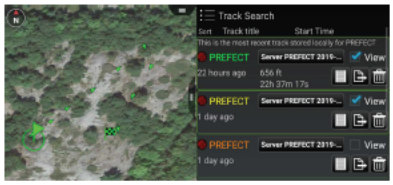


Selecting the [**Track History**] icon will open Track Details for the current active track. The track title, color and style can be modified. Initiate a new track by selecting the [**Add Track**] icon. Accept or edit the default track name and select the [**OK**] button to begin the new track. User location data is recorded as breadcrumbs in a new track file.

Track Search

Use the Track Search function to view track information that has been previously saved locally or on a TAK Server. The tool searches the track database for matches against the specified time range and by user callsign. Matching tracks are displayed as a list, and can be selected to view on the map interface.





Select the [**Track Search**] icon to access the function. Specify callsign and time frame, check the box for Server Search (if desired), then select [**Search**]. The track list will appear. The query results can be sorted by Track Name or Start Time. Select any of the query results to move to that track. Once selected, the name, color, and style of a selected track can be modified or the track can be cleared. Convert a track to a TAK route or export it as a KML, KMZ, GPX or CSV file by selecting the desired track and then [**Export**]. Enter a file name then select [**Next**] and choose the export format. Select [**Done**] or [**Send**] when the export completes.

When viewing the track list, the Track History Toolbar will appear at the top of the screen. The options include [**Add a Track**], [**Multi-select**], [**Track Search**], [**Clear Tracks**] and [**Exit**]. The Track History List allows the user to select tracks of other users that have been saved on their device. The Track Search – Local Device allows the user to perform a tailored search for tracks meeting their criteria. The searching option allows the user to retrieve all the tracks on the device.

The Track History Breadcrumb and Settings can be configured in the Settings > Tools Preferences > Track History Preferences.

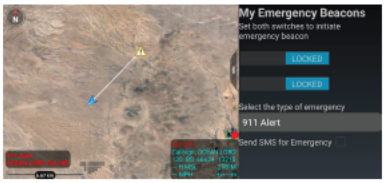
37

Unclassified

Emergency Beacon

Select the [**Emergency Beacon**] icon to open the Emergency Beacon Tool.

The Emergency Beacon allows the user to indicate their need for assistance, the type of emergency and their location on the map. The type of emergency can be selected from the drop-down menu, before activation, and includes options for an Alert, Ring the Bell, Geo Fence Breached or In Contact.



Once the Emergency type has been selected and both switches have been enabled, the TAK Server broadcasts the announcements to all network contacts. Even if the user's device is turned off, the beacon will continue. Only when the user returns to the Emergency Beacon tool and turns off the switches will the beacon be canceled and removed. If the SMS for Emergency option has been configured, the alert will be sent via text message to the configured numbers.

34

57. Additionally, the exemplary Accused Products allow users to establish groups and to exchange messages via interaction with servers which provide the Raytheon TAK, TAK Server, ATAK, WebTAK, CivTAK, and WinTAK application services, among other relevant services. The exemplary Accused Products further allow users to retrieve map information from multiple sources including street-view maps, as well as satellite renderings.

[34] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view

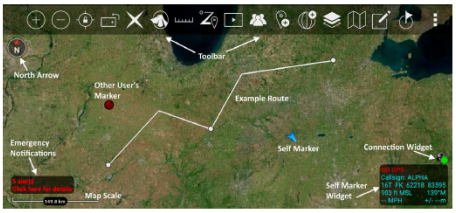
ATAK Civilian Overview

The Civilian Team Awareness Kit for Android (ATAK Civilian) is a Government-off-the-Shelf (GOTS) software application and mapping framework for mobile devices. ATAK Civilian has been designed and developed to run on Android smart devices used in a first responder environment. The ATAK Civilian software application is an extensible moving map display that integrates imagery, map and overlay information to provide enhanced collaboration and Situational Awareness (SA) over a tactical meshed network. ATAK Civilian promotes information flow and communications from the field environment to command enterprise locations.

The first time ATAK Civilian is opened, or after a Clear Content, a passphrase is auto-generated to activate data encryption. The user can supply their own passphrase by using Settings > Show All Preferences > Device Preferences > Change Encryption Passphrase. Following this step, ATAK Civilian's End User License Agreement (EULA) must be accepted. Next, the user will be prompted to change their callsign and/or import preferences or data from a Mission Package. All changes/imports can always be updated later. Finally, the user can place their self-marker by following the instructions located in the lower right corner.

The toolbar runs along the top of the map display. The features whose icons form the center portion of the toolbar are discussed in individual sections of this guide. The three dots at the right of the toolbar provide additional menu items that appear in a drop-down menu. A Long Press on the map will toggle the toolbar between hidden and visible.

The North Arrow appears in the upper left and is used to control map orientation. It has two primary modes: North Up/Track Up (default) and Manual Map Rotation/Lock. While in North Up/Track Up Mode, single press on the [**North Arrow**] icon to cycle between the North Up and Track Up map orientation. Long press the [**North Arrow**] to call out the additional controls menu where the Manual Rotation/Lock and 3D features are available. Select the [**Rotation**] button to enter Manual Map Rotation/Lock Mode. When in Manual Map Rotation/Lock Mode, rotate the map orientation by pressing on the map with two fingers and pivoting them in the desired direction. Single press on the [**North Arrow**] to lock the screen orientation, signified by the appearance of the lock icon, and again to unlock the orientation for further adjustment. 3D controls are discussed in a separate section.



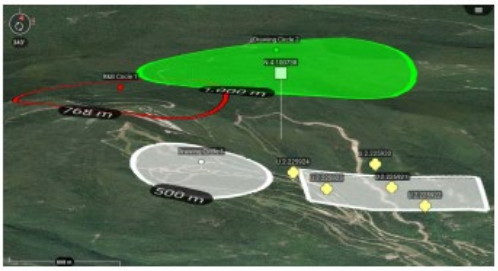
Select the [**Magnifier**] buttons to zoom in or out on the map. The map can also be zoomed by using two fingers on the screen to pinch and spread the map. Select the [**Back**] button to center the screen on the Self Marker or the [**Padlock**] icon to lock the center of the screen to the Self Marker. Select the [**Orientation**] icon to toggle the screen position between portrait and landscape.

The optional connection widget indicates whether or not the user is connected to a TAK Server. This has a corresponding Android notification that provides the same information. Toggle this display on at Settings > Network Connections > Network Connections > Display Connection Widget.

Alerts and notifications are displayed in the lower left of the map interface.

The Map Scale displays a 1 inch to X mi/km reference on the map. The scale adjusts with the map when zoomed in and out. Hint windows are available to alert users to changes or make suggestions about the use of tools the first time they are opened.

3D View



ATAK Civilian features 3D viewing of terrain and map items (DTED required). To enable 3D view, long press on the [**North Arrow**] to call out the additional controls menu and select [**3D**]. A tilt angle indicator will appear around the edge of the [**North Arrow**] when 3D view is active. Touch the screen with two fingers and simultaneously swipe up or down on the screen to tilt the view angle. Once the appropriate viewing angle is set, select the [**3D Lock**] button to retain this view while panning the map. While viewing the map from an angle, some map items will appear raised above the map surface if they have defined elevations.

3D Models

ATAK Civilian supports the use of 3D models. OBJ models and other types from products such as Pix4D can be imported via the Import Manager or can be manually placed in the atak/overlays folder prior to startup. If using Import Manager browse to the .OBJ file and import only that file, or browse to a .ZIP file that contains the .OBJ file (and others) and import only that file. If using manual placement to the atak/overlays folder, place a .ZIP file containing the .OBJ file (and others) into the directory and they will be imported on startup.

Once imported, a 3D Model icon will appear on the map. Zoom into the area of the icon until a loading ring appears. After the loading process has finished, the 3D model will be projected onto the map. Enable the map 3D View and tilt the view angle to see the 3D modeling. Loaded 3D models will appear as their own category in Overlay Manager and can be toggled on/off or removed from there.

Unclassified

Placement

The user can enter locations of interest using the Point Dropper tool. Select the [**Point Dropper**] icon to place internationally standardized markers and other icons on the map, edit the data and share the markers with other network members.

Self-Marker

The Self-Marker is displayed as a blue arrowhead at the user's current location. The options available on the Self-Marker radial are: Compass Rose, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, GPS Error, Range & Bearing Line, GPS Lock to Self, Tracking Breadcrumbs, Place a Marker at the user's current location and Details. Other TAK users appear on the display as a colored circle. The color of the circle represents the user's Team affiliation, with additional lettering inside the circle to identify the role the user on the team. Team Member markers that include a diagonal line indicate that the GPS location is not available. A solid icon indicated that the team member has GPS reception.

Available roles include: Team Member, Team Lead (designated by a TL in the center of the marker), Headquarters (HQ in center), Sniper (S), Medic (+), Forward Observer (FO), RTO (R) or K9 (K9). The options available when another user's Self-Marker is selected are: Inner Ring – Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, GPS Lock on Friendly, Video Player (if available), Communication Options (if configured by that user), Custom Threat Rings, Tracking Breadcrumbs and Details.

Outer Ring (Communication Options) – Data Package, Email, SMS Messaging, GeoChat, VOIP and Cellular Phone, when available.

Unclassified

Radial Menus

Unknown Object | **Neutral Object** | **Red Object** | **Friendly Object** | **Spot Object**

The options available for Unknown Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Neutral Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Red Object Markers are: Delete, Polar Coordinate Entry, Compass Rose/Bullseye, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Friendly Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Video, Contact Card, Custom Threat Rings, Tracking Breadcrumbs and Details. The Video radial will activate if a properly formatted packet that includes the link to the video feed is included. Select the video radial to open the associated video. The Contact Card can be selected to display additional communication options, including GeoChat, Email, VoIP, SMS Messaging and Cellular Phone, when available.

The options available for Spot Map are: Delete, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Nav-To, Custom Threat Rings, Labels and Details.

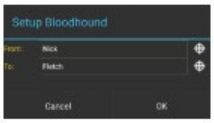
The options for User Defined Iconsets are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings. Tracking Breadcrumbs and Details.

Select [**Details**] on the marker radial to make desired modifications, including: Coordinate, Elevation, Name, Type and Remarks. Selecting Marker Type opens a dialog box with extra categories. File attachments, including images, can be associated with the object by selecting the [**Paperclip**] icon. Once all the desired modifications have been made, the Marker can be sent to other network members using [**Send**]. The information can be broadcast to all members or sent to specific recipients. Select the [**Auto Send**] option to broadcast the marker to other TAK users on the network, with updates automatically sent about once every 60 seconds.

Bloodhound Tool

The Bloodhound Tool provides support for tracking and intercepting a map item. It allows the user to select two points on the map and/or map objects and display range & bearing information between the chosen tracker and the target.

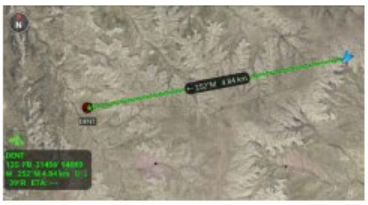
Select the [**Bloodhound**] icon to open the Bloodhound Tool. A window will open, prompting the user to choose where to start by tapping the [**From Reticle**] (default = user's self marker) and where to bloodhound (track) to by tapping the [**To Reticle**].



Targets include map objects like other User's Self Markers, DPs, Markers, Shape center points, Range & Bearing end-points and any other map objects. If the user selects a map location instead of an object as the target, Bloodhound will place a waypoint marker there. The self marker will then track towards the waypoint.

Select [**OK**] and Bloodhound will be activated.

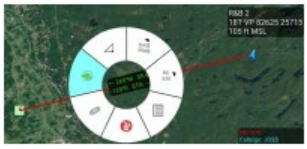
If either point moves, the green widget in the lower left will show the updated information. As the tracking object begins to navigate toward the target, the Estimated Time of Arrival (ETA) will update accordingly.



The green line showing the direct path from the tracker to the target will flash when the user-defined ETA outer threshold is reached (default = 6 minutes from target). The line will flash as the tracker continues toward the target until the next ETA threshold is reached (default = 3 minutes). The line will turn a flashing yellow until the final ETA threshold (default = 1 minute) is reached. The line then flashes red until the target is reached. Colors and thresholds can be modified in Settings > Tool Preferences > Bloodhound Preferences.

Selecting the green Bloodhound icon on the map will pan the map to the Bloodhound Range & Bearing Line. Disengage the Bloodhound Tool by selecting the [**Bloodhound**] icon on the toolbar.

Multiple Bloodhound



To create multiple bloodhounds, selecting the Range and Bearing Tool and select the [**R&B Line**] icon. Select two markers on the map and once the R&B line is created, select the line to bring up the radial. Select the [**Bloodhound**] radial, and the bloodhound information will be displayed on the R&B Line itself.

If either point moves, the Bloodhound information shown on the R&B Line will be updated. As the tracking object begins to navigate toward the target, the Estimated Time of Arrival (ETA) will update accordingly.

Go To

Select the [**Go To**] icon to enter details and navigate to a specific location on the map.

Select from the [**MGRS**] (military grid reference system), [**DD**] (decimal degrees), [**DM**] (degrees - minutes), [**DMS**] (degrees-minutes-seconds), [**UTM**] (Universal Transverse Mercator) or [**ADDR**] tabs on the Go To interface and enter the location data of interest. The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

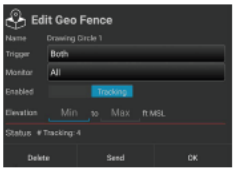
The user can enter the Latitude, Longitude and Elevation in the space provided for [**MGRS**] , [**DD**], [**D-M**] or [**D-M-S**] searches. If DTED is installed, the elevation value can be automatically populated by tapping the [**Pull From DTED**] button.The user can select a desired marker type (Spot, Unknown, Neutral, Red, or Friendly) to be placed at the entered coordinates. If [**No Point**] is selected, the map will pan to the location but will not add a point.

Note: The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

The Address Lookup provider used for the ADDR tab can be configured in the Settings > Tool Preferences > Address Lookup Preferences.

Geofencing

The Geo Fence tool allows users to create a virtual fence that triggers entry/exit notifications if map items of interest cross the virtual boundary lines. The Geo Fence options are added to the existing drawing tools. After a shape has been added, the Geo Fence Tool can be accessed either by selecting the [**Geo Fence**] icon from the menu items or selecting it from the radial.



The Enabled Field slider will move to Tracking by default when a new Geo Fence window is created. Toggle the slider between Tracking and Off to enable/disable the Geo Fence. Use the Trigger field to define which types of Geo Fence breach to monitor. Choose between Entry, Exit or Both. Use the Monitor field to define which entities the Geo Fence will track.

Choose between TAK Users, Friendly, Hostile, Custom or All. Check the [**Specify Elevation**] box to enable the Elevation field, where elevation boundaries for the entities being tracked can be defined. Select the [**OK**] button to finish creating the fence. Select the [**Send**] button to create the fence and send it to another user. Select [**Delete**] to close the Create Geo Fence window and discard changes.

Alerts appear on the map interface. Selecting the [**Alert Notification**] will open the alerts menu, detailing the activity monitored in the user defined region. The default radius for monitoring users (filtered within the "Monitor" field) outside the Geo Fence is set at 75 km. This means the total area monitored begins at the farthest point from the center of the shape plus 75 km. If the user wishes to keep the Geo Fence, but disable tracking, the user can set the tracking [**Enabled**] to off in the Edit Window.

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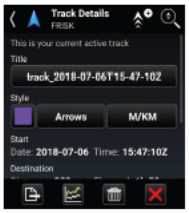
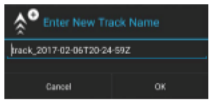
Unclassified

Track History

The device's GPS can be used to track movements with the Track History tool. These tracked paths can be exported to a TAK server, to a route or to a KML, KMZ, GPX or CSV file. A GPS position must be established before tracking can begin.

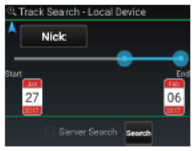




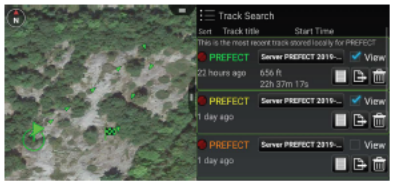
Selecting the [**Track History**] icon will open Track Details for the current active track. The track title, color and style can be modified. Initiate a new track by selecting the [**Add Track**] icon. Accept or edit the default track name and select the [**OK**] button to begin the new track. User location data is recorded as breadcrumbs in a new track file.

Track Search

Use the Track Search function to view track information that has been previously saved locally or on a TAK Server. The tool searches the track database for matches against the specified time range and by user callsign. Matching tracks are displayed as a list, and can be selected to view on the map interface.



Select the [**Track Search**] icon to access the function. Specify callsign and time frame, check the box for Server Search (if desired), then select [**Search**]. The track list will appear. The query results can be sorted by Track Name or Start Time. Select any of the query results to move to that track. Once selected, the name, color, and style of a selected track can be modified or the track can be cleared. Convert a track to a TAK route or export it as a KML, KMZ, GPX or CSV file by selecting the desired track and then [**Export**]. Enter a file name then select [**Next**] and choose the export format. Select [**Done**] or [**Send**] when the export completes.



When viewing the track list, the Track History Toolbar will appear at the top of the screen. The options include [**Add a Track**], [**Multi-select**], [**Track Search**], [**Clear Tracks**] and [**Exit**]. The Track History List allows the user to select tracks of other users that have been saved on their device. The Track Search – Local Device allows the user to perform a tailored search for tracks meeting their criteria. The searching option allows the user to retrieve all the tracks on the device.

The Track History Breadcrumb and Settings can be configured in the Settings > Tools Preferences > Track History Preferences.

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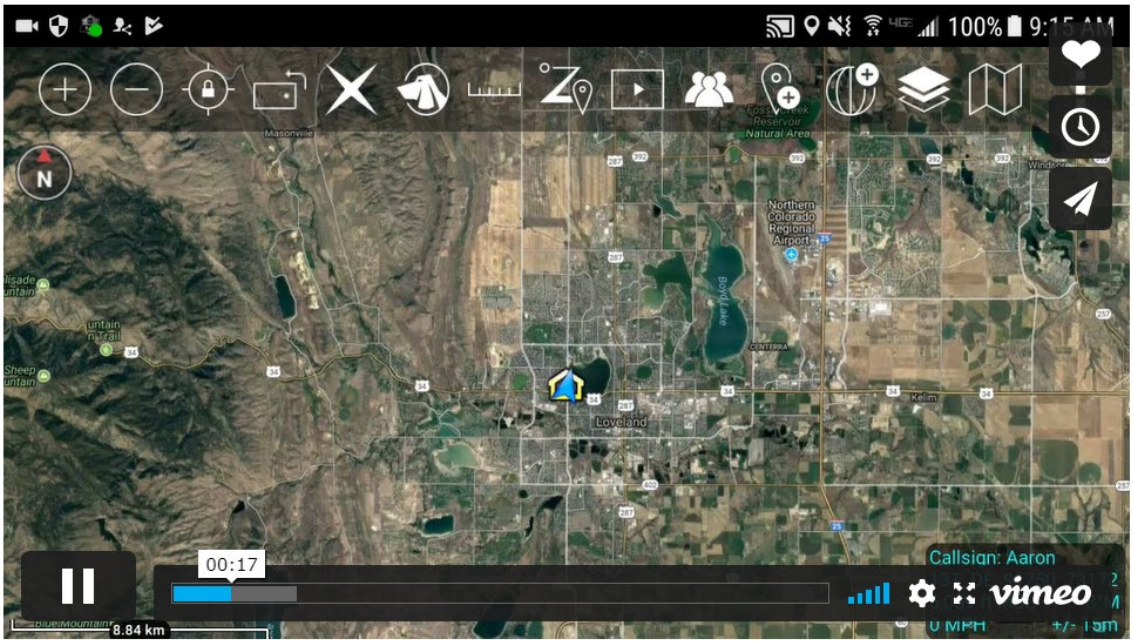
[35] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view



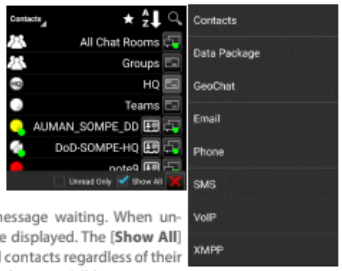
[36]

58. The exemplary Accused Products are programmed to form and join groups by transmitting messages:

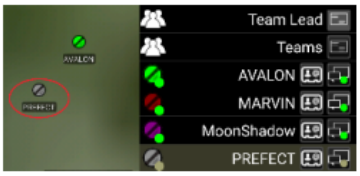
[36] https://wiki.civtak.org/index.php?title=ATAK_Manual

Contacts

The Contacts list includes a variety of ways in which a user may communicate with other users, such as GeoChat (ATAK Civilian's built in Chat capability), Data Packages, Email, Phone, SMS, VoIP and XMPP.



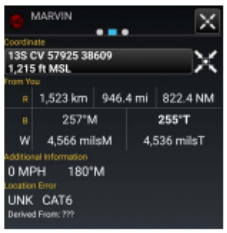
A default communication type (shown in the last column) may be selected and used until another type of communication is selected.



The Contacts list has two filters available at the bottom of the screen. The Unread Only box, when checked, will display only contacts with whom there are unread message waiting. When unchecked (default), all available contacts are displayed. The [**Show All**] box, when checked (default), will display all contacts regardless of their location. When unchecked, only contacts that are visible on current map screen will be displayed.

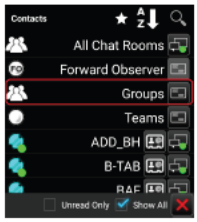
If a contact is no longer online, it will be indicated by changing the contact listing to a yellow color and the marker changes to gray both in the list and on the map.

Profile cards are accessed by selecting the second to last column in the Contacts list and are available for each contact. These contain additional information about that contact including: 1) role, software type and version installed, node type, default connector, last reported time, battery life; 2) location information, and 3) available types of communication.

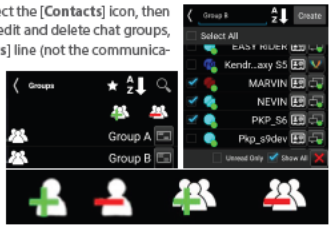


GeoChat Group Management

Text-based Chat messages may be sent to active network members by using the GeoChat function. To enter GeoChat Group Management, select the [**Contacts**] icon and select [**GeoChat**] from the drop-down menu.

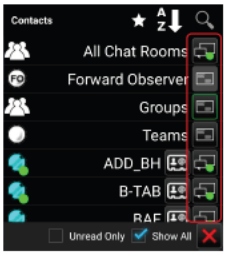


GeoChat Group Management is initiated through Contacts. Select the [**Contacts**] icon, then select GeoChat from the drop-down. The user can now create, edit and delete chat groups, as well as sub-groups. To create a chat group, select the [**Groups**] line (not the communications button). Select the [**Add Group**] icon to create the name of the group and add contacts to the group and then select [**Create**]. If a parent group is being created, no contacts need to be added at this level. To add a nested group, tap the parent group, select the [**Add Group**] icon to create the name of the sub-group and add contacts. Groups may be managed using the options to add/delete contacts or to add/delete GeoChat group.



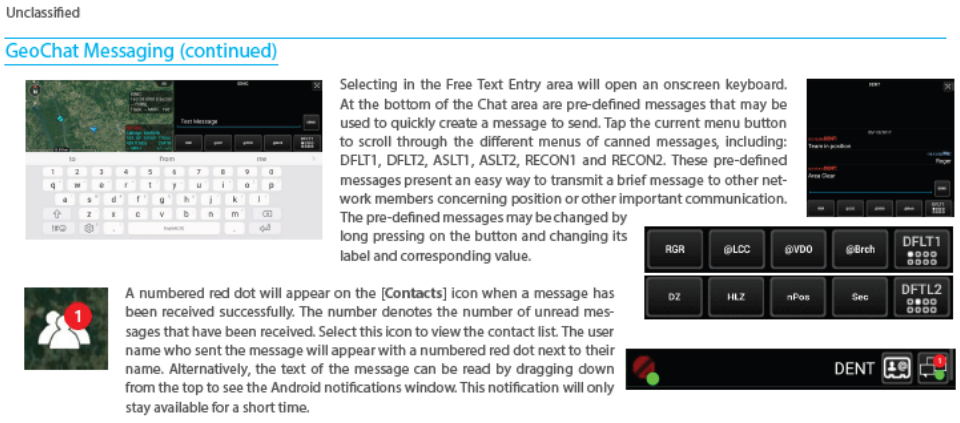
To add users to a group, select the [**Groups**] line (not the communications button), then select the name of the group to add users. Select the [**Add Users**] icon. A window will open allowing the group creater to add users to the selected group. Select the [**Add**] button when all the users to be added are checked.

GeoChat Messaging



Group and person-to-person messaging is available. To view messages from or send messages to an individual, tap on the desired contact's [**Communication**] icon. Selecting the [**Pan To**] icon, located at the top right of the call sign in an individual chat, will pan the map interface to that user's location. Select [**All Chat Rooms**] to view all messages from or send messages to those present on the network or TAK Server. Other groupings available for viewing or sending messages are: Forward Observer, Groups, HQ, K9, Medic, RTO, Sniper, Team Lead and Teams. If the user's current role is Forward Observer, HQ, K9, Medic, RTO, Sniper or Team Lead, that user can view or send messages to all other contacts with the same role. If a GeoChat message is sent from the top level of Teams, it will be sent to all contacts, similar to [**All Chat Rooms**].

When a sub-Team is chosen, messages can only be sent to that user's active (My Team) team color. When a parent group is chosen, messages are sent to all members of the parent group, as well as all of the sub-groups. When a sub-group is chosen, messages are sent only to members of the sub-group. Individuals within GeoChat may be removed from the Contacts menu by toggling the visibility of individuals or groups within Overlay Manager.



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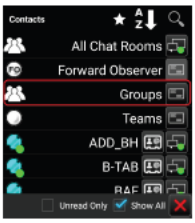
59. The exemplary Accused Products are further programmed to facilitate participation in the group by communicating with a server and sending to and receiving location information, as depicted below:

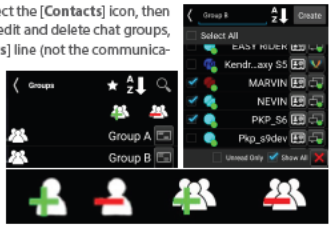
[37] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view

GeoChat Group Management

Text-based Chat messages may be sent to active network members by using the GeoChat function. To enter GeoChat Group Management, select the [**Contacts**] icon and select [**GeoChat**] from the drop-down menu.

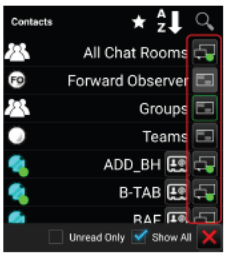


GeoChat Group Management is initiated through Contacts. Select the [**Contacts**] icon, then select GeoChat from the drop-down. The user can now create, edit and delete chat groups, as well as sub-groups. To create a chat group, select the [**Groups**] line (not the communications button). Select the [**Add Group**] icon to create the name of the group and add contacts to the group and then select [**Create**]. If a parent group is being created, no contacts need to be added at this level. To add a nested group, tap the parent group, select the [**Add Group**] icon to create the name of the sub-group and add contacts. Groups may be managed using the options to add/delete contacts or to add/delete GeoChat group.



To add users to a group, select the [**Groups**] line (not the communications button), then select the name of the group to add users. Select the [**Add Users**] icon. A window will open allowing the group creater to add users to the selected group. Select the [**Add**] button when all the users to be added are checked.

GeoChat Messaging



Group and person-to-person messaging is available. To view messages from or send messages to an individual, tap on the desired contact's [**Communication**] icon. Selecting the [**Pan To**] icon, located at the top right of the call sign in an individual chat, will pan the map interface to that user's location. Select [**All Chat Rooms**] to view all messages from or send messages to those present on the network or TAK Server. Other groupings available for viewing or sending messages are: Forward Observer, Groups, HQ, K9, Medic, RTO, Sniper, Team Lead and Teams. If the user's current role is Forward Observer, HQ, K9, Medic, RTO, Sniper or Team Lead, that user can view or send messages to all other contacts with the same role. If a GeoChat message is sent from the top level of Teams, it will be sent to all contacts, similar to [**All Chat Rooms**].

When a sub-Team is chosen, messages can only be sent to that user's active (My Team) team color. When a parent group is chosen, messages are sent to all members of the parent group, as well as all of the sub-groups. When a sub-group is chosen, messages are sent only to members of the sub-group. Individuals within GeoChat may be removed from the Contacts menu by toggling the visibility of individuals or groups within Overlay Manager.

GeoChat Messaging (continued)

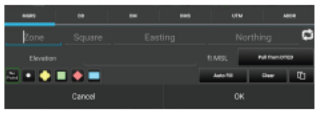
Selecting in the Free Text Entry area will open an onscreen keyboard. At the bottom of the Chat area are pre-defined messages that may be used to quickly create a message to send. Tap the current menu button to scroll through the different menus of canned messages, including: DFLT1, DFLT2, ASLT1, ASLT2, RECON1 and RECON2. These pre-defined messages present an easy way to transmit a brief message to other network members concerning position or other important communication. The pre-defined messages may be changed by long pressing on the button and changing its label and corresponding value.

A numbered red dot will appear on the [**Contacts**] icon when a message has been received successfully. The number denotes the number of unread messages that have been received. Select this icon to view the contact list. The user name who sent the message will appear with a numbered red dot next to their name. Alternatively, the text of the message can be read by dragging down from the top to see the Android notifications window. This notification will only stay available for a short time.

Go To

Select the [**Go To**] icon to enter details and navigate to a specific location on the map.

Select from the [**MGRS**] (military grid reference system), [**DD**] (decimal degrees), [**DM**] (degrees - minutes), [**DMS**] (degrees-minutes-seconds), [**UTM**] (Universal Transverse Mercator) or [**ADDR**] tabs on the Go To interface and enter the location data of interest. The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.



The user can enter the Latitude, Longitude and Elevation in the space provided for [**MGRS**] , [**DD**], [**D-M**] or [**D-M-S**] searches. If DTED is installed, the elevation value can be automatically populated by tapping the [**Pull From DTED**] button.The user can select a desired marker type (Spot, Unknown, Neutral, Red, or Friendly) to be placed at the entered coordinates. If [**No Point**] is selected, the map will pan to the location but will not add a point.

Note: The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

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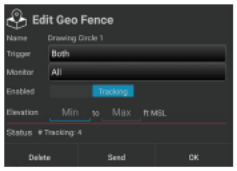


The Enabled Field slider will move to Tracking by default when a new Geo Fence window is created. Toggle the slider between Tracking and Off to enable/disable the Geo Fence. Use the Trigger field to define which types of Geo Fence breach to monitor. Choose between Entry, Exit or Both. Use the Monitor field to define which entities the Geo Fence will track.

Choose between TAK Users, Friendly, Hostile, Custom or All. Check the [**Specify Elevation**] box to enable the Elevation field, where elevation boundaries for the entities being tracked can be defined. Select the [**OK**] button to finish creating the fence. Select the [**Send**] button to create the fence and send it to another user. Select [**Delete**] to close the Create Geo Fence window and discard changes.

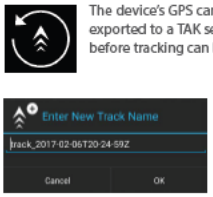
Alerts appear on the map interface. Selecting the [**Alert Notification**] will open the alerts menu, detailing the activity monitored in the user defined region. The default radius for monitoring users (filtered within the "Monitor" field) outside the Geo Fence is set at 75 km. This means the total area monitored begins at the farthest point from the center of the shape plus 75 km. If the user wishes to keep the Geo Fence, but disable tracking, the user can set the tracking [**Enabled**] to off in the Edit Window.

35

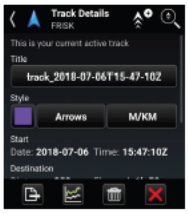
Unclassified

Track History

The device's GPS can be used to track movements with the Track History tool. These tracked paths can be exported to a TAK server, to a route or to a KML, KMZ, GPX or CSV file. A GPS position must be established before tracking can begin.



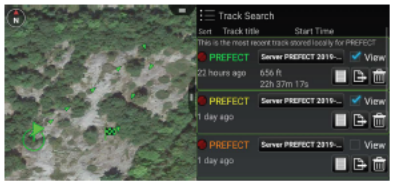
Selecting the [**Track History**] icon will open Track Details for the current active track. The track title, color and style can be modified. Initiate a new track by selecting the [**Add Track**] icon. Accept or edit the default track name and select the [**OK**] button to begin the new track. User location data is recorded as breadcrumbs in a new track file.



Track Search

Use the Track Search function to view track information that has been previously saved locally or on a TAK Server. The tool searches the track database for matches against the specified time range and by user callsign. Matching tracks are displayed as a list, and can be selected to view on the map interface.

Select the [**Track Search**] icon to access the function. Specify callsign and time frame, check the box for Server Search (if desired), then select [**Search**]. The track list will appear. The query results can be sorted by Track Name or Start Time. Select any of the query results to move to that track. Once selected, the name, color, and style of a selected track can be modified or the track can be cleared. Convert a track to a TAK route or export it as a KML, KMZ, GPX or CSV file by selecting the desired track and then [**Export**]. Enter a file name then select [**Next**] and choose the export format. Select [**Done**] or [**Send**] when the export completes.



When viewing the track list, the Track History Toolbar will appear at the top of the screen. The options include [**Add a Track**], [**Multi-select**], [**Track Search**], [**Clear Tracks**] and [**Exit**]. The Track History List allows the user to select tracks of other users that have been saved on their device. The Track Search – Local Device allows the user to perform a tailored search for tracks meeting their criteria. The searching option allows the user to retrieve all the tracks on the device.

The Track History Breadcrumb and Settings can be configured in the Settings > Tools Preferences > Track History Preferences.

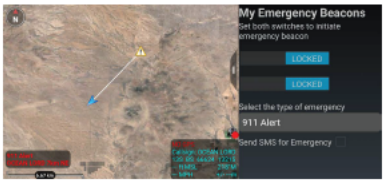
37

Unclassified

Emergency Beacon

Select the [**Emergency Beacon**] icon to open the Emergency Beacon Tool.

The Emergency Beacon allows the user to indicate their need for assistance, the type of emergency and their location on the map. The type of emergency can be selected from the drop-down menu, before activation, and includes options for an Alert, Ring the Bell, Geo Fence Breached or In Contact.



Once the Emergency type has been selected and both switches have been enabled, the TAK Server broadcasts the announcements to all network contacts. Even if the user's device is turned off, the beacon will continue. Only when the user returns to the Emergency Beacon tool and turns off the switches will the beacon be canceled and removed. If the SMS for Emergency option has been configured, the alert will be sent via text message to the configured numbers.

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60. The location information is presented on interactive displays on the exemplary Accused Products which include interactive maps and a plurality of user selectable symbols corresponding to other devices. The symbols are positioned on the map at positions corresponding to the locations of the other devices, as depicted below:

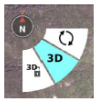
[38] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view

ATAK Civilian Overview

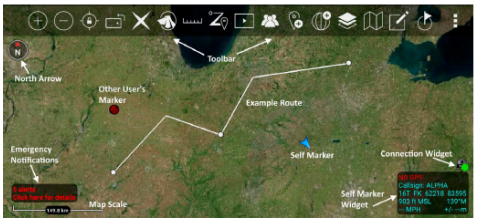
The Civilian Team Awareness Kit for Android (ATAK Civilian) is a Government-off-the-Shelf (GOTS) software application and mapping framework for mobile devices. ATAK Civilian has been designed and developed to run on Android smart devices used in a first responder environment. The ATAK Civilian software application is an extensible moving map display that integrates imagery, map and overlay information to provide enhanced collaboration and Situational Awareness (SA) over a tactical meshed network. ATAK Civilian promotes information flow and communications from the field environment to command enterprise locations.

The first time ATAK Civilian is opened, or after a Clear Content, a passphrase is auto-generated to activate data encryption. The user can supply their own passphrase by using Settings > Show All Preferences > Device Preferences > Change Encryption Passphrase. Following this step, ATAK Civilian's End User License Agreement (EULA) must be accepted. Next, the user will be prompted to change their callsign and/or import preferences or data from a Mission Package. All changes/imports can always be updated later. Finally, the user can place their self-marker by following the instructions located in the lower right corner.

The toolbar runs along the top of the map display. The features whose icons form the center portion of the toolbar are discussed in individual sections of this guide. The three dots at the right of the toolbar provide additional menu items that appear in a drop-down menu. A Long Press on the map will toggle the toolbar between hidden and visible.



The North Arrow appears in the upper left and is used to control map orientation. It has two primary modes: North Up/Track Up (default) and Manual Map Rotation/Lock. While in North Up/Track Up Mode, single press on the [**North Arrow**] icon to cycle between the North Up and Track Up map orientation. Long press the [**North Arrow**] to call out the additional controls menu where the Manual Rotation/Lock and 3D features are available. Select the [**Rotation**] button to enter Manual Map Rotation/Lock Mode. When in Manual Map Rotation/Lock Mode, rotate the map orientation by pressing on the map with two fingers and pivoting them in the desired direction. Single press on the [**North Arrow**] to lock the screen orientation, signified by the appearance of the lock icon, and again to unlock the orientation for further adjustment. 3D controls are discussed in a separate section.



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The optional connection widget indicates whether or not the user is connected to a TAK Server. This has a corresponding Android notification that provides the same information. Toggle this display on at Settings > Network Connections > Network Connections > Display Connection Widget.

Alerts and notifications are displayed in the lower left of the map interface.

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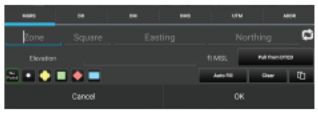

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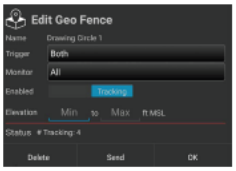

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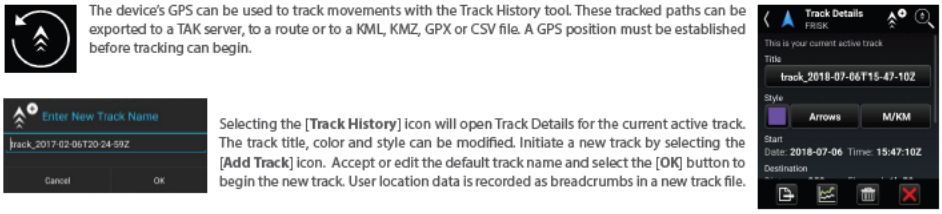

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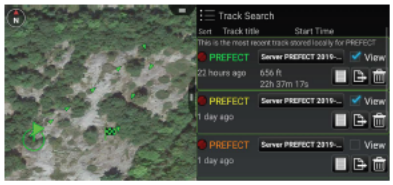

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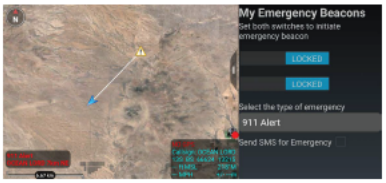

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39

61. The exemplary Accused Products are further programmed to permit users to request and display additional maps from additional servers by, for example, moving the map screen and/or by selecting satellite images or other types of maps. The exemplary Accused Products are further programmed to permit interaction with the display where a user may select one or more

[39] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view

symbols and where the exemplary Accused Products further permit data to be sent to other devices based on that interaction.

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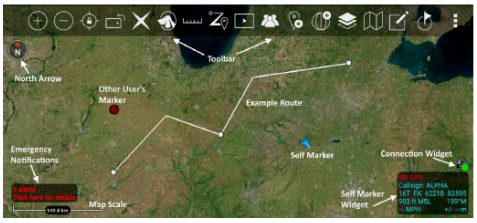

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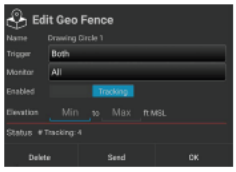
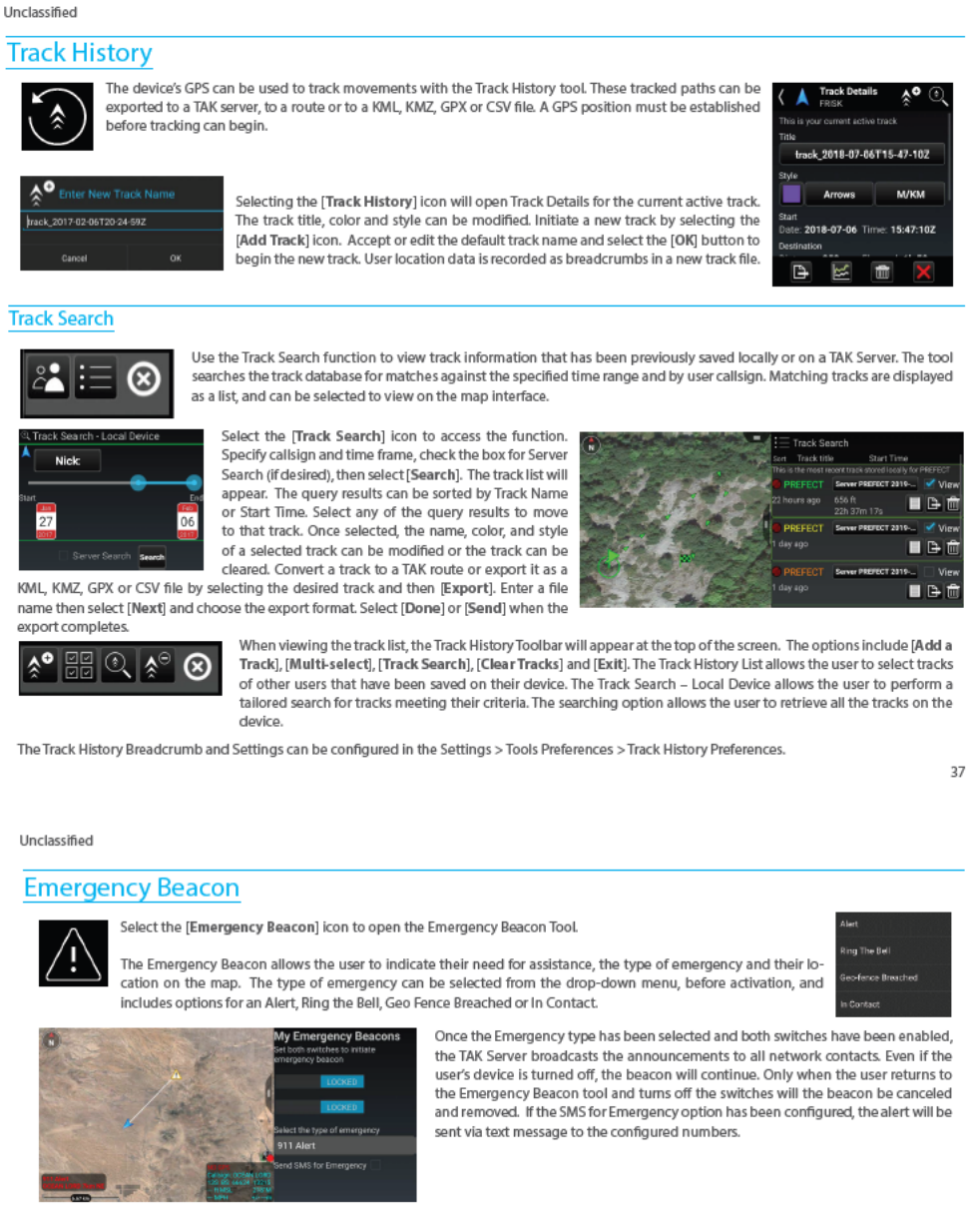


The Enabled Field slider will move to Tracking by default when a new Geo Fence window is created. Toggle the slider between Tracking and Off to enable/disable the Geo Fence. Use the Trigger field to define which types of Geo Fence breach to monitor. Choose between Entry, Exit or Both. Use the Monitor field to define which entities the Geo Fence will track.

Choose between TAK Users, Friendly, Hostile, Custom or All. Check the [**Specify Elevation**] box to enable the Elevation field, where elevation boundaries for the entities being tracked can be defined. Select the [**OK**] button to finish creating the fence. Select the [**Send**] button to create the fence and send it to another user. Select [**Delete**] to close the Create Geo Fence window and discard changes.

Alerts appear on the map interface. Selecting the [**Alert Notification**] will open the alerts menu, detailing the activity monitored in the user defined region. The default radius for monitoring users (filtered within the "Monitor" field) outside the Geo Fence is set at 75 km. This means the total area monitored begins at the farthest point from the center of the shape plus 75 km. If the user wishes to keep the Geo Fence, but disable tracking, the user can set the tracking [**Enabled**] to off in the Edit Window.

35



62. The Accused Products, such as Defendants' Airport Surface Awareness System, Pro Line Fusion, Surface Management System, Ascend, OpsCore, ARINCDirect, ARINC Global Network, ARINC Integrator, ARINC Hermes, FasTAK, and Rosetta Technology applications, solutions, and servers further include similar features and functionalities to Raytheon TAK, TAK

[40] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view

Server, ATAK, WebTAK, CivTAK, and WinTAK applications, solutions, and servers, and infringe in a substantially similar manner:[41]

[42]

[41] https://www.collinsaerospace.com/what-we-do/industries/commercial-aviation/flight-operations/message-management; https://www.collinsaerospace.com/what-we-do/industries/commercial-aviation/ground-operations/messaging-data-exchange/arinc-messaging

[42] https://www.rtx.com/news/news-center/2024/05/09/rtx-introduces-the-collins-airport-surface-awareness-system

Moving map

Integrates the terrain database with real-time flight information for greater situational awareness, overlay weather, airways, navaids, and more on the moving map especially in low visibility conditions and unfamiliar territory. All delivered with the enhanced safety of natural, eyes-forward flying.

[43]

[43] https://www.collinsaerospace.com/what-we-do/industries/military-and-defense/targeting/targeting-and-c2/fastak-integrated-targeting-system https://www.rockwellcollins.com/~/media/Files/Unsecure/Products/Product%20Brochures/Integrated%20Systems/Flight%20Deck/Pro%20Line%20Fusion/Pro%20Line%20Fusion%20Gulfstream%20G280.aspx; https://battle-updates.com/update/contract-news-in-brief-837/; https://prd-sc102-cdn.rtx.com/-/media/ca/product-assets/marketing/r/rosetta-technology-data-sheet.pdf?rev=8f6858685dde43b4a432806333f4624b&hash=F0C027F7D9128630CF5CDB243A3FFDCB

Optimized data for faster decision-making

OpsCore pairs Collins' proven messaging, alerting and fleet management capabilities with FlightAware's Firehose™ API and HyperFeed® data aggregation and analysis tools to bring multiple sources of data together into one, single stream of actionable data. This is then delivered to aircrews, flight operators and key airport personnel, keeping them informed at every step of the journey.

This bird's eye view of operations, combined with a high level of data-driven situational awareness, supports better, faster decision-making, as well as reduced costs and delays from IRROPS, fuel and weather impacts.

[44]

[45]

[44] https://prd-sc102-cdn.rtx.com/-/media/ca/product-assets/marketing/o/opscore/opscore-flight-tracking-data-sheet-v4.pdf?rev=a023a17537e34e608801ce915734e749&hash=AC3FA21989AC3122EBDA90B5624338FD

[45] https://www.collinsaerospace.com/what-we-do/industries/military-and-defense/targeting/targeting-and-c2/fastak-integrated-targeting-system

63. AGIS Software has suffered damages as a result of Defendants' direct and indirect infringement of the '123 Patent in an amount to be proved at trial.

64. AGIS Software has suffered, and will continue to suffer, irreparable harm as a result of Defendants' infringement of the '123 Patent for which there is no adequate remedy at law unless Defendants' infringement is enjoined by this Court.

COUNT IV
(Infringement of the '829 Patent)

65. Paragraphs 1 through 19 are incorporated herein by reference as if fully set forth in their entireties.

66. AGIS Software has not licensed or otherwise authorized Defendants to make, use offer for sale, sell, distribute, export from, or import any products that embody the inventions of the '829 Patent.

67. Defendants have and continue to directly infringe at least claim 34 of the '829 Patent, either literally or under the doctrine of equivalents, by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States the Accused Products without authority and in violation of 35 U.S.C. § 271(a).

68. Defendants have and continue to indirectly infringe at least claim 34 of the '829 Patent by actively, knowingly, and intentionally inducing others to directly infringe, either literally or under the doctrine of equivalents, by making, using, selling, offering for sale, distributing, exporting from, and/or importing into the United States the infringing Accused Products and by instructing users of the Accused Products to perform at least the method of claim 34 in the '829 Patent. For example, Defendants, with knowledge that the Accused Products infringe the '829 Patent at least as of the date of this Complaint, actively, knowingly, and intentionally induced, and continue to actively, knowingly, and intentionally induce direct infringement of at least claim 34

of the ’829 Patent in violation of 35 U.S.C. § 271(b). Alternatively, Defendants believed there was a high probability that others would infringe the ’829 Patent but remained willfully blind to the infringing nature of others’ actions.

69. For example, Defendants have indirectly infringed and continue to indirectly infringe at least claim 34 of the ’829 Patent in the United States because Defendants’ customers use the Accused Products, including at least the Raytheon TAK, TAK Server, ATAK, WebTAK, CivTAK, and WinTAK solutions and servers, alone or in conjunction with additional Accused Products, in accordance with Defendants’ instructions and thereby directly infringe at least one claim of the ’829 Patent in violation of 35 U.S.C. § 271. Defendants directly and/or indirectly intentionally instruct their customers to infringe through training videos, demonstrations, brochures, installations, and/or user guides, such as those located at one or more of the following: https://bbn-tak.myshopify.com/; https://www.civtak.org/atak-about/; https://www.civtak.org/documentation/; https://wiki.civtak.org/index.php?title=ATAK_Manual; and through Raytheon’s agents and representatives located within this Judicial District. Defendants are thereby liable for infringement of the ’829 Patent under 35 U.S.C. § 271(b).

70. Alternatively, Defendants believed there was a high probability that others would infringe the ’829 Patent but remained willfully blind to the infringing nature of others’ actions. For example, Defendants directly infringe and/or indirectly infringe by instructing their customers to infringe by a system comprising: a second device programmed to perform operations comprising: receiving from a first device via a first server, a request to join a group, wherein the group includes the first device; sending, to the first server, an indication of acceptance of the request, wherein the first server is configured to join the first device to the group based on the acceptance of the request, and wherein joining the first device to the group comprises authorizing

the first device to repeatedly share device location information and repeatedly engage in remote control operations with each device included in the group; sending a first message to the first server, wherein the first message comprises data identifying the first device and a request for a first updated location of the first device, and wherein the first server is configured to send a second message to the first device based on and in response to receiving the first message from the second device, wherein the second message comprises a request for the first updated location of the first device; after sending the first message, receiving, from the first server, a response to the first message, the response including first location information comprising the first updated location of the first device; receiving from a second server, georeferenced map data; presenting, via a display of the second device, a georeferenced map based on the georeferenced map data and a symbol corresponding to the first device; wherein the symbol is positioned on the georeferenced map at a first position corresponding to the first updated location of the first device, and wherein the georeferenced map data relate positions on the georeferenced map to spatial coordinates; after receiving the first location information and the georeferenced map data, and after presenting the georeferenced map and the symbol positioned on the georeferenced map at the first position corresponding to the first updated location of the first device, receiving second location information comprising a second updated location of the first device from the first server, and using the server-provided georeferenced map data and the second location information to reposition the symbol on the georeferenced map at a second position corresponding to the second updated location of the first device; and identifying user interaction with the display specifying an action and, based thereon, sending, to the first server, a third message related to remotely controlling the first device to perform an action, wherein the first server is configured to send a fourth message to the first device based on receiving the third message from the second device,

wherein the fourth message relates to remotely controlling the first device to perform the action, and wherein the first device is configured to perform the action based on receiving the fourth message. For example, the Accused Products include features, as shown below.

71. For example, Defendants' Accused Products allow users to share their locations and view other users' locations on a map and to communicate with those users via the Raytheon TAK, TAK Server, ATAK, WebTAK, CivTAK, and WinTAK applications and solutions:

> The Team Awareness Kit (TAK), for civilian uses, or Tactical Assault Kit (also TAK) for military uses is a suite of software that provides geospatial information and allows user collaboration over geography. There are numerous TAK Products in the TAK family, all developed at government expense
>
> The Team Awareness Kit for Android (ATAK, also known as CivTAK) was originally developed by the Air Force Research Laboratory (AFRL) and is now maintained by a Joint Product Center.
>
> ATAK (including CivTAK) is an Android smartphone geospatial infrastructure and situational awareness app. It allows for precision targeting, surrounding land formation intelligence, situational awareness, navigation, and data sharing.
>
> All the Android variants of TAK are virtually identical and all are interoperable with each other and with other TAK products. There are small, military-specific additions in military versions of ATAK.
>
> [46]

[46] https://www.civtak.org/documentation/

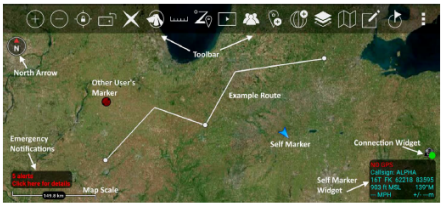
ATAK Civilian Overview

The Civilian Team Awareness Kit for Android (ATAK Civilian) is a Government-off-the-Shelf (GOTS) software application and mapping framework for mobile devices. ATAK Civilian has been designed and developed to run on Android smart devices used in a first responder environment. The ATAK Civilian software application is an extensible moving map display that integrates imagery, map and overlay information to provide enhanced collaboration and Situational Awareness (SA) over a tactical meshed network. ATAK Civilian promotes information flow and communications from the field environment to command enterprise locations.

The first time ATAK Civilian is opened, or after a Clear Content, a passphrase is auto-generated to activate data encryption. The user can supply their own passphrase by using Settings > Show All Preferences > Device Preferences > Change Encryption Passphrase. Following this step, ATAK Civilian's End User License Agreement (EULA) must be accepted. Next, the user will be prompted to change their callsign and/or import preferences or data from a Mission Package. All changes/imports can always be updated later. Finally, the user can place their self-marker by following the instructions located in the lower right corner.

The toolbar runs along the top of the map display. The features whose icons form the center portion of the toolbar are discussed in individual sections of this guide. The three dots at the right of the toolbar provide additional menu items that appear in a drop-down menu. A Long Press on the map will toggle the toolbar between hidden and visible.

The North Arrow appears in the upper left and is used to control map orientation. It has two primary modes: North Up/Track Up (default) and Manual Map Rotation/Lock. While in North Up/Track Up Mode, single press on the [**North Arrow**] icon to cycle between the North Up and Track Up map orientation. Long press the [**North Arrow**] to call out the additional controls menu where the Manual Rotation/Lock and 3D features are available. Select the [**Rotation**] button to enter Manual Map Rotation/Lock Mode. When in Manual Map Rotation/Lock Mode, rotate the map orientation by pressing on the map with two fingers and pivoting them in the desired direction. Single press on the [**North Arrow**] to lock the screen orientation, signified by the appearance of the lock icon, and again to unlock the orientation for further adjustment. 3D controls are discussed in a separate section.



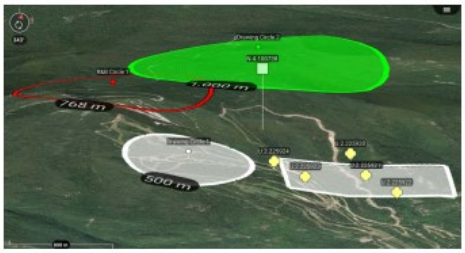
Select the [**Magnifier**] buttons to zoom in or out on the map. The map can also be zoomed by using two fingers on the screen to pinch and spread the map. Select the [**Back**] button to center the screen on the Self Marker or the [**Padlock**] icon to lock the center of the screen to the Self Marker. Select the [**Orientation**] icon to toggle the screen position between portrait and landscape.

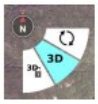
The optional connection widget indicates whether or not the user is connected to a TAK Server. This has a corresponding Android notification that provides the same information. Toggle this display on at Settings > Network Connections > Network Connections > Display Connection Widget.

Alerts and notifications are displayed in the lower left of the map interface.

The Map Scale displays a 1 inch to X mi/km reference on the map. The scale adjusts with the map when zoomed in and out. Hint windows are available to alert users to changes or make suggestions about the use of tools the first time they are opened.

3D View

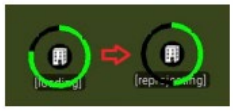




ATAK Civilian features 3D viewing of terrain and map items (DTED required). To enable 3D view, long press on the **[North Arrow]** to call out the additional controls menu and select [**3D**]. A tilt angle indicator will appear around the edge of the [**North Arrow**] when 3D view is active. Touch the screen with two fingers and simultaneously swipe up or down on the screen to tilt the view angle. Once the appropriate viewing angle is set, select the [**3D Lock**] button to retain this view while panning the map. While viewing the map from an angle, some map items will appear raised above the map surface if they have defined elevations.

3D Models

ATAK Civilian supports the use of 3D models. OBJ models and other types from products such as Pix4D can be imported via the Import Manager or can be manually placed in the atak/overlays folder prior to startup. If using Import Manager browse to the .OBJ file and import only that file, or browse to a .ZIP file that contains the .OBJ file (and others) and import only that file. If using manual placement to the atak/overlays folder, place a .ZIP file containing the .OBJ file (and others) into the directory and they will be imported on startup.



Once imported, a 3D Model icon will appear on the map. Zoom into the area of the icon until a loading ring appears. After the loading process has finished, the 3D model will be projected onto the map. Enable the map 3D View and tilt the view angle to see the 3D modeling. Loaded 3D models will appear as their own category in Overlay Manager and can be toggled on/off or removed from there.

Placement

The user can enter locations of interest using the Point Dropper tool. Select the [**Point Dropper**] icon to place internationally standardized markers and other icons on the map, edit the data and share the markers with other network members.

Self-Marker

The Self-Marker is displayed as a blue arrowhead at the user's current location. The options available on the Self-Marker radial are: Compass Rose, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, GPS Error, Range & Bearing Line, GPS Lock to Self, Tracking Breadcrumbs, Place a Marker at the user's current location and Details. Other TAK users appear on the display as a colored circle. The color of the circle represents the user's Team affiliation, with additional lettering inside the circle to identify the role the user on the team. Team Member markers that include a diagonal line indicate that the GPS location is not available. A solid icon indicated that the team member has GPS reception.

Available roles include: Team Member, Team Lead (designated by a TL in the center of the marker), Headquarters (HQ in center), Sniper (S), Medic (+), Forward Observer (FO), RTO (R) or K9 (K9). The options available when another user's Self-Marker is selected are: Inner Ring – Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, GPS Lock on Friendly, Video Player (if available), Communication Options (if configured by that user), Custom Threat Rings, Tracking Breadcrumbs and Details.

Outer Ring (Communication Options) – Data Package, Email, SMS Messaging, GeoChat, VOIP and Cellular Phone, when available.

Point Dropper

Selecting the [**Point Dropper**] icon will open the Point Dropper menu, containing marker symbology with one or more icon sets, a Recently Added button and an Iconset Manager button.

The Markers symbology affiliations are: Unknown, Neutral, Red and Friendly. Select the affiliation, then a location on the map interface to drop the marker. To add a marker by manually entering coordinates, long press on the map interface and enter the MGRS location. Change the standard naming convention by entering values into the custom prefix and index fields or leave blank to use the defaults. If values are entered, the next marker will be dropped with the prefix name and starting number(s) or letter(s) and every subsequent marker will be assigned the next consecutive number(s) or letter(s).

The user can select the mission specific pallet to open point options including Waypoint (WP), Sensor or Observation Point (OP).

The user can move between icon sets by either swiping in the icon set area or selecting on the [**Iconset Name**] field to bring up the Icon Pallet drop-down.

The last point placed is shown at the bottom of the Point Dropper window. The information for all recently placed points can be accessed by selecting the [**Clock**] icon. This displays the marker icon, name, coordinates, elevation and range & bearing information. The user can send, rename or remove any recently added markers by selecting the [**Arrows**] next to the marker to reveal [**SEND**], [**RENAME**] or [**DEL**] buttons.

Select the [**Iconset Manager**] (gear) button to add or delete icon sets or to set the default Marker Mapping.

Radial Menus

Unknown Object | **Neutral Object** | **Red Object** | **Friendly Object** | **Spot Object**

The options available for Unknown Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Neutral Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Red Object Markers are: Delete, Polar Coordinate Entry, Compass Rose/Bullseye, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Friendly Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Video, Contact Card, Custom Threat Rings, Tracking Breadcrumbs and Details. The Video radial will activate if a properly formatted packet that includes the link to the video feed is included. Select the video radial to open the associated video. The Contact Card can be selected to display additional communication options, including GeoChat, Email, VoIP, SMS Messaging and Cellular Phone, when available.

The options available for Spot Map are: Delete, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Nav-To, Custom Threat Rings, Labels and Details.

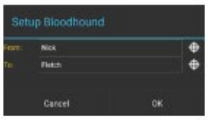
The options for User Defined Iconsets are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings. Tracking Breadcrumbs and Details.

Select [**Details**] on the marker radial to make desired modifications, including: Coordinate, Elevation, Name, Type and Remarks. Selecting Marker Type opens a dialog box with extra categories. File attachments, including images, can be associated with the object by selecting the [**Paperclip**] icon. Once all the desired modifications have been made, the Marker can be sent to other network members using [**Send**]. The information can be broadcast to all members or sent to specific recipients. Select the [**Auto Send**] option to broadcast the marker to other TAK users on the network, with updates automatically sent about once every 60 seconds.

Bloodhound Tool

The Bloodhound Tool provides support for tracking and intercepting a map item. It allows the user to select two points on the map and/or map objects and display range & bearing information between the chosen tracker and the target.

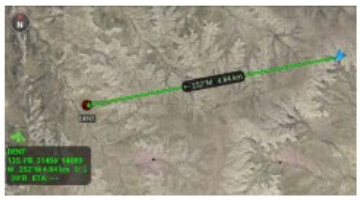
Select the [**Bloodhound**] icon to open the Bloodhound Tool. A window will open, prompting the user to choose where to start by tapping the [**From Reticle**] (default = user's self marker) and where to bloodhound (track) to by tapping the [**To Reticle**].



Targets include map objects like other User's Self Markers, DPs, Markers, Shape center points, Range & Bearing endpoints and any other map objects. If the user selects a map location instead of an object as the target, Bloodhound will place a waypoint marker there. The self marker will then track towards the waypoint.

Select [**OK**] and Bloodhound will be activated.

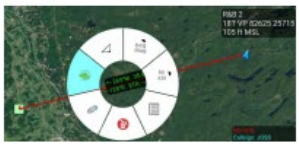
If either point moves, the green widget in the lower left will show the updated information. As the tracking object begins to navigate toward the target, the Estimated Time of Arrival (ETA) will update accordingly.



The green line showing the direct path from the tracker to the target will flash when the user-defined ETA outer threshold is reached (default = 6 minutes from target). The line will flash as the tracker continues toward the target until the next ETA threshold is reached (default = 3 minutes). The line will turn a flashing yellow until the final ETA threshold (default = 1 minute) is reached. The line then flashes red until the target is reached. Colors and thresholds can be modified in Settings > Tool Preferences > Bloodhound Preferences.

Selecting the green Bloodhound icon on the map will pan the map to the Bloodhound Range & Bearing Line. Disengage the Bloodhound Tool by selecting the [**Bloodhound**] icon on the toolbar.

Multiple Bloodhound



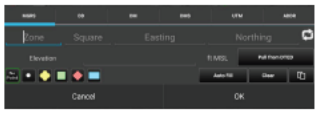
To create multiple bloodhounds, selecting the Range and Bearing Tool and select the [**R&B Line**] icon. Select two markers on the map and once the R&B line is created, select the line to bring up the radial. Select the [**Bloodhound**] radial, and the bloodhound information will be displayed on the R&B Line itself.

If either point moves, the Bloodhound information shown on the R&B Line will be updated. As the tracking object begins to navigate toward the target, the Estimated Time of Arrival (ETA) will update accordingly.

Go To

Select the [**Go To**] icon to enter details and navigate to a specific location on the map.

Select from the [**MGRS**] (military grid reference system), [**DD**] (decimal degrees), [**DM**] (degrees - minutes), [**DMS**] (degrees-minutes-seconds), [**UTM**] (Universal Transverse Mercator) or [**ADDR**] tabs on the Go To interface and enter the location data of interest. The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.



The user can enter the Latitude, Longitude and Elevation in the space provided for [**MGRS**] , [**DD**], [**D-M**] or [**D-M-S**] searches. If DTED is installed, the elevation value can be automatically populated by tapping the [**Pull From DTED**] button.The user can select a desired marker type (Spot, Unknown, Neutral, Red, or Friendly) to be placed at the entered coordinates. If [**No Point**] is selected, the map will pan to the location but will not add a point.

Note: The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

The Address Lookup provider used for the ADDR tab can be configured in the Settings > Tool Preferences > Address Lookup Preferences.

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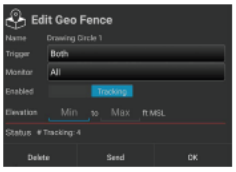
Geofencing

The Geo Fence tool allows users to create a virtual fence that triggers entry/exit notifications if map items of interest cross the virtual boundary lines. The Geo Fence options are added to the existing drawing tools. After a shape has been added, the Geo Fence Tool can be accessed either by selecting the [**Geo Fence**] icon from the menu items or selecting it from the radial.



The Enabled Field slider will move to Tracking by default when a new Geo Fence window is created. Toggle the slider between Tracking and Off to enable/disable the Geo Fence. Use the Trigger field to define which types of Geo Fence breach to monitor. Choose between Entry, Exit or Both. Use the Monitor field to define which entities the Geo Fence will track.

Choose between TAK Users, Friendly, Hostile, Custom or All. Check the [**Specify Elevation**] box to enable the Elevation field, where elevation boundaries for the entities being tracked can be defined. Select the [**OK**] button to finish creating the fence. Select the [**Send**] button to create the fence and send it to another user. Select [**Delete**] to close the Create Geo Fence window and discard changes.

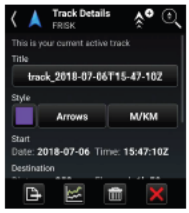
Alerts appear on the map interface. Selecting the [**Alert Notification**] will open the alerts menu, detailing the activity monitored in the user defined region. The default radius for monitoring users (filtered within the "Monitor" field) outside the Geo Fence is set at 75 km. This means the total area monitored begins at the farthest point from the center of the shape plus 75 km. If the user wishes to keep the Geo Fence, but disable tracking, the user can set the tracking [**Enabled**] to off in the Edit Window.

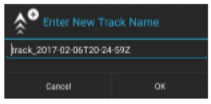
35

Unclassified

Track History

The device's GPS can be used to track movements with the Track History tool. These tracked paths can be exported to a TAK server, to a route or to a KML, KMZ, GPX or CSV file. A GPS position must be established before tracking can begin.

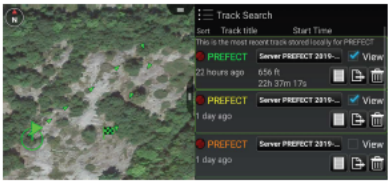




Selecting the [**Track History**] icon will open Track Details for the current active track. The track title, color and style can be modified. Initiate a new track by selecting the [**Add Track**] icon. Accept or edit the default track name and select the [**OK**] button to begin the new track. User location data is recorded as breadcrumbs in a new track file.

Track Search

Use the Track Search function to view track information that has been previously saved locally or on a TAK Server. The tool searches the track database for matches against the specified time range and by user callsign. Matching tracks are displayed as a list, and can be selected to view on the map interface.



Select the [**Track Search**] icon to access the function. Specify callsign and time frame, check the box for Server Search (if desired), then select [**Search**]. The track list will appear. The query results can be sorted by Track Name or Start Time. Select any of the query results to move to that track. Once selected, the name, color, and style of a selected track can be modified or the track can be cleared. Convert a track to a TAK route or export it as a KML, KMZ, GPX or CSV file by selecting the desired track and then [**Export**]. Enter a file name then select [**Next**] and choose the export format. Select [**Done**] or [**Send**] when the export completes.

When viewing the track list, the Track History Toolbar will appear at the top of the screen. The options include [**Add a Track**], [**Multi-select**], [**Track Search**], [**Clear Tracks**] and [**Exit**]. The Track History List allows the user to select tracks of other users that have been saved on their device. The Track Search – Local Device allows the user to perform a tailored search for tracks meeting their criteria. The searching option allows the user to retrieve all the tracks on the device.

The Track History Breadcrumb and Settings can be configured in the Settings > Tools Preferences > Track History Preferences.

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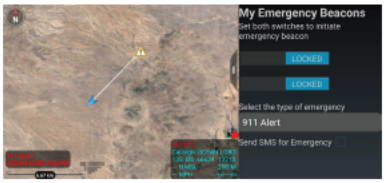
Unclassified

Emergency Beacon

Select the [**Emergency Beacon**] icon to open the Emergency Beacon Tool.

The Emergency Beacon allows the user to indicate their need for assistance, the type of emergency and their location on the map. The type of emergency can be selected from the drop-down menu, before activation, and includes options for an Alert, Ring the Bell, Geo Fence Breached or In Contact.



Once the Emergency type has been selected and both switches have been enabled, the TAK Server broadcasts the announcements to all network contacts. Even if the user's device is turned off, the beacon will continue. Only when the user returns to the Emergency Beacon tool and turns off the switches will the beacon be canceled and removed. If the SMS for Emergency option has been configured, the alert will be sent via text message to the configured numbers.

47

72. Additionally, the exemplary Accused Products allow users to establish groups and to exchange messages via interaction with servers which provide the Raytheon TAK, TAK Server, ATAK, WebTAK, CivTAK, and WinTAK services, among other relevant services:

[47] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view

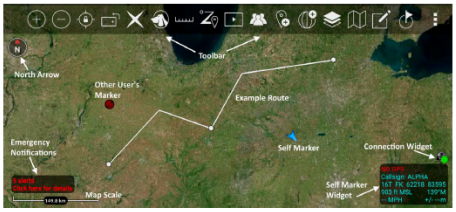
ATAK Civilian Overview

The Civilian Team Awareness Kit for Android (ATAK Civilian) is a Government-off-the-Shelf (GOTS) software application and mapping framework for mobile devices. ATAK Civilian has been designed and developed to run on Android smart devices used in a first responder environment. The ATAK Civilian software application is an extensible moving map display that integrates imagery, map and overlay information to provide enhanced collaboration and Situational Awareness (SA) over a tactical meshed network. ATAK Civilian promotes information flow and communications from the field environment to command enterprise locations.

The first time ATAK Civilian is opened, or after a Clear Content, a passphrase is auto-generated to activate data encryption. The user can supply their own passphrase by using Settings > Show All Preferences > Device Preferences > Change Encryption Passphrase. Following this step, ATAK Civilian's End User License Agreement (EULA) must be accepted. Next, the user will be prompted to change their callsign and/or import preferences or data from a Mission Package. All changes/imports can always be updated later. Finally, the user can place their self-marker by following the instructions located in the lower right corner.

The toolbar runs along the top of the map display. The features whose icons form the center portion of the toolbar are discussed in individual sections of this guide. The three dots at the right of the toolbar provide additional menu items that appear in a drop-down menu. A Long Press on the map will toggle the toolbar between hidden and visible.

The North Arrow appears in the upper left and is used to control map orientation. It has two primary modes: North Up/Track Up (default) and Manual Map Rotation/Lock. While in North Up/Track Up Mode, single press on the [**North Arrow**] icon to cycle between the North Up and Track Up map orientation. Long press the [**North Arrow**] to call out the additional controls menu where the Manual Rotation/Lock and 3D features are available. Select the [**Rotation**] button to enter Manual Map Rotation/Lock Mode. When in Manual Map Rotation/Lock Mode, rotate the map orientation by pressing on the map with two fingers and pivoting them in the desired direction. Single press on the [**North Arrow**] to lock the screen orientation, signified by the appearance of the lock icon, and again to unlock the orientation for further adjustment. 3D controls are discussed in a separate section.



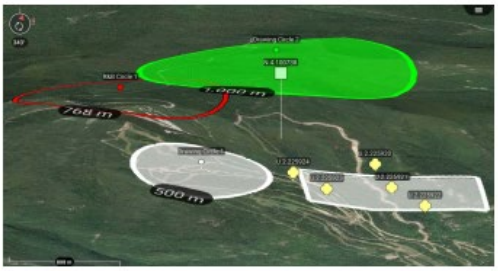
Select the [**Magnifier**] buttons to zoom in or out on the map. The map can also be zoomed by using two fingers on the screen to pinch and spread the map. Select the [**Back**] button to center the screen on the Self Marker or the [**Padlock**] icon to lock the center of the screen to the Self Marker. Select the [**Orientation**] icon to toggle the screen position between portrait and landscape.

The optional connection widget indicates whether or not the user is connected to a TAK Server. This has a corresponding Android notification that provides the same information. Toggle this display on at Settings > Network Connections > Network Connections > Display Connection Widget.

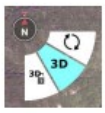
Alerts and notifications are displayed in the lower left of the map interface.

The Map Scale displays a 1 inch to X mi/km reference on the map. The scale adjusts with the map when zoomed in and out. Hint windows are available to alert users to changes or make suggestions about the use of tools the first time they are opened.

3D View



ATAK Civilian features 3D viewing of terrain and map items (DTED required). To enable 3D view, long press on the **[North Arrow]** to call out the additional controls menu and select [**3D**]. A tilt angle indicator will appear around the edge of the [**North Arrow**] when 3D view is active. Touch the screen with two fingers and simultaneously swipe up or down on the screen to tilt the view angle. Once the appropriate viewing angle is set, select the [**3D Lock**] button to retain this view while panning the map. While viewing the map from an angle, some map items will appear raised above the map surface if they have defined elevations.



3D Models

ATAK Civilian supports the use of 3D models. OBJ models and other types from products such as Pix4D can be imported via the Import Manager or can be manually placed in the atak/overlays folder prior to startup. If using Import Manager browse to the .OBJ file and import only that file, or browse to a .ZIP file that contains the .OBJ file (and others) and import only that file. If using manual placement to the atak/overlays folder, place a .ZIP file containing the .OBJ file (and others) into the directory and they will be imported on startup.

Once imported, a 3D Model icon will appear on the map. Zoom into the area of the icon until a loading ring appears. After the loading process has finished, the 3D model will be projected onto the map. Enable the map 3D View and tilt the view angle to see the 3D modeling. Loaded 3D models will appear as their own category in Overlay Manager and can be toggled on/off or removed from there.

Unclassified

Placement

The user can enter locations of interest using the Point Dropper tool. Select the [**Point Dropper**] icon to place internationally standardized markers and other icons on the map, edit the data and share the markers with other network members.

Self-Marker

The Self-Marker is displayed as a blue arrowhead at the user's current location. The options available on the Self-Marker radial are: Compass Rose, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, GPS Error, Range & Bearing Line, GPS Lock to Self, Tracking Breadcrumbs, Place a Marker at the user's current location and Details. Other TAK users appear on the display as a colored circle. The color of the circle represents the user's Team affiliation, with additional lettering inside the circle to identify the role the user on the team. Team Member markers that include a diagonal line indicate that the GPS location is not available. A solid icon indicated that the team member has GPS reception.

Available roles include: Team Member, Team Lead (designated by a TL in the center of the marker), Headquarters (HQ in center), Sniper (S), Medic (+), Forward Observer (FO), RTO (R) or K9 (K9). The options available when another user's Self-Marker is selected are: Inner Ring – Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, GPS Lock on Friendly, Video Player (if available), Communication Options (if configured by that user), Custom Threat Rings, Tracking Breadcrumbs and Details.

Outer Ring (Communication Options) – Data Package, Email, SMS Messaging, GeoChat, VOIP and Cellular Phone, when available.

Unclassified

Radial Menus

Unknown Object **Neutral Object** **Red Object** **Friendly Object** **Spot Object**

The options available for Unknown Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Neutral Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Red Object Markers are: Delete, Polar Coordinate Entry, Compass Rose/Bullseye, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Tasking, Custom Threat Rings, Tracking Breadcrumbs and Details.

The options available for Friendly Object Markers are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Video, Contact Card, Custom Threat Rings, Tracking Breadcrumbs and Details. The Video radial will activate if a properly formatted packet that includes the link to the video feed is included. Select the video radial to open the associated video. The Contact Card can be selected to display additional communication options, including GeoChat, Email, VoIP, SMS Messaging and Cellular Phone, when available.

The options available for Spot Map are: Delete, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Nav-To, Custom Threat Rings, Labels and Details.

The options for User Defined Iconsets are: Delete, Polar Coordinate Entry, Fine Adjust/Enter Coordinate/MGRS Location, Range & Bearing Line, Lock On, Tasking, Custom Threat Rings. Tracking Breadcrumbs and Details.

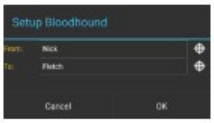
Select [**Details**] on the marker radial to make desired modifications, including: Coordinate, Elevation, Name, Type and Remarks. Selecting Marker Type opens a dialog box with extra categories. File attachments, including images, can be associated with the object by selecting the [**Paperclip**] icon. Once all the desired modifications have been made, the Marker can be sent to other network members using [**Send**]. The information can be broadcast to all members or sent to specific recipients. Select the [**Auto Send**] option to broadcast the marker to other TAK users on the network, with updates automatically sent about once every 60 seconds.

Unclassified

Bloodhound Tool

The Bloodhound Tool provides support for tracking and intercepting a map item. It allows the user to select two points on the map and/or map objects and display range & bearing information between the chosen tracker and the target.

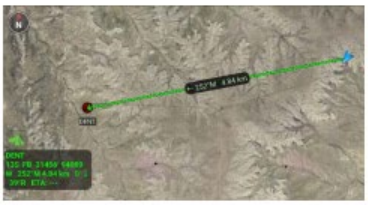
Select the [**Bloodhound**] icon to open the Bloodhound Tool. A window will open, prompting the user to choose where to start by tapping the [**From Reticle**] (default = user's self marker) and where to bloodhound (track) to by tapping the [**To Reticle**].



Targets include map objects like other User's Self Markers, DPs, Markers, Shape center points, Range & Bearing end-points and any other map objects. If the user selects a map location instead of an object as the target, Bloodhound will place a waypoint marker there. The self marker will then track towards the waypoint.

Select [**OK**] and Bloodhound will be activated.

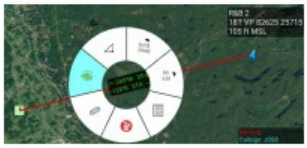
If either point moves, the green widget in the lower left will show the updated information. As the tracking object begins to navigate toward the target, the Estimated Time of Arrival (ETA) will update accordingly.



The green line showing the direct path from the tracker to the target will flash when the user-defined ETA outer threshold is reached (default = 6 minutes from target). The line will flash as the tracker continues toward the target until the next ETA threshold is reached (default = 3 minutes). The line will turn a flashing yellow until the final ETA threshold (default = 1 minute) is reached. The line then flashes red until the target is reached. Colors and thresholds can be modified in Settings > Tool Preferences > Bloodhound Preferences.

Selecting the green Bloodhound icon on the map will pan the map to the Bloodhound Range & Bearing Line. Disengage the Bloodhound Tool by selecting the [**Bloodhound**] icon on the toolbar.

Multiple Bloodhound



To create multiple bloodhounds, selecting the Range and Bearing Tool and select the [**R&B Line**] icon. Select two markers on the map and once the R&B line is created, select the line to bring up the radial. Select the [**Bloodhound**] radial, and the bloodhound information will be displayed on the R&B Line itself.

If either point moves, the Bloodhound information shown on the R&B Line will be updated. As the tracking object begins to navigate toward the target, the Estimated Time of Arrival (ETA) will update accordingly.

Go To

Select the [**Go To**] icon to enter details and navigate to a specific location on the map.

Select from the [**MGRS**] (military grid reference system), [**DD**] (decimal degrees), [**DM**] (degrees- minutes), [**DMS**] (degrees-minutes-seconds), [**UTM**] (Universal Transverse Mercator) or [**ADDR**] tabs on the Go To interface and enter the location data of interest. The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

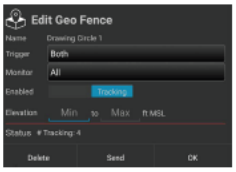
The user can enter the Latitude, Longitude and Elevation in the space provided for [**MGRS**] , [**DD**], [**D-M**] or [**D-M-S**] searches. If DTED is installed, the elevation value can be automatically populated by tapping the [**Pull From DTED**] button.The user can select a desired marker type (Spot, Unknown, Neutral, Red, or Friendly) to be placed at the entered coordinates. If [**No Point**] is selected, the map will pan to the location but will not add a point.

Note: The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

The Address Lookup provider used for the ADDR tab can be configured in the Settings > Tool Preferences > Address Lookup Preferences.

Geofencing

The Geo Fence tool allows users to create a virtual fence that triggers entry/exit notifications if map items of interest cross the virtual boundary lines. The Geo Fence options are added to the existing drawing tools. After a shape has been added, the Geo Fence Tool can be accessed either by selecting the [**Geo Fence**] icon from the menu items or selecting it from the radial.



The Enabled Field slider will move to Tracking by default when a new Geo Fence window is created. Toggle the slider between Tracking and Off to enable/disable the Geo Fence. Use the Trigger field to define which types of Geo Fence breach to monitor. Choose between Entry, Exit or Both. Use the Monitor field to define which entities the Geo Fence will track.

Choose between TAK Users, Friendly, Hostile, Custom or All. Check the [**Specify Elevation**] box to enable the Elevation field, where elevation boundaries for the entities being tracked can be defined. Select the [**OK**] button to finish creating the fence. Select the [**Send**] button to create the fence and send it to another user. Select [**Delete**] to close the Create Geo Fence window and discard changes.

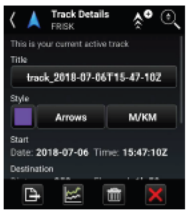
Alerts appear on the map interface. Selecting the [**Alert Notification**] will open the alerts menu, detailing the activity monitored in the user defined region. The default radius for monitoring users (filtered within the "Monitor" field) outside the Geo Fence is set at 75 km. This means the total area monitored begins at the farthest point from the center of the shape plus 75 km. If the user wishes to keep the Geo Fence, but disable tracking, the user can set the tracking [**Enabled**] to off in the Edit Window.

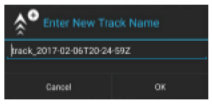
35

Unclassified

Track History

The device's GPS can be used to track movements with the Track History tool. These tracked paths can be exported to a TAK server, to a route or to a KML, KMZ, GPX or CSV file. A GPS position must be established before tracking can begin.





Selecting the [**Track History**] icon will open Track Details for the current active track. The track title, color and style can be modified. Initiate a new track by selecting the [**Add Track**] icon. Accept or edit the default track name and select the [**OK**] button to begin the new track. User location data is recorded as breadcrumbs in a new track file.

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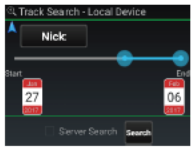
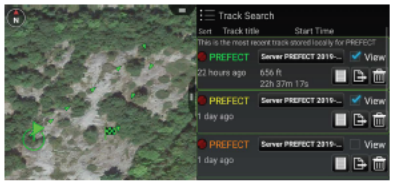
Use the Track Search function to view track information that has been previously saved locally or on a TAK Server. The tool searches the track database for matches against the specified time range and by user callsign. Matching tracks are displayed as a list, and can be selected to view on the map interface.



Select the [**Track Search**] icon to access the function. Specify callsign and time frame, check the box for Server Search (if desired), then select [**Search**]. The track list will appear. The query results can be sorted by Track Name or Start Time. Select any of the query results to move to that track. Once selected, the name, color, and style of a selected track can be modified or the track can be cleared. Convert a track to a TAK route or export it as a KML, KMZ, GPX or CSV file by selecting the desired track and then [**Export**]. Enter a file name then select [**Next**] and choose the export format. Select [**Done**] or [**Send**] when the export completes.

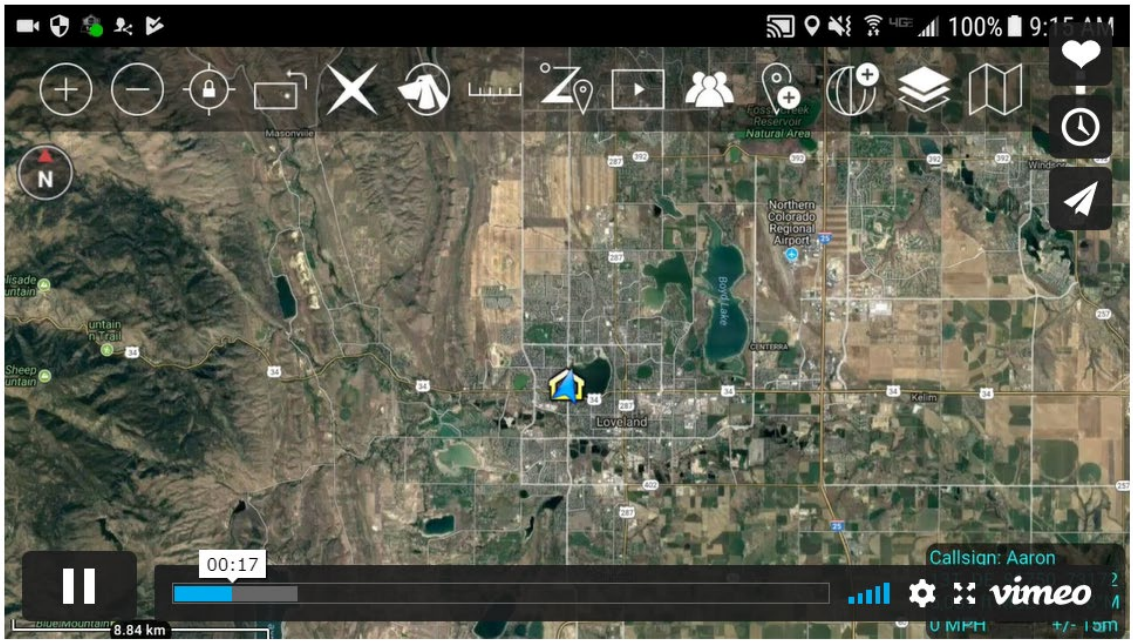


When viewing the track list, the Track History Toolbar will appear at the top of the screen. The options include [**Add a Track**], [**Multi-select**], [**Track Search**], [**Clear Tracks**] and [**Exit**]. The Track History List allows the user to select tracks of other users that have been saved on their device. The Track Search – Local Device allows the user to perform a tailored search for tracks meeting their criteria. The searching option allows the user to retrieve all the tracks on the device.

The Track History Breadcrumb and Settings can be configured in the Settings > Tools Preferences > Track History Preferences.

37 48

[48] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view



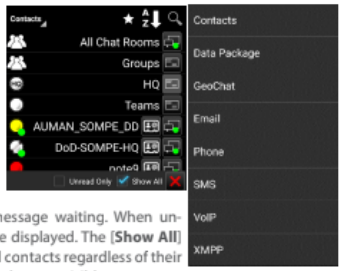
[49]

73. The exemplary Accused Products are programmed to form and join groups by transmitting messages:

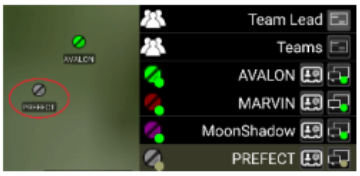
[49] https://wiki.civtak.org/index.php?title=ATAK_Manual

Contacts

The Contacts list includes a variety of ways in which a user may communicate with other users, such as GeoChat (ATAK Civilian's built in Chat capability), Data Packages, Email, Phone, SMS, VoIP and XMPP.



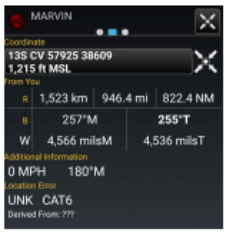
A default communication type (shown in the last column) may be selected and used until another type of communication is selected.



The Contacts list has two filters available at the bottom of the screen. The Unread Only box, when checked, will display only contacts with whom there are unread message waiting. When unchecked (default), all available contacts are displayed. The [**Show All**] box, when checked (default), will display all contacts regardless of their location. When unchecked, only contacts that are visible on current map screen will be displayed.

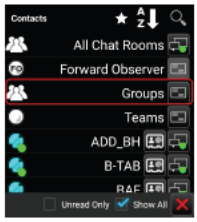
If a contact is no longer online, it will be indicated by changing the contact listing to a yellow color and the marker changes to gray both in the list and on the map.

Profile cards are accessed by selecting the second to last column in the Contacts list and are available for each contact. These contain additional information about that contact including: 1) role, software type and version installed, node type, default connector, last reported time, battery life; 2) location information, and 3) available types of communication.

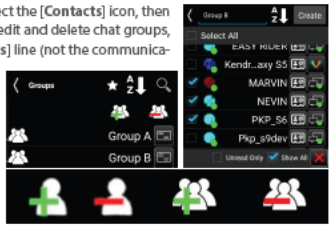


GeoChat Group Management

Text-based Chat messages may be sent to active network members by using the GeoChat function. To enter GeoChat Group Management, select the [**Contacts**] icon and select [**GeoChat**] from the drop-down menu.

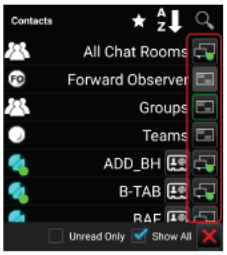


GeoChat Group Management is initiated through Contacts. Select the [**Contacts**] icon, then select GeoChat from the drop-down. The user can now create, edit and delete chat groups, as well as sub-groups. To create a chat group, select the [**Groups**] line (not the communications button). Select the [**Add Group**] icon to create the name of the group and add contacts to the group and then select [**Create**]. If a parent group is being created, no contacts need to be added at this level. To add a nested group, tap the parent group, select the [**Add Group**] icon to create the name of the sub-group and add contacts. Groups may be managed using the options to add/delete contacts or to add/delete GeoChat group.



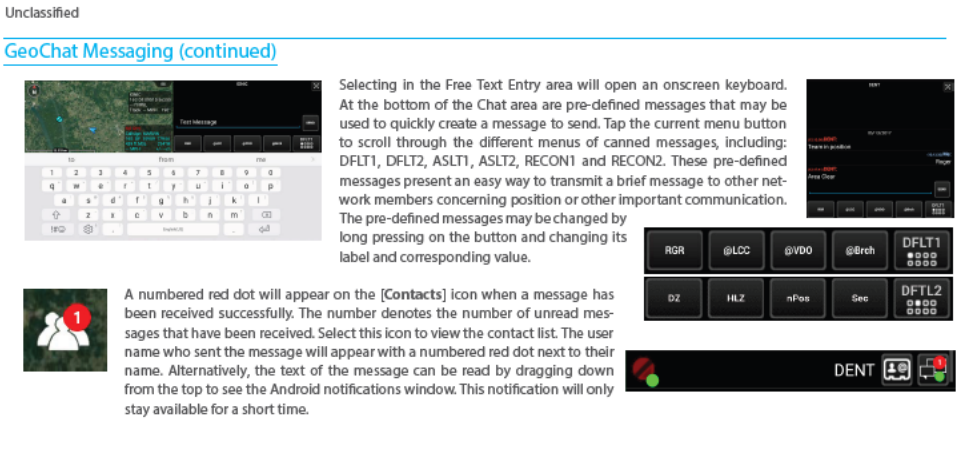
To add users to a group, select the [**Groups**] line (not the communications button), then select the name of the group to add users. Select the [**Add Users**] icon. A window will open allowing the group creater to add users to the selected group. Select the [**Add**] button when all the users to be added are checked.

GeoChat Messaging

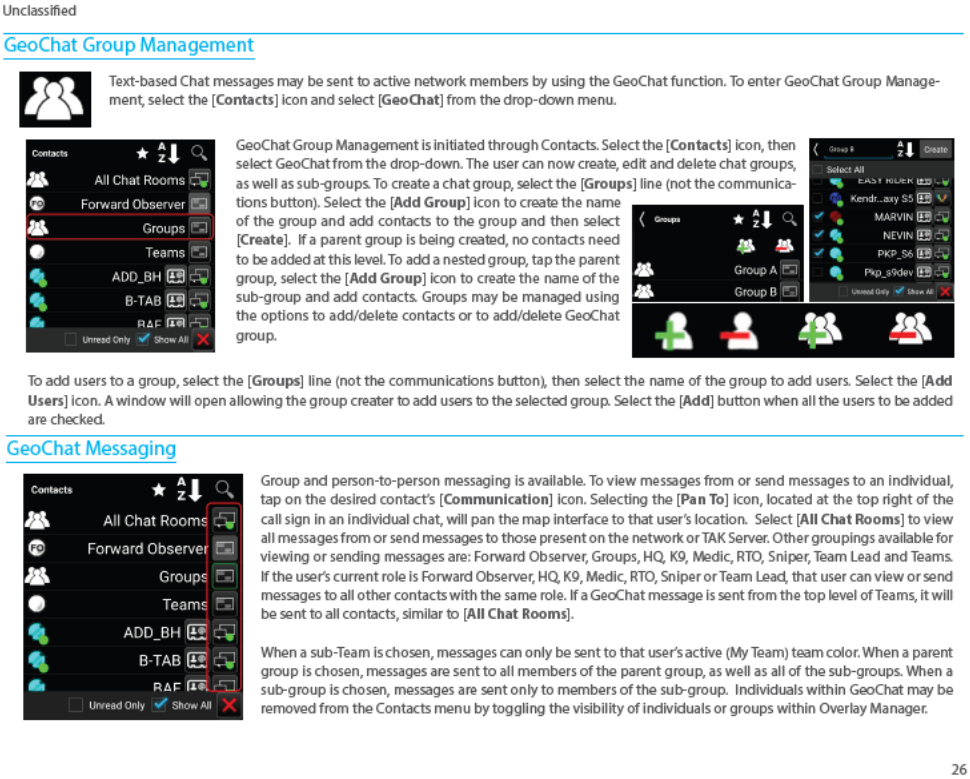


Group and person-to-person messaging is available. To view messages from or send messages to an individual, tap on the desired contact's [**Communication**] icon. Selecting the [**Pan To**] icon, located at the top right of the call sign in an individual chat, will pan the map interface to that user's location. Select [**All Chat Rooms**] to view all messages from or send messages to those present on the network or TAK Server. Other groupings available for viewing or sending messages are: Forward Observer, Groups, HQ, K9, Medic, RTO, Sniper, Team Lead and Teams. If the user's current role is Forward Observer, HQ, K9, Medic, RTO, Sniper or Team Lead, that user can view or send messages to all other contacts with the same role. If a GeoChat message is sent from the top level of Teams, it will be sent to all contacts, similar to [**All Chat Rooms**].

When a sub-Team is chosen, messages can only be sent to that user's active (My Team) team color. When a parent group is chosen, messages are sent to all members of the parent group, as well as all of the sub-groups. When a sub-group is chosen, messages are sent only to members of the sub-group. Individuals within GeoChat may be removed from the Contacts menu by toggling the visibility of individuals or groups within Overlay Manager.



74. The exemplary Accused Products are further programmed to facilitate participation in the groups by communicating with one or more servers and sending to and receiving location information, as depicted below:



[50] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view

Unclassified

GeoChat Messaging (continued)

Selecting in the Free Text Entry area will open an onscreen keyboard. At the bottom of the Chat area are pre-defined messages that may be used to quickly create a message to send. Tap the current menu button to scroll through the different menus of canned messages, including: DFLT1, DFLT2, ASLT1, ASLT2, RECON1 and RECON2. These pre-defined messages present an easy way to transmit a brief message to other network members concerning position or other important communication. The pre-defined messages may be changed by long pressing on the button and changing its label and corresponding value.

A numbered red dot will appear on the [**Contacts**] icon when a message has been received successfully. The number denotes the number of unread messages that have been received. Select this icon to view the contact list. The user name who sent the message will appear with a numbered red dot next to their name. Alternatively, the text of the message can be read by dragging down from the top to see the Android notifications window. This notification will only stay available for a short time.

Unclassified

Go To

Select the [**Go To**] icon to enter details and navigate to a specific location on the map.

Select from the [**MGRS**] (military grid reference system), [**DD**] (decimal degrees), [**DM**] (degrees - minutes), [**DMS**] (degrees-minutes-seconds), [**UTM**] (Universal Transverse Mercator) or [**ADDR**] tabs on the Go To interface and enter the location data of interest. The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

The user can enter the Latitude, Longitude and Elevation in the space provided for [**MGRS**] , [**DD**], [**D-M**] or [**D-M-S**] searches. If DTED is installed, the elevation value can be automatically populated by tapping the [**Pull From DTED**] button.The user can select a desired marker type (Spot, Unknown, Neutral, Red, or Friendly) to be placed at the entered coordinates. If [**No Point**] is selected, the map will pan to the location but will not add a point.

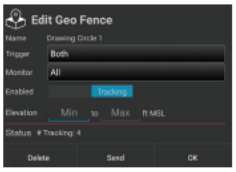
Note: The address provider name appears beneath the Elevation Data when the user selects the [**ADDR**] tab.

The Address Lookup provider used for the ADDR tab can be configured in the Settings > Tool Preferences > Address Lookup Preferences.

32

Geofencing

The Geo Fence tool allows users to create a virtual fence that triggers entry/exit notifications if map items of interest cross the virtual boundary lines. The Geo Fence options are added to the existing drawing tools. After a shape has been added, the Geo Fence Tool can be accessed either by selecting the [**Geo Fence**] icon from the menu items or selecting it from the radial.



The Enabled Field slider will move to Tracking by default when a new Geo Fence window is created. Toggle the slider between Tracking and Off to enable/disable the Geo Fence. Use the Trigger field to define which types of Geo Fence breach to monitor. Choose between Entry, Exit or Both. Use the Monitor field to define which entities the Geo Fence will track.

Choose between TAK Users, Friendly, Hostile, Custom or All. Check the [**Specify Elevation**] box to enable the Elevation field, where elevation boundaries for the entities being tracked can be defined. Select the [**OK**] button to finish creating the fence. Select the [**Send**] button to create the fence and send it to another user. Select [**Delete**] to close the Create Geo Fence window and discard changes.

Alerts appear on the map interface. Selecting the [**Alert Notification**] will open the alerts menu, detailing the activity monitored in the user defined region. The default radius for monitoring users (filtered within the "Monitor" field) outside the Geo Fence is set at 75 km. This means the total area monitored begins at the farthest point from the center of the shape plus 75 km. If the user wishes to keep the Geo Fence, but disable tracking, the user can set the tracking [**Enabled**] to off in the Edit Window.

Unclassified

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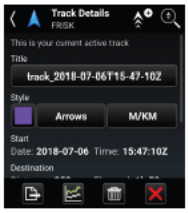
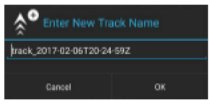
The device's GPS can be used to track movements with the Track History tool. These tracked paths can be exported to a TAK server, to a route or to a KML, KMZ, GPX or CSV file. A GPS position must be established before tracking can begin.

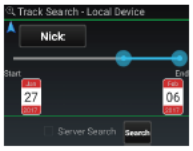




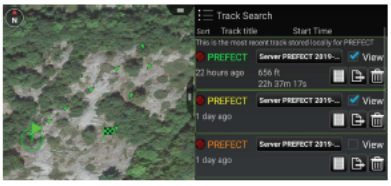
Selecting the [**Track History**] icon will open Track Details for the current active track. The track title, color and style can be modified. Initiate a new track by selecting the [**Add Track**] icon. Accept or edit the default track name and select the [**OK**] button to begin the new track. User location data is recorded as breadcrumbs in a new track file.

Track Search

Use the Track Search function to view track information that has been previously saved locally or on a TAK Server. The tool searches the track database for matches against the specified time range and by user callsign. Matching tracks are displayed as a list, and can be selected to view on the map interface.

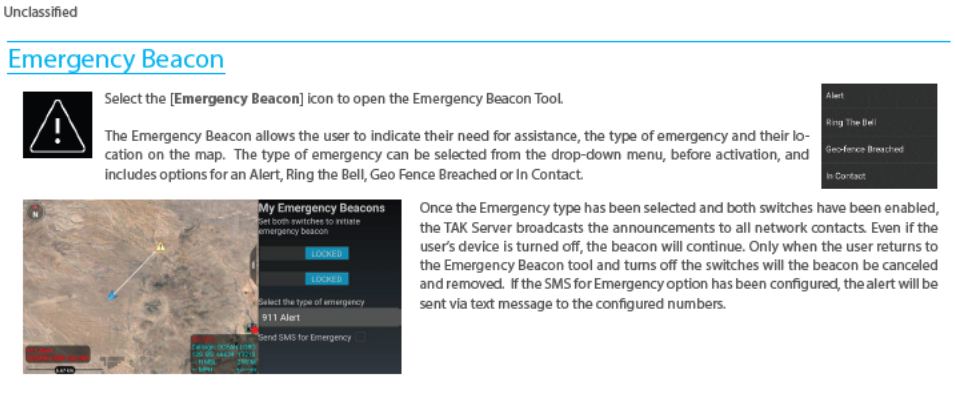


Select the [**Track Search**] icon to access the function. Specify callsign and time frame, check the box for Server Search (if desired), then select [**Search**]. The track list will appear. The query results can be sorted by Track Name or Start Time. Select any of the query results to move to that track. Once selected, the name, color, and style of a selected track can be modified or the track can be cleared. Convert a track to a TAK route or export it as a KML, KMZ, GPX or CSV file by selecting the desired track and then [**Export**]. Enter a file name then select [**Next**] and choose the export format. Select [**Done**] or [**Send**] when the export completes.



When viewing the track list, the Track History Toolbar will appear at the top of the screen. The options include [**Add a Track**], [**Multi-select**], [**Track Search**], [**Clear Tracks**] and [**Exit**]. The Track History List allows the user to select tracks of other users that have been saved on their device. The Track Search – Local Device allows the user to perform a tailored search for tracks meeting their criteria. The searching option allows the user to retrieve all the tracks on the device.

The Track History Breadcrumb and Settings can be configured in the Settings > Tools Preferences > Track History Preferences.


Unclassified

Emergency Beacon

Select the [**Emergency Beacon**] icon to open the Emergency Beacon Tool.

The Emergency Beacon allows the user to indicate their need for assistance, the type of emergency and their location on the map. The type of emergency can be selected from the drop-down menu, before activation, and includes options for an Alert, Ring the Bell, Geo Fence Breached or In Contact.

Once the Emergency type has been selected and both switches have been enabled, the TAK Server broadcasts the announcements to all network contacts. Even if the user's device is turned off, the beacon will continue. Only when the user returns to the Emergency Beacon tool and turns off the switches will the beacon be canceled and removed. If the SMS for Emergency option has been configured, the alert will be sent via text message to the configured numbers.

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75. The location information is presented on interactive displays on the exemplary Accused Products which include interactive maps and a plurality of user selectable symbols corresponding to other devices. The symbols are positioned on the map at positions corresponding to the locations of the other devices, as depicted below:


Unclassified

ATAK Civilian Overview

The Civilian Team Awareness Kit for Android (ATAK Civilian) is a Government-off-the-Shelf (GOTS) software application and mapping framework for mobile devices. ATAK Civilian has been designed and developed to run on Android smart devices used in a first responder environment. The ATAK Civilian software application is an extensible moving map display that integrates imagery, map and overlay information to provide enhanced collaboration and Situational Awareness (SA) over a tactical meshed network. ATAK Civilian promotes information flow and communications from the field environment to command enterprise locations.

The first time ATAK Civilian is opened, or after a Clear Content, a passphrase is auto-generated to activate data encryption. The user can supply their own passphrase by using Settings > Show All Preferences > Device Preferences > Change Encryption Passphrase. Following this step, ATAK Civilian's End User License Agreement (EULA) must be accepted. Next, the user will be prompted to change their callsign and/or import preferences or data from a Mission Package. All changes/imports can always be updated later. Finally, the user can place their self-marker by following the instructions located in the lower right corner.

The toolbar runs along the top of the map display. The features whose icons form the center portion of the toolbar are discussed in individual sections of this guide. The three dots at the right of the toolbar provide additional menu items that appear in a drop-down menu. A Long Press on the map will toggle the toolbar between hidden and visible.

The North Arrow appears in the upper left and is used to control map orientation. It has two primary modes: North Up/Track Up (default) and Manual Map Rotation/Lock. While in North Up/Track Up Mode, single press on the [**North Arrow**] icon to cycle between the North Up and Track Up map orientation. Long press the [**North Arrow**] to call out the additional controls menu where the Manual Rotation/Lock and 3D features are available. Select the [**Rotation**] button to enter Manual Map Rotation/Lock Mode. When in Manual Map Rotation/Lock Mode, rotate the map orientation by pressing on the map with two fingers and pivoting them in the desired direction. Single press on the [**North Arrow**] to lock the screen orientation, signified by the appearance of the lock icon, and again to unlock the orientation for further adjustment. 3D controls are discussed in a separate section.

Select the [**Magnifier**] buttons to zoom in or out on the map. The map can also be zoomed by using two fingers on the screen to pinch and spread the map. Select the [**Back**] button to center the screen on the Self Marker or the [**Padlock**] icon to lock the center of the screen to the Self Marker. Select the [**Orientation**] icon to toggle the screen position between portrait and landscape.

The optional connection widget indicates whether or not the user is connected to a TAK Server. This has a corresponding Android notification that provides the same information. Toggle this display on at Settings > Network Connections > Network Connections > Display Connection Widget.

Alerts and notifications are displayed in the lower left of the map interface.

The Map Scale displays a 1 inch to X mi/km reference on the map. The scale adjusts with the map when zoomed in and out. Hint windows are available to alert users to changes or make suggestions about the use of tools the first time they are opened.

5

[51] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view

Unclassified

Go To

Select the [**Go To**] icon to enter details and navigate to a specific location on the map.

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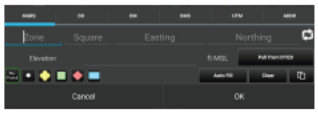

The user can enter the Latitude, Longitude and Elevation in the space provided for [**MGRS**] , [**DD**], [**D-M**] or [**D-M-S**] searches. If DTED is installed, the elevation value can be automatically populated by tapping the [**Pull From DTED**] button.The user can select a desired marker type (Spot, Unknown, Neutral, Red, or Friendly) to be placed at the entered coordinates. If [**No Point**] is selected, the map will pan to the location but will not add a point.

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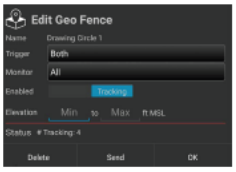

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35

Unclassified

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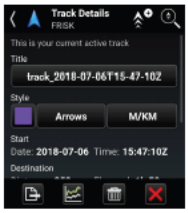

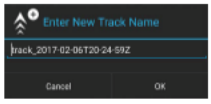

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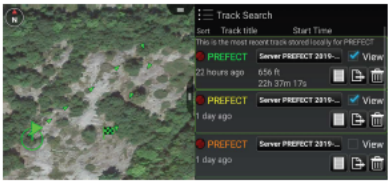

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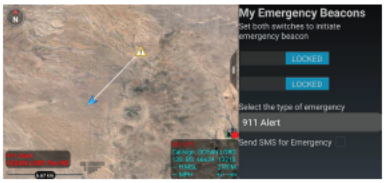

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52

76. The exemplary Accused Products are further programmed to permit users to request and display additional maps from additional servers by, for example, moving the map screen and/or by selecting satellite images or other types of maps. The exemplary Accused Products are further programmed to permit interaction with the display where a user may select one or more

[52] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view

symbols and where the exemplary Accused Products further permit data to be sent to other devices based on that interaction.

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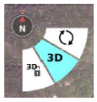

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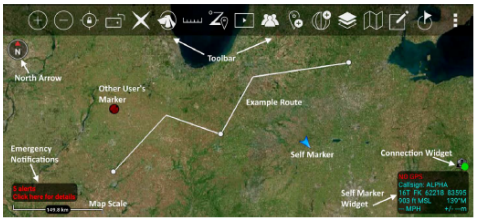

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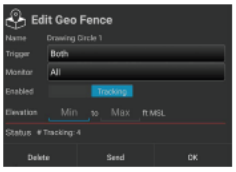

The Enabled Field slider will move to Tracking by default when a new Geo Fence window is created. Toggle the slider between Tracking and Off to enable/disable the Geo Fence. Use the Trigger field to define which types of Geo Fence breach to monitor. Choose between Entry, Exit or Both. Use the Monitor field to define which entities the Geo Fence will track.

Choose between TAK Users, Friendly, Hostile, Custom or All. Check the [**Specify Elevation**] box to enable the Elevation field, where elevation boundaries for the entities being tracked can be defined. Select the [**OK**] button to finish creating the fence. Select the [**Send**] button to create the fence and send it to another user. Select [**Delete**] to close the Create Geo Fence window and discard changes.

Alerts appear on the map interface. Selecting the [**Alert Notification**] will open the alerts menu, detailing the activity monitored in the user defined region. The default radius for monitoring users (filtered within the "Monitor" field) outside the Geo Fence is set at 75 km. This means the total area monitored begins at the farthest point from the center of the shape plus 75 km. If the user wishes to keep the Geo Fence, but disable tracking, the user can set the tracking [**Enabled**] to off in the Edit Window.

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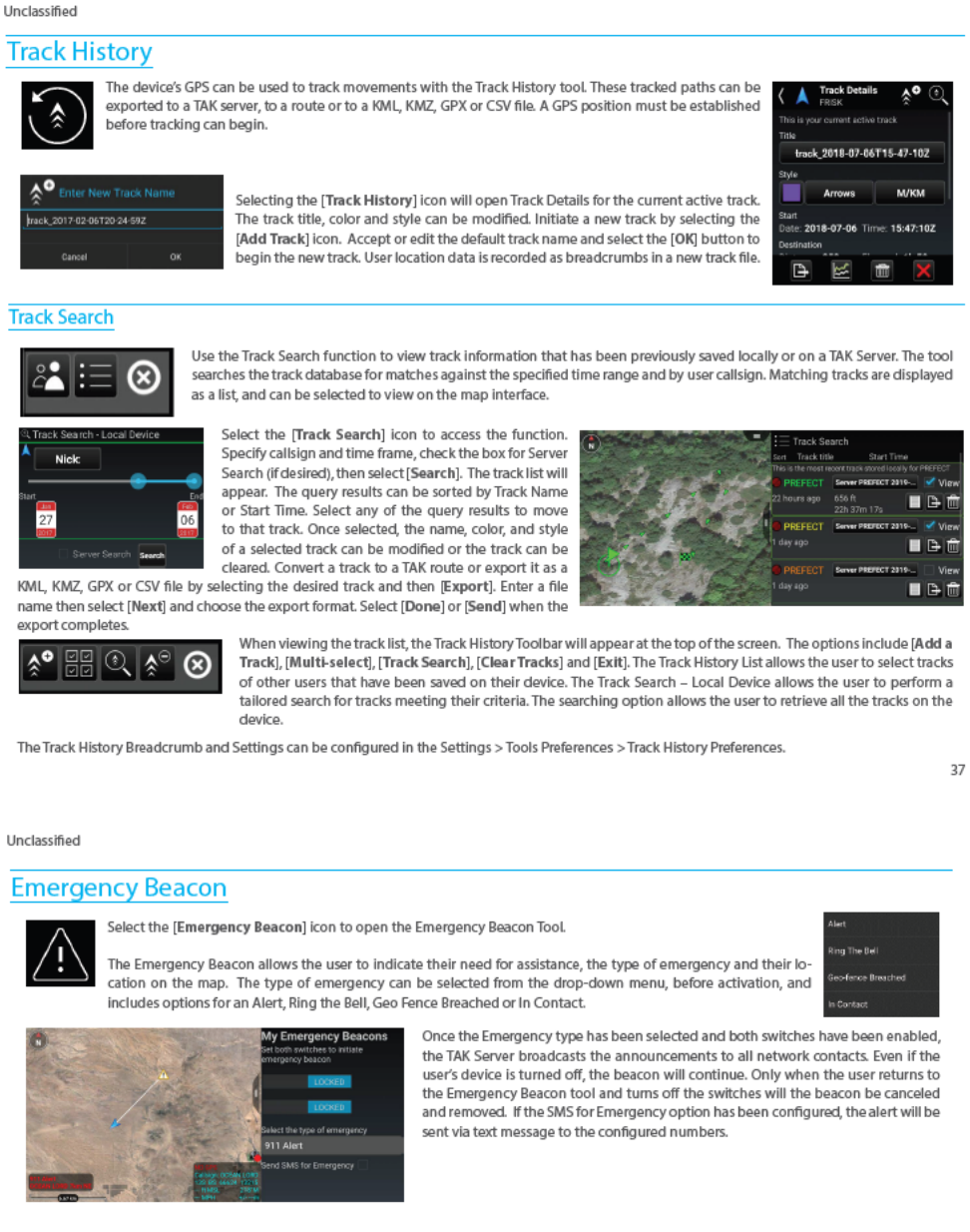

Unclassified

Track History

The device's GPS can be used to track movements with the Track History tool. These tracked paths can be exported to a TAK server, to a route or to a KML, KMZ, GPX or CSV file. A GPS position must be established before tracking can begin.

Selecting the [**Track History**] icon will open Track Details for the current active track. The track title, color and style can be modified. Initiate a new track by selecting the [**Add Track**] icon. Accept or edit the default track name and select the [**OK**] button to begin the new track. User location data is recorded as breadcrumbs in a new track file.

Track Search

Use the Track Search function to view track information that has been previously saved locally or on a TAK Server. The tool searches the track database for matches against the specified time range and by user callsign. Matching tracks are displayed as a list, and can be selected to view on the map interface.

Select the [**Track Search**] icon to access the function. Specify callsign and time frame, check the box for Server Search (if desired), then select [**Search**]. The track list will appear. The query results can be sorted by Track Name or Start Time. Select any of the query results to move to that track. Once selected, the name, color, and style of a selected track can be modified or the track can be cleared. Convert a track to a TAK route or export it as a KML, KMZ, GPX or CSV file by selecting the desired track and then [**Export**]. Enter a file name then select [**Next**] and choose the export format. Select [**Done**] or [**Send**] when the export completes.

When viewing the track list, the Track History Toolbar will appear at the top of the screen. The options include [**Add a Track**], [**Multi-select**], [**Track Search**], [**Clear Tracks**] and [**Exit**]. The Track History List allows the user to select tracks of other users that have been saved on their device. The Track Search – Local Device allows the user to perform a tailored search for tracks meeting their criteria. The searching option allows the user to retrieve all the tracks on the device.

The Track History Breadcrumb and Settings can be configured in the Settings > Tools Preferences > Track History Preferences.

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Unclassified

Emergency Beacon

Select the [**Emergency Beacon**] icon to open the Emergency Beacon Tool.

The Emergency Beacon allows the user to indicate their need for assistance, the type of emergency and their location on the map. The type of emergency can be selected from the drop-down menu, before activation, and includes options for an Alert, Ring the Bell, Geo Fence Breached or In Contact.

Once the Emergency type has been selected and both switches have been enabled, the TAK Server broadcasts the announcements to all network contacts. Even if the user's device is turned off, the beacon will continue. Only when the user returns to the Emergency Beacon tool and turns off the switches will the beacon be canceled and removed. If the SMS for Emergency option has been configured, the alert will be sent via text message to the configured numbers.

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77. The Accused Products, such as Defendants' Airport Surface Awareness System, Pro Line Fusion, Surface Management System, Ascend, OpsCore, ARINCDirect, ARINC Global Network, ARINC Integrator, ARINC Hermes, FasTAK, and Rosetta Technology applications, solutions, and servers further include similar features and functionalities to Raytheon TAK, TAK

[53] https://drive.google.com/file/d/1bo9WHadg3J3o55OLlx1mn3McqEJzvgrK/view

Server, ATAK, WebTAK, CivTAK, and WinTAK applications, solutions, and servers, and infringe in a substantially similar manner:[54]

[55]

[54] https://www.collinsaerospace.com/what-we-do/industries/commercial-aviation/flight-operations/message-management; https://www.collinsaerospace.com/what-we-do/industries/commercial-aviation/ground-operations/messaging-data-exchange/arinc-messaging

[55] https://www.rtx.com/news/news-center/2024/05/09/rtx-introduces-the-collins-airport-surface-awareness-system

Moving map

Integrates the terrain database with real-time flight information for greater situational awareness, overlay weather, airways, navaids, and more on the moving map especially in low visibility conditions and unfamiliar territory. All delivered with the enhanced safety of natural, eyes-forward flying.

56

[56] https://www.collinsaerospace.com/what-we-do/industries/military-and-defense/targeting/targeting-and-c2/fastak-integrated-targeting-system https://www.rockwellcollins.com/~/media/Files/Unsecure/Products/Product%20Brochures/Integrated%20Systems/Flight%20Deck/Pro%20Line%20Fusion/Pro%20Line%20Fusion%20Gulfstream%20G280.aspx; https://battle-updates.com/update/contract-news-in-brief-837/; https://prd-sc102-cdn.rtx.com/-/media/ca/product-assets/marketing/r/rosetta-technology-data-sheet.pdf?rev=8f6858685dde43b4a432806333f4624b&hash=F0C027F7D9128630CF5CDB243A3FFDCB

Optimized data for faster decision-making

OpsCore pairs Collins' proven messaging, alerting and fleet management capabilities with FlightAware's Firehose™ API and HyperFeed® data aggregation and analysis tools to bring multiple sources of data together into one, single stream of actionable data. This is then delivered to aircrews, flight operators and key airport personnel, keeping them informed at every step of the journey.

This bird's eye view of operations, combined with a high level of data-driven situational awareness, supports better, faster decision-making, as well as reduced costs and delays from IRROPS, fuel and weather impacts.

[57]

[58]

[57] https://prd-sc102-cdn.rtx.com/-/media/ca/product-assets/marketing/o/opscore/opscore-flight-tracking-data-sheet-v4.pdf?rev=a023a17537e34e608801ce915734e749&hash=AC3FA21989AC3122EBDA90B5624338FD

[58] https://www.collinsaerospace.com/what-we-do/industries/military-and-defense/targeting/targeting-and-c2/fastak-integrated-targeting-system

78. AGIS Software has suffered damages as a result of Defendants' direct and indirect infringement of the '829 Patent in an amount to be proved at trial.

79. AGIS Software has suffered, and will continue to suffer, irreparable harm as a result of Defendants' infringement of the '829 Patent for which there is no adequate remedy at law unless Defendants' infringement is enjoined by this Court.

DEMAND FOR JURY TRIAL

Plaintiff hereby demands a jury for all issues so triable.

PRAYER FOR RELIEF

WHEREFORE, AGIS Software prays for relief against Defendants as follows:

a. Entry of judgment declaring that Defendants have directly and/or indirectly infringed one or more claims of each of the Patents-in-Suit;

b. Entry of judgment declaring that Defendants' infringement of the Patents-in-Suit has been willful and deliberate;

c. An order pursuant to 35 U.S.C. § 283 permanently enjoining Defendants, their officers, agents, servants, employees, attorneys, and those persons in active concert or participation with them, from further acts of infringement of the Patents-in-Suit;

d. An order awarding damages sufficient to compensate AGIS Software for Defendants' infringement of the Patents-in-Suit, but in no event less than a reasonable royalty, together with interest and costs;

e. An order awarding AGIS Software treble damages under 35 U.S.C. § 284 as a result of Defendants' willful and deliberate infringement of the Patents-in-Suit;

f. Entry of judgment declaring that this case is exceptional and awarding AGIS Software its costs and reasonable attorney fees under 35 U.S.C. § 285; and

g. Such other and further relief as the Court deems just and proper.

Dated: October 24, 2024

Respectfully submitted,

/s/ Alfred R. Fabricant

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