

Wildfire Initial Attack Mobile Mapping (WIAMM) Project

Patrick Robinson

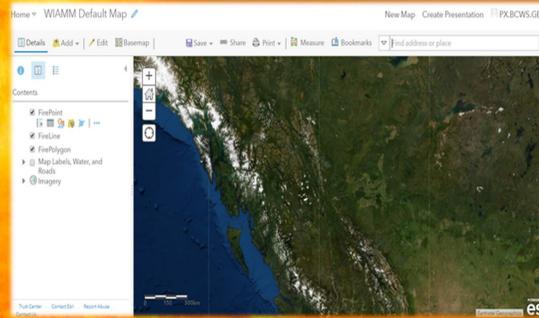
MSc. Candidate, NRES Forestry, UNBC

A Collaboration Between GeoBC and the BC Wildfire Service

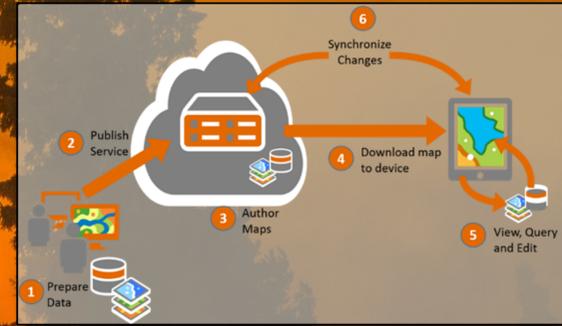


The Challenge:

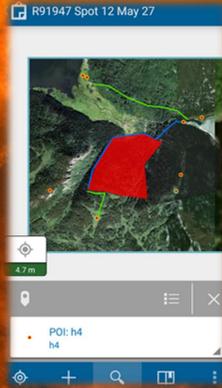
Provide ground crew Initial Attack (IA) Fire Fighters from the BC Wildfire Service (BCWS) with access to high quality, interactive digital maps, for use in the field away from network connectivity. The maps must be available on-demand and in a format suitable for the requirements of fire managers and fire line operational environments. The ability to access high quality digital mapping products away from network connectivity on mobile devices is a relatively recent technological possibility considering IA operational constraints (demanding response times, large coverage areas, and harsh environments). For IA success, crews must achieve fast response times to incidents, meaning there is usually not enough time to create and distribute useful digital maps for crews during a fire call/deployment using traditional mapping methods.



Maps are created in Arc GIS Online by entering coordinates for new targets and uploading to the WIAMM shared group.



Maps are downloaded by crews for offline access on mobile devices through the Collector for Arc GIS mobile application and information is input from the air and the ground.



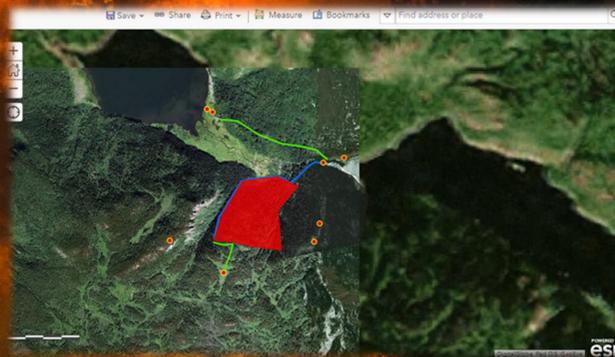
Methods and Workflow:

The WIAMM maps are created in Arc GIS Online and consumed by crews via the mobile application, Collector for Arc GIS. Design for the WIAMM is very basic and focuses on limiting clutter and avoiding user confusion by optimizing user-friendliness of the workflow for both the desktop and mobile application user-interface components. During the pilot trial fifteen Initial Attack wildfire crews from the BCWS were provided with access to WIAMM maps through the Collector mobile application and trained on how to use them in operational settings (active initial attack incidents) during the 2019/2020 wildfire season. Operations/management staff associated with those crews were also provided access to the Collector mobile application as well as the Arc GIS Online desktop web map component, which they used for creating maps for new targets.

Examples of the types of information collected includes fire perimeters, access/egress trails, hose lays, staging areas, safety zones, helipads, pump sites and spot fires. Once the map data is synced to the cloud geodatabase, it is accessible by all personnel with access to the WIAMM group, via desktop or mobile app.

Benefits:

The WIAMM tool (Arc GIS Online paired with the Collector for Arc GIS mobile app) offers user-interactivity, operational versatility and robust spatial database access. With this tool, it is possible to leverage valuable spatial information housed in provincial databases, such as land status information, pipeline locations, sensitive hydrological areas, and forest fuel types, etc., serving up all that critical information straight into the hands of ground crews who are often faced with the responsibility of having to make difficult emergency decisions in the heat of the moment. In addition, one of the most innovative aspects of this use of the Collector app is that it enables the capture of aerial perspectives of incidents while crews are arriving via aircraft and orbiting overhead. Capturing information available from an aerial perspective provides a strong advantage for tactical planning as it can be brought down to the ground or wirelessly shared between ground crews and aerial support where network connectivity allows.



Findings and Results:

The goal of the 2019/2020 trial was to assess the feasibility of operationally utilizing this tool on active wildfire targets, and to identify the associated benefits and limitations of adopting it for broader organizational utilization. Based on the results of the trial, the WIAMM tool demonstrated significant potential in strengthening critical communications between ground crews, aerial support and management staff, while enhancing situational awareness and advanced fire-attack/tactical planning, and overall improving crew safety. Following the successful 2019/2020 pilot tests, limitations were identified and options for how they can be resolved are being investigated in support of the goal of broader adoption.

Contact:

robinsonp@unbc.ca

References:

- ESRI, Arc GIS Online. Author: Robinson, P. (2019). WIAMM default map page. Retrieved February 26, 2020, from <https://governmentofbc.maps.arcgis.com/home/webmap/viewer.html?webmap=799cdd524ab482897fe22e6be31c6c7>
- ESRI, Collector for Arc GIS mobile application screen capture, WIAMM operational map. Retrieved February 26, 2020
- Photos: BC Wildfire Service (M.M)
- Shaner, J. (2014, February 18). Collector – Disconnected editing and sync. Retrieved February 26, 2020, from <https://www.esri.com/arcgis-blog/products/collector/field-mobility/collector-disconnected-editing-and-sync/>