Integrating Advanced Technologies to Improve the Safety of Wildland Firefighters and Emergency Responders

A Satellite-Based GIS-GPS Program Utilizing Real-Time Geo-processing for Managing the Deployment of Wildland Firefighters

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Since receiving Bachelor’s Degrees in Electrical Engineering in 1981, and Mechanical Engineering in 1985, the founder of ARGOS FireTech and design engineer for Prometheus’ Shield has worked on the development and implementation of advanced technologies. In addition to leading the design efforts of the company, he has served over 20 years as a Certified Wildland Firefighter and First Responder in rural Pennsylvania, Wyoming, and New Mexico. He maintains a current wildland firefighter certification and remains an active member of several rural Fire Departments in Northern New Mexico.
The Only Wildland Fire Management Program Combining the Reliability of Satellite Positioning, the Power of the ArcGIS Mapping Platform, and the Ease of Document Control with Microsoft Office 365

Prometheus’ Shield includes all Incident Command System (ICS) forms in fillable, electronic format. All revisions to these National Information Management System documents are archived for submission and future reference.
ARGOS FireTech offers Incident Command staff a full-service personnel and equipment tracking solution for managing wildland fires. Using our Esri ArcGIS web portal, which includes dual-mode GPS tracking, multiple map displays, fire behavior analysis, weather, and other critical resource tracking and communications tools, Prometheus’ Shield can capture, display, disseminate, and port data to and from every asset deployed from Incident Command.

With its combination of tracking, communications, and mapping, Prometheus’ Shield is the first Wildland Fire Incident Management Service available anywhere.
On June 30th, 2013, shortly after completing a two-week deployment on the Tres Lagunas Fire in New Mexico, news surrounding the death of the Granite Mountain Hot Shot crew in Yarnell, Arizona reached the Pecos Canyon Fire Department where I was stationed.

As a professional design engineer and a 25 year veteran of wildland firefighting, it hit especially hard. Shortly afterwards, we decided to apply our engineering knowledge and firefighting experience in an effort to prevent this from happening again. Unfortunately, I had to wait for some of the technology to catch up with my design ideas. In 2015, two new technologies became available that made this project possible...
Blue Sky Network

First, Blue Sky Network introduced the HawkEye PT+, a sophisticated yet rugged Iridium satellite-based GPS device. This military-grade, dual-mode GPS tracking device guarantees connectivity anywhere on the planet, regardless of the local terrain or weather. This full-feature GPS unit sends and receives email messages using the same dual-mode system it uses for positioning, making it a truly reliable emergency communications device. Firefighters can be sent updates, special alerts, and weather reports, anywhere in the field. Group messages can be used for assignment changes or incident-wide information.
The HawkEye PT+

Each firefighter is equipped with the HawkEye PT+, and as each unit is programmed into Prometheus’ Shield it is associated with the firefighters NWCG data stored in the Access database.
Blue Sky Network’s leading fleet management web portal, SkyRouter, is a comprehensive cloud-based solution designed to support multi-asset types working seamlessly with Blue Sky Network’s advanced tracking hardware. Blue Sky Network has also pioneered advanced technologies, such as dual-mode tracking solutions (GSM-cellular and Iridium-Satellite) and the HawkEye Link, which provides a Bluetooth interface for smartphones and tablets. Founded in 2001, Blue Sky Network is headquartered in San Diego, California.

www.blueskynetwork.com
Information Management is critical in emergency response operations, but getting the right information to the right people at the right time can be difficult. SharePoint makes that collaboration and sharing of documentation straightforward and secure. All Incident Command System forms (required by the National Information Management System and US Forest Service) have been converted to fillable, electronic files in InfoPath through the Sharepoint site. As these are living documents, all versions of each report are displayed and archived for later submission to the US Forest Service.
Incident Command System Documentation

All of the Incident Command System forms used for documenting state or federally managed emergency operations have been programmed as metadata in SharePoint using InfoPath. This allows each version of the ICS report is available real-time to all authorized users. The information is immediately available throughout the enterprise based on permissions that are set by the user.
The ARGOS FireTech Interactive Web Portal

The Interactive Web Portal is the entry point for incident management operations. It provides authorized users and technicians secure access to the multiple components and applications within Prometheus’ Shield.

It connects users to ArcGIS software and the SharePoint Incident Command System website, UAV flight software, SkyRouter Data Center, and the Hawkeye PT Instant Messaging System.
The ArcGIS Map

A Simulation of the Bandelier Fire Using Real-Time GPS Position Reports