



U.S. FOREST SERVICE USE OF MOBILE GEOSPATIAL TECHNOLOGY

BRIEFING FOR THE INTERNATIONAL MAP INDUSTRY ASSOCIATION MEET-UP
ARLINGTON, VA
JANUARY 31, 2019

Betsy Kanalley
703-605-4575
bkanalley@fs.fed.us



DISCUSSION TOPICS

- Overview of the Forest Service
- How is the Forest Service Addressing the Increasing Utility of Mobile Geospatial Technologies?
- Look at the ways the Forest Service is using Mobile Geospatial Tools
- Look at the people using these tools
- Example use-cases
- Questions

THE FOREST SERVICE – SOME BACKGROUND



Vicki Christiansen
Chief, August 2018

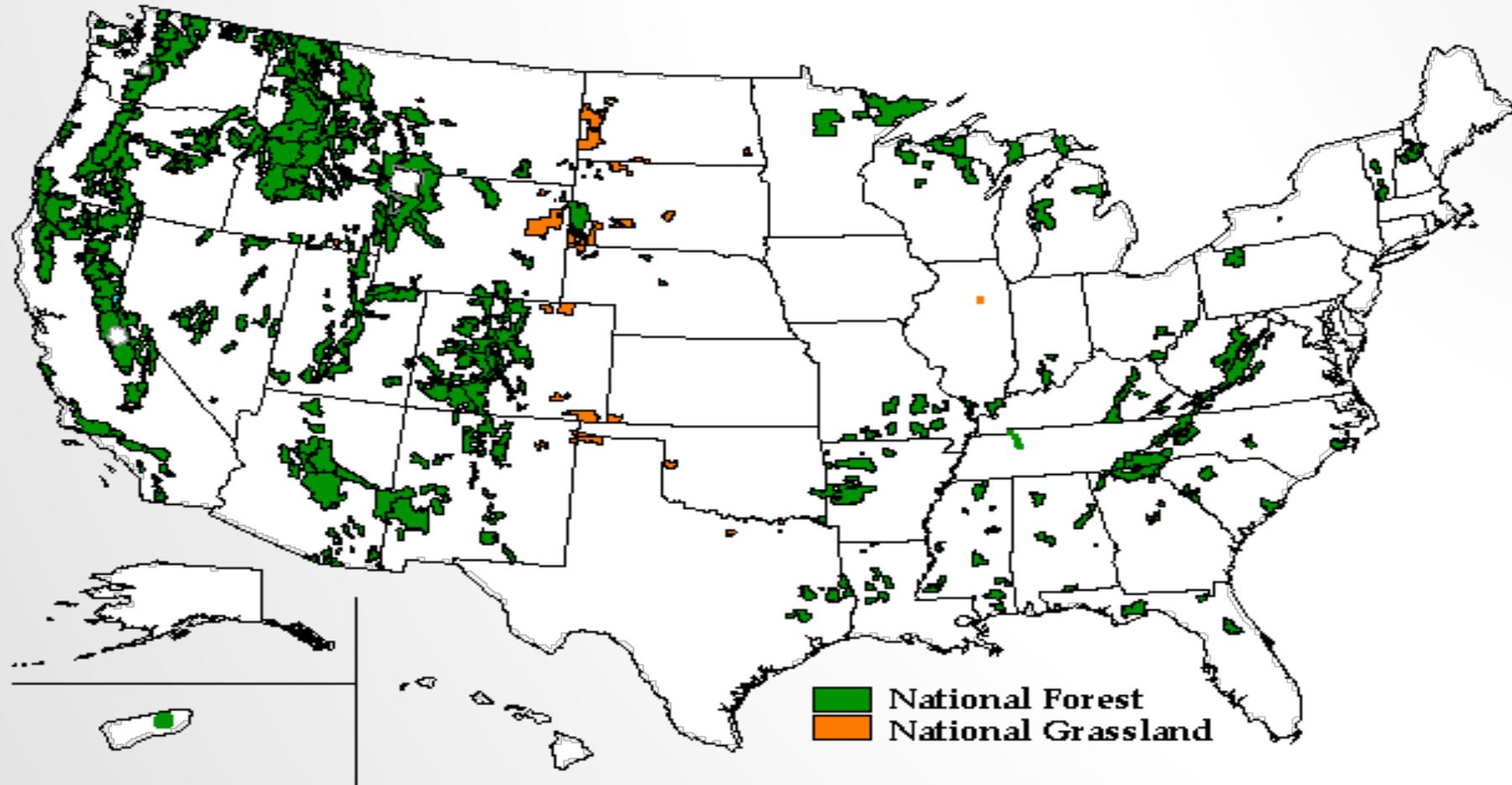
We are a multi-faceted agency that manages and protects 154 national forests and 20 grasslands in 43 states and Puerto Rico

- Approximately 193 million acres
- Over 30,000 employees
- Over 7,000 geospatial technical employees
- **Research & Development** - largest forestry research organization in the work
- **State & Private Forestry** – Cooperative Partnerships, Fire fighting
- **International Forestry** – Technical advice and assistance
- **National Forest System** – Public Land Management

Motto - “Caring for the Land and Serving People”



National Forest System Lands



FOREST SERVICE MISSION

To sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations.

Geospatial Information and Technologies are essential to meet mission goals.



WHAT ARE THE BENEFITS OF MOBILE GEOSPATIAL TECHNOLOGIES*?

Increase the value of FS Enterprise Geospatial

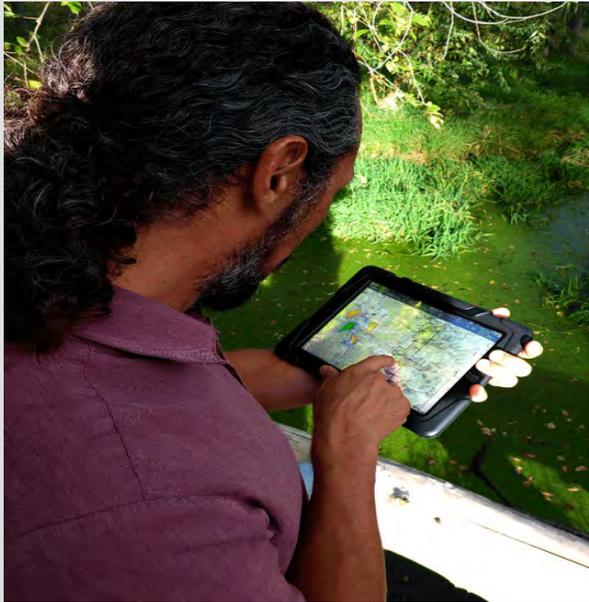
3 Key Benefits:

- Improve Efficiency and Accuracy of Field Operations
- Achieve Rapid Data Collection and Seamless Data Integration
- Provide data to support leadership in making informed and timely decisions by providing current, relevant data that can be collected once and used for multiple purposes – defensible decisions

*For this discussion, the focus is on use of Mobile Geospatial Technologies related to data collection, navigation/wayfinding and incidence response



COMMONLY USED MOBILE GEOSPATIAL APPLICATIONS



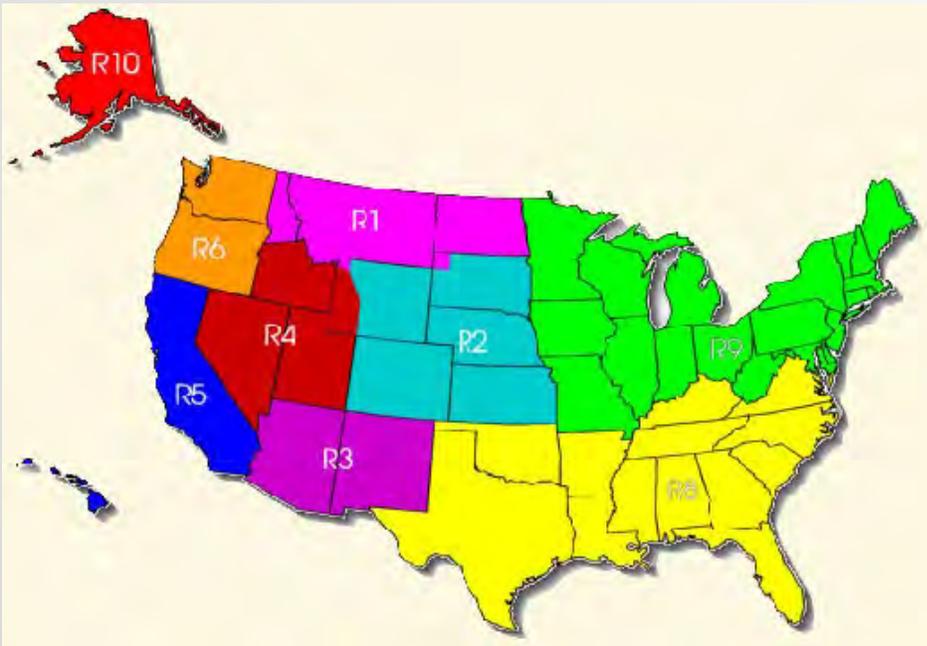
- Esri Applications
 - Collector for ArcGIS
 - Survey 123 for ArcGIS
- Avenza Maps Pro
- Trimble apps
- Legacy Natural Resource Manager (NRM) Mobile apps – conversion to Collector, Survey123

HOW IS THE FOREST SERVICE ADDRESSING THE INCREASING UTILITY OF MOBILE GEOSPATIAL TECHNOLOGIES?



Organizational Activities

- Forest Service Regions have established a Mobile Geospatial Manager
 - provide leadership and support of the implementation and use of mobile technologies
 - provide guidance and facilitates the development and maintenance of mobile applications, tools, and workflows.
- Ensure USDA and FS policies are followed
- Facilitate deployment of national mobile technology
- Facilitate adoption of mobile applications
- Monitor Effectiveness of Mobile applications
- With the CIO's Mobile Computing Program assist in device and app procurement, maintenance/upgrades, etc.



HOW IS THE FOREST SERVICE ADDRESSING THE INCREASING UTILITY OF MOBILE GEOSPATIAL TECHNOLOGIES?



Organizational Activities

➤ Mobile Geospatial Technology Applications Group (MGTAG)

- Evolved from the GPS Working Group
- Primarily focused on mobile technologies for data collection
- Provides:
 - Strategic oversight
 - Leadership
 - Efficient technical solutions
 - Recommendations
 - Guidance and Advice to users

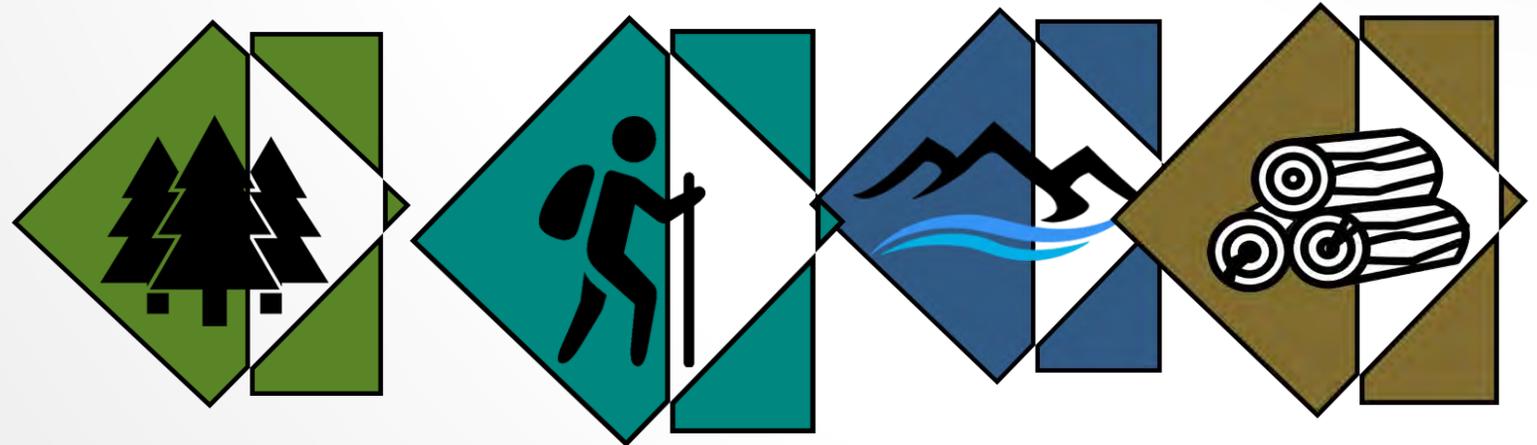
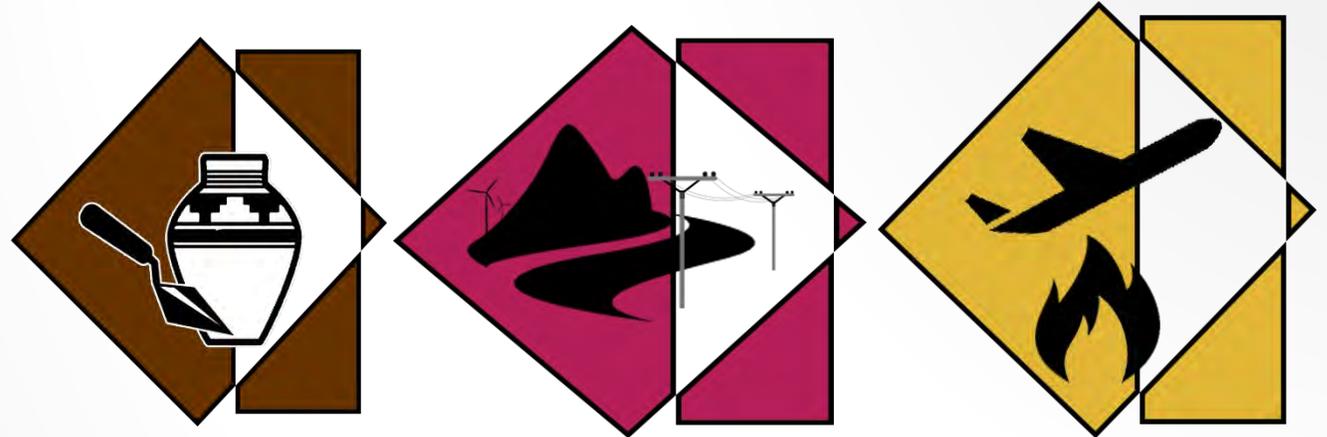
➤ Interagency Wildland Fire Mobile Technology Working Group

- provides coordination, and evaluation of new mobile technologies and innovation in Fire and Aviation



USE OF MOBILE GEOSPATIAL APPLICATIONS FOR NATURAL RESOURCE MANAGEMENT

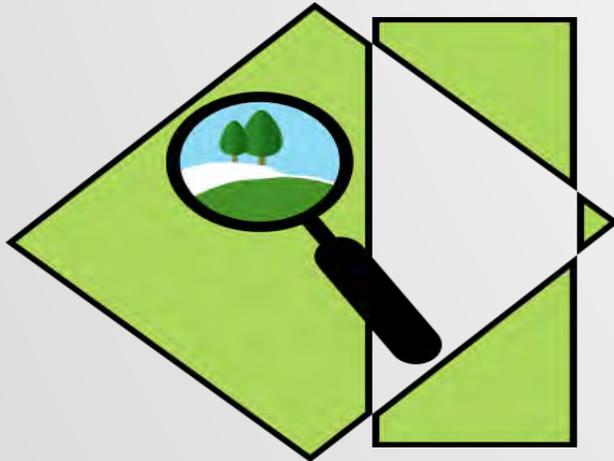
- Vegetation/Timber
- Hydrology/Aquatics
- Invasive Species
- Wildlife -Habitats
- Watershed
- Fire Management
- Recreation
- Road and Trails
- Law Enforcement
- Soils
- Cultural Sites
- Several others...



WHO IS USING MOBILE GEOSPATIAL TECHNOLOGIES?



- Biologist
- Hydrologist
- Range Manager
- Forester
- Forestry technician
- Transportation Engineer
- Fire Crew
- Helicopter pilot
- Timber Crew Coordinator
- Zone Fire Management Officer
- Landscape Architect
- Recreation Planner
- Vegetation Management specialist
- Sales Administrator
- GIS technical professionals
- GIS Coordinator
- Cartographer/cartographer tech



EXAMPLE USE-CASE

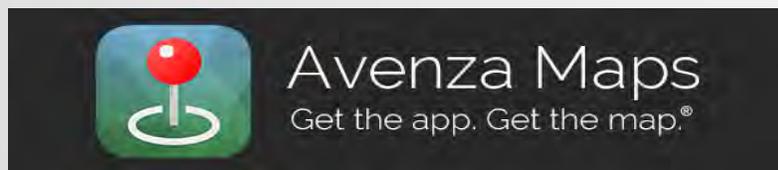
SALE OF FS MAPS AT AVENZA MAPS STORE

Sale of Digital Maps to the Visiting Public

- Simple and easy to upload maps
- Data/information about maps may be entered when maps are uploaded
- Easy customer access
- Available to download to phones, tablets – iOS and Android
- Maps loaded to the site must be secure
- For Sale and free maps
- Visitors can search store by location or title
- Publications can be removed and replaced with updated versions

Avenza Maps Store

- Public access to Geospatial versions of popular FS Visitor Maps
- Secure site – no pirated copying of maps
- Regions publish maps at Avenza Store and receive periodic reimbursements for maps sold
- Maps are easy for the public to view and purchase
- Maps for internal users can be made available at sites that are hidden from the public – accessed by QR code or URL
- Easy to replace maps at site - new archival capability
- Avenza provides statistics and earnings reports



EXAMPLE USE-CASE

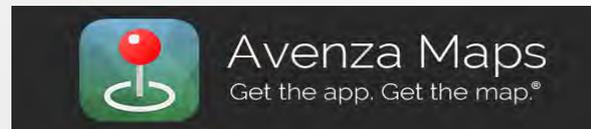
AVENZA MAPS-PRO FOR WILDLAND FIRE SUPPORT

Avenza Maps Pro

- FREE application (iOS, Android, Windows Mobile)
- Import up to 3 “custom” maps
- Record activities via GPS
- Works offline – back country
- Plot place marks and photos
- Access to Avenza Maps Store
- Commercial and professional use permitted
- Import unlimited custom maps
- Import & export shapefiles
- Request app features
- Priority technical support
- Subscription management system

Wildland Fire Fighting

- Back country navigation
- Fire perimeter tracking
- Record fire activities with pins and photos
- Export to briefing maps and share with other crews
- Record sensitive sites on maps and share with fire crews to assist in planning
- Locate water sources and other important features important for incident management and for wayfinding



EXAMPLE USE-CASE - COLLECTING DATA ABOUT RECREATION SITES USING SURVEY 123

Collecting Data for the FS Accessibility Database

- Detailed accessibility information about each recreation site/facility, individual rec unit and constructed features.
- To provide accurate information to our visitors:
 - What's available in the rec. site and its' accessibility
 - Need that accurate information to better manage recreation sites, what needs repair or replacement, etc.
- **Assess recreation sites and facilities**
- Where deficiencies:
 - Transition Plan- what's not in compliance, how and when rec. sites and facilities will be brought into compliance.
- ESRI's Survey123 on iOS and Android tablets
- Surveys operate on tablet outside FS firewall:
- Surveys can be conducted by non-FS crews
- 21 CSC crews – funding available- FS unit decides



EXAMPLE USE-CASE

USE OF ESRI COLLECTOR IN FOREST PRODUCT MODERNIZATION

Need

- Systems for timber harvest need to evolve
- Help improve local economies
- Make better use of technology

Use of Esri Collector App

- Digitally mark trees for thinning
- Collect data to be used in restoration planning/analysis



EXAMPLE USE-CASE

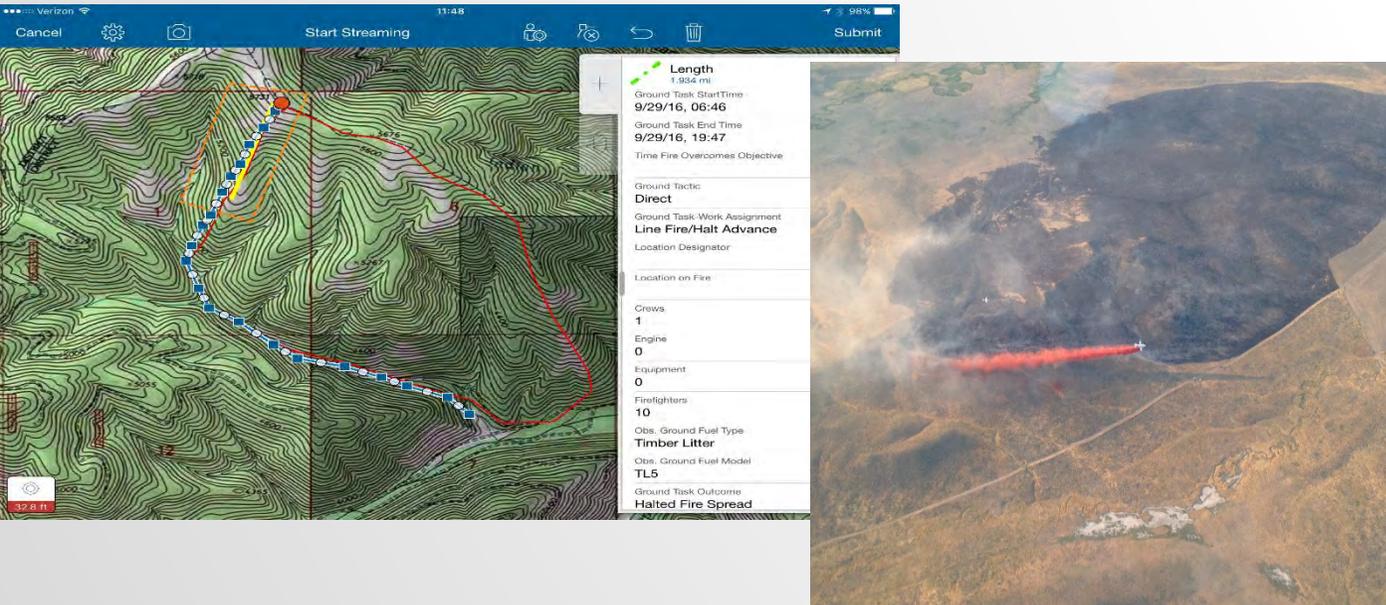
USE OF ESRI COLLECTOR TO ASSESS AERIAL FIREFIGHTING USE AND EFFECTIVENESS

Need

- GAO Audit of expenses
- Need for more cost effective firefighting
- Reduce risk/fatality

Use of Esri's Collector App

- Obtain a representative sample of all aircraft use
- Determine what we are doing effectively and efficiently
- Requires very accurate data
- Use this information to improve efficiencies and effectiveness
- Not a retardant study but a look at what ways we are effective application and replicate those process



QUESTIONS?

Betsy Kanalley

703-605-4575

bkanalley@fs.fed.us

