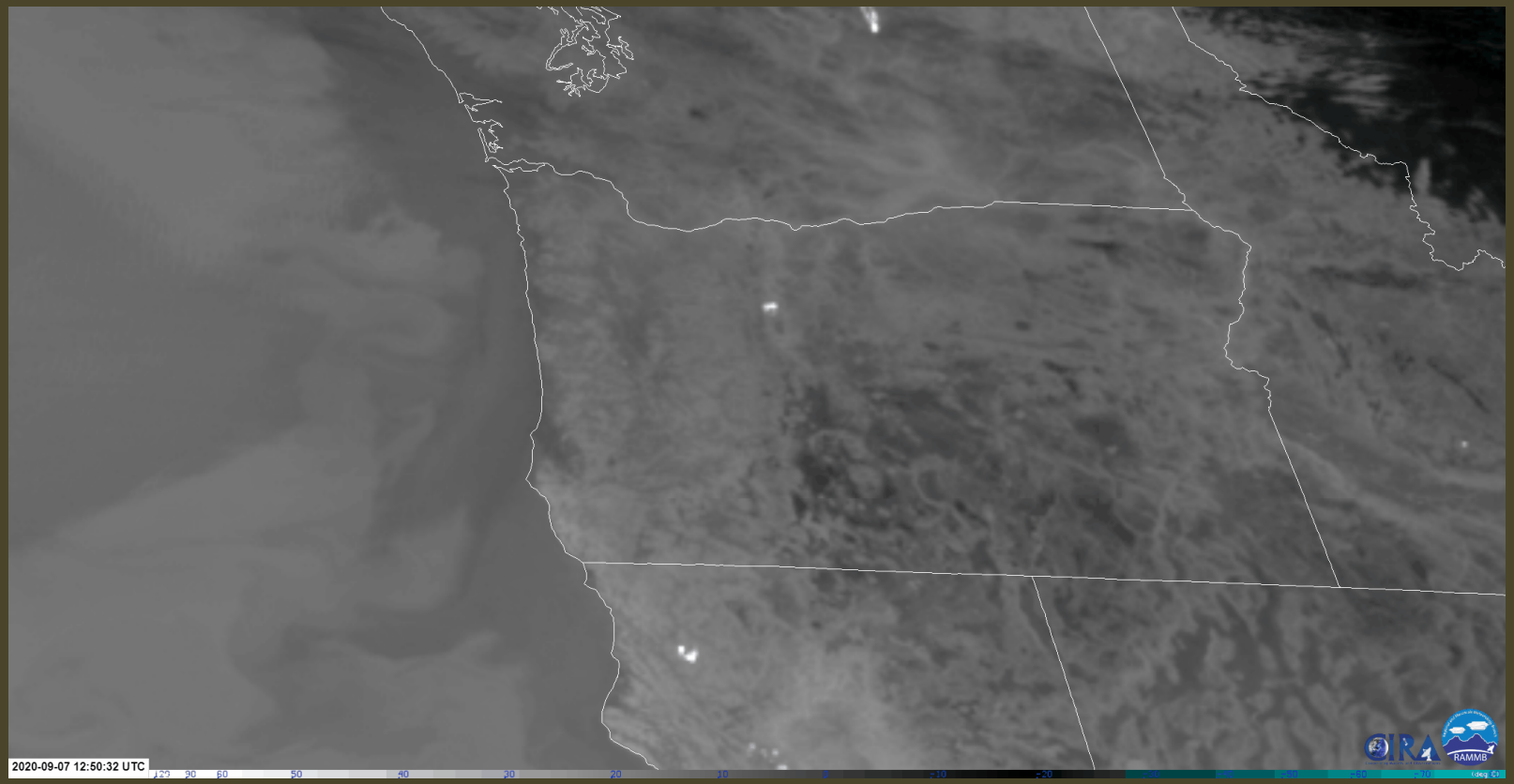


Wildfire Detection and Monitoring
What if we had a nationwide system in place today?

PCAST Presentation March 24, 2002

Wildfire Detection and Monitoring – Why and What

COST

SAVE RESOURCES & MONEY BY KNOWING WHAT AND WHERE IT IS HAPPENING

RISK

REDUCTION OF RISK IS CRITICAL FOR OUR FIREFIGHTERS, THE PUBLIC, AND THE LANDS AND RESOURCES WE PROTECT

- LARGER COMPLEX FIRES OCCURNING ALL AT ONCE
- EXPANSION OF DEVELOPMENT PUTS MILLIONS OF HOMES AT RISK
- LANDSCAPES WITH HEAVY FUELS AND STEEP TERRAIN
- THE FIRE YEAR RATHER THAN FIRE SEASON

CREWS

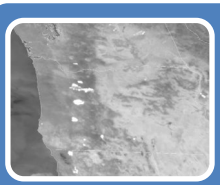
ENGINES

AVIATION

LIMITED ASSETS FOR WILDLAND FIREFIGHTING – RELIANCE ON COOPERATORS

NATIONAL INTERAGENCY FIRE CENTER
Boise, Idaho

Wildfire Detection and Monitoring
Incident Awareness and Assessment



Satellite

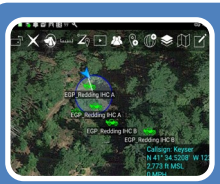
- Government, Commercial, International
- Constellation, Geo, Heo, Polar, Sun Synchronous

Aircraft

- Mapping – 12 to 24 hour Cycle of Perimeter Mapping
- Tactical – Real-Time Support to Operations
- UAS – Increasing Use

Ground based Sensors

- Camera – Lookouts, Communication Towers, New Locations
- Mobile – Move with Fire



Resource – Fire Fighter Tracking

- PIL – GPS, Satellite Based, Location Ping,
- Real Time SA – TAK, MANET, MESH, Two Way Data Stream

LAST MILE CONNECTION

!Greatest Capability Gap is Persistence!

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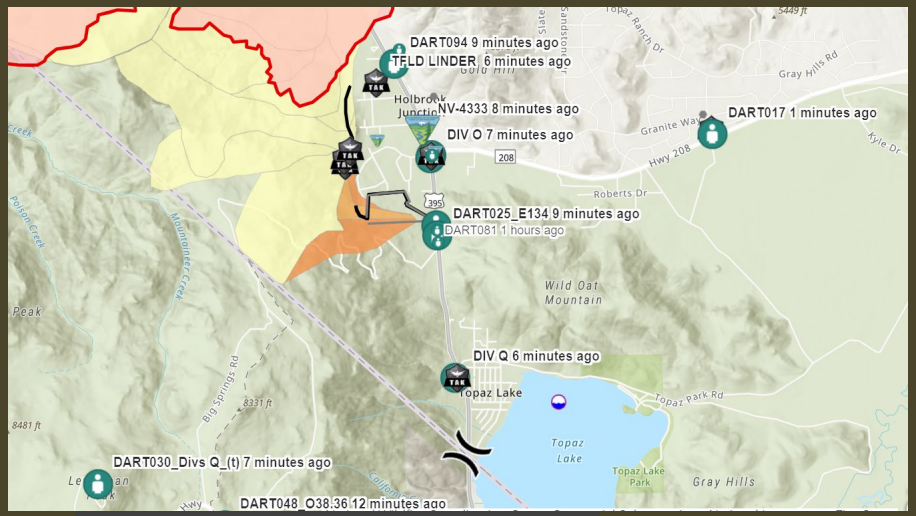
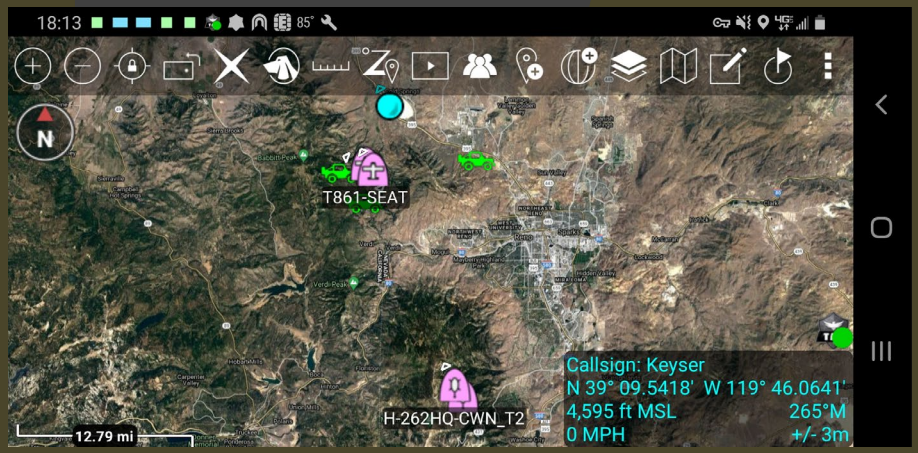
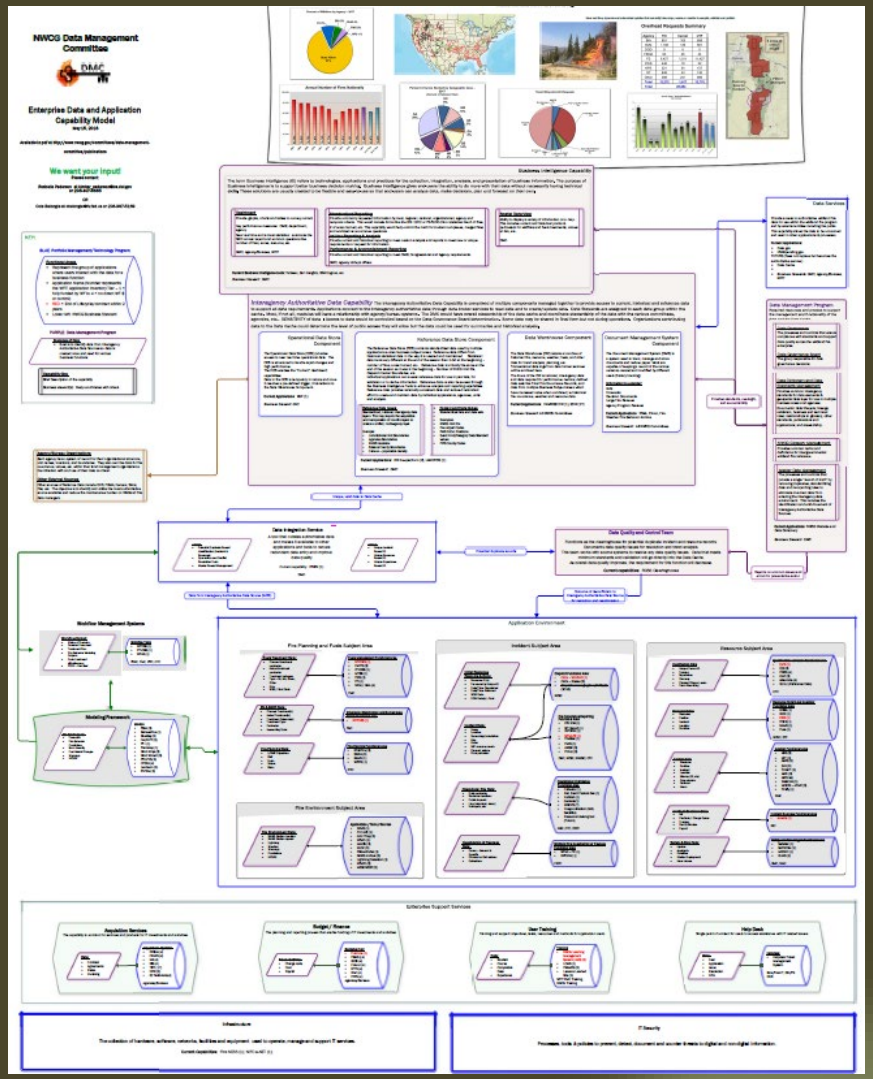
Data Interoperability and Integration







https://www.nwcg.gov/committees/data-management-committee

NATIONAL INTERAGENCY FIRE CENTER
Boise, Idaho

Programmatic approach with all levels of government working together is needed.

Operationally the wildfire community is an integrated and interoperable system that is not limited by jurisdictional and agency boundaries and policies. However, the technology, science, budgets, funding, and data management used to support operational wildland fire fighting is managed on an individual agency level and program.

Some progress has been made through the establishment of NWCG (National Wildland Fire Coordinating Group) committees and the WFIT (Wildland Fire Information Technology) program which support the development of data standards and interoperable technology solutions. Technology continue to evolve and develop rapidly. Federal wildland fire agencies ability to adopt and integrate these technologies struggles to find cross agency/department solutions. The need to integrate and support grassroots ideas and efforts into the wildland fire system with standards and programmatic support that is interoperable, seamless technological solution across all agency boundaries is a priority.

Detection, Monitoring, and other capabilities are being developed at a rapid pace. However, there is little coordination amongst partners resulting in less opportunity for operationalization at an enterprise scale. Budget, Policy, and Training for wildland fire fighters, decision makers, and agency leads is not keeping up with the pace of change.

This potentially puts our wildland firefighters in greater risk.

Ongoing use and Continuous Evaluation of Capabilities and Technologies - Partnerships

Ground Based

Ground based camera systems have been used effectively to detect and monitor for years. However, there is no national standards for the integration and sharing of data. Most systems still depend on a "person in the middle" to monitor and report a wildfire. In addition, systems need to be interoperable with and support mobile devices

FireGuard

National FireGuard Joint Task Force (NFGJTF) analysts exhaust all means to aggregate, analyze and assess multi-source, near real-time remote sensing information, and disseminate timely and tailored products to wildfire fighting interagency partners nationwide in order to inform operational decisions on the ground when lives and property are on the line and every second counts. However, it has yet to be established as a fully funded program.

Commercial/Private

The US based commercial satellite program continues to grow and provide new capabilities that the wildfire community is learning to utilize, this includes both through imagery and internet connectivity. Through its partnership with NASA and National Guard Bureau the wildfire community is implementing a new system for collection management that will allow the greater utilization commercial imagery. The HDDS contract through USGS has been the primary gateway to the commercial market and this needs to be expanded.

NASA

The wildfire community and NASA have a rich history of working together to solve aeronautical and earth science problems. Currently NASA is supporting the evaluation of HALE/HAPS systems to provide persistent imagery and communication infrastructure. NASA airspace experts are working to build a universal traffic management system (UTM) to integrate UAS seamlessly and safely into emergency response fire traffic areas. NASA continues to work identify areas of opportunity and new technology evaluations in support of wildfire management.

NOAA

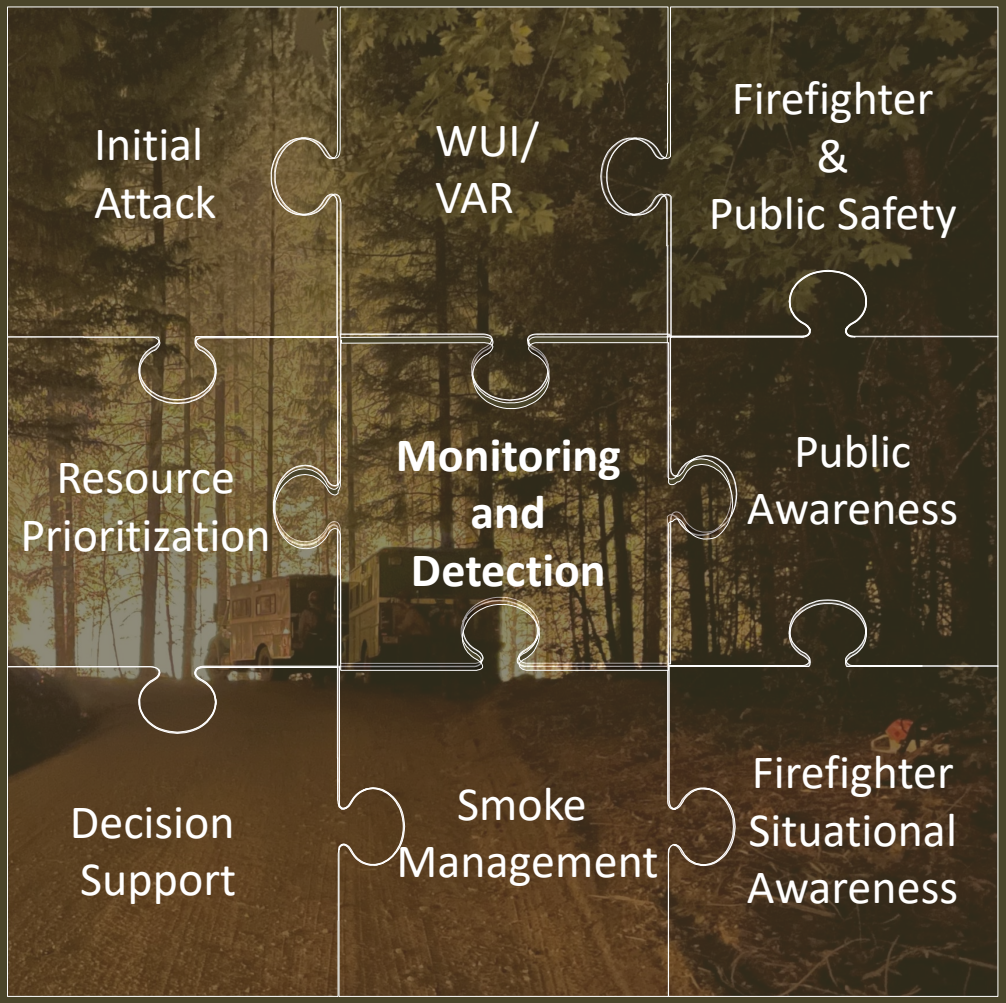
NOAA and NWS provide products and data to support weather forecasting, modeling, and smoke management. The VIIRS satellite-based sensor has been providing detection and monitoring capabilities and with the recent establishment of GOES-R the ability to scan the entire US every 10 minutes has broken new ground on wildfire observation. The Infrastructure legislation has provided funding and direction to the wildfire agencies to work with NOAA to continue to build out detection and monitoring capabilities using data from GOES and identify areas of integration of this data into wildfire management.

DOE/USGS

Through the RADR-Fire program, the DOE has built a foundational artificial intelligence capability to detect and map wildfires from commercial satellite data. The USFS is working with DOE to transition this new AI tool into a operational environment and expand it sensor library. The USFS currently collects over 4000 satellite images a year through the USGS HDDS program. The integration of these two programs has the potential to change the way the fire program utilizes commercial satellite sensors.

Where do we want to go?

Wildfire Detection and Monitoring is one piece of the puzzle



Detection and Monitoring:

- Needs to be available to“ boots on the ground”
- Needs to be integrated into the “system”
- Needs to be scalable
- Needs to be based on standards & requirements
- Needs to be identified as a program with leadership support
- Needs to be continually assessed and improved upon as technology changes

Worthless if leadership does not receive it
Worthless if it is not understood
Worthless if it is not used

Contact

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For details on technology being evaluated by the fire community please see the following link:
https://storymaps.arcgis.com/collections/c193360ddf124e5e9ad70b344d40eb14