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MOBILE STRATEGY FOR ENTERPRISE GIS



Focus Of This Talk

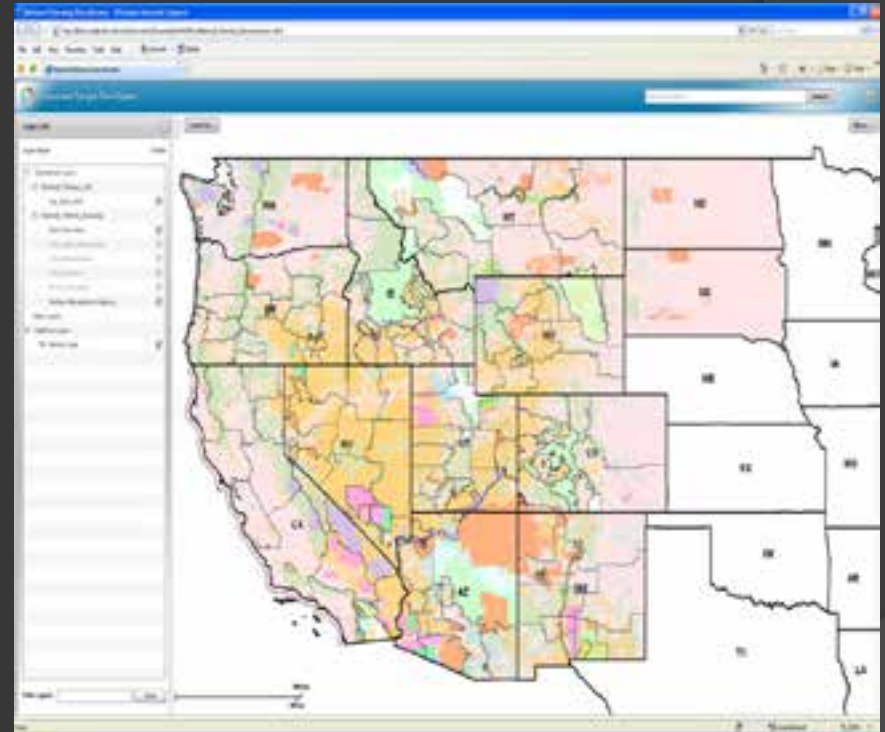
z The BLM creates and uses cultural and physical geographic science to solve North American problems.



The 8 ecosystems of landscape management: forest, grass land, shrub land, desert, tundra, inland waters, coastal and marine.

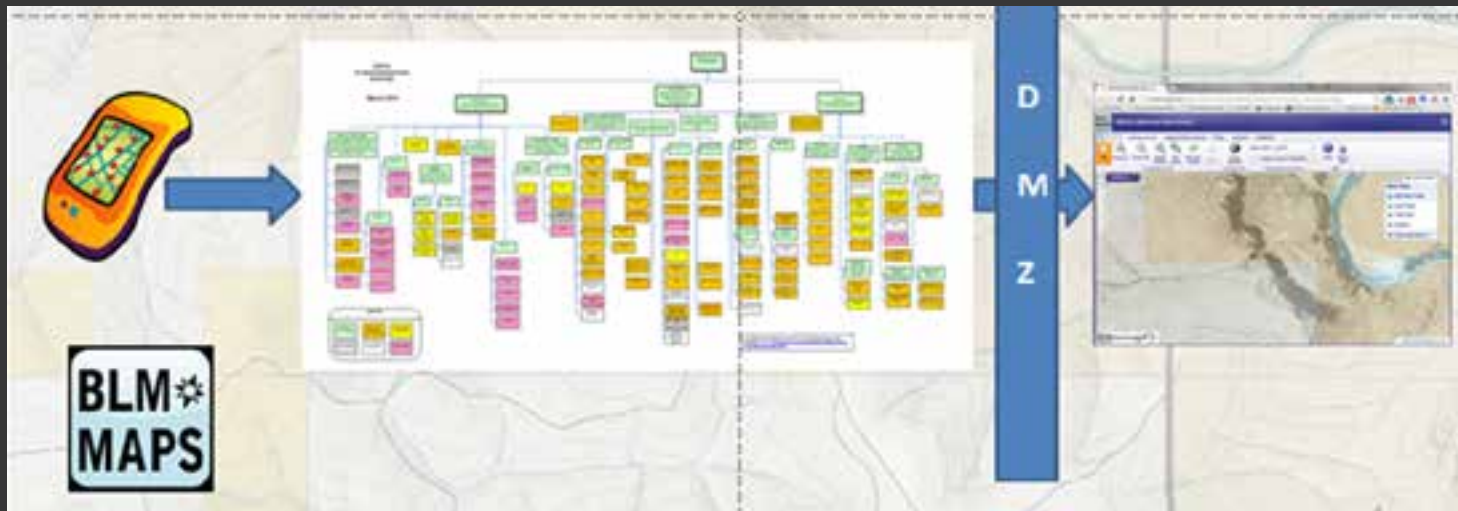
Focus Of This Talk

- ž Enterprise decisions affect flora, fauna (including people), soil, water, air and minerals on millions of cubic acres.
- ž The decisions are based on based on geographic information.
- ž The decisions change the land for generations.



Focus Of This Talk

- Mobile Enterprise GIS data (Mobile EGIS) collected in the field is the secret to use scientific geographic information to make those decisions.



This is the story of how one enterprise is transitioning to enterprise GIS.

Enterprise Background

ž Department of the Interior Agency

ž There are ten sister agencies:

- ž Bureau of Reclamation
- ž National Park Service
- ž US Geological Survey
- ž Bureau of Indian Affairs
- ž Bureau of Ocean Energy
- ž Office of Surface Mining
- ž Interior Business Center
- ž US Fish and Wildlife Service
- ž Bureau of Safety and Environmental Enforcement



Enterprise Background

z Manage more cubic land than any other federal agency

- 12 Western states, with Alaska
- Organized by states

- Over 250 million acres surface
- One staff person/ 21000 acres
- 17000 staff
80% use EGIS
- 700 million acres sub surface title
- 25-75% of western states are federal lands



Enterprise Mission

- ž This enterprise makes far more money than it spends
 - Only IRS taxes collect more dollars
 - Over \$6 billion annually
 - Mostly from timber harvest and energy development
 - 40% funds to states/counties for roads, schools, police and other needs



Enterprise Mission

- ž In 1787, the original 13 colonies designated BLM predecessor:
 - Official record of all fed land titles
 - Official Public Land Survey System
 - The enterprise still surveys and keeps these official records.



Enterprise Mission

Manage

“the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people”

Federal Land Policy and Management Act of 1976

ž Mission is multi use



- Energy creation and transportation
- Economic development
- Recreation and public safety
- Sustainable natural resource conservation

Enterprise Mission

- ž Resource Management Plans
 - Balance ALL resource values
 - Governs all decisions for 20 - 30 years
 - Plan relies on geographic analysis
 - For all BLM plans in the nation, see www.eplanning.gov
- ž Once Plan is signed, Geographic Information monitors trends and effects



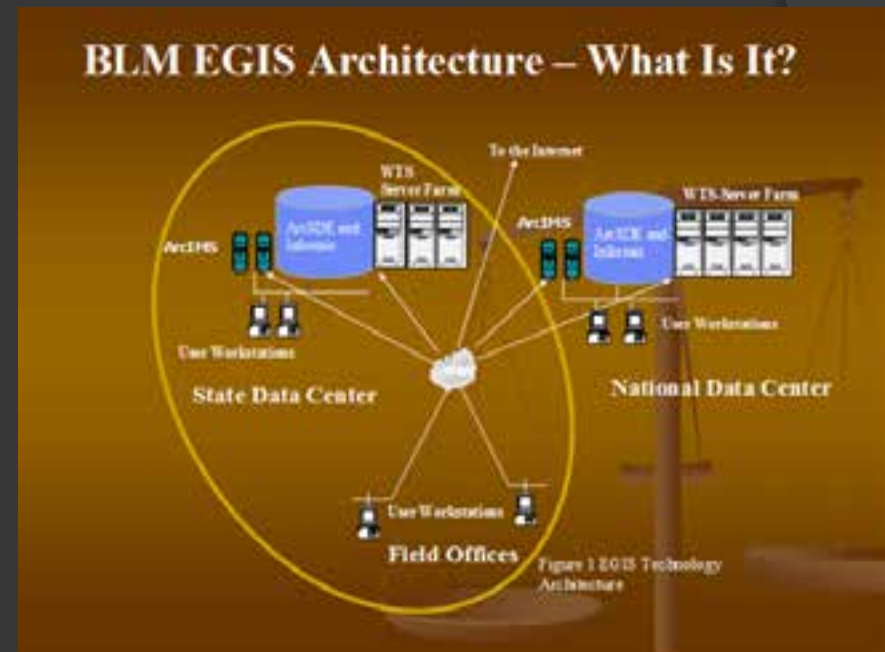
The Mission Depends on Geographic Information

- ž Collect Revenue
- ž Survey and Manage Federal Land Titles
- ž Use Plans to Balance ALL Resources
- ž Monitor and Assess Landscape Health



What is 2003 EGIS System?

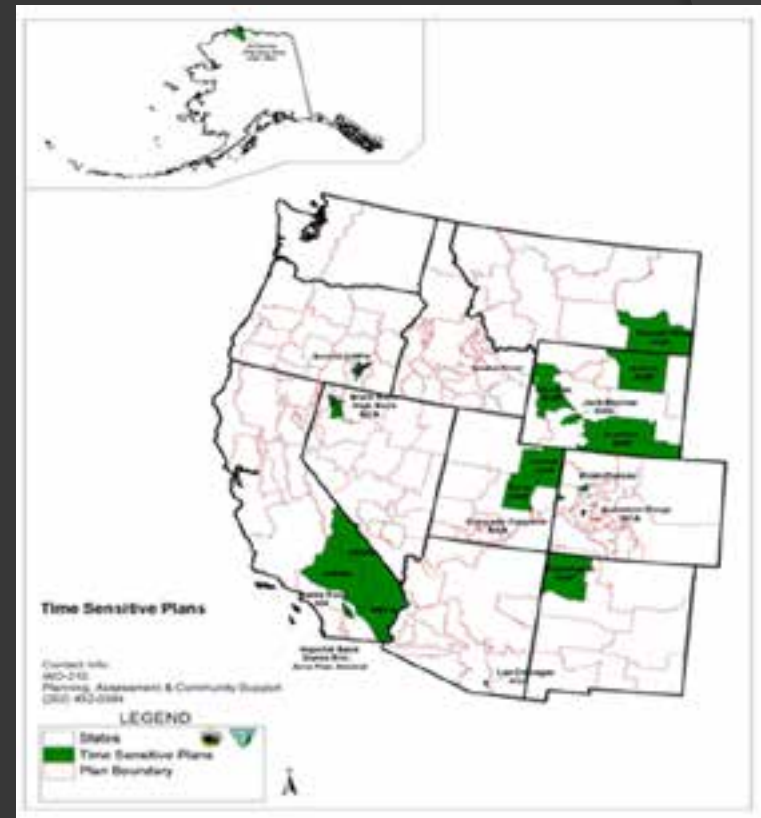
- ž State is hub to collect field mobile EGIS daily
- ž One, corporate GIS field, state and national levels
- ž Data replicated daily to National for quick congressional answers



Geographic Information Depends on Mobile EGIS

Mobile EGIS = Most Scientific Integrity:

- ž Field Office BLM First Hand Observations
- ž Uses Global Positioning System (GPS)
- ž Most Detail retained at field level
- ž Automated transfer reduces error and labor
- ž Collected by thousands since the 90s
- ž Landscape wide collection



Geographic Information Depends on Mobile EGIS

ž Two Flavors – Generic and Custom

– Generic, ad-hoc mobile EGIS for local projects:

- Fast
- Uses current mobile EGIS infrastructure to update corporate data
- No Programming



Department of Anthropology, University of Toronto, 2010
Fig. 10. Late period polished stone pestles, left, Generic stone pestle

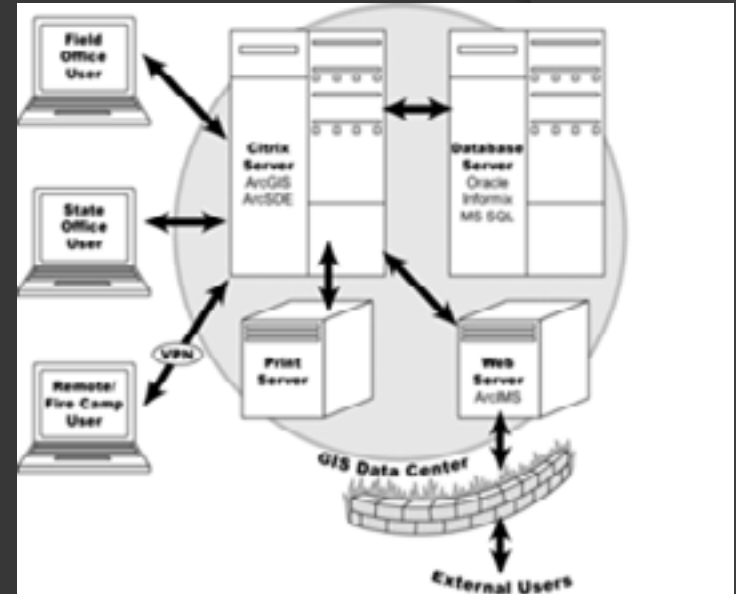
Geographic Information Depends on Mobile EGIS

- Custom uses Generic Mobile EGIS as foundation
 - Saves time and complexity on:
 - National or State Applications
 - National or State Standards



Quandary!

- ž Some like it EGIS
 - Some like it Text-based
- ž Some like it ESRI
 - Some like it Open Source
- ž Some like it Windows Mobile
 - Some like it Smart Phone/Tablet



The BLM currently designs for all philosophies!

Five Measures of Success

Reduce costs and protect data integrity by:

1. Eliminating paper, duplicate data keying, and data migrations
2. Replicating daily updates to EGIS system
3. Easy to use for new staff scientists
4. All Mobile EGIS staff use same system:
 - a. Standard training
 - b. Simpler technical support
5. Use COTS as basis
 - a. Customization possible

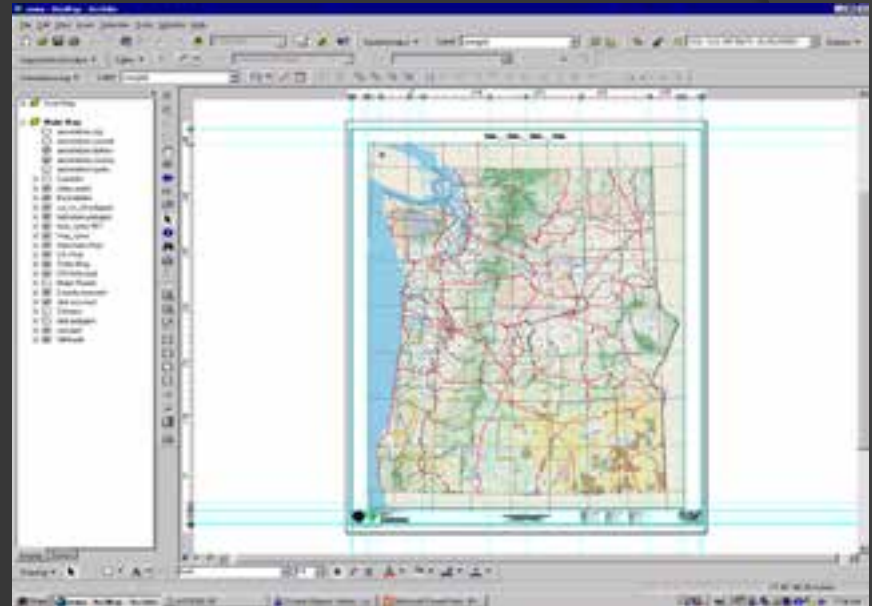


EGIS vs Text-based

GIS

Reduce costs and protect data integrity by:

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Problems

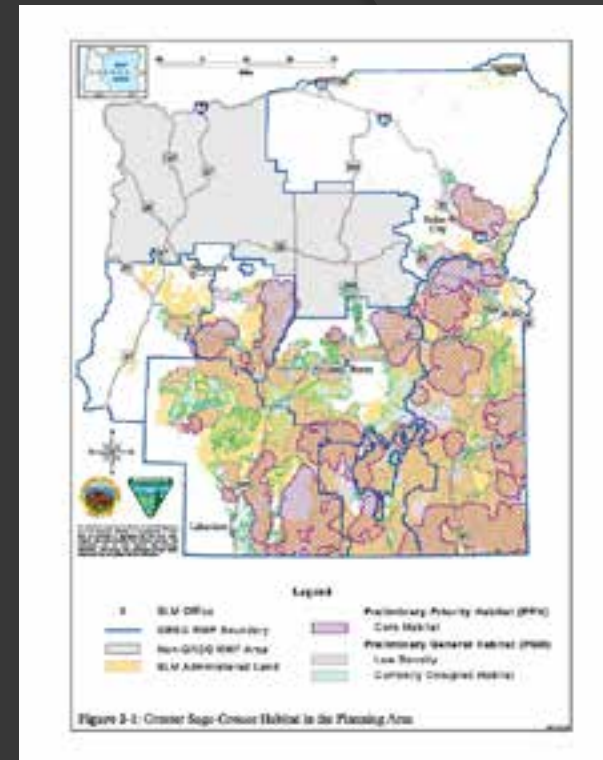
- May slow performance on the network
- May be difficult for some staff to learn and use

EGIS vs Text-based

Text-Based

Reduce costs and protect data integrity by:

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 - ☉ Customization possible



Advantages

- ž Attributes are simple, fast
- ž Separate Geographic Locations are EGIS points, lines, polygons, events and linear networks with minimal attributes
- ž Legacy BLM systems can be maintained

ESRI vs Open Source

ESRI EGIS system is currently Operational

Reduce costs and protect data integrity by:

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ž Problems

- Mobile GIS relies on ArcPad (does not work on smartphone)
 - COTS Substitutes are immature (Collector and ArcGIS for Mobile)
- Proprietary format
 - Must be translated for international use



ESRI vs Open Source

Open Source is NOT currently operating in EGIS

Reduce costs and protect data integrity by:

- ~~○ Eliminating paper, duplicate data keying, and data migrations~~
- ~~○ Replicating daily updates to EGIS system~~
- ~~○ Easy to use for new staff scientists~~
- ~~○ All field Mobile EGIS staff use same system:~~
 - ~~○ Standard training~~
 - ~~○ Simpler technical support~~
- ~~○ Use COTS as basis~~
 - ~~○ Customization possible~~



Advantages

- ž Inexpensive software and database cost (free!)
- ž International standards so no translator
- ž All spatial and non-spatial data is readily indexed and searched
- ž BLM will use it for Geospatial Publication Module to serve public information

Windows Mobile vs Smart Phone/Tablet

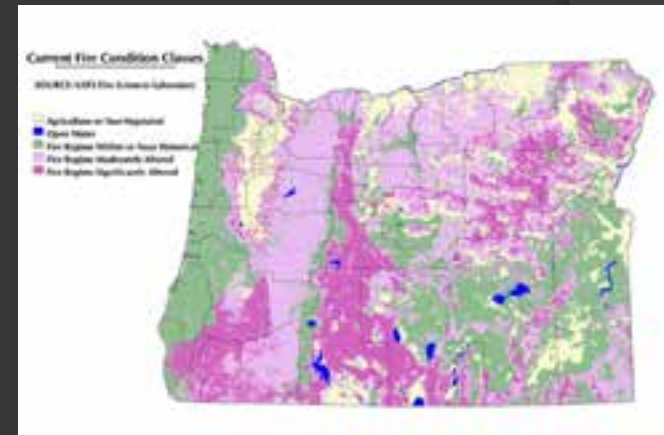
Windows Mobile is currently operating in EGIS

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ž Problems

- Mobile GIS relies on ArcPad (does not work on smartphone)
- COTS Substitutes are immature (Collector and ArcGIS for Mobile)



Windows Mobile vs Smart Phone/Tablet

Smart Phone is currently NOT operating in EGIS

Reduce costs and protect data integrity by:

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Windows Mobile vs Smart Phone/Tablet

Advantages

- National Mobile GIS Team tests indicate that Smartphones can replace Windows Mobile hardware and software
- Generic Ad-Hoc field capability will be possible
- System will work with no cell coverage
- System will work with no data plan
- National Mobile GIS Team is now developing the missing Crucial Field Data Collection Tools
- National Mobile GIS Team is now developing the tools to work with related tables
- National Mobile GIS Team is now developing the missing EGIS data management tools



What are the EGIS Challenges?

1. Some like it Text Based
 - Transition from legacy text-based systems to inherently geospatial BLM EGIS system
2. Some like it Open Source
 - Transition public dissemination to open source through the Geospatial Publication Module
3. Some like it Smart Phone
 - Transition from ArcPad to smartphones and tablets



Focus Of This Talk

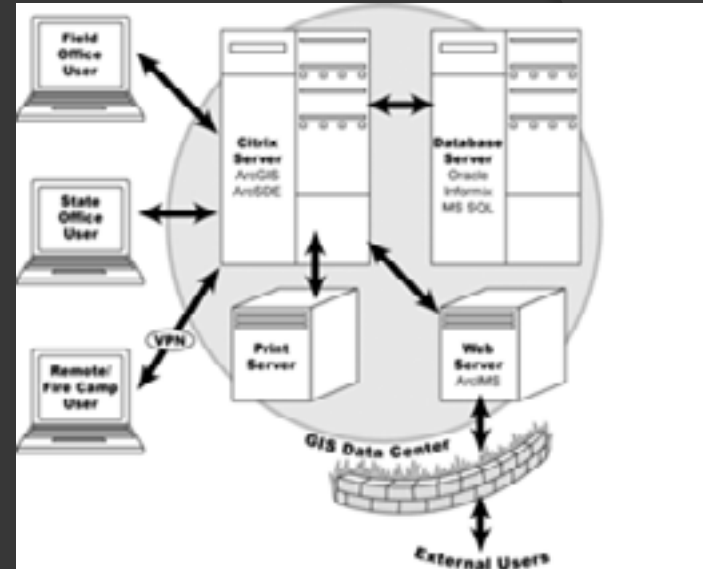
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The 8 ecosystems of landscape management: forest, grass land, shrub land, desert, tundra, inland waters, coastal and marine.

Quandary!

- ž Some like it ESRI
 - Some like it Open
 - Use Open for Publication
- ž Some like it GIS
 - Some like it Text-based
 - Transition to GIS
- ž Some like it Windows Mobile
 - Some like it Smart Phone
 - Transition to Smart Phone



Summary

- ž The BLM has an operating EGIS system
 - Legacy systems are transitioning to EGIS



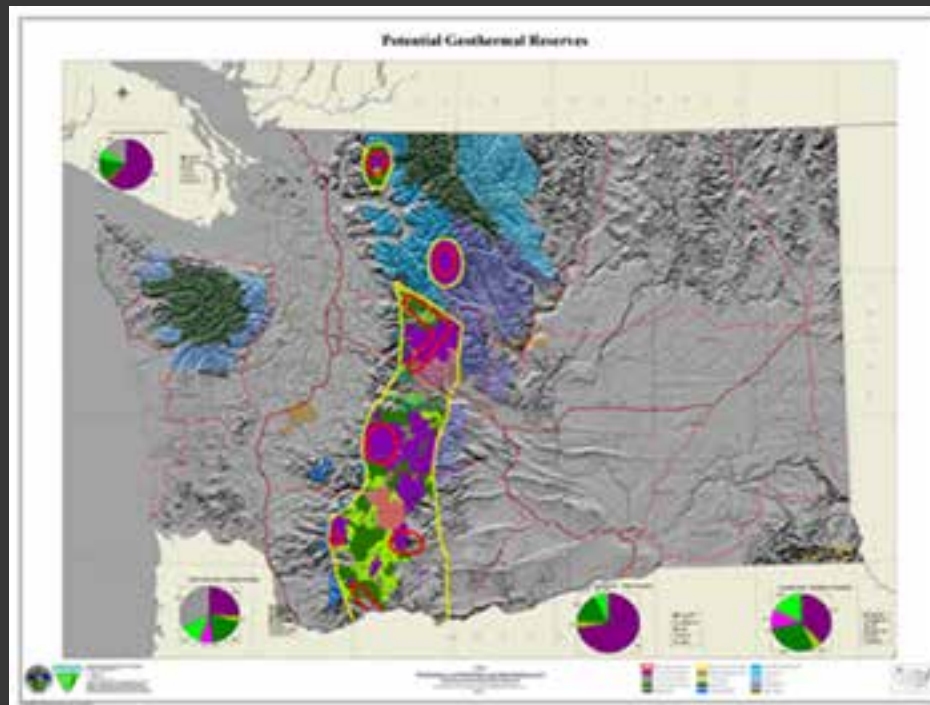
Summary

- ž EGIS is used to make landscape decisions in the United States
 - BLM EGIS will publish Open Source data



Summary

- ž Mobile EGIS is the foundation of enterprise decisions
 - Transition to Smartphones is underway



Summary

- ž Decisions based on EGIS have cultural and physical impacts for decades



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*All statements are my opinion and
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