Intelligent Transportation Systems in National Parks & DOI Public Lands

Michael Clark
David Jackson

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**John A. Volpe National Transportation Systems Center
Research and Innovative Technology Administration
U.S. Department of Transportation**

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Presentation Overview

1. Report Purpose and Procedure

2. Report Findings

3. Potential Action Items

Public lands units involve intelligent transportation systems (ITS) to:

- Help visitors make travel plans

- Facilitate visitor use of alternative transportation systems

- Alleviate entrance station and parking congestion

- Alert visitors to traffic situations and incidents

- Monitor and manage park traffic and transit operations

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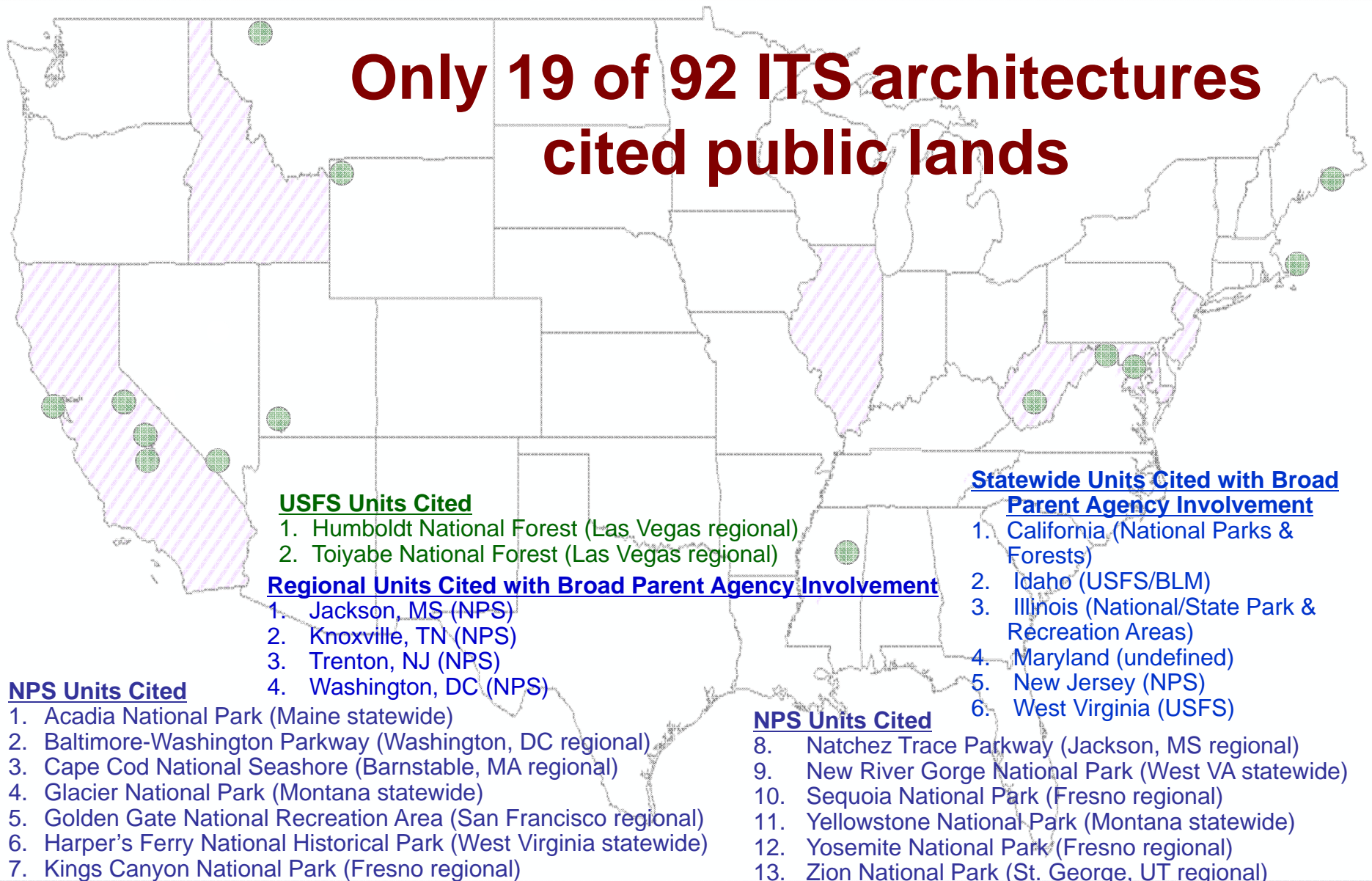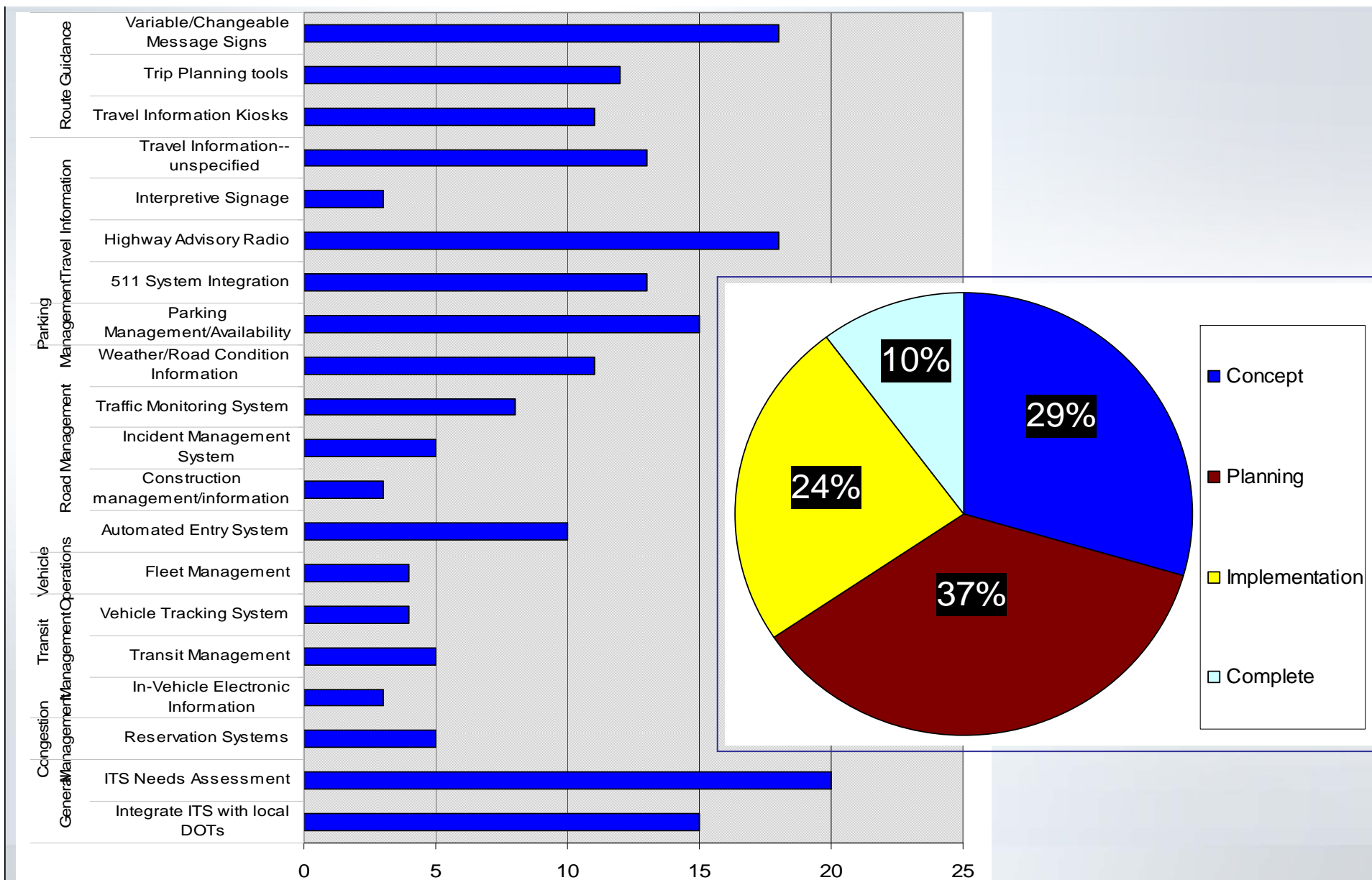**Research and Innovative Technology Administration**

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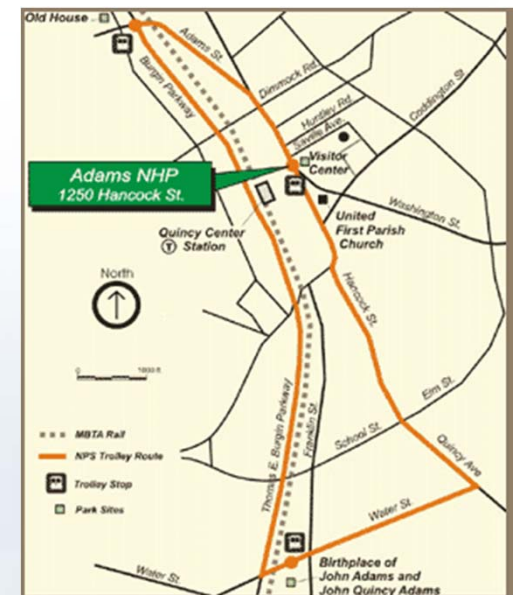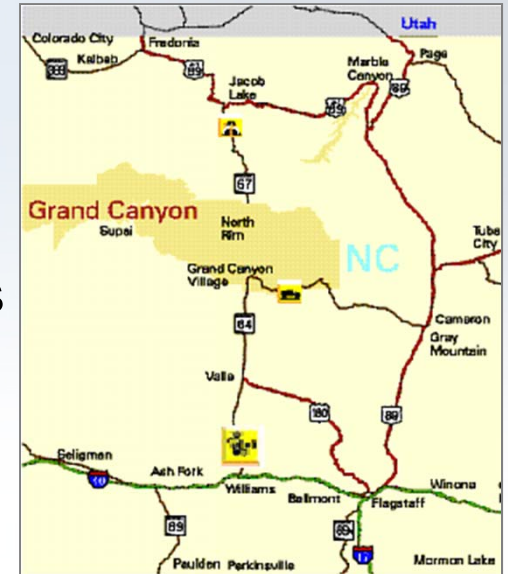
Report Purpose

- Update 2005 inventory of ITS deployments on public lands

- Reviewed ITS architectures and other related material

- Identify costs & benefits of ITS to public land units

  – Interview PL Units with ITS involvement

Only 19 of 92 ITS architectures cited public lands

USFS Units Cited
1. Humboldt National Forest (Las Vegas regional)
2. Toiyabe National Forest (Las Vegas regional)

Regional Units Cited with Broad Parent Agency Involvement
1. Jackson, MS (NPS)
2. Knoxville, TN (NPS)
3. Trenton, NJ (NPS)
4. Washington, DC (NPS)

NPS Units Cited
1. Acadia National Park (Maine statewide)
2. Baltimore-Washington Parkway (Washington, DC regional)
3. Cape Cod National Seashore (Barnstable, MA regional)
4. Glacier National Park (Montana statewide)
5. Golden Gate National Recreation Area (San Francisco regional)
6. Harper's Ferry National Historical Park (West Virginia statewide)
7. Kings Canyon National Park (Fresno regional)

Statewide Units Cited with Broad Parent Agency Involvement
1. California (National Parks & Forests)
2. Idaho (USFS/BLM)
3. Illinois (National/State Park & Recreation Areas)
4. Maryland (undefined)
5. New Jersey (NPS)
6. West Virginia (USFS)

NPS Units Cited
8. Natchez Trace Parkway (Jackson, MS regional)
9. New River Gorge National Park (West VA statewide)
10. Sequoia National Park (Fresno regional)
11. Yellowstone National Park (Montana statewide)
12. Yosemite National Park (Fresno regional)
13. Zion National Park (St. George, UT regional)

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Park Units Interviewed

1. Gateway NRA
2. Acadia NP
3. Shenandoah NP
4. Great Smoky Mountains NP
5. Grand Teton NP
6. Golden Gate NRA
7. Yosemite NP

8. Arches NP
9. Humboldt-Toiyabe NF
10. Mount Rainier NP
11. Grand Canyon NP
12. Zion NP
13. Yellowstone NP
14. Bryce Canyon NP

- Conversations carried out throughout fall 2010

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Overview of Current Status

- Little expansion of ITS technologies in recent years
  - Systems with greatest utility continue to grow
  - Costs of more complex systems outweigh benefits
  - Units desire technologies which are easier to manage
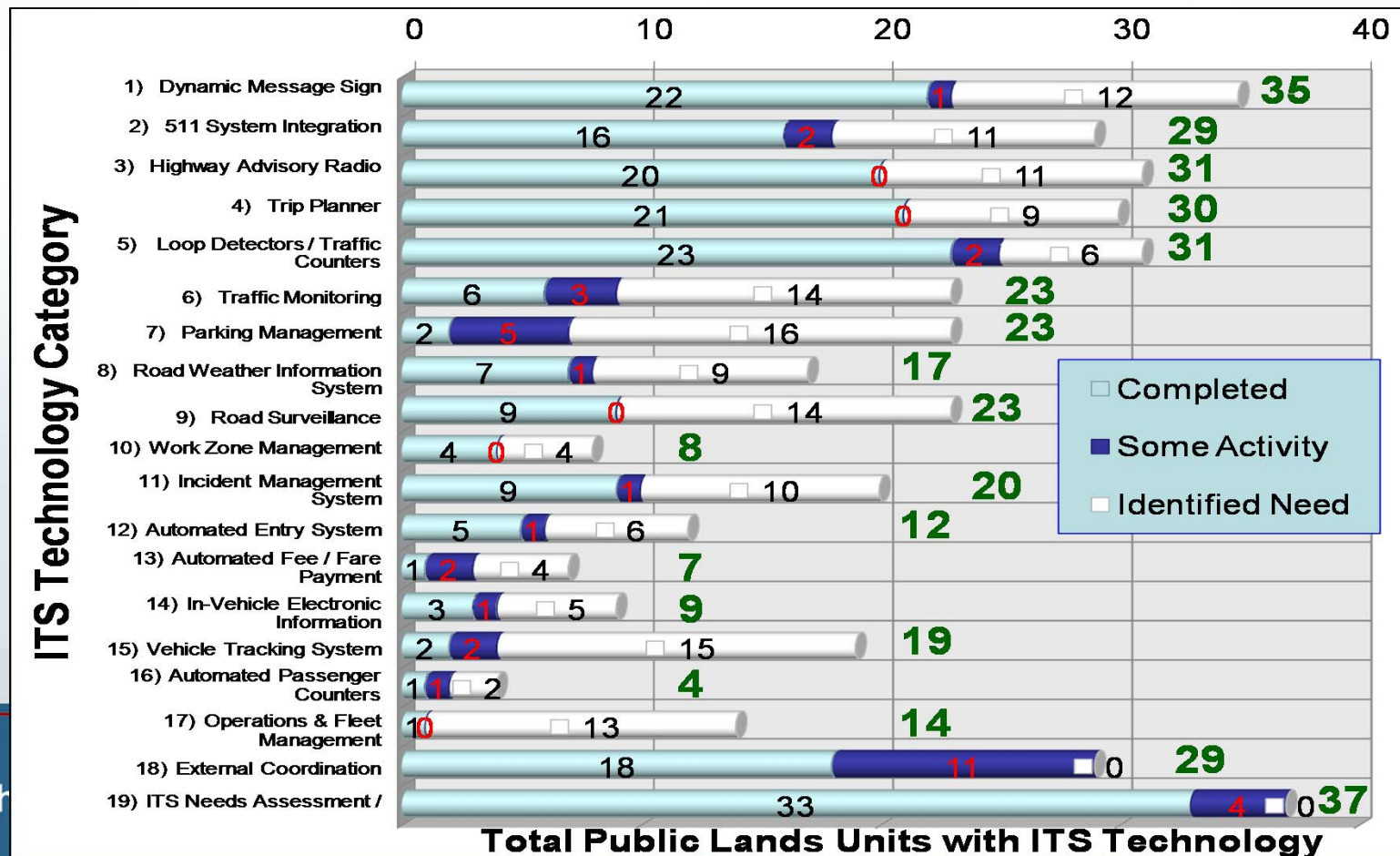
Approaches to ITS Among Units

- Small-scale solutions offer most utility to units
  - Straightforward and cost-effective
  - Examples include dynamic message signs (DMS) and traffic counters
- Outside contractors can assist with deployment and ongoing operation

Approaches to ITS Among Units

- Systems engineering processes ensure projects are carried forward most efficiently
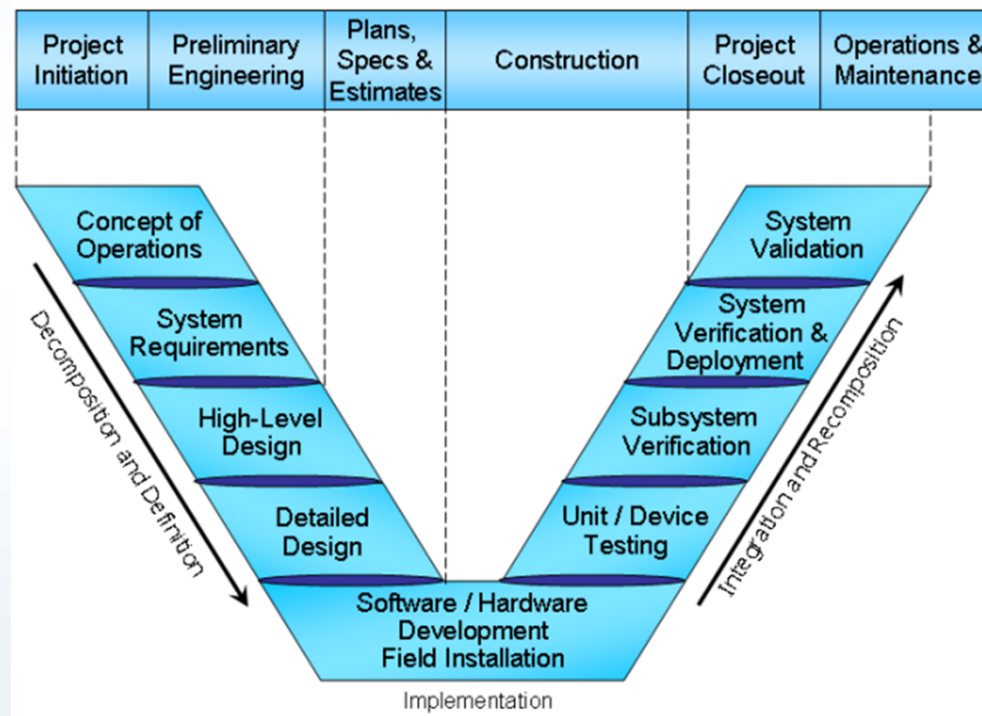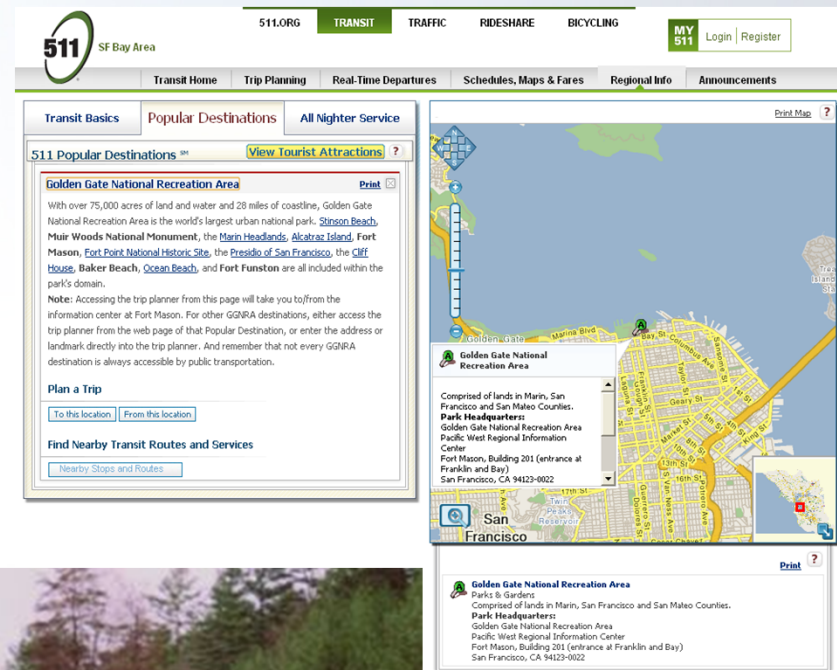
Approaches to ITS Among Units

- Transportation issues may be tolerable when ITS interventions are costly and complex

Technologies with Most Utility

- Dynamic message signs

- Highway advisory radio

- 511 traveler information systems

- Traffic counters and loop detectors

- Social media applications

Social Media Applications

- Permit units to share interpretive and traveler-related information to visitors at off-site locations
  - Traffic delays
  - Detours
  - Alternative transportation options
  - Parking information
- Valuable if information needed on short notice
  - Mobile devices increasingly used for social networking
- Staff and expertise issues among units
  - Some lean on friends groups for social media presence

Social Media Applications

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Social Media Applications

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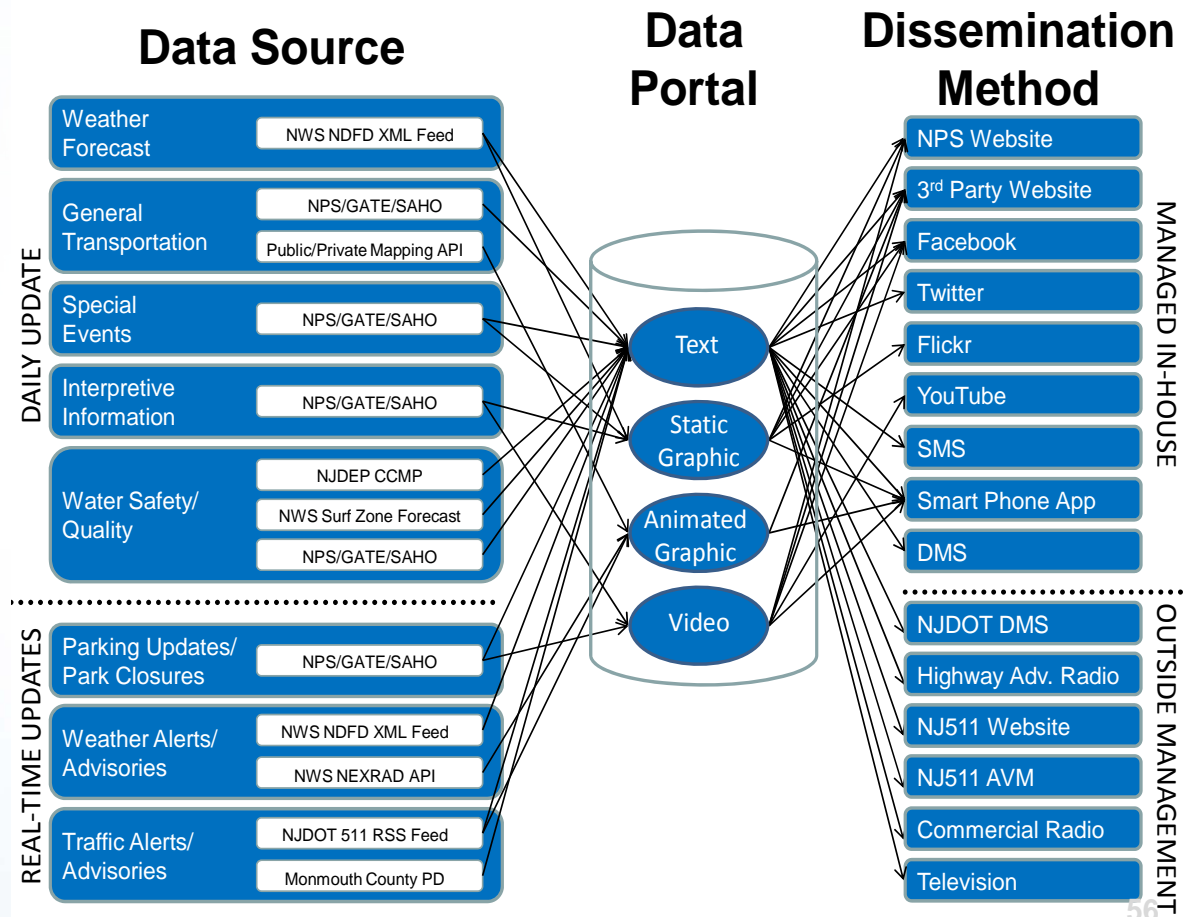Research and Innovative Technology
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Common Issues of ITS Technologies

- Power and connectivity issues plague successful operation of many ITS technologies
  - Lack of infrastructure due to rural setting of many units
  - Poor climate conditions
  - Rugged terrain

- Many technologies require manual input from staff

Common Issues of ITS Technologies

- Advanced traveler information systems (ATIS) offer opportunities to efficiently distribute time-sensitive information without tying up staff

Data Source

DAILY UPDATE

Weather Forecast	NWS NDFD XML Feed
General Transportation	NPS/GATE/SAHO
	Public/Private Mapping API
Special Events	NPS/GATE/SAHO
Interpretive Information	NPS/GATE/SAHO
Water Safety/ Quality	NJDEP CCMP
	NWS Surf Zone Forecast
	NPS/GATE/SAHO

REAL-TIME UPDATES

Parking Updates/ Park Closures	NPS/GATE/SAHO
Weather Alerts/ Advisories	NWS NDFD XML Feed
	NWS NEXRAD API
Traffic Alerts/ Advisories	NJDOT 511 RSS Feed
	Monmouth County PD

Data Portal

- Text
- Static Graphic
- Animated Graphic
- Video

Dissemination Method

MANAGED IN-HOUSE

- NPS Website
- 3rd Party Website
- Facebook
- Twitter
- Flickr
- YouTube
- SMS
- Smart Phone App
- DMS

OUTSIDE MANAGEMENT

- NJDOT DMS
- Highway Adv. Radio
- NJ511 Website
- NJ511 AVM
- Commercial Radio
- Television

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Potential Action Items

- ITS strategic plan to enable
  - Systematic planning
  - Procurements
  - Implementation
  - Operation
  - Maintenance
  - Evaluation

- Would allow FLMAs to focus on those technologies that produce the greatest results for individual units and regions

Potential Action Items

- Efforts needed to improve procurement processes
  - Coordinate multi-device procurement
  - Utilizing GSA-approved product lists

- Offer more training opportunities to public lands staff
  - Professional capacity building
  - Peer exchanges

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