



The GDOT ITS Strategic Deployment Plan

Presented to:

ITS-GA

May 29, 2008

Agenda

- **Why** was the SDP developed?
- **How** was the SDP developed?
- **What** is the SDP?
- **How** will the SDP be used?

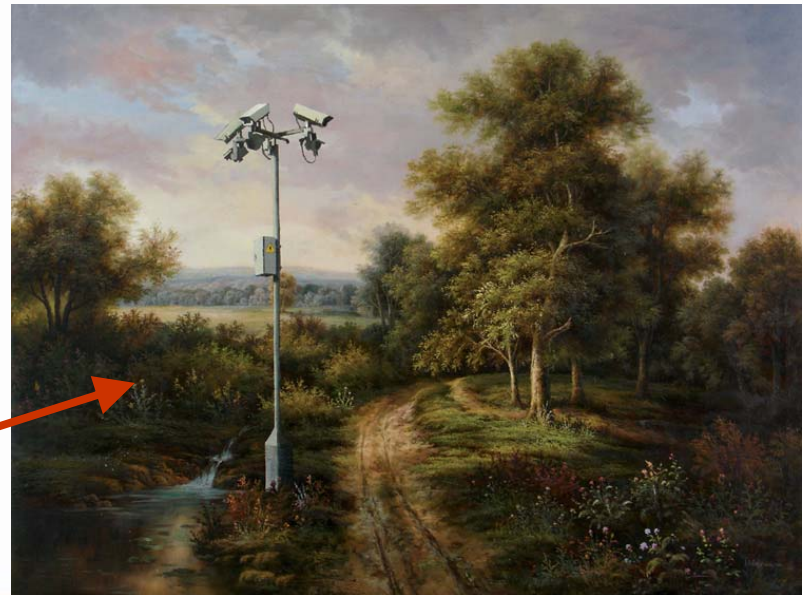
Why

- ITS was typically not included in early concept or budget for a project
- Adding ITS to a project resulted in:
 - Budget over-runs
 - Delays in project schedule
 - Or ITS just didn't get added

Why

- GDOT began adding ITS consideration during project Concept
- Level of ITS deployment was inconsistent
 - Depended on the engineers involved
 - Take what we could get

**Inappropriate ITS
Deployment**



**GDOT needed a methodology to
consistently have ITS included in projects
at the appropriate level of deployment.**

Strategic Deployment Plan (SDP)

- Technology neutral
- Services based
 - Surveillance
 - Dissemination, etc.
- Statewide
- Guidance

Stakeholder Outreach

- 3 weeks (Oct/Nov 2007)
- 19 Meetings
- 21 Agencies
- 63 People

Group	People
GDOT	25
City/County	20
Consultants	10
Federal Highway	1
Airport	3
Other State Agency	4

Question 1: How much (and what kind) of ITS is appropriate?

Question 2: ***How do you know?***

Think of ALL ITS

- “Typical” ITS services
 - Surveillance (CCTV Cameras)
 - Detection (Video, Radar, Microwave)
 - Control (Signals)
 - Dissemination (DMS, HAR, www, 511)
- Don’t Forget
 - Work Zones
 - Enforcement
 - Variable speed limits
 - Crash prevention and safety

**More of
the Same**



Describing a Road

- Functional Classification
- Rural/Urban
- Traffic Volumes
- Evacuation Route
- Other

Different Roads = Different Needs?



Urban Principal Arterial



Urban Collector Street



Urban Local Street



Urban Minor Arterial



Rural Major Collector



Rural Local Road

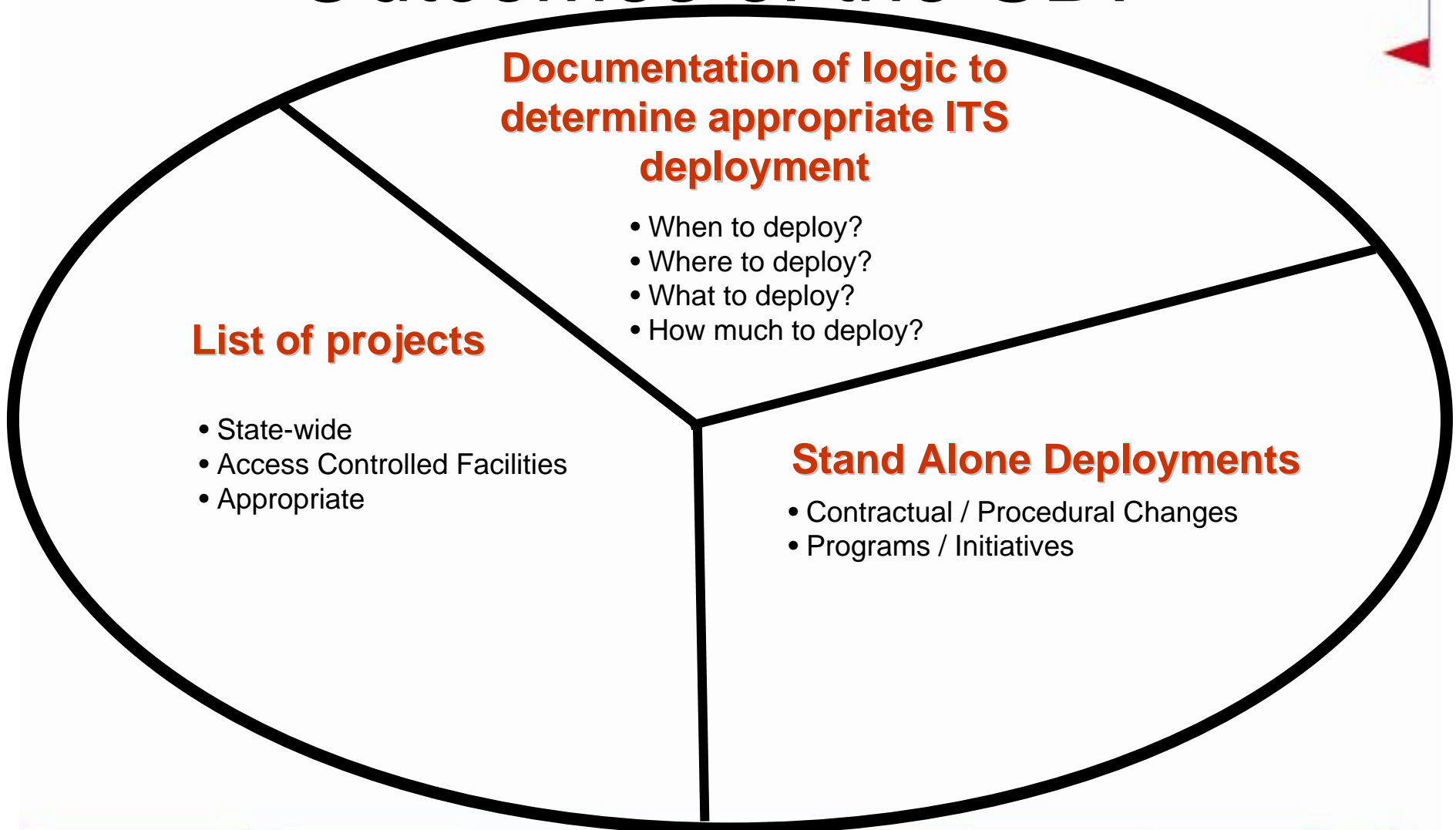


Rural Principal Arterial



Rural Minor Collector

Outcomes of the SDP



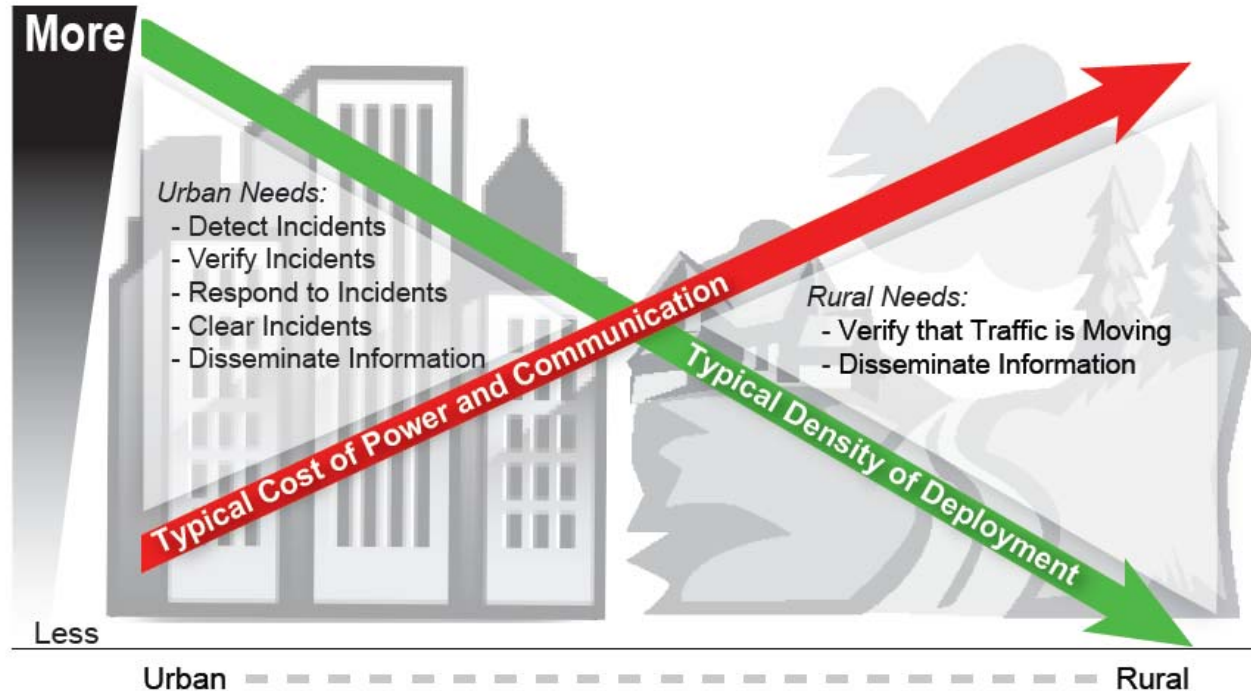
SDP Logic – ITS Deployment

- Freeways
 - 3 levels defined
- Surface Street
 - 4 levels defined

Engineering
Judgment
Required!

Category	Freeway	Surface
Surveillance	✓	✓
Detection	✓	✓
Dissemination	✓	✓
Communications	✓	✓
Control		✓

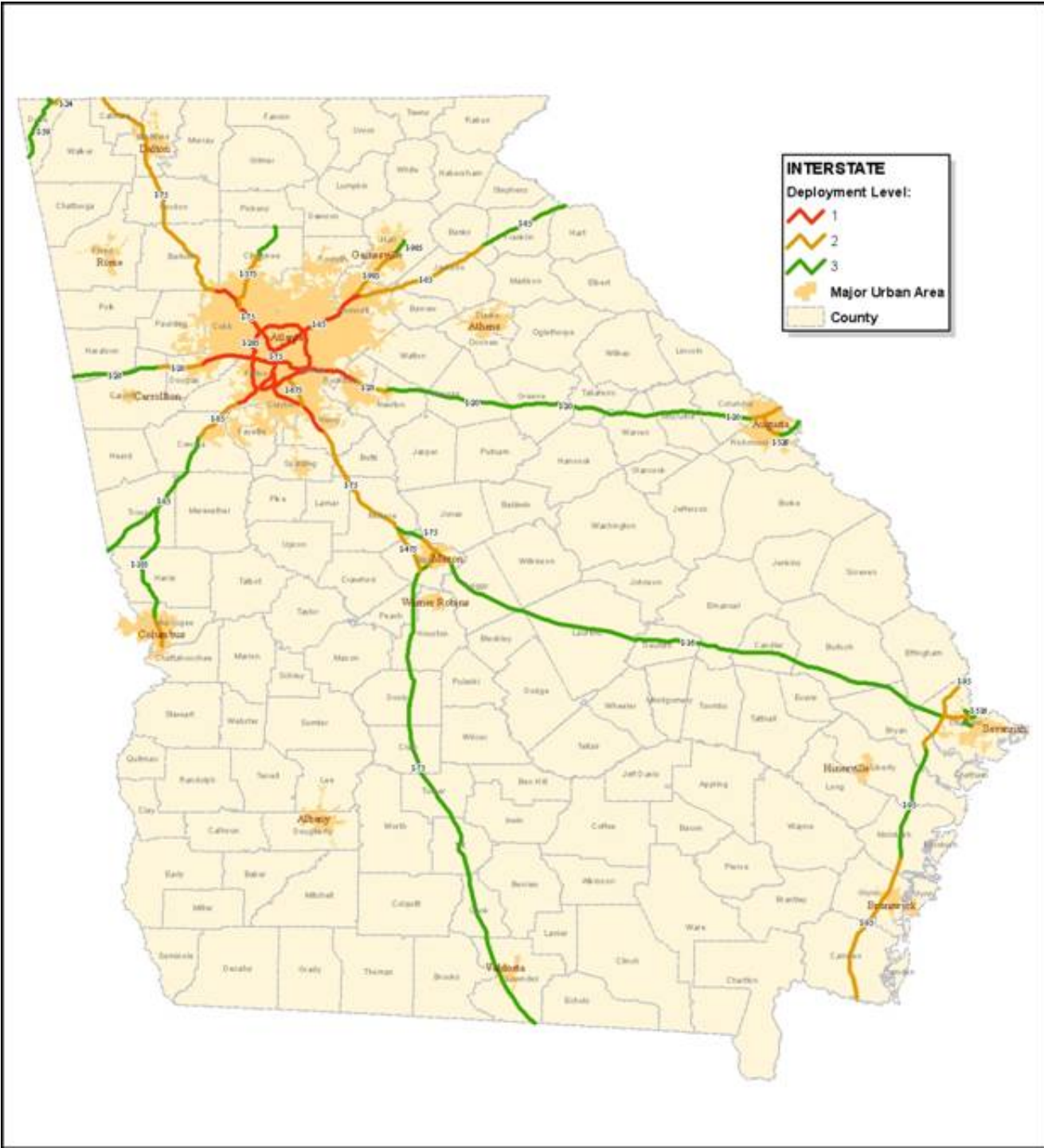
Freeway Deployment



Freeway Deployment

	Freeways	
	Deployment Level	Refer to Section
Design Year AADT > 100,000	1	3.1.1
50,000 < Design Year AADT ≤ 100,000	2	3.1.2
Design Year AADT ≤ 50,000	3	3.1.3

Capability	Purpose	Freeway - Level 1	Freeway - Level 2	Freeway - Level 3	
Surveillance	Incident Management	At all interchanges	At all interchanges where the cost of power and communication is not extreme.	At all interchanges where the cost of power and communication is not high	
		Along mainline freeway to provide near-continuous coverage of the roadway	At midpoint between interchanges spaced more than 6 miles apart where power and communications costs are not extreme	At midpoint between interchanges spaced more than 10 miles apart where power and communications costs are not high	
		N/A	Provide surveillance to view roadway sections where local knowledge or experience indicates a need for surveillance.		
	Support Information Dissemination	At all CMS sites - Located to view CMS message			
Detection	Incident Detection and Information Dissemination	Collect data at all interchanges	Collect data at all freeway interchanges where v/c ratios exceed 0.85 during peak hours	N/A	
		N/A	Collect data at all interchanges where power and communications costs are not extreme	Collect data at all interchanges where the cost of power and communication is not high	
		Collect data continuously along the roadway with a maximum spacing of data collection points of 0.5 - 1.0 mile	Collect data at midpoint between interchanges spaced more than 6 miles apart where power and communications costs are not extreme	Collect data at midpoint between interchanges spaced more than 10 miles apart where power and communications costs are not high	
	Support ramp metering	Collect data along all freeway mainlines where ramp metering is installed	N/A		
Dissemination	Local Dissemination	Provide local dissemination 2 miles in advance of all freeway-to-freeway interchanges	Provide local dissemination 2 miles in advance of freeway-to-freeway major interchanges		
		Provide local dissemination 2 miles in advance of freeway-to-major arterial interchanges	N/A		
		Provide local information dissemination if appropriate to support special event generators (stadium, convention center, etc.)			
		Provide local information dissemination in advance of major diversion routes to support large-scale evacuations as identified in a Statewide Emergency Information Dissemination Plan			
	Local Broadcast	Located to support other ITS deployments that require local broadcast information, such as RWIS and visibility warning systems			
		Located as identified in a Statewide Emergency Information Dissemination Plan			
Wide Area Broadcast	Provide all available data to traffic information dissemination networks such as 511				



Surface Streets – ITS Needs

Functional Classification ?

Number of Lanes?

Rural / Urban?

Volumes?

Surface Streets – ITS Needs

- Primary
 - Operations and maintenance of traffic signals and signal systems
- Secondary
 - Traffic operations at special event locations
 - Evacuations
 - Traffic Information (collect and disseminate)

Surface Streets – ITS Needs

Spacing and Operations of Traffic Signals

Surface Street Deployment

$$\text{Coupling Index (CI)} = \frac{ADT / (\frac{1}{2}L)}{D} = \frac{ADT}{D(\frac{1}{2}L)}$$

Where:

ADT = Average Daily Traffic on roadway section

L = Number of approach lanes carrying traffic

D = Distance between signals (feet)

Surface Street Deployment

	Surface Street	
	Deployment Level	Refer to Section
$CI_{avg} \geq 6$ or $D_{avg} \leq 2500'$ feet	1	3.2.1
$3 < CI_{avg} < 6$ or $2500' < D_{avg} < 5000'$	2	3.2.2
≤ 3 or $D_{avg} \geq 5000'$	3	3.2.3
$CI_{avg} = \text{not applicable}$ or No signals, or isolated signals	4	3.2.4

D_{avg} = Average Distance Between Signals (feet)

ITS Deployment Levels on Surface Streets *

Capability	Purpose	Surface Street - Level 1	Surface Street - Level 2	Surface Street - Level 3	Surface Street - Level 4
Surveillance	Observe traffic and signal operations	Provide surveillance to view traffic operations at all signalized intersections in coordinated signal systems			
		Provide surveillance of signalized intersections where v/c ratios exceed 0.85 during peak hours	Provide surveillance of signalized intersections where v/c ratios exceed 0.90 during peak hours	Provide surveillance of signalized intersections where v/c ratios exceed 1.0 during peak hours	
		Provide surveillance to view most of the roadway with a minimum of "blind" spots	Surveillance should cover major intersections and provide good overviews of the major roadway	Surveillance should cover major intersections or roadway sections where local knowledge or experience indicates a need for surveillance	
	Support signal maintenance and trouble shooting	Provide surveillance at signalized intersections located more than 1 hour of travel from maintenance facility	Provide surveillance at signalized intersections located more than 2 hours of travel from maintenance facility	Provide surveillance at signalized intersections located more than 3 hours of travel from maintenance facility.	
	Support Information Dissemination	At all CMS sites - Located to view CMS message			
Detection	Collect vehicle speed data for information dissemination	Measure traffic speed midway between major intersections and at other locations where ITS devices are located to achieve a maximum spacing of 2 miles		N/A	
Control	Efficient traffic operation	Operate traffic signals in coordinated systems	Operate signals spaced within 2,500 feet of one another in a coordinated system		N/A
		N/A	For signals spaced less than 5,000 feet apart, consider operating signals with a CI** between 2 and 6 as a coordinated system		N/A
Dissemination	Local Dissemination	In advance of major freeway interchanges where alternate routes exist and data is available about the conditions on the freeway	In advance of freeway interchanges where surface street v/c ratios exceed 0.85 and alternate routes exist and data is available about the conditions on the freeway		N/A
		Provide local information dissemination if appropriate to support special event generators (stadium, convention center, etc.)			
		In advance of major diversion routes to support large-scale evacuations as identified in a Statewide Emergency Information Dissemination Plan			
	Local Broadcast	Located to support other ITS deployments that require local broadcast information, such as RWIS and visibility warning systems.			
		Located as identified in a Statewide Emergency Information Dissemination Plan			
Wide Area Broadcast	Provide all available data to traffic information dissemination networks such as 511				

List of Projects

- All access controlled facilities
 - Provided to GDOT
 - Being investigated for addition of ITS components

Stand Alone Deployments

- Contractual / Procedural Changes
 - Maintenance of traffic signal operations during construction
 - Contractual incentives for towing and clearance
 - ITS in work zones

Stand Alone Deployments

- Programs / Initiatives
 - Develop ITS costs and benefits
 - Develop information dissemination master plan for evacuations
 - Crash prevention and safety systems
 - Spot deployments
 - Support other deployments

Using the SDP

- Project Programming
 - ITS costs included in project from the beginning
- Project Concept
 - Define needs and ITS services to satisfy the needs
- Project Design
 - Appropriate ITS devices included in project at appropriate density
- Identify ITS-only Projects

Using the SDP

Use of the SDP will be mandated
in the next version of GDOT Plan
Development Process

Impact of the SDP



ITS is
“mainstreamed”
in Georgia

Thank You

