

Transit ITS Strategic Planning in Virginia

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2009 VTA Conference

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Project Need

- ❑ **Current** - Ad-hoc ITS deployment
 - Independent systems
 - Varying technology standards
 - Difficulties in data sharing
 - Limited guidance on project selection
 - Barriers to deployment

- ❑ **Future** – Results from Transit ITS Strategic Plan
 - Improved program coordination
 - Greater return from ongoing and new deployments
 - Cost savings
 - Phased technology roll-outs that allow for optimization of investments and returns
 - Greater consistency in the levels and types of service provided across operators

DRPT Mission: *Improve the mobility of people and goods while expanding transportation choices in the Commonwealth*

Project Overview

- ❑ Establish a coordinated process for transit ITS planning and deployment
- ❑ DRPT and AECOM / IBI Group team leading effort to develop transit ITS strategic plan:
 - Statewide Transit Systems Inventory/Assessment
 - Technology Assessment
 - Review Statewide ITS Architecture Components
 - Evaluation and Deployment Strategy
 - Virginia Transit ITS Strategic Plan

Technology Assessment

Inventory Transit ITS – Market Trends

Central Systems

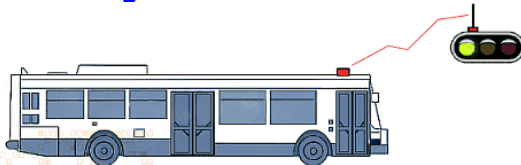
- Communications Systems
- Computer Aided Dispatching (CAD) / Automatic Vehicle Location (AVL)
- Scheduling & Workforce Management Software
- Maintenance Management Systems (MMS)



In-Vehicle Systems

- Mobile Data Terminals
- Automatic Stop Announcements (ASA)
- Automatic Passenger Counters

Transit Signal Priority



Automated Fare Collection

Security Systems

- On-Board Cameras
- In-Station/Stop Cameras
- In-Station/Stop Emergency Alarms
- Vehicle Alarms



Advanced Traveler Information

- Next Bus Arrival Displays/Annunciation at Stations
- Real-time Information Provided Online
- Real-time Information Available through Personal Communications Devices
- Interactive Voice Response (IVR) System
- Transit Trip Planner



Scenarios – Technology Bundles

- Industry typical scenarios for technology deployments by service type and size

		On-Board Equipment					Central System Equipment							Wayside Equipment				
		CAD/AVL	APC	AVA	TSP	AFC	On-Board Cam	IVR	RT Web	Trip Plan	Info Mobile Device	Sched & Run Cut	Maint Mgmt	Driver Mgmt	Yard Mgmt	Info Displ	Sec Cam	Sec Alarm Button
Fixed-Route	300+ Vehicles	●	●	●	●	●	●	●	●	●	●	●	●	●	◐	●	●	◐
	100-300 Vehicles	●	●	●	◐	●	●	◐	◐	◐	◐	●	●	●	◐	●	●	◐
	<100 Vehicles	●	◐	●	○	◐	◐	◐	◐	○	●	◐	◐	◐	◐	○	○	○
Demand-Response	Large (50+ Vehicles)	●	-	-	-	◐	●	-	-	-	-	●	-	-	-	-	-	-
	Small (<50 Vehicles)	●	-	-	-	◐	◐	-	-	-	-	●	-	-	-	-	-	-
	Commuter Bus	●	○	◐	○	●	●	●	◐	●	◐	◐	◐	○	●	●	○	
	Passenger Rail	●	◐	●	-	◐	●	●	●	◐	●	◐	◐	○	●	●	◐	

 Essential
  Desirable
  Optional

Survey Results

□ 23 agencies responded, categorized by service type:

FIXED-ROUTE	
300+ Vehicles	WMATA
	Hampton Roads Transit
100-300 Vehicles	Fairfax County DOT (Fairfax Connector)
<100 Vehicles	AASC/Four County Transit
	Alexandria Transit Company
	Arlington Transit
	Blacksburg Transit
	Charlottesville Transit Service
	Greater Roanoke Transit Company
	Harrisonburg
	King Street Trolley
	Loudoun County Office of Transportation Services
	Potomac & Rappahannock Transportation Commission
	RADAR-UHSTS, Inc.
	Virginia Regional Transit
	Passenger Rail

DEMAND-RESPONSE	
50+ Vehicles (Large Fleet)	Arlington Transit
	Hampton Roads Transit
	JAUNT, Inc.
<50 Vehicles (Small Fleet)	WMATA
	AASC/Four County Transit
	Bay Transit
	Blacksburg Transit
	Charlottesville Transit Service
	Greater Roanoke Transit Company
	Greene County Transit, Inc.
	Harrisonburg
	Lake Area Bus
	RADAR-UHSTS, Inc.
	Rockbridge Area Transportation System
	Virginia Regional Transit
	Williamsburg Area Transit Authority
	Commuter Bus
	Potomac & Rappahannock Transportation Commission

Survey Results - SmartBus

	Currently Deployed	Not Deployed and Plan to Implement	Not Deployed and No Plan to Implement
AVL/CAD	52%	35%	13%
APC	22%	35%	43%
Black Box	9%	26%	65%
TSP	9%	35%	57%

- AVL/CAD is the most commonly deployed with varying capabilities
- Black Box and TSP are not common deployments
- ITS technology vendors vary from agency to agency



Survey Results – Electronic Payment

	Currently Deployed	Not Deployed and Plan to Implement	Not Deployed and No Plan to Implement
Registering Fareboxes	52%	13%	35%

- ❑ Common AFC vendors include GFI and Cubic
- ❑ Fare media supported include SmartCard (Metrocard), magnetic stripe, coins and bills



Survey Results – Security

	Currently Deployed	Not Deployed and Plan to Implement	Not Deployed and No Plan to Implement
Driver Camera	36%	41%	23%
On-Board Camera	39%	35%	26%
In-Station/Stop Camera	18%	32%	45%
In-Station/Stop Emergency Alarm	14%	18%	64%

- ❑ Common on-board camera vendors include Safety Vision, DriveCam and GE
- ❑ Video feeds are not usually monitored in real-time. Reviewed only when there is an incident.



Survey Results – Traveler Information

	Currently Deployed	Not Deployed and Plan to Implement	Not Deployed and No Plan to Implement
Automated Stop Announcement/ Message Sign	39%	35%	26%
Electronic Destination Sign	70%	4%	26%
Trip Planner	36%	32%	32%
Next Bus Arrival Display	18%	55%	27%
Real Time Information - On-Line	18%	55%	27%
Real Time Information - Personal Comm Device	14%	55%	32%
IVR Phone System	27%	36%	36%

- ❑ Common Electronic Destination Sign vendors include Luminator and Twin Vision
- ❑ Common Automated Stop Announcement / Sign include Digital Recorders and Twin Vision
- ❑ Multiple operators are deploying the Google Trip Planner



Survey Results – Operational

	Currently Deployed	Not Deployed and Plan to Implement	Not Deployed and No Plan to Implement
Scheduling & Run Cutting Software	52%	26%	22%
Maintenance Management System	57%	30%	13%
Driver Assignment & Workforce Management System	39%	17%	43%
Yard Management System	9%	22%	65%
Wireless LAN	26%	30%	39%
Voice Transmissions	62%	19%	19%
Data Transmissions	33%	29%	33%

- ❑ Common Scheduling and Workforce Software include HASTUS and Trapeze
- ❑ Little interest in new deployments of Yard Management Systems
- ❑ Voice and data transmissions through owned or leased commercial networks

Survey Results - General

- ❑ For those ITS technologies identified to be deployed in the future, the top 10 prioritized deployments are:

- ❑ Current state of preparedness of operators to procure, deploy and manage new ITS technologies:

Qualified staff able to support deployment activities and ready to begin now	30%
Some staff able to support deployment activities but additional expertise required	55%
Do not have staff or expertise and unable to support deployment activities now	15%

1	Automatic Vehicle Location and/or Computer Aided Dispatch Capabilities
2	Scheduling and Run Cutting Software
3	Radio Voice Transmissions
4	Maintenance Management Systems
5	Smart Card Fare Payment
6	Radio Data Transmissions
7	Automatic Passenger Counters
8	Driver Assignment and Workforce Management Systems
9	Real Time Information Available On-Line
10	Registering Farebox

Survey Results - General

- Agency opinion regarding benefits / costs of ITS technologies deployed to date:

Benefits outweigh costs	50%
Benefits and costs are even	25%
Costs outweigh benefits	25%

- Customer feedback regarding deployed ITS technologies:

Positive feedback	71%
Neutral feedback	29%
Negative feedback	0%

Evaluation Strategy

- ❑ Compare industry typical scenarios with current status
- ❑ Identify short, medium and long term projects for each operator to achieve typical deployment
- ❑ Customize with operator input
- ❑ Flexible plan to allow adjustment based on funding availability
- ❑ Identify performance measures for each technology
- ❑ Identify resource sharing opportunities

Resource Sharing

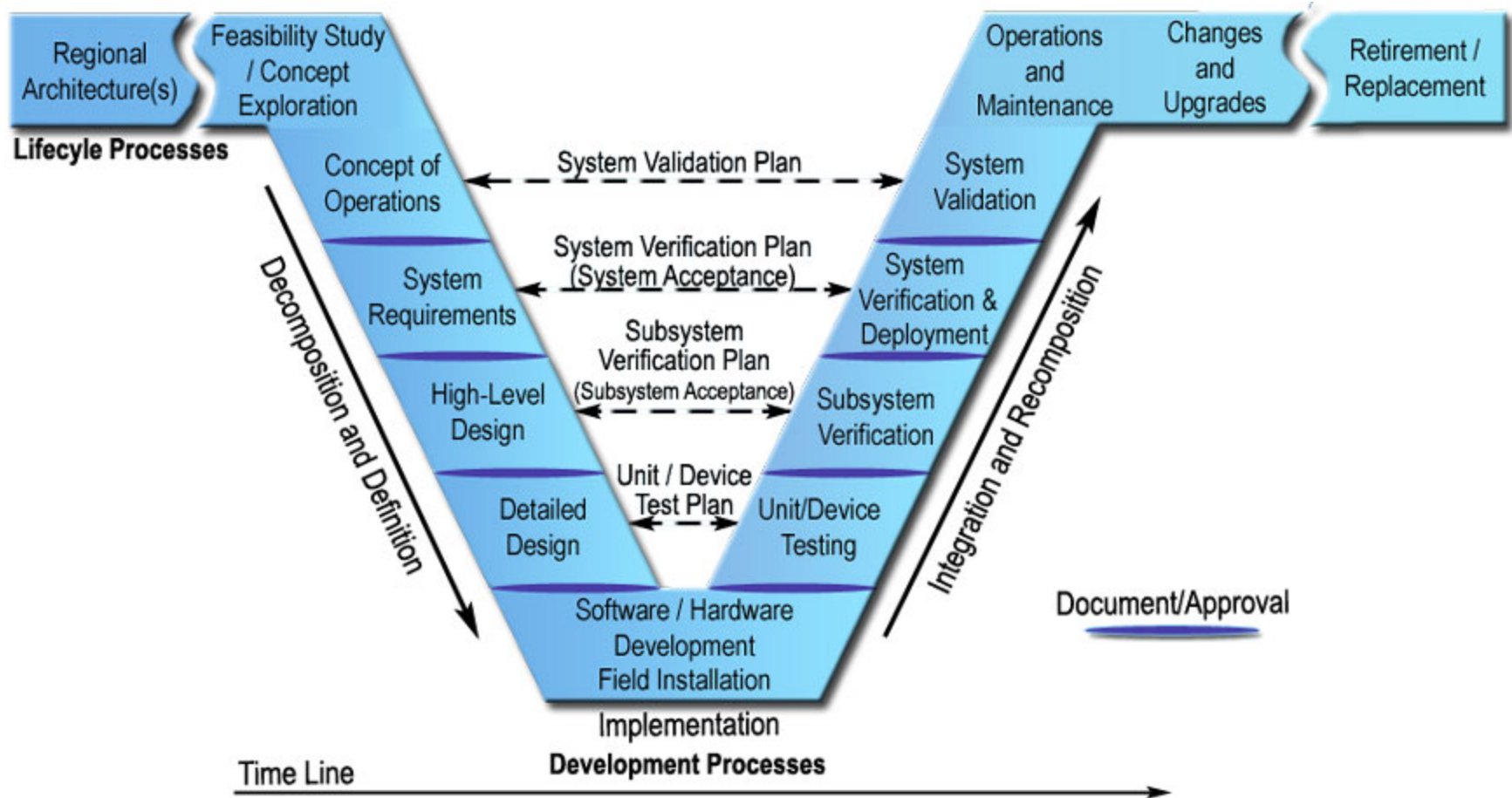
- ❑ Identify cross-cutting projects and resource sharing opportunities based on:
 - Similar project timing
 - Regional proximity
 - Technical needs

- ❑ What are the market drivers?
 - Cost savings
 - Improved program coordination
 - Enhanced interaction between operators and systems
 - Better consistency in levels and types of services provided



Scenarios – Other Considerations

❑ Systems engineering approach



Next Steps

- ❑ Upcoming workshop to present draft plan for operator feedback
 - ❑ June 10 – Richmond
 - ❑ June 11 - NOVA
- ❑ Final report – July 2009

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