

The Convergence of Intelligent Transportation and Electronic Toll Collection

**The Future of Integrated Transportation
Management Systems
A North American Viewpoint**

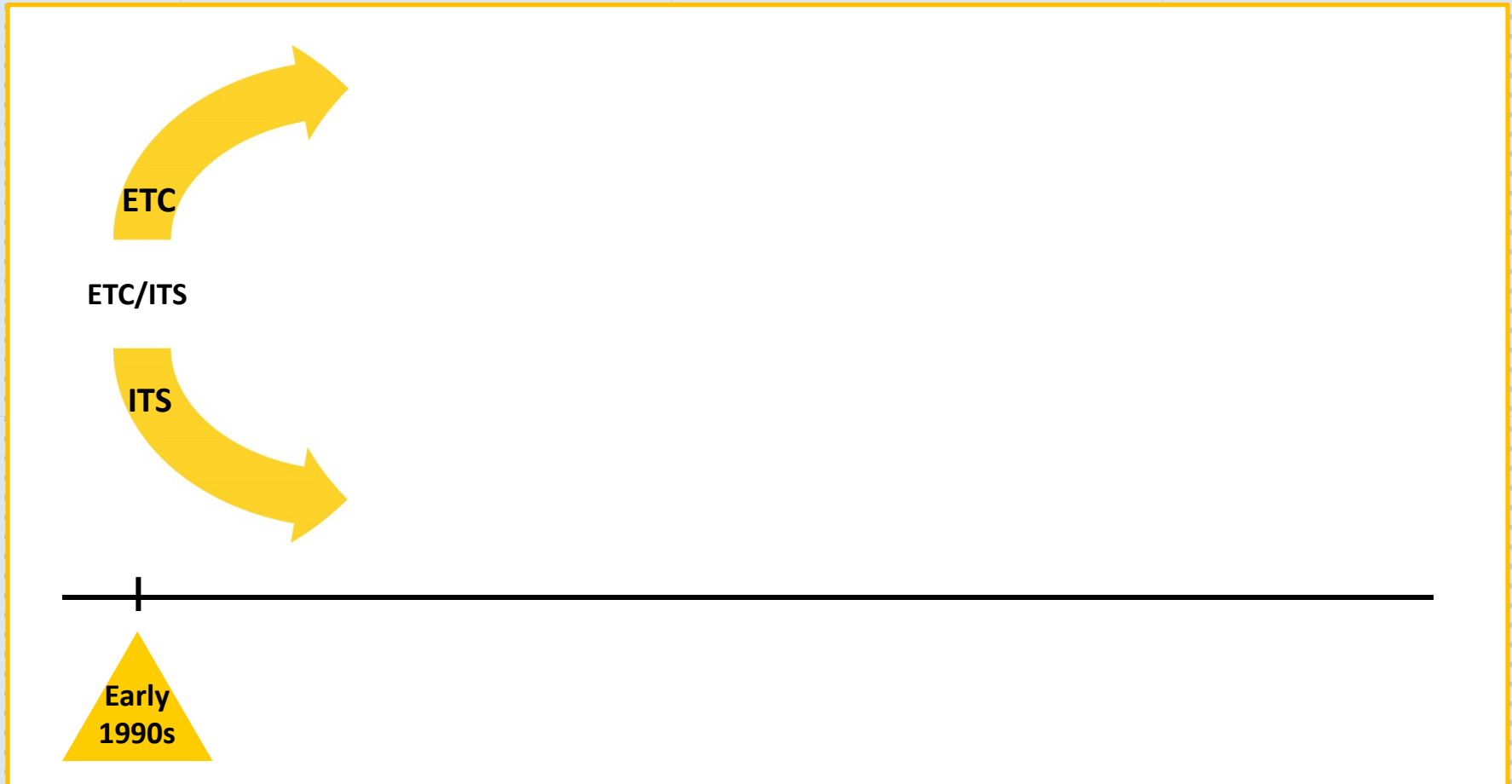
October 20, 2014

History Lesson.....

- Mobility 2000 → IVHS → ITS / Telematics
- 28 User Services
- ETC was an integral part of the ITS Program



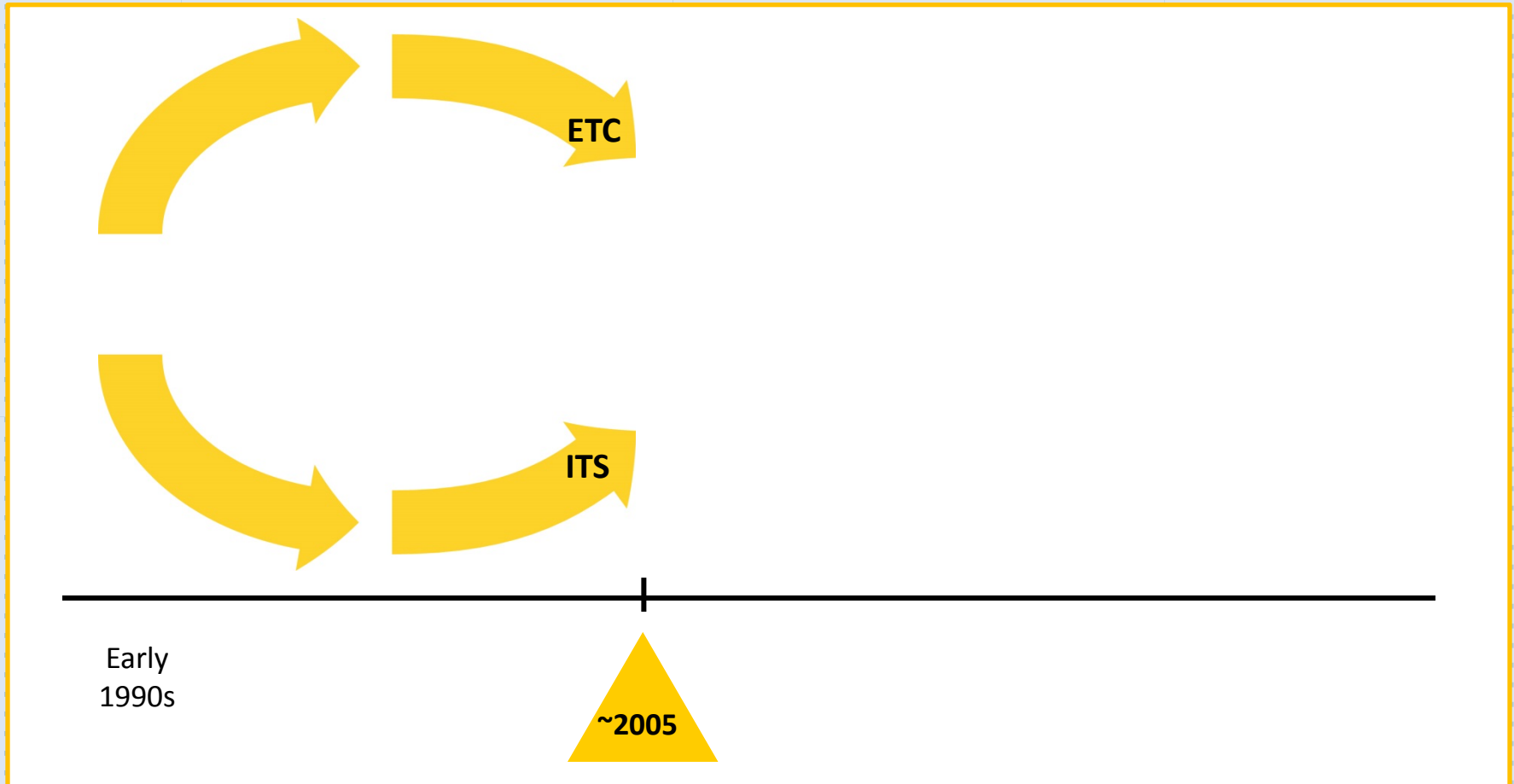
Divergence / Convergence Timeline



Why the Divergence???

- **Electronic Tolling had...**
 - Commercialized Products
 - Standardization efforts
 - Strong Return on Investment
- **ITS had....**
 - Emerging Technologies
 - Demonstration Projects
 - Need for funding sources

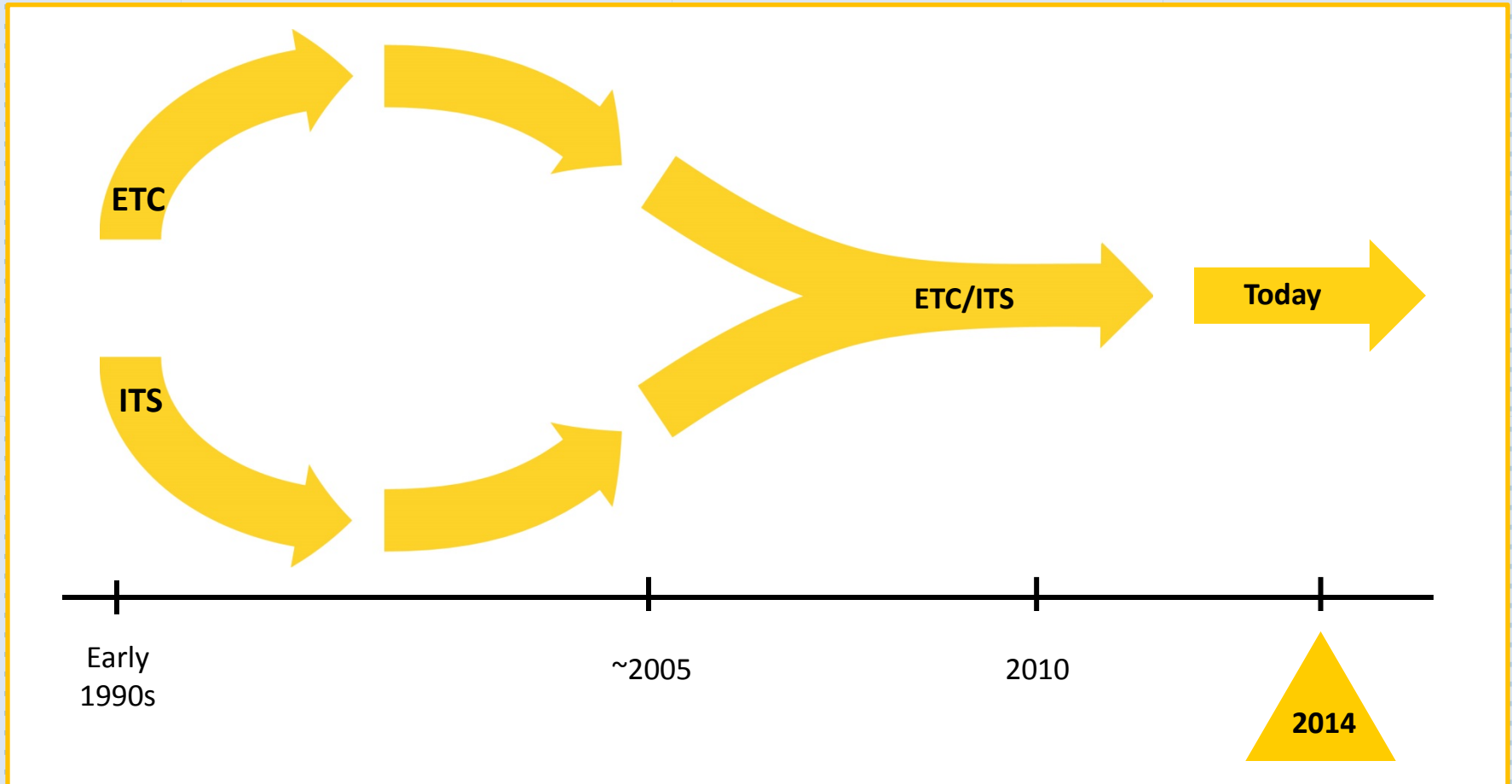
Divergence / Convergence Timeline



The Convergence has Begun

- **Electronic Tolling ...**
 - Was transitioning into 2nd or 3rd generation systems (ETC-ORT-MLFF)
 - Widely accepted and deployed
- **ITS had....**
 - Mature, standards based technology
 - Demonstrated benefits
 - Cost effective applications

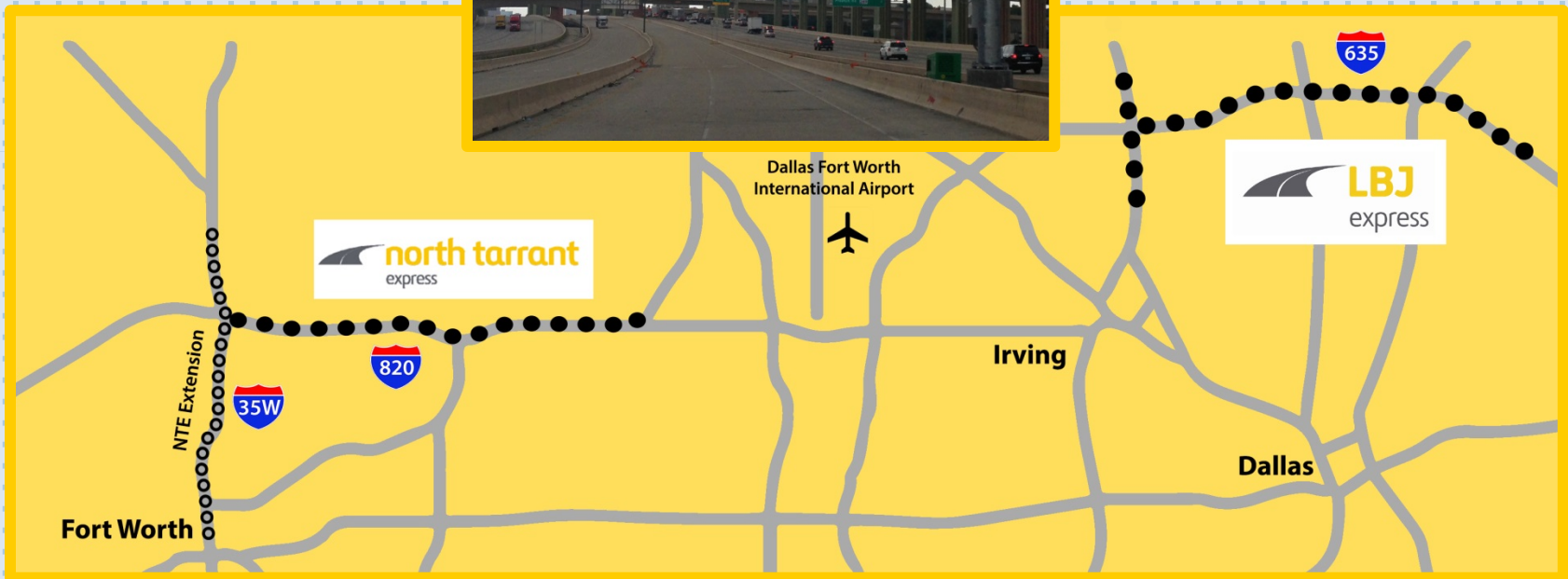
Divergence / Convergence Timeline



Today Convergence is Required

- **Managed Lanes ...**
 - Toll rates need to be set based on actual traffic conditions
- **ITS**
 - Is required to properly set toll rates
- **Operations...**
 - Traffic and revenue are managed by the same resources

LBJ / NTE Managed Lanes – Dallas, Texas



LBJ / NTE by the Numbers

North Tarrant Express.

- 2 road segments in 13.5 mile corridor
- 3 General Purpose , 2 Managed Lanes and 2 FRL per direction
- 11 Toll Zones
- Service commencement on June 2014
- Second Segment went live on October 2014

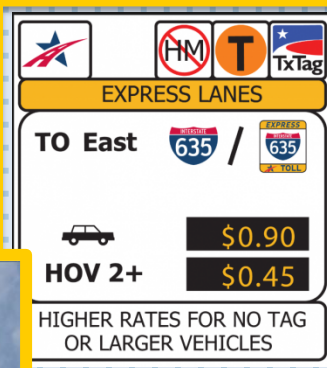


LBJ Express.

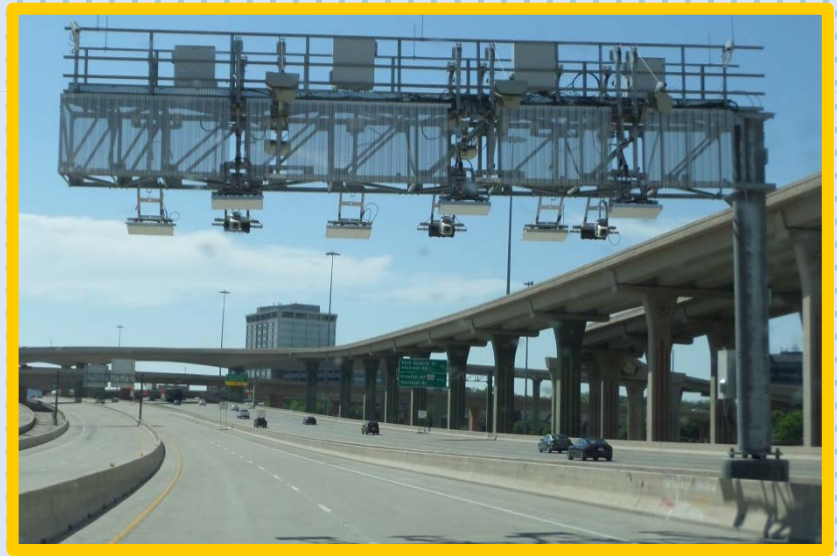
- 17 miles long corridor in 3 road segments
- 4 General Purpose , 3 Managed Lanes and 3 FRL per direction
- 18 Toll Zones
- First Segment went live on November 2013
- Second Segment went live July 2014



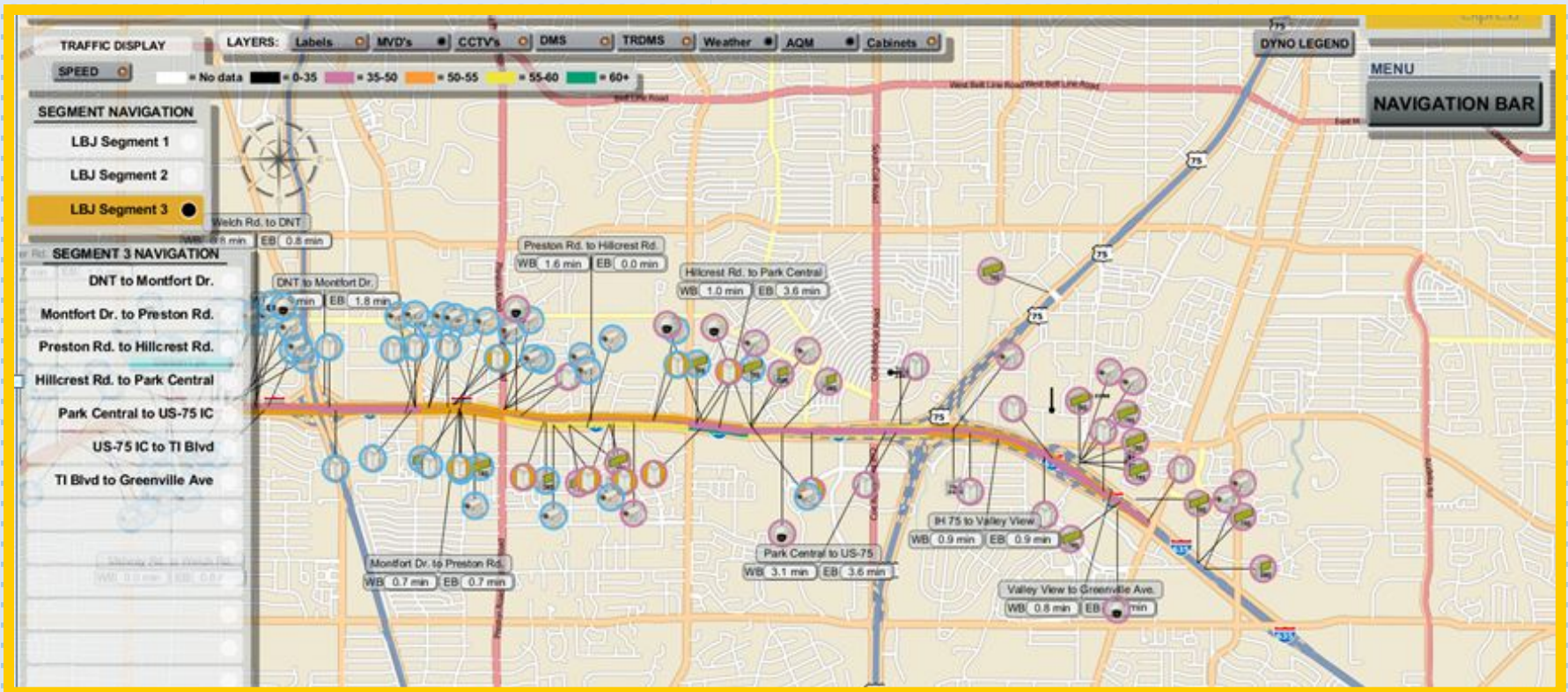
ITS & ETC Integrated Technologies



TRS & DMS Signs



Integrated Traffic Operations



Integrated Maintenance

Toll Zone Status: LBJ Zone 7T

Back To Map

System Status	
Sub-System	Status
AVDC	Degraded
AVI	Normal
VTS	Degraded
TZC	Normal
LANE I/O	Normal

Toll Zones	
Name	
LBJ Zone 5T	
LBJ Zone 6T	
LBJ Zone 7T	
LBJ Zone 8A	
LBJ Zone 8B	
LBJ Zone 9T	

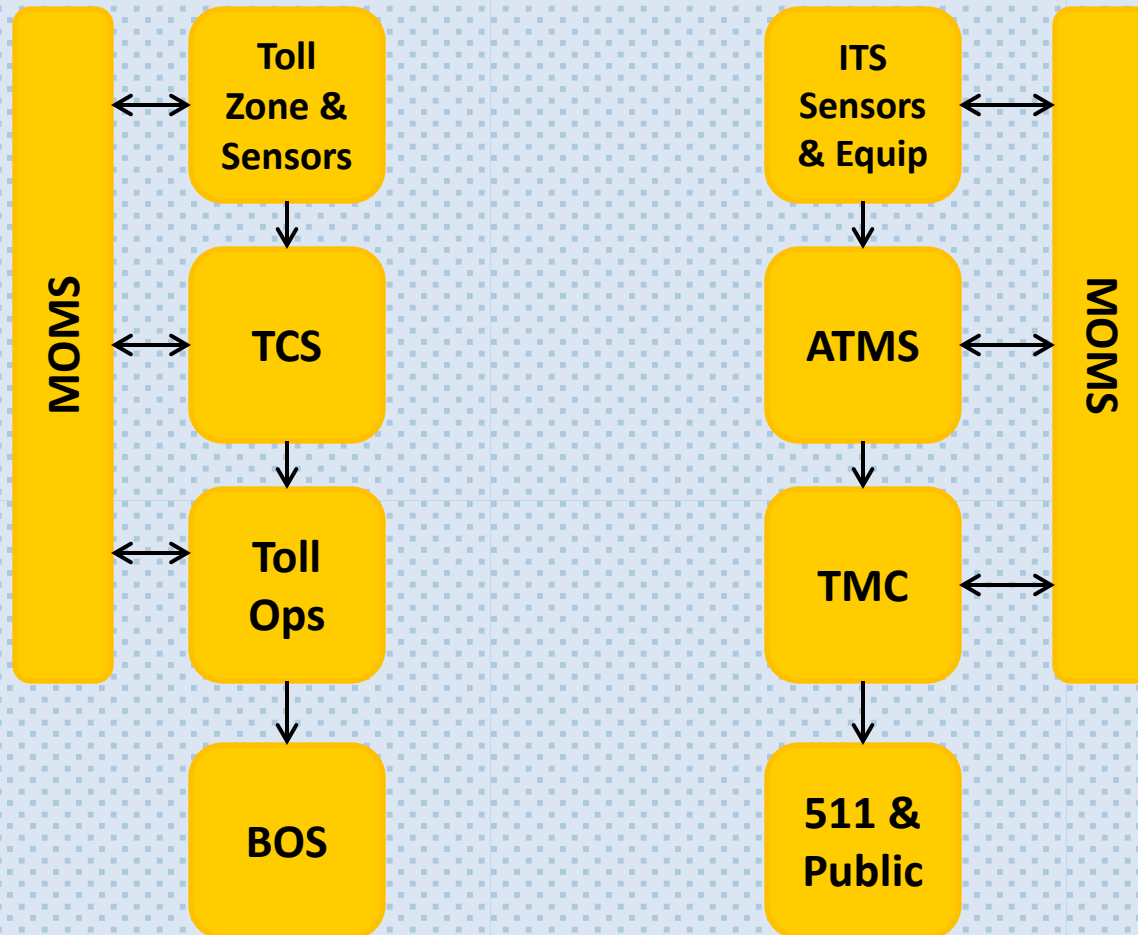
Show Legend

The diagram shows a toll zone with three lanes: Lane 2 (66 MPH), Lane 1 (69 MPH), and an Outside shoulder (72 MPH). Each lane has a gantry with various sensors and cameras. A central vertical structure separates the lanes.

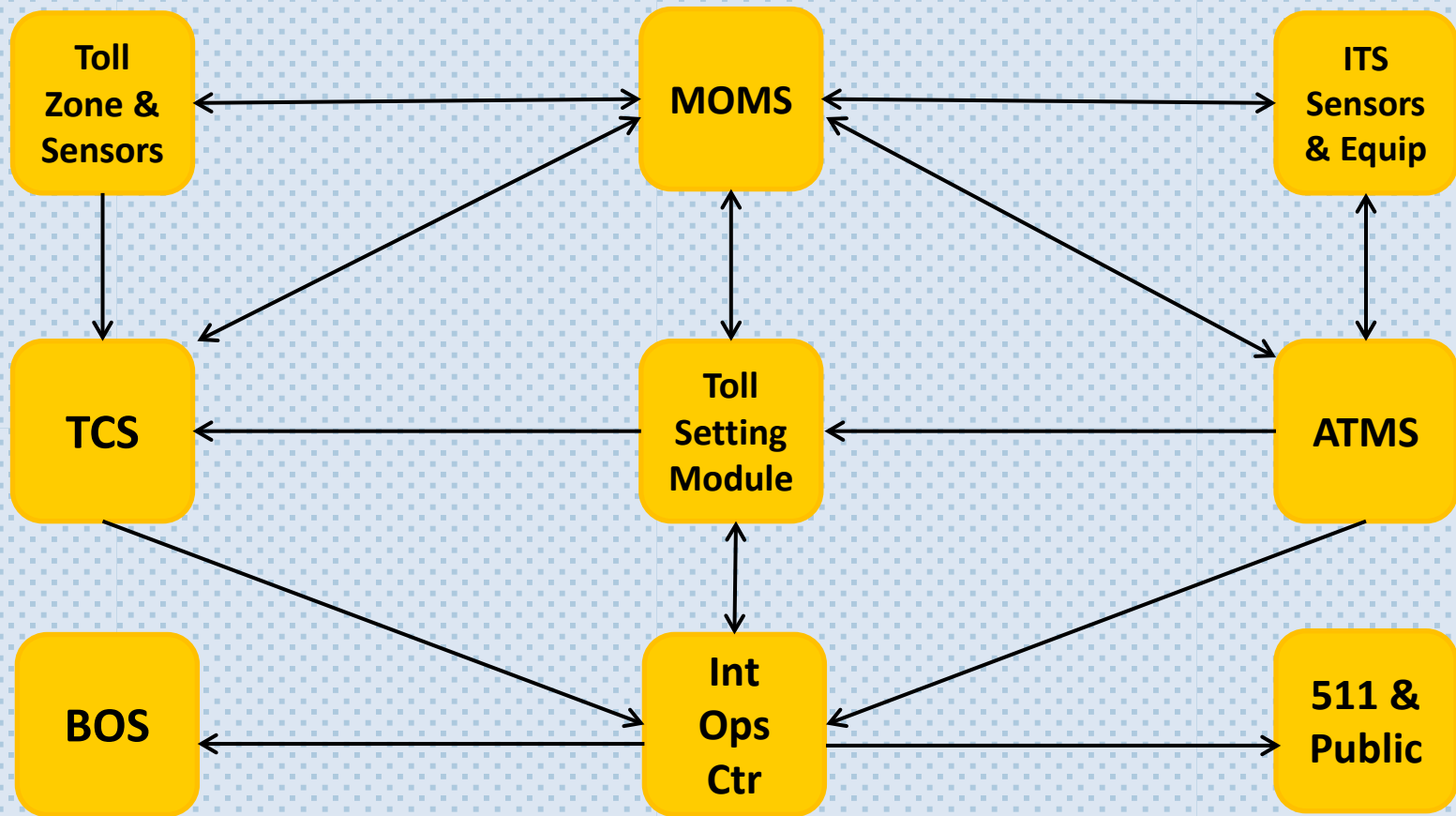
Cabinet	
TZC	BOS
SIC 1	Remote TZC
SIC 2	Central MOMS
JANUS	
FRONT SWITCH	MOXA 1
REAR SWITCH	MOXA 2
AUX. SWITCH	UPS
SAS SWITCH	GENERATOR

Gantry	
FRONT SWITCH	
REAR SWITCH	
AUX. SWITCH	
MOXA 1	
MOXA 2	

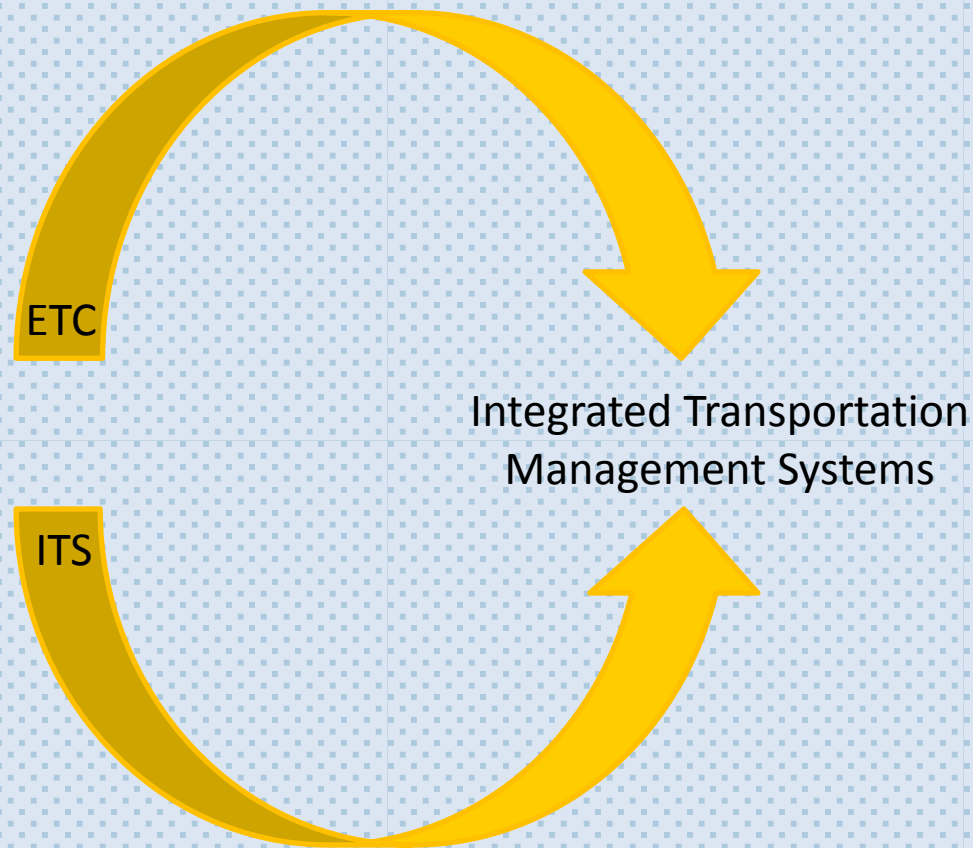
Traditional Approach to Design



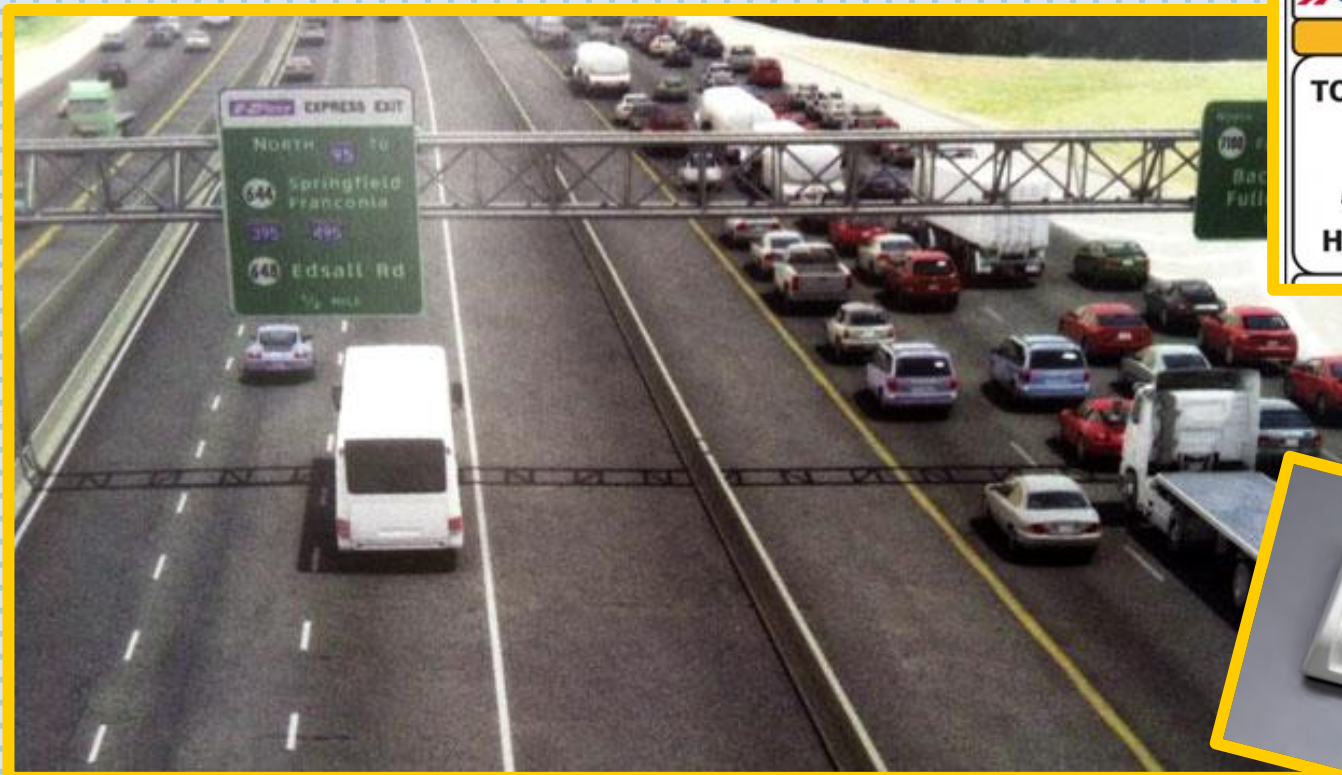
Integrated Approach to Design



Convergence of ITS and ETC



Driving Change: Managed Lanes



EXPRESS LANES			
TO East		/	
	\$0.90		
HOV 2+	\$0.45		



Driving Change: Connected Vehicle



Driving Change: Market Demand

- LBJ/NTE Express Lanes
- I-95 Express Lanes in Virginia
- I-95 Express Toll Lanes in Maryland
- I-75 and I-575 Express Lanes in Georgia
- NC I-77 HOT Lanes in North Carolina
- I-4 Managed Lanes in Florida
- ... More Coming

Dan Toohey

Kapsch TrafficCom North America

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We Make Your Traffic Flow

Thank You