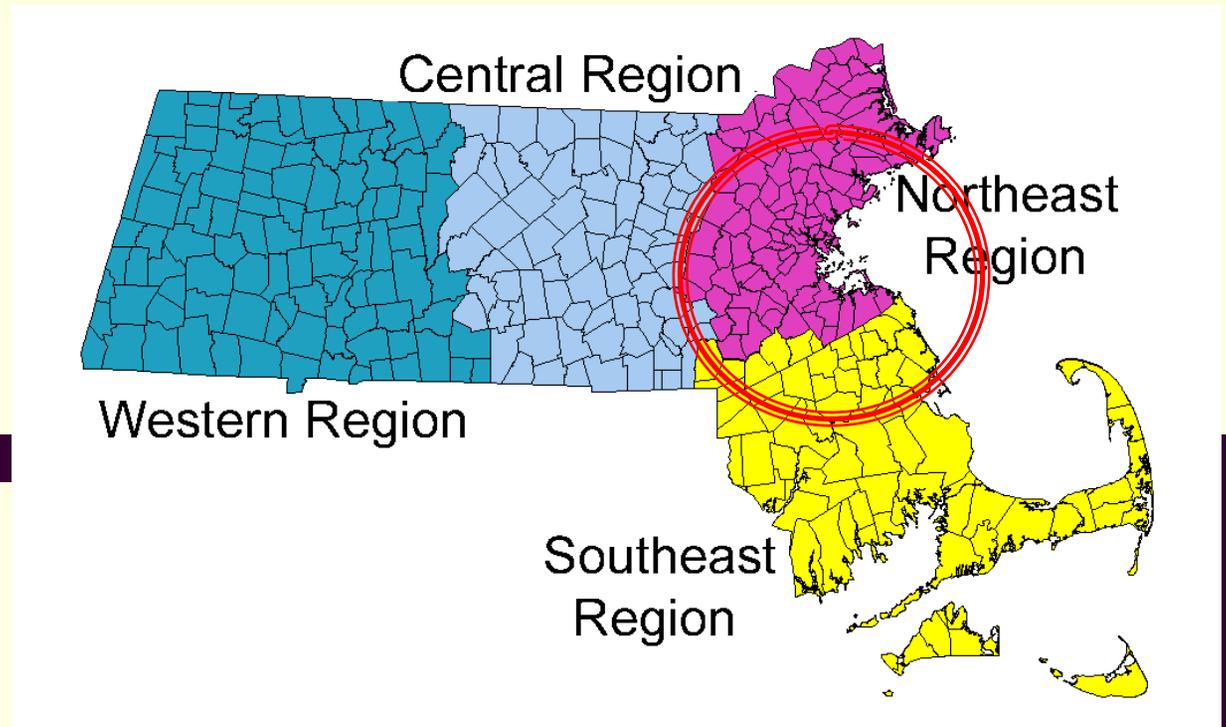


# Boston Regional ITS

## Architecture



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- 
- There are risks and costs to a program of action. But they are far less than the long-range risks and costs of comfortable inaction.

**John F. Kennedy (1917 - 1963)**

# Bottom Line

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- Institutional Change
  - Fragmented individual agencies
  - Consolidated Operations Center required
- Use of Technology
  - Need to leverage on the potentials, benefits and flexibilities that ITS brings to the system

# Agenda

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- **Regional Needs**
- **User Centric Systems**
- **Flexibility**
- **FHWA Rules**
- **Conclusion**

# Stakeholder Identified Regional Needs

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- Safety and Security
- Communications Infrastructure
- Operations and Maintenance
- Congestion Management
- Transit Demand
- Para-Transit Efficiency
- Information Sharing

**Assessment: Needs analysis captures regional requirements.**

# Regional Needs

## Safety and Security (1 of 7)

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### IN ITS PLAN:

- Event (Incident/Accident) management
- Information Sharing
- Transit Call Boxes

### Critique of Plan:

- Focus on Security
- Reactive vs. Proactive

### OUR RECOMMENDATIONS:

- Pedestrian Safety
- Consolidated Operations Center
- Port Security
- CVO Security

# Regional Needs

## Communications Infrastructure (2 of 7)

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### IN ITS PLAN:

- Communication Direct Lines
- Computer Aided Dispatch/ Actual Vehicle Location
- Massachusetts Interagency Video Information System (MIVIS)

### Critique of Plan:

- Identified cost of leased lines...new fix to old problem.
- Failed to capture structure problems.

### OUR RECOMMENDATIONS:

- Leverage Technology
- Consolidated Operations Center

# Regional Needs

## Operations and Maintenance (3 of 7)

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### IN ITS PLAN

- Event management
- Information Sharing
- Computer Aided Dispatching (CAD)/Automatic Vehicle Location (AVL)
- 511
- Signal Priorities

### Critique of Plan:

- Focus on response to incidents
- Fails to address integration or consolidation of assets

### OUR RECOMMENDATIONS:

- Consolidated Operations Center
- Cooperative Maintenance plans

# Regional Needs

## Congestion Management (4 of 7)

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- The average driver was stuck in traffic or forced to drive below the posted speed limit for 51 hours in 2003, and Boston ranks 13<sup>th</sup> worst congested city in the U.S. (Texas Transportation Institute)
- “Improve congestion through congestion management”
- **IN ITS PLAN:**
  - Event Reporting System
  - Expansion of MIVIS
  - 511
- **OUR RECOMMENDATIONS:**
  - Congestion Pricing
  - Variable Parking Pricing Scheme

# Regional Needs

## Transit Demand (5 of 7)

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- More than 20% of daily trips in Boston Metro are transit trips
- Need to improve transit service to improve transit demand
- **IN ITS PLAN:**
  - CAD
  - AVL
  - Transit Signal Priority
- **OUR RECOMMENDATIONS:**
  - Transit ITS initiatives satisfactory
  - Coordinate with Congestion Management efforts

# Regional Needs

## Paratransit Efficiency (6 of 7)

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- Paratransit service providers desire ITS solutions to improve their efficiency
- **IN ITS PLAN:**
  - CAD
  - AVL
  - 511
- **ON TRACK FOR EFFICIENT OPERATIONS:**
  - Better coordination with fixed-route transit
  - Combined paratransit trips

# Regional Needs

## Information Sharing (7 of 7)

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- Need for information sharing amongst the numerous Boston agencies including traffic data, information on incident or other events, and video feeds
  
- **IN ITS PLAN:**
  - Event Reporting System
  - Expansion of MIVIS
  - Transportation Data Archiving System
  
- **SOLID COMMUNICATIONS SETUP WILL BE CRUTIAL**
  - Common operations center
  - Wireless Local Area Network (LAN)

# Agenda

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- Regional Needs
- **User Centric Systems**
- Flexibility
- FHWA Rules
- Conclusion

# User-Centric Systems

## Measure Metrics

Multi-Modality

Flexible travelers

Emergency services

Other services

Boston Architecture

MBTA  
Integrated  
Regional Fare  
Cards

- 511
- VMS

- Emergency Management Network
- Interagency Communications Network
- Event reporting and Video Integration Systems

- Cashless & Convenient

Grade

C

B

A

C

# Agenda

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- Regional Needs
- User Centric Systems
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# Flexibility

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- Ability to change future configuration
- Uncertainty Management => Adds value
- Types
  - Fiscal, Institutional, Technical, ***Operational***
- ITS provides for Operational flexibility

# ITS provides operational flexibility:

By Managing ***existing***  
Infrastructure at lower costs

## Problem: (example)

- Congestion in Boston

## Traditional Solution:

- \$14billion Big Dig Infrastructure

## ITS Solution: (example)

- Congestion Pricing

## How Flexibility Provided:

- More cost-effective ways to mitigate problem
- Option of change/abandon exercised easily in future

# ITS provides operational flexibility:

Allows sharing of information

## Problem: (example)

- Limited leveraging of ITS capabilities: *only* sharing of fragmented info feeds
  - Different organizations have individual equipment
- System upgrades expensive and difficult

## Recommendation for better ITS:

- common data gathering
  - Integrated data sourcing infrastructure => Cost effective O&M

## How Flexibility Provided:

- Provides way to manage uncertainties as an integrated team
- Less risk aversion and flexibility to take on projects

# Agenda

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- Regional Needs
- User Centric Systems
- Flexibility
- **FHWA Rules**
- Conclusion

# FHWA Final Rule

- **Boston met Final Rule – but not enough on operations/standards**
- Set of standardized components
  - Each region chooses according to need
  - Why not do this with institutional structures/O&M?
- Technical, institutional integration strategies
  - No mention of Operations and Management
  - No definitions for design standards
- FTA Final Rule and Transportation Planning Policy separate
- Upgrading existing systems discouraged
  - Why not provide for O&M/institutional upgrade?

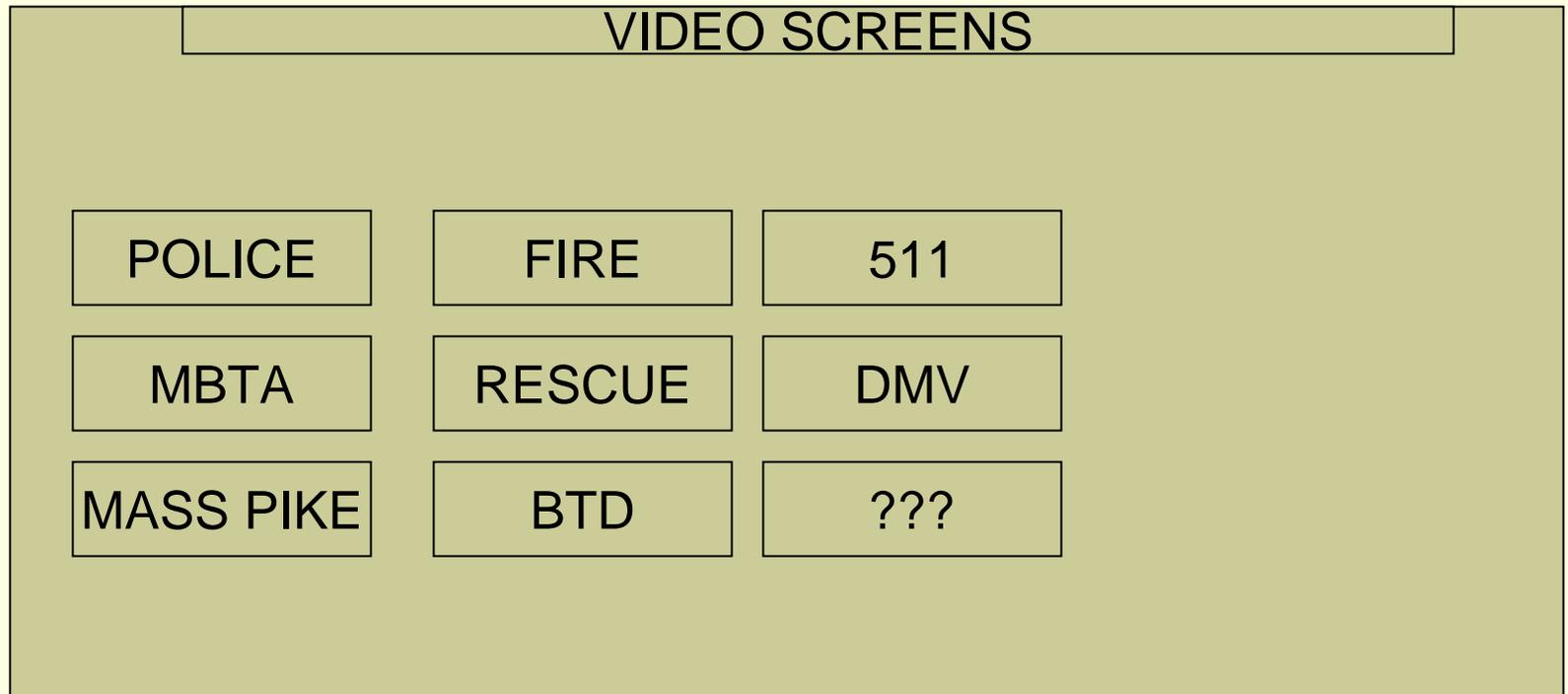
# Agenda

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# Consolidated Operations Center

- Multiple agencies work together
- Share information directly.



# Conclusion

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- Consolidated Operations Center
- Updated use of technology
  - Pedestrian/Bike Safety
  - CVO/Port Safety and Security
  - Pricing
    - Congestion and Parking
  - Wireless LAN

# QUESTIONS???

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- Whenever you have an efficient government, you have a dictatorship.

**Harry S Truman (1884 - 1972)**, *Lecture at Columbia University, 28 Apr. 1959*