

# ITS Standards the US Experience\*

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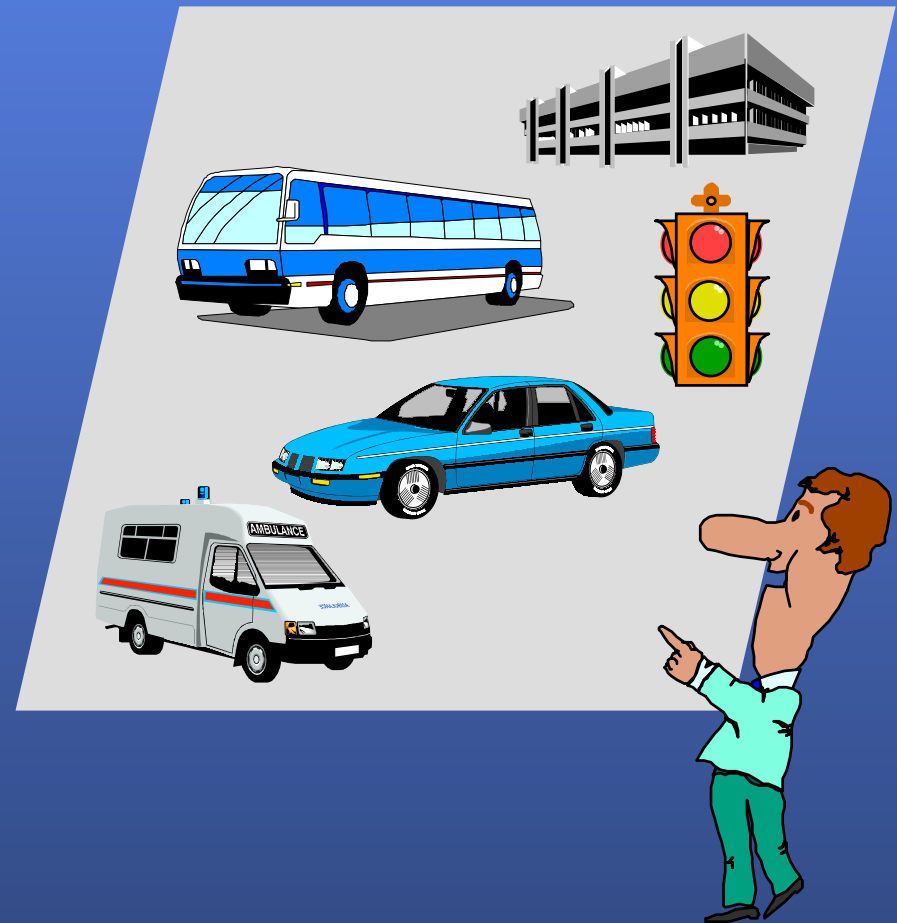
\* Title by Ging Ging

# U.S. ITS Legislation

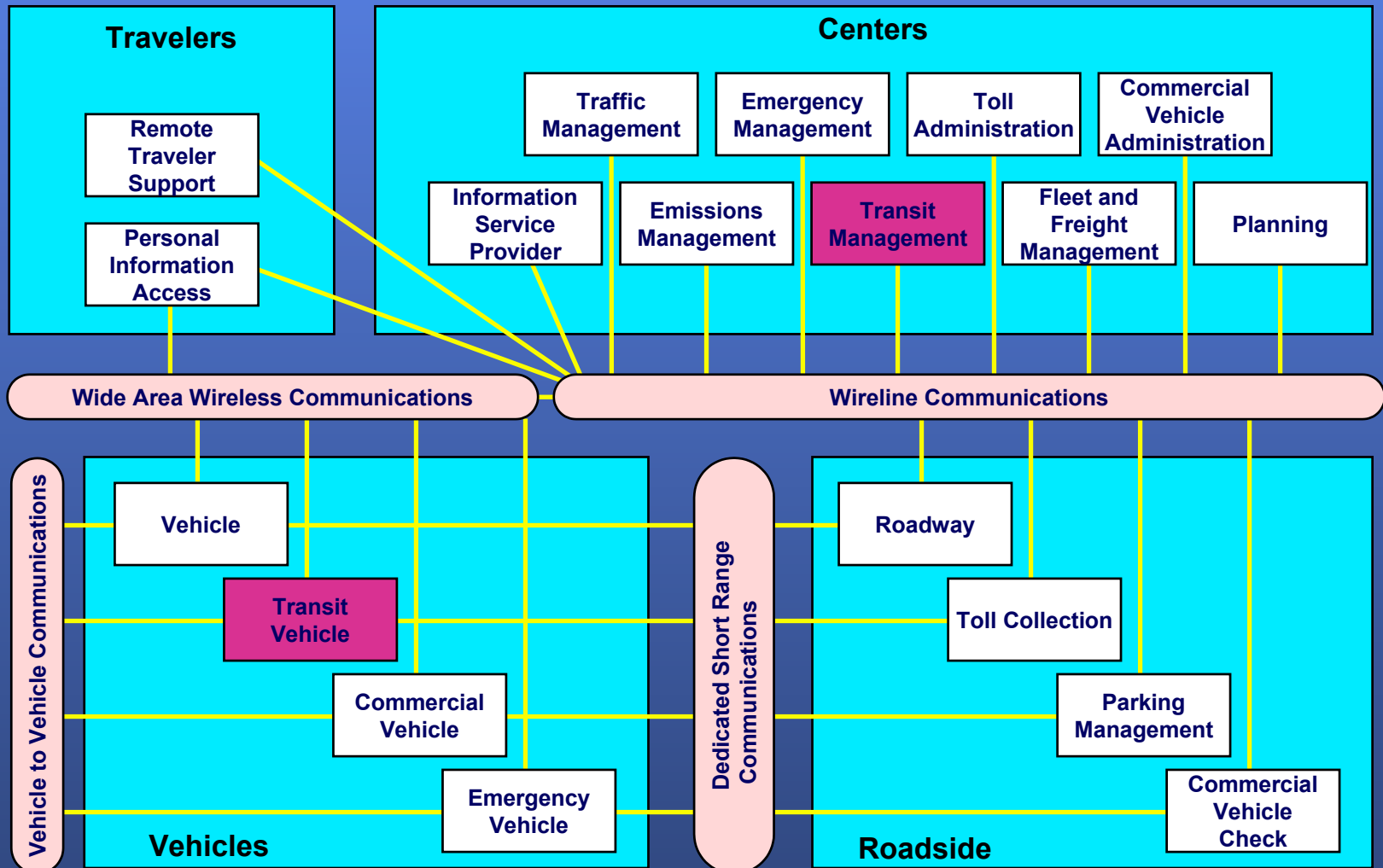
- Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)
- Transportation Equity Act of 1998 (TEA-21)
  - » Integration Program
  - » Critical Standards
  - » ITS Architecture Conformity
  - » ITS Standards Conformity
- TEA-21 Reauthorization in progress

# US National ITS Architecture Provides a Framework

- Define interconnections and interdependencies between functions
- Support Testing and Interoperability
- Define a blueprint for integration of systems



# US National ITS Architecture



# What are ITS Standards?

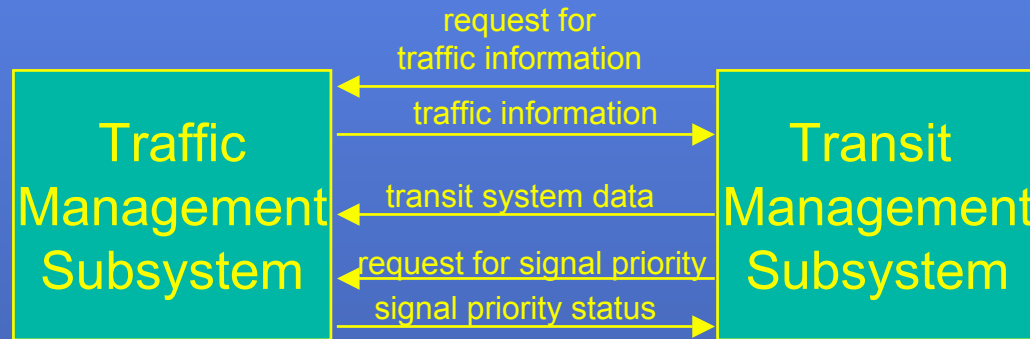
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- ITS standards are specifications that define how system components interconnect and interact within the overall framework of the National ITS Architecture.
- They specify how different technologies, products and components interconnect and interoperate so that information can be shared automatically.

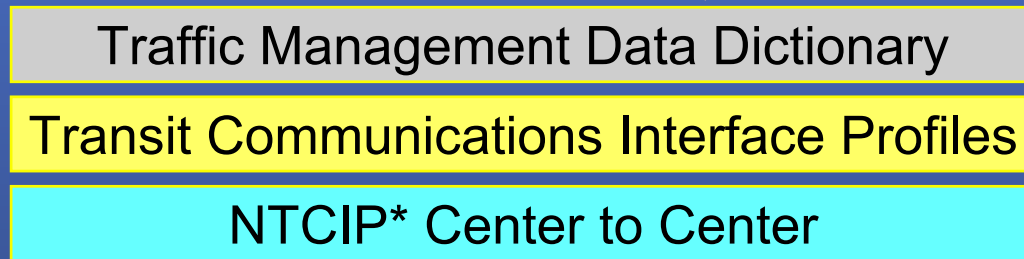
# Architecture and Standards

An Example:

*ITS  
Architecture*



*ITS  
Standards*



Data Elements  
Message Sets  
Dialogs

\*NTCIP: National Transportation  
Communications for ITS Protocol

# Why the U.S. Develops ITS Standards?

- Facilitates interoperability at interagency, inter-jurisdictional, state, and national levels
- Provides an environment for multiple vendor sources
- Ensures safety of traveling public
- Facilitates widespread deployment
- Promotes an ITS market

# ITS Standards Program

- The DOT ITS Standards Program is accelerating development of about 100 non-proprietary, industry-based, consensus ITS standards.
- Standards cover traffic management, transit management, traveler information, DSRC, incident management, and human factors
- DOT is also providing training, testing, and technical support for the standards
- For more information, see
  - <http://www.its-standards.net/>

# Who Develops Standards in the U.S. -SDOs

- National Transportation Communications for ITS Protocols (NTCIP) Joint Committee
  - National Electronic Manufacturers Association
  - Institute of Transportation Engineers
  - American Association of State Highway and Transportation Officials
- Society of Automotive Engineers
- American Society for Testing and Materials
- Institute of Electrical and Electronics Engineers
- American Public Transportation Association

# APTA's Current Standards Development Programs

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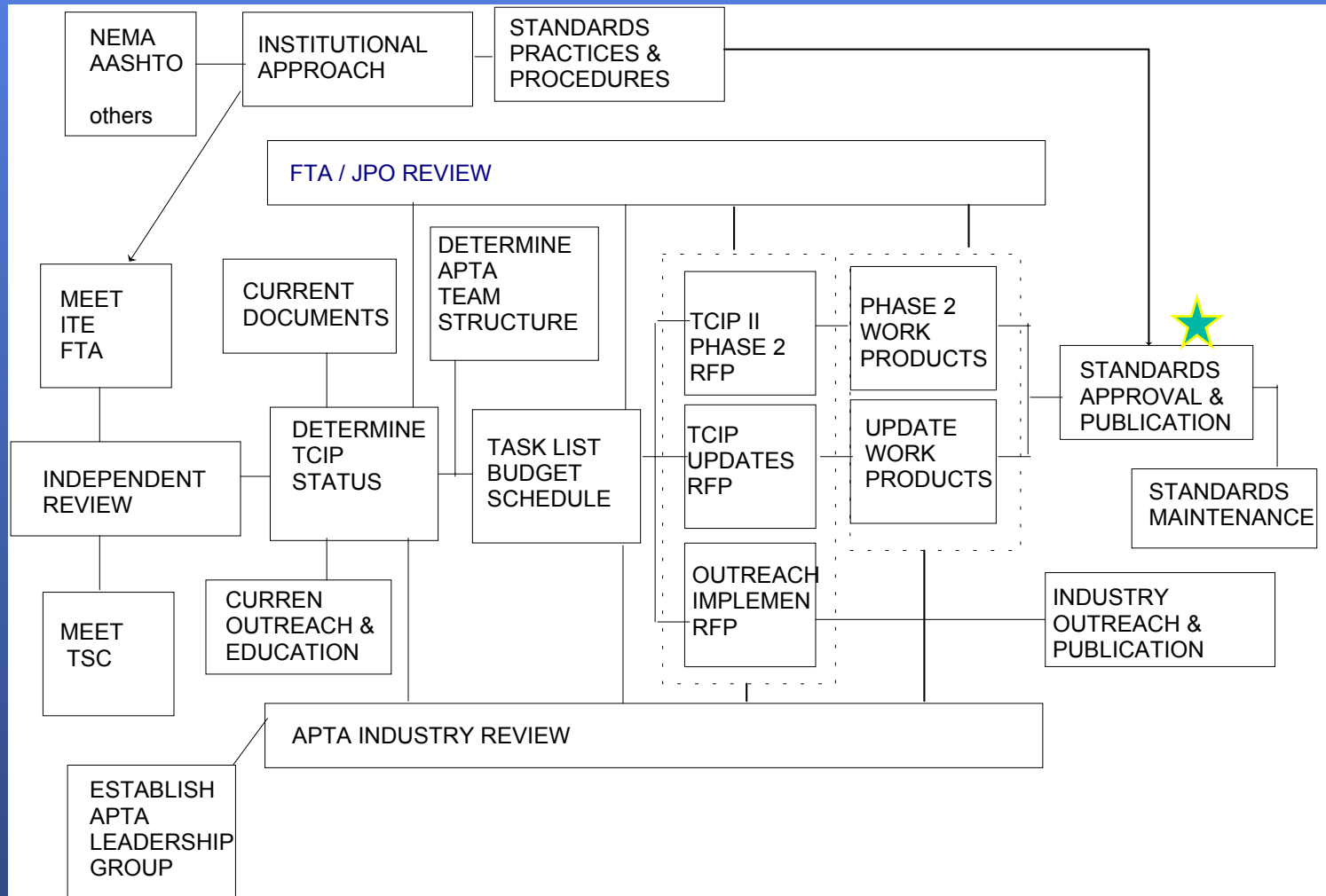
- **Five Separate Programs with over 150 Standards, Recommended Practices and Guidelines and 500 Volunteer Participants:**
  - **Commuter Railroad Standards (PRESS)**
  - **Rail Transit Standards**
  - **Bus Standards**
  - **Automated Fare Collection System Standards**
  - **ITS Standards (Intelligent Transportation System)**
- **Based on American National Standards Institute (ANSI) Consensus Process**
- **Active for Eight Years with Combined \$8 Million Invested**
- **Collaborative Relationships Established with Other SDO's**

# Transit Communications Interface Profiles (TCIP)

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- TCIP standardizes transit data definitions, formats and message exchange between components employed in transit systems
- Why develop TCIP?
  - To minimize the cost of tailoring interfaces within a transit system by standardizing and modularizing these interfaces
- APTA's role:
  - Tasked by the FTA to perform an assessment of the then-NTCIP directed TCIP standards (2001)
  - Produce and implement an overall plan for continued TCIP development
  - Promote ITS deployment in the transit industry

# APTA TCIP Program



# Example of TCIP Deployment

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- Transit IDEA Project 39
- Dynamic Timetable Generator
  - Automate publication of Schedule Timetables for Web-sites
  - Portland OR (Tri-Met) and Chicago IL (RTA)
- Expected Results
  - Open Source software tool
  - Transferable to many agencies

# Problems with Making DEPLOYABLE Standards

- Moving to DEPLOYMENT of standards
  - We have 80+ standards published, but.....
- Must ensure that standards are complete and correct
  - Sound systems engineering
  - Meet full set of deployment requirements
  - Clear concept of operations
  - Compile correctly
  - Cover specified interfaces completely
- In some cases, need to do Version 2.x/3.x

# Standards testing

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- Manufacturers need a way to prove conformance
  - Some vendors beginning to claim conformance to NTCIP standards
- Need a way to verify conformance
- Conformance does not guarantee interoperability
- APTA taking on role in testing and deploying TCIP

# Conclusions

- U.S. ITS Standards program being developed through Legislative action
- Standards program involves Federal leadership, Regional planning, and close interaction with local transit agencies
- ITS program currently emphasizes conformance to ITS National Architecture and development of “voluntary” national consensus standards
- TCIP is an active Transit Standard under test by APTA