

National Operations of Center of Excellence (NOCoE) Innovative Procurement and Contracting Peer Exchange

ITE International: Innovative Traffic Management and Control Equipment Procurement Methods

**Carlos A. Ortiz, PE, TE, PTOE
ADVANTEC Consulting – Chief Operating Officer**

May 21, 2021

Innovative Traffic Management and Control Equipment Procurement Methods

JULY 2020

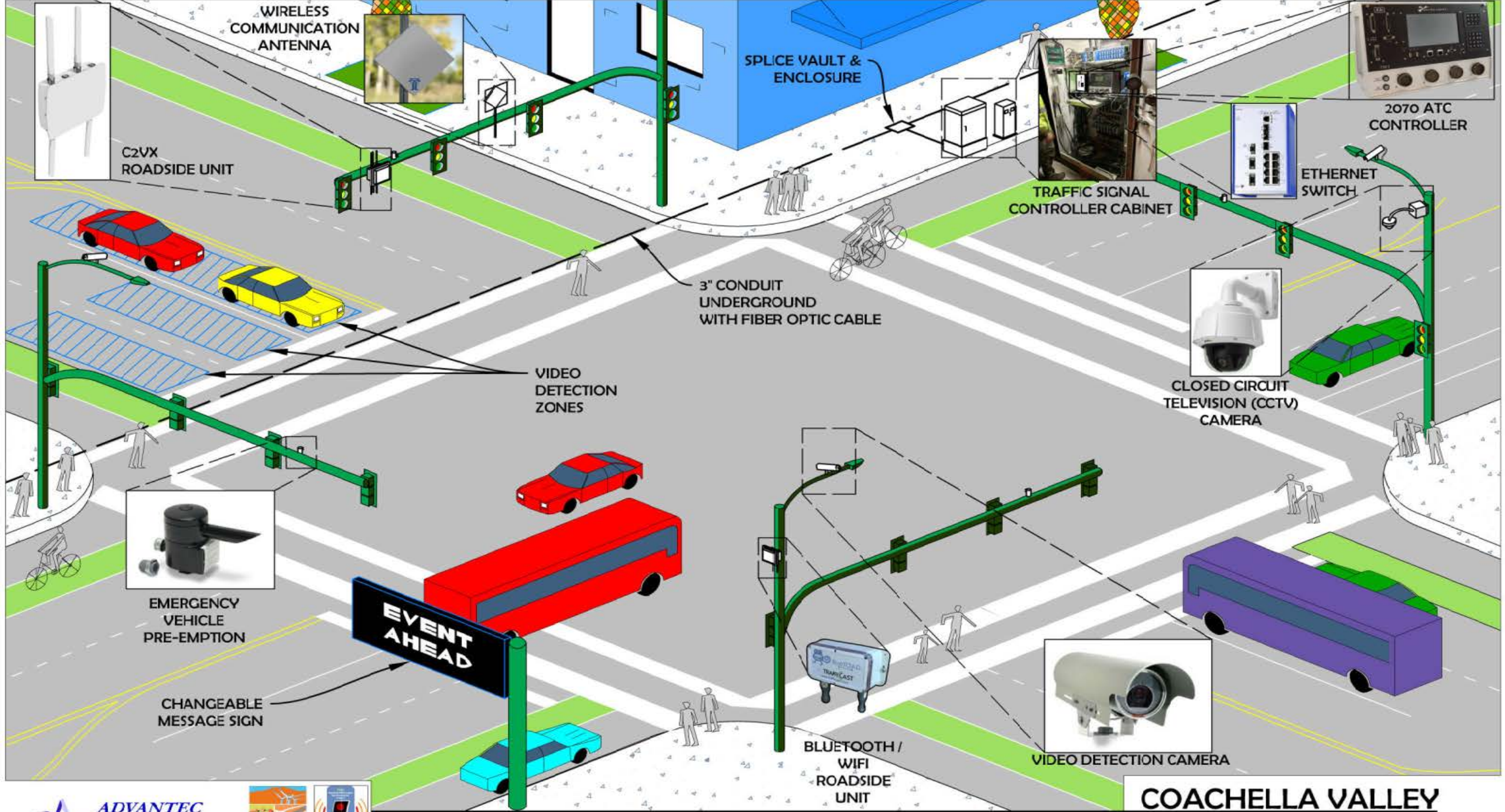
Institute of Transportation
Engineers



- ✓ ***Informational Report (IR) – July 2020***
- ✓ ***Developed by Industry Council / ITE Members***
- ✓ ***Original IR 2000***
- ✓ ***Description of procurement methods for traffic management and control equipment and systems supporting ITS***
- ✓ ***Intended to portrait a state-of-the-practice at procurement methods***
- ✓ ***Transit ITS, Toll Lanes, and Passenger Train are NOT addressed in the IR***
- ✓ ***Free to ITE Members***
- ✓ ***www.ite.org***

ITE International: Innovative Traffic Management and Control Equipment Procurement Methods

- ✓ Summary of *current practices in the procurement* of Intelligent Transportation Systems (ITS) and traffic management and control equipment
- ✓ Intelligent Transportation Systems and operational technologies and services associated with today's Connected Vehicles and Vehicle-to-Infrastructure (V2I) applications
 - Controllers, conflict monitors, and associated devices
 - Cabinets
 - Detection systems and sensors
 - Computers
 - Display monitors
 - Communications devices
 - Cabling and other equipment and services, such as cameras, sensors, poles and signal heads
 - Software and firmware associated with equipment
 - Installation and testing



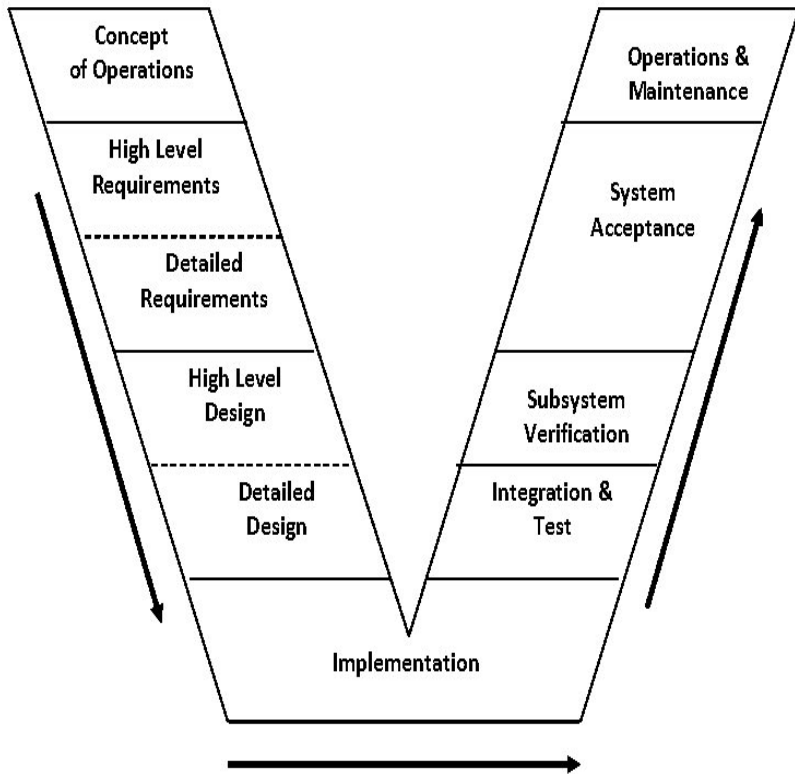


Figure 1: Systems Engineering Analysis "V" Diagram



ITS REGIONAL ARCHITECTURE AND SYSTEMS ENGINEERING PROCESS



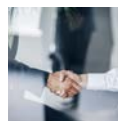
SYSTEM ENGINEERING PROCESS - "V" DIAGRAM



ENSURES AGENCY NEEDS ARE MET



NATIONAL STANDARDS ARE APPLIED



REQUIREMENTS ARE CLEARLY DEFINED

ITE International: Innovative Traffic Management and Control Equipment

Procurement Methods

- ✓ On September 27, 2019, FHWA further revised procurement rules by relaxing requirements for the use of patented or proprietary materials. The Executive Summary of the final rule is as follows:

*The FHWA is revising its regulations at 23 CFR 635.411 to **provide greater flexibility for States to use patented or proprietary materials in Federal-aid highway projects.** Based on a century- old Federal requirement, the outdated requirements in 23 CFR 635.411(a)–(e) are being rescinded to encourage innovation in the development of highway transportation technology and methods. As a result, State Departments of Transportation (State DOTs) will no longer be required to provide certifications, make public interest findings, or develop research or experimental work plans to use patented or proprietary products in Federal-aid projects.*

*Federal funds participation will no longer be restricted when State DOTs **specify a trade name for approval in Federal-aid contracts.** In addition, Federal-aid participation **will no longer be restricted when a State DOT specifies patented or proprietary materials** in design-build Request-for-Proposal documents.*

The same flexibility generally applies to local agencies using Federal aid funds, but may be subject to State Specific procedures.

ITE International: Innovative Traffic Management and Control Equipment Procurement Methods

✓ Traffic Management / ITS Procurement Guidelines

- Life Cycle Cost
- Development of Functional Performance Requirements
- Bid Selection Process and Evaluation Criteria



ITS Operation During Construction



Fiber Optic Improvements



Upgrade Network



Upgrade CCTV Cameras



LED Lighting Feasibility



Battery Backups



IP HD CCTV & Analytics



ICM and ATM Approach



Disaster Recovery Plan



Expand/Enhance TMC Communications



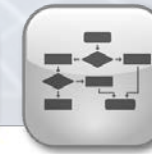
Performance Tracking



ATC / ATMS / STMP



Wireless Backup System



Device Upgrade & Work-Flow



Improved Travel Time Predictions



Upgrade CMSs

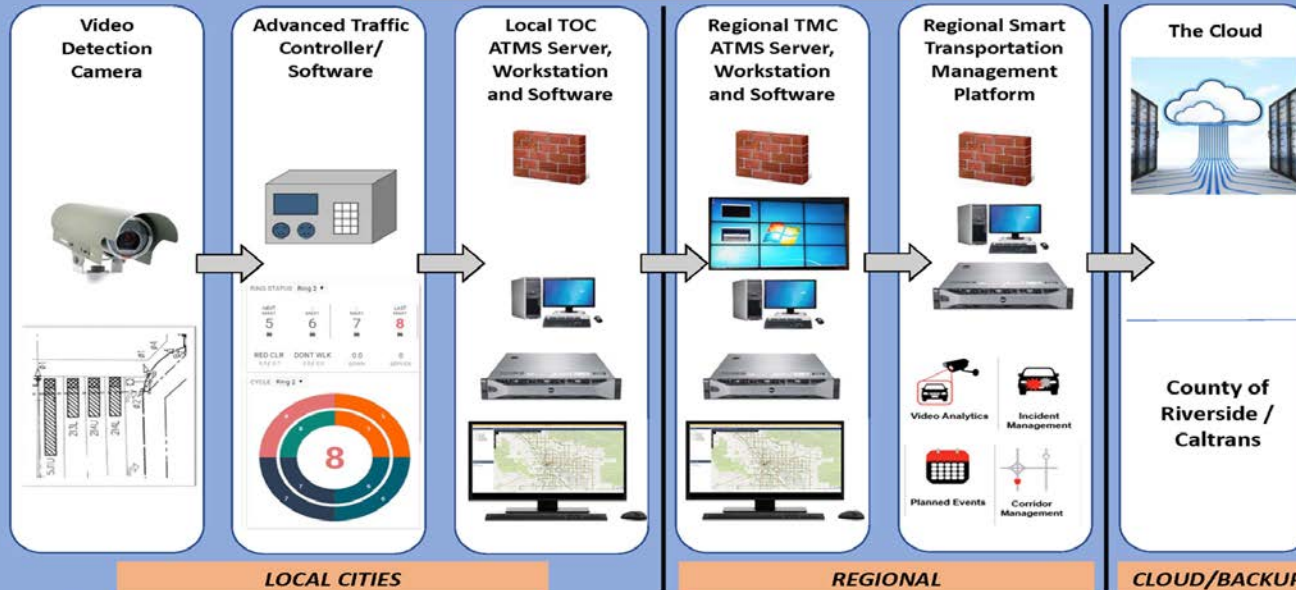


Technology Selection Process



TMC & HUBS

ITS DATA FLOWCHART



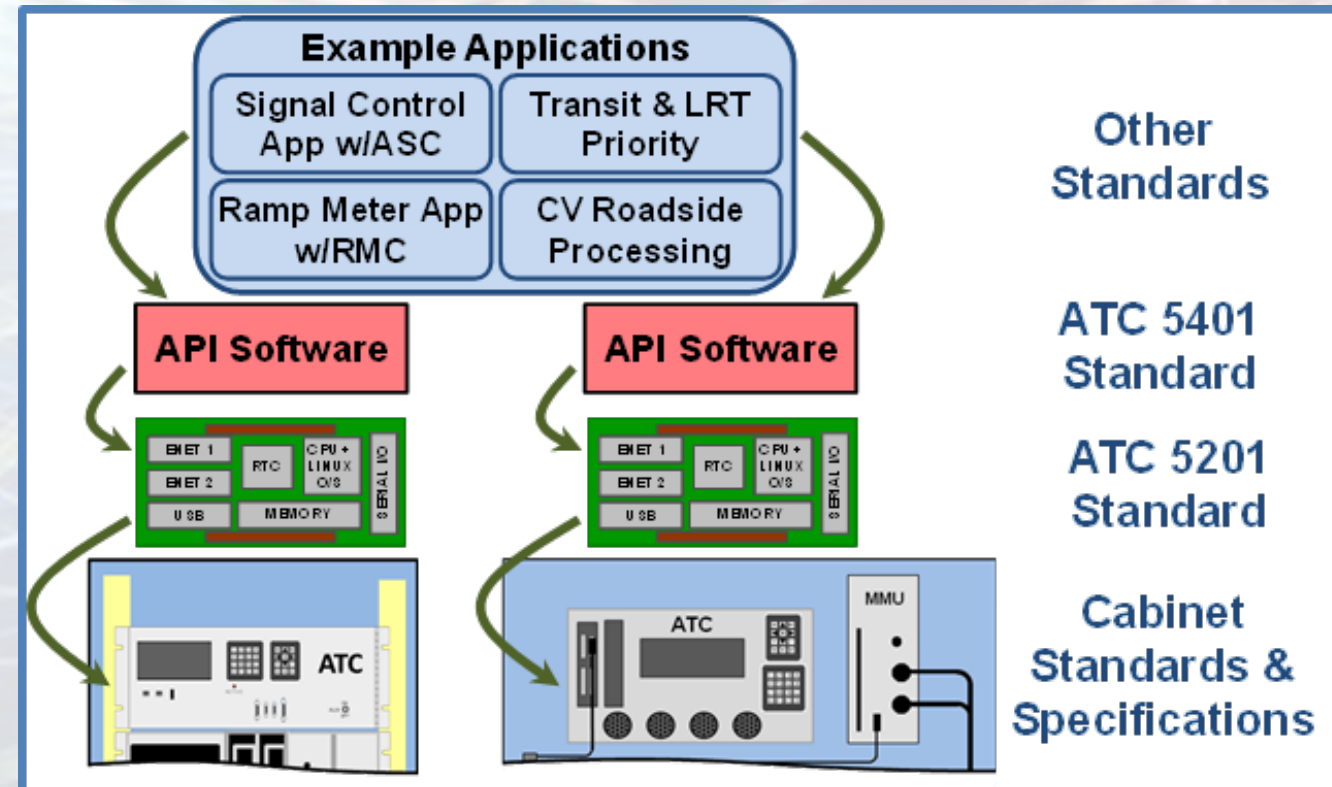
ITE International: Innovative Traffic Management and Control Equipment Procurement Methods

✓ Traffic Management / ITS Procurement Guidelines

- Development of Functional Performance Requirements

❖ Performance Requirements: ITS Standards

- ATC 5201 v06A, Advanced Transportation Controller
- ATC 5401 v02A, Application Programming Interface (API)
- ATC 5301 v02, ATC Cabinet
- NTCIP 1202 v03A, Object Definitions for Actuated Signal Controllers (ASC)
- NTCIP 1218 v01, Object Definitions for Roadside Units (RSUs)



ITE International: Innovative Traffic Management and Control Equipment Procurement Methods

✓ Methods of Procuring Traffic Management / ITS Products and Services

- Engineer/Contractor (a.k.a. Consultant/Contractor)
- System Manager
- One-Step Method
- Two-Step Method
- Design / Build (or Design / Build / Operate/Maintain)
- Sole Source
- Public / Private Partnerships
- Design Competition
- Software as a Service (SaaS)
- Mobility as a Service (MaaS) - Mobility on Demand (MOD)
- Deferred Purchase of Competitive Bid Items with a Pool of Funds
- Annual/Statewide Purchase Contracts
- Negotiation with Multiple Proposers

ITE International: Innovative Traffic Management and Control Equipment Procurement Methods

✓ Comparison of Procurement Strategies

Strategy	Best Uses	Advantages	Disadvantages
Engineer / Contractor	Qualified staff available and experienced contractor	Time to complete; no change orders	Surprises are hard to handle
System Manager	Agencies that do not have qualified staff available	Experienced managers	Design costs
One Step Method	Quantities and procedures are well-established	Purchasing departments are familiar with the method	Contractor has no incentive to be innovative, low cost does not ensure quality
Two Step Method	Traditional organization with complex projects	Proposal, then regular bid process	Takes longer

ITE International: Innovative Traffic Management and Control Equipment Procurement Methods

Design / Build (also Operate / Maintain)	Trusted agencies with known processes	Time to complete	Agency has less control over project
Sole Source	Only one source exists to fulfill the agency's requirements	Streamlined bid process	Often misused to streamline "regular" procurement processes
Public / Private Partnerships	ITS deployments which are enhanced through public / private sector collaboration, innovation and funding	Draws on external experiences, budget, and operational efficiencies	Requires increased collaboration and communication
Design Competition	Big ticket items	Prototyping guarantees success	Massively complex; may be unsettling to "normal" procedures
Software as a Service	Flexible ITS applications that can be accessed remotely over the cloud	Cost predictability, continuous updates, and easy-to-use interfaces	Often challenging to procure, while unfamiliar technology can present internal challenges
Deferred Purchase of Items with Pooled Funds	Microcomputers and other consumer retail items	Best price, latest, and best equipment	May conflict with agency's' purchasing regulations
Annual / Statewide Purchase Contracts	Consumable items and items needing to be stored	Easy for purchasing agent	Inventory is not always available
Negotiation with Multiple Proposers	Selecting among several viable suppliers	The agency's negotiating stance with the "probable best" vendor remains strong	Selection of not-low bid not welcomed by purchasing agencies

ITE International: Innovative Traffic Management and Control Equipment Procurement Methods

CONTACT INFORMATION:

- **Carlos A. Ortiz, PE, TE, PTOE**
- **949-861-4999 (Office)**
- **949-636-0646 (Mobile)**
- **cortiz@advantec-usa.com**
- **Twitter: @CAOrtiz2121**
- **LinkedIn**