

TSMO Program Clearing House Update

HGAC Operations Task Force
Meeting
October 24, 2017



Overview

- TSMO Planning Concepts
- TSMO Website Presentation
- 2017 User Needs & Priorities Survey Results
- Updated Communications Map
- Next Steps



TSMO Website Presentation

- Overview
- About
 - Change Management
 - Stakeholders
 - Project Development <http://tti.houston.tamu.edu/hgactsmo/default.aspx>
 - About/Contact
- TSMO Section
 - Capability Maturity Concepts
 - Planning Concepts
 - Current Activities
- Placeholders
 - ITS
 - Systems Engineering
 - Archives



TSMO Planning Concepts

- Strategic Planning
 - Vision
 - Mission
 - Goals
 - Objectives
- Program Planning
 - Strategic Objectives
 - Program Objectives



Stakeholders Survey – Initial Results

- Responses: October 15, 2017
Deadline – 23

Classification	Responders
County	9
Transit	5
Local	4
State	3
Regional	1
Federal	1

- Top Transportation Goal for Region
 - Increasing transportation system efficiency and capacity
- Transportation Problem Priority & Importance
 - Traffic Congestion (Rank and Importance)



Survey Results - Goals

Transportation Goals for the Region	Average Rank	No. Responses	Rank
Increasing transportation system efficiency and capacity	2.29	21	1
Enhancing mobility	2.41	22	2
Improving safety	3.05	22	3
Increasing economic productivity	4.00	22	4
Reducing energy consumption and environmental costs	4.32	22	5
Creating an environment for an ITS market	5.00	22	6



Analysis Methodology

- Priority Ranking
 - Only provided ranks were included.
 - Ranks were averaged for each area within the question and ranked from lowest to highest.
- Importance Scale & Ranking
 - Assigned a value and averaged
 - Not Important = 0
 - Somewhat Important = 1
 - Important = 2
 - Moderately Important = 3
 - Very Important = 4



Transportation Problems

Transportation Problems	Average Rank	No. Responses	Rank	Responses	Importance Scale	Importance Rank
Traffic congestion	2.33	21	1	23	3.43	1
Lack of mobility and accessibility	4.52	21	2	23	3.17	4
Severe budgetary constraints	4.76	21	3	23	3.35	2
Disconnected transportation modes	5.10	21	4	22	3.00	6
Traffic accidents, injuries, and fatalities	5.71	21	5	23	3.22	3
Personal safety and security	6.43	21	6	23	3.13	5
Transportation following emergencies	6.75	20	7	23	2.70	7
Lack of transportation information/traveler information	6.86	21	8	22	2.55	8
Air pollution	7.55	20	9	23	2.04	11
Commercial vehicle operations/Goods movement delays	7.67	21	10	23	2.17	10
Unanticipated transportation needs /Enhanced Planning	8.00	21	11	23	2.43	9



Increase Vehicle Throughput

	Average Rank	No. Responses	Rank	Responses	Importance Scale	Importance Rank
Increasing Vehicle Throughput						
Surface street control (smart signals)	3.38	21	1	22	3.18	1
Freeway control (ramp metering, ramp bypass, variable)	4.38	21	2	22	2.41	6
Corridor management – regional/multi-jurisdictional data sharing and system management	4.67	21	3	22	2.64	4
Incident management – recurring and non-recurring	4.81	21	4	22	2.82	3
Corridor management - historical evaluation, real-time assessment, and forecast of the roadway network	5.40	20	5	22	2.14	7
Incident management – emergency evacuation and	6.10	21	6	22	3.05	2
Maintenance and Work Zone management – activity	6.95	21	7	22	2.55	5
Reversible lane management capability	7.33	21	8	22	1.45	11
Maintenance and Work Zone management – fleet vehicle	7.38	21	9	22	2.05	8
Corridor management – railroad operations coordination	7.57	21	10	22	1.68	10
Corridor management – the use of weather data to	7.76	21	11	22	1.77	9



Increase Passenger Throughput

	Average Rank	No. Responses	Rank	Responses	Importance Scale	Importance Rank
Increasing Passenger Throughput						
Flexible transit	3.05	20	1	20	2.45	1
HOV lane management	3.15	20	2	20	2.00	5
Real-time ride matching	3.30	20	3	20	2.30	4
Integrating transit and other travel modes/feeder services	3.55	20	4	20	2.35	3
Personalized public transit information	3.80	20	5	20	2.40	2
Transit signal priority	4.15	20	6	20	1.95	6



Reduce Travel Demand

Reducing Travel Demand	Average Rank	No. Responses	Rank	Responses	Importance Scale	Importance Rank
Providing enhanced trip planning and route guidance	1.90	21	1	22	3.00	2
Providing dynamic route guidance (en-route traveler)	2.19	21	2	22	3.09	1
Use of congestion pricing	2.95	21	3	22	1.95	3
Encouraging telecommuting	2.95	21	3	22	1.91	4



Mobility and Accessibility

Mobility and Accessibility Solutions	Average Rank	No. Responses	Rank	Responses	Importance Scale	Importance Rank
Use of automatic vehicle location/tracking to update transit schedules and schedule adherence	2.79	19	1	20	2.95	1
Publishing multi-modal pre-trip AND en-route traveler information	4.10	20	2	20	2.45	3
Providing real-time transit information at transit stops and on-board vehicles	4.15	20	3	19	2.79	2
Publishing multi-modal pre-trip traveler information only	4.70	20	4	20	2.20	5
Providing personalized public transportation service information, including the ability to request personalized public transit	4.90	20	5	20	2.05	7
Providing turn-by-turn route guidance	4.95	20	6	20	2.00	8
Providing enabling technologies to provide transit operators with the ability to provide demand responsive transit operations	5.00	20	7	20	2.40	4
Provide real-time parking facility information (could be park and rides and/or private parking facilities in activity centers	5.35	20	8	20	2.10	6



Improve Cross-jurisdictional Transportation Operations

	Average Rank	No. Responses	Rank	Responses	Importance Scale	Importance Rank
Improve multi-agency or cross-jurisdictional transportation system operations						
Creation/maintenance of a multi-agency regional transportation information clearinghouse to allow data sharing	2.65	20	1	21	2.76	2
Providing capability for the sharing of traffic information and control among traffic management centers to support regional traffic management strategies	2.75	20	2	21	2.81	1
Providing two way communications between multiple transit and traffic agencies to improve service coordination	2.80	20	3	20	2.60	3
Disseminating multi-modal travel information en-route	3.25	20	4	20	2.55	4
Disseminating multi-modal travel information pre-trip	3.55	20	5	20	2.45	5



Prioritize or Create Funding Opportunities

	Average Rank	No. Responses	Rank	Responses	Importance Scale	Importance Rank
Prioritize funding or create new funding						
Use of more electronic toll/payment capability for transportation services (tolls, parking, transit, permits, etc.)	3.63	19	1	19	2.32	4
The use of ITS data for enhanced transportation planning, including more transit-based data	3.84	19	2	19	2.74	2
Advanced maintenance strategies – roadway maintenance and construction, scheduling based on minimizing cost to travelers and optimizing revenue capability	3.84	19	2	19	2.68	3
Advanced maintenance strategies – infrastructure monitoring monitors the condition of pavement, bridges, tunnels, associated hardware, and other transportation-related infrastructure to minimize expense in inspection and traffic control.	4.89	18	4	19	2.79	1
Efficiently manage lighting, minimizing electricity costs	5.11	19	5	18	1.94	7
Advanced maintenance strategies – fleet vehicle maintenance	5.47	19	6	19	2.05	6
Advanced maintenance strategies – fleet management (location, etc.)	5.53	19	7	19	2.16	5
Fee-for-use to provide data to 3rd parties to package personalized travel data	6.26	19	8	19	1.21	8
Fee-for-use yellow pages and/or reservation type services (information about lodging, restaurants, service stations, etc.)	6.63	19	9	19	1.00	9



Reducing Accidents, Injuries and Fatalities

	Average Rank	No. Responses	Rank	Responses	Importance Scale	Importance Rank
Reducing Accidents, Injuries and fatalities						
Use of automated warning systems – support for speed monitoring and either regulatory speed limit adjustment or warning speeds based on environmental conditions to suggest safe driving speeds	4.95	19	1	20	2.20	3
Use of automated warning systems – support for work zone detection	4.95	19	1	20	2.30	2
Integrate incident management capabilities with commercial vehicle tracking to assure effective treatment of HAZMAT material and incidents	5.74	19	3	20	2.15	6
Intersection collision avoidance systems	5.74	19	3	20	2.40	1
Detection of adverse weather conditions and response management capability	6.42	19	5	20	2.20	3
Use of automated warning systems – support for in-vehicle signing	6.42	19	5	20	2.10	7
Advanced railroad grade crossing systems	6.84	19	7	19	1.89	9
Mayday support (support for in-vehicle emergency assistance requests)	6.84	19	7	19	2.16	5
On-board commercial vehicle safety monitoring and reporting	6.84	19	7	20	1.95	8
Advanced commercial vehicle fleet and freight administration (monitoring hazmat cargo/security and routing)	7.00	19	10	20	1.80	10
Partially and fully automated vehicle control systems	7.74	19	11	20	1.75	11
Vehicle condition monitoring	8.53	19	12	20	1.40	12



Reducing Air Pollution

	Average Rank	No. Responses	Rank	Responses	Importance Scale	Importance Rank
Reducing Air Pollution						
Advanced traffic management – surface street control	3.11	19	1	20	2.60	2
Advanced traffic management – freeway control	3.16	19	2	20	2.80	1
Advanced traffic management – regional traffic management	3.47	19	3	20	2.50	3
Advanced traffic management – work zone management	5.42	19	4	20	2.40	4
Enhanced trip planning, including dynamic routing	5.53	19	5	20	2.20	6
Advanced traffic management – speed monitoring	5.58	19	6	20	2.30	5
Multi-modal pre-trip traveler information	6.21	19	7	20	1.95	8
Real-time ride matching	6.95	19	8	20	2.05	7
Congestion pricing	7.63	19	9	20	1.55	9
Remote emissions sensing	7.95	19	10	20	1.25	10



Personal Safety and Security

Personal Safety and Security	Average Rank	No. Responses	Rank	Responses	Importance Scale	Importance Rank
Transit surveillance and sensor monitoring - physical security of transit passengers and transit vehicle operators	3.26	19	1	20	2.50	1
Threat detection - monitoring of transportation infrastructure	3.79	19	2	20	2.50	1
Threat detection – detect and classify security sensitive HAZMAT	4.58	19	3	20	2.25	3
Threat detection - detect when an unauthorized commercial vehicle driver attempts to drive their vehicle based on stored driver identity information	4.89	19	4	19	1.95	4
Route guidance and turn-by-turn direction support	5.21	19	5	19	1.68	7
Asset tracking – commercial vehicles	5.53	19	6	20	1.65	8
Electronic seals and GPS tracking of commercial vehicles	5.68	19	7	20	1.75	5
Mayday services	5.68	19	7	20	1.75	5
Biometric identification	6.37	19	9	20	1.15	9



2008 vs. 2017 Overall Top Five Solution

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Corridor management – regional/multi-jurisdictional data sharing and system management 2. Surface street control (smart signals) 3. Corridor management - historical evaluation, real-time assessment, and forecast of the roadway network performance 4. Reversible lane management capability 5. Incident management – recurring and non-recurring events | <ol style="list-style-type: none"> 1. Surface street control (smart signals) 2. Freeway Control (ramp metering, ramp bypass, variable speeds...) 3. Corridor management – regional/multi-jurisdictional data sharing and system management 4. Incident management – recurring and non-recurring events 5. Corridor management - historical evaluation, real-time assessment, and forecast of the roadway network performance |
|--|---|



Agency Information

- Do you feel that management is your agency is knowledgeable about how ITS can serve your customers?
 - Yes: 63%
 - No: 37%
 - No Response: 4



Agency Information

- Do you feel that management in your agency is willing to invest in further ITS deployment to better serve your customers?
 - Yes: 90%
 - No: 10%
 - No Response: 2



Agency Information

- Does your agency have internal processes to compare traditional and ITS projects against each other?
 - Yes: 52%
 - No: 48%
 - No Response: 2



Agency Barrier to Implementation

- What are the barriers to further implementation of ITS within your agency?

Agency: Barriers to Implementation	Average Rank	No. Responses	Rank
Project Financing	3.48	21	1
Staff Skill Set	4.00	21	2
Inter-Organizational Coordination	5.29	21	3
Interagency Coordination/Cooperation	5.33	21	4
Freedom of Information	5.90	21	5
State Laws	5.95	21	6
Federal Acts	6.19	21	7
Liability	6.33	21	8
Intellectual Property	6.71	21	9
Lacks of Standards	7.19	21	10
Other	9.76	17	11



ITS Training and Awareness

ITS Training and Awareness	Count	Percentage
We have some level of staff with experience, but could use training opportunities.	10.00	48%
We have adequate levels of staff with experience and self-train within the organization.	5.00	24%
Our agency currently has a little ITS or plans to implement some level of ITS, but staff knowledge and/or training is a barrier.	4.00	19%
ITS is not currently a priority of the agency, so very few of our staff know much about ITS.	2.00	10%
Our organization might be a little adverse to change, so new technology is a barrier to ITS deployment.	0.00	0%
Other (Indicate Below)	0.00	0%
No response.	2.00	



Deployment Capability

Deployment Capability	Count	Percentage
We have the ability to spec and contract for design and construction, as well as the ability to maintain and operate in-house.	8.00	38%
We don't have sufficient knowledge to either contract for design or maintain and operate ITS systems	5.00	24%
We have the ability to specify and contract for design and construction, and the ability to contract for maintenance and operations of ITS systems (full outsourcing)	3.00	14%
We have the ability to specify and contract for design and construction, but not the ability to maintain and operate ITS systems internally (we cannot or will not outsource)	3.00	14%
Other (Indicate Below)	2.00	10%
We have the ability to design and construct with internal forces, as well as the ability to maintain and operate in-house.	0.00	0%
No Response	2.00	

- Comments on "Other"
 - Not Sure.
 - We have both the ability to spec, design in house, contract for design and construction, construct and maintain in house and also contract for maintenance of ITS devices.



Systems Engineering

- How does your agency feel about the need to apply systems engineering to ITS projects?
 - Very Important: 43%
 - Important: 38%
 - Neutral: 19%
 - Not Important: 0%



Systems Engineering Templates

Agency: Systems Engineering Templates	Average Rank	No. Responses	Rank
Travel time monitoring system w/data sharing w/TranStar	2.90	20	1
Multi-agency coordinated signal systems w/central software	3.50	20	2
New CCTV system - standalone, with noew of future data sharing into TranStar	3.70	20	3
Central traffic signal control and monitoring (combing central control s/CCTV monitoring for TIM)	3.75	20	4
New DMS installation - municipal/county standalone s/control sharing w/TranStar	3.80	20	5
Some type of Transit related system; maybe bus priority on signals or multi-agency fare collection	4.20	20	6
Other	5.87	15	7



ITS Evaluation

- How does your agency feel about the need evaluate before/after benefits of ITS projects?
 - Very Important: 50%
 - Important: 35%
 - Neutral: 15%
 - Not Important: 0%



Thank You!

- Blueridge Transportation Group
- Brazoria County
- Brazos Transit District
- City of Conroe
- City of League City, TX
- City of Missouri City
- City of Sugar Land
- Colorado Valley Transit, Inc.
- Fort Bend County-Public Transportation Dept.
- Galveston Island Transit
- Gulf Coast Center/Connect Transit
- Harris County Toll Road Authority
- Harris County Transit
- HC CSD Transit Operations
- HCID#4
- Houston METRO
- Houston TranStar
- Montgomery County
- Port Houston
- TxDOT
- Waller County



Updated Communications Map

- Rajat Rajbhandari, Ph.D., PE
 - Research Engineer, Research & Implementation – Dallas
- Continuing to add to previous map
 - Standard attribute tables
 - ESRI and Agency Fields
 - Coordination with agencies for update



Next Steps

- Update Goals/Objective of ITS Plan
- Continue adding content to website
- ITS architecture
 - Visiting with stakeholders
 - Equipment and interfaces
 - Agreements, document, projects
- Comment Period



Contact Information

Charles R. Stevens Jr., P.E., PTOE
Texas A&M Transportation Institute
e-mail: c-stevens@tamu.edu

