U.S. DOT Traveler Information Data Quality Webinar
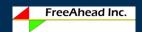
November 2, 2009

Transportation leadership you can trust.

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Webinar Agenda

- **Welcome and Introductions**

- **Recap Since Previous Data Quality Workshop**

- **Review of Comments Received on the NPRM and Status of Rulemaking**

- **Traffic Data Quality Measurement – Shawn Turner, TTI**

- **Guidance on the Information Sharing Data Exchange Formats**

- **Review and Discussion of Advance Questions**
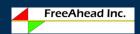
- **Open Discussion, Questions and Answers**

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Welcome and Introductions

- **Bob Rupert – FHWA Office of Operations**

- **Tom Stout – FHWA Office of Operations**

- **David Hill – FreeAhead Inc.**

- **Erin Flanigan – Cambridge Systematics Inc.**

- **Shawn Turner – Texas Transportation Institute**

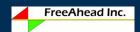CAMBRIDGE SYSTEMATICS

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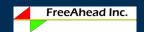
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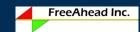# Recap Since Previous Data Quality Workshop

- **July 8-9, 2008 – Data Quality Workshop**

- **December 17-18, 2008 – Probe Data Workshop #1**

- **September 10-11, 2009 – Probe Data Workshop #2**

- **NPRM Published January 14, 2009**

- **February 17, 2009 – NTOC Briefing on Real-Time System Management Information Program**

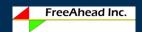- **April 15-17, 2009 – TRB Intelligent Transportation Systems Committee Midyear Meeting**

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Data Quality Workshop – Washington, D.C.

- **Workshop Objectives**

  - **Engage stakeholders on data quality issues before §1201 NPRM release**

    - **Not a substitute for formal comment**

  - **Expose current obstacles that prevent data quality exchange**

  - **Identify how private enterprise can express their products according to these terms**

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Data Quality Workshop – Washington, D.C.

- **Workshop Expectations**
  - **Provide an update on data quality since 2004 report**
  - **Explore issues on data quality and data exchange**
  - **Discuss public and private sector issues on data quality**
  - **Present case studies**
  - **Provide an overview of the upcoming NPRM**
  - **Present proposed data quality measures**
  - **Receive feedback from participants**

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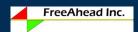# Data Quality Workshop – Washington, D.C.

- **Workshop Agenda**
  - **Welcome & Introductions**
  - **White Paper Presentation & Previous Studies on Data Quality**
  - **Introduction of Broad Issues & Setup for Breakout Session**
  - **Breakout Session to Discuss Public & Private Sector Issues**
  - **Report Back from Breakout Session**
  - **I-95 Corridor Probe Data Contract**
  - **Case Study – GPS Phones as Traffic Sensors**
  - **NPRM for RTSMIP & Real Time Information Goals for ITS Program**
  - **Proposed Data Quality Measures**
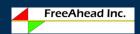 - **Recap and Summarize Workshop**

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Data Quality Workshop – Washington, D.C.

- **White Paper**
  - **FHWA-HOP-08-038**
  - **http://ops.fhwa.dot.gov/publications/fhwahop08038/**

Data Quality Workshop – Washington, D.C.

- **Public Sector Issues Identified**
  - Data customers are diverse and with differing needs
  - Public acceptance/approval primary data quality standard
  - Desirable to have more specific performance measures
  - Procurement advanced through better awareness of standards for data collection
  - Ownership of the data
  - Metadata can increase the confidence in the data
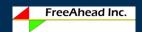 - FHWA can assist through outreach, communication and education

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Data Quality Workshop – Washington, D.C.

- **Private Sector Issues Identified**
  - Data types provided: speed, travel time, volume, occupany and incidents
  - Latency is intrinsic to the nature of the system producing the data – push vs. pull
  - Data fusion may obscure quality issues
  - Data quality generally guaranteed in the terms of the contract
  - XML, KML, TMC, DATEX2 standards are used
  - Customers obtained based on coverage, consistency and price
  - Data obtained from many different technologies

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Data Quality Workshop – Washington, D.C.

Proposed Data Quality Measures

|	Travel Time	Speed	Weather Information
Accuracy	10-17% error range for data collection and travel time estimation	5-20% error range for speed measurement or estimation	Recommended to contain information that matches actual conditions
Completeness	95-100% temporal coverage	95-100% temporal coverage	100% (24 hr/7 days)
Validity	90-100% validity for sensor or instrumented car data collection	90-100% validity for sensor or instrumented car data collection	90-100% validity for sensor
Timeliness	Less than 1 minute for local implementation and less than 5 minutes for national implementation	Real-time	An hourly update
Coverage	Sensor spacing of 1 mile and 100% area coverage	100% area coverage	100% area coverage
Accessibility	Less than 5 minutes and warning system if traffic information is more than 5 minutes old	Less than 5 minutes and warning system if traffic information is more than 5 minutes old	5-10 minutes

Probe Data Workshop 1 – Irvine, CA
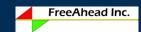
- **Objectives**
  - **Promote understanding of probe data services market**
    - Articulate probe data provider capabilities
    - Understand technical limitations
  - **Improve the utility of probe data services for public sector applications**
    - Well articulated public sector needs
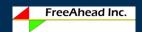   - Describe the service gap to support public sector applications

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Probe Data Workshop 1 – Irvine, CA

- **Workshop Agenda**
  - **Probe data case studies**
    - **NCHRP study on probe data (70-01)**
    - **Georgia Navigator Cell Phone Probe Data**
    - **I-95 Corridor Vehicle Probe Program**
    - **European developments in data services**
    - **CCIT Mobile Millennium**
    - **Bluetooth Based Validation Methods Developed at Maryland CATT**
    - **Brickyard 400 - Indianapolis Bluetooth Test**
  - **Facilitated discussions on agency needs for probe data**
    - **What data are agencies using now and where is coming from?**
    - **What trends drive the need for alternate sources of new data?**
    - **What methods does your agency use to assess new sources of data?**
    - **Where are the data gaps?**
    - **How are you currently using probe data services now?**
  - **Methodology for Evaluating GPS Probe Data**

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Probe Data Workshop 1 – Irvine, CA

- **Facilitated Discussion Highlights**
  - **Data are collected specifically for applications**
    - Paradox **–** funding priorities lead towards traveler information
    - Lane by lane collection versus travel time data (OD) methods
    - Source matters **–** point detection or probe data (captures free flow)
    - What is the error rate and what is the acceptable error
    - Defining segments
  - **VII could be the provider of the common set of data**
  - **Arterial performance**
    - Hard stops have high emissions impact
    - Transit monitoring not a substitute for arterial data

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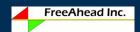# Probe Data Workshop 1 – Irvine, CA

- **Facilitated Discussion Highlights**
  - **Performance Measures**
    - Baseline data for before/after studies
    - Identifying locations where physical improvements are needed
  - **Weather impacts on flow performance**
  - **Policy vs. technology**
    - HPMS future?
    - Technology for technology sake

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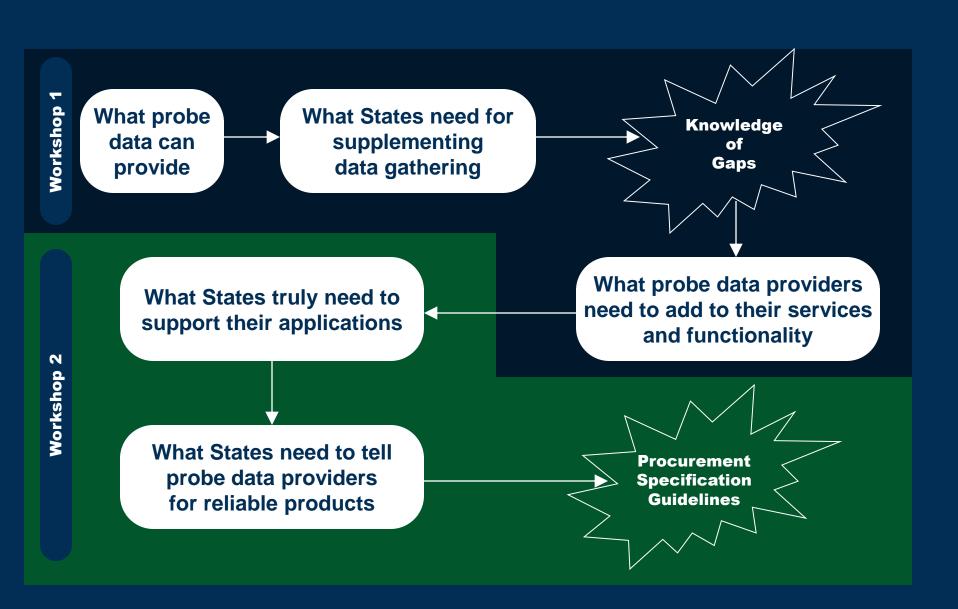FreeAhead Inc.

Probe Data Workshop 1 – Irvine, CA

- **Second Facilitated Discussion Highlights**
  - **Given what probe data services provide, how will these services satisfy the growing needs of the public sector?**
    - **Operations for planning & planning for operations**
  - **Do we use the probe data differently from other sources?**
    - **Data fusion is key – collecting in new ways, but reporting of the data is the same**
  - **Can existing tools use probe data?**
    - **New methods and processes would need to be developed**
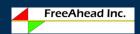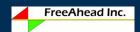   - **Sometimes probe data is being forced into existing applications**

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Data Probe Workshops

Workshop 1

What probe data can provide → What States need for supplementing data gathering → Knowledge of Gaps

Workshop 2

Knowledge of Gaps → What probe data providers need to add to their services and functionality → What States truly need to support their applications → What States need to tell probe data providers for reliable products → Procurement Specification Guidelines

Probe Data Workshop 2 – Philadelphia, PA

- **Workshop Objectives**

    - **Assist State DOTs with:**
        - **exploring data service procurements**
        - **understanding probe data applications**
        - **understanding the different data service markets for public sector applications.**

    - **The workshop discussion will explore procurement methods, basic data needs, and lessons learned on integration and application of probe data in an operational setting.**

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Probe Data Workshop 2 – Philadelphia, PA

- **Workshop Agenda**
  - **Recap and update of what we heard in Irvine**
  - **Case studies on recent state procurements**
    - **Wisconsin DOT**
    - **Michigan DOT**
    - **Delaware DOT**
    - **Pooled Fund Study**
  - **Private sector panel discussion**
  - **Considerations for probe data procurements**
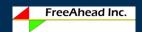 - **Facilitated discussion – Probe data procurement**

Probe Data Workshop 2 – Philadelphia, PA

- **What makes a good procurement document?**

  - **Be specific on what is it you want…**
    - **Not the "how", but the "what"**
    - **Focus on the outcome**

  - **Define what it is that you want to be measured**
    - **How to evaluate (what is your ground truth)**
    - **How do you then pay**

  - **Be specific, but be sure to be flexible at the same time**

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Probe Data Workshop 2 – Philadelphia, PA

- **Learn from Others**

  - **Don't reinvent the wheel**

  - **Good Examples:**

    - **I-95 CC**
      - Well done for its detail and specifics

    - **Wisconsin**
      - Offered flexibility on payment structure
      - Process was RFI to RFP
      - Offered addendum to further clarify/ refine requirements

    - **Michigan**
      - Being questioned about the "deliverable"
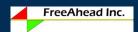   - Phasing from urban to rural to freight

NTOC Briefing – February 17, 2009

- **Purpose of Briefing**

  - **General understanding of the Real-Time System Management Information Program**

  - **General understanding of the Regulatory Benefit-Cost Analysis**

  - **Next Steps / Actions**

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SAFETEA-LU, Subtitle B, Section 1201

Real-Time System Management Information Program

- **Establish a real-time system management information program in all States**

- **Capable of monitoring, in real-time, the traffic and travel conditions of the major highways**

- **Capable of sharing real-time information to address congestion problems and to facilitate national & regional highway traveler information.**

- **As regional ITS architectures are developed / updated, they will explicitly address real-time highway & transit information needs and the systems needed to meet such needs.**

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TRB Intelligent Transportation Systems Committee Midyear Meeting

- **Workshop on Identifying Traveler Information Research Needs to Achieve All Roads-All Modes-All the Time**

  - DOTs are doing a good job in conveying planned events.

  - Monitoring of exceptions to normal conditions is adequately performed.

  - Freeway speed maps and video/snapshots are good where there is coverage, often limited in rural areas and on arterials.

  - Radio and TV are dominate in providing traffic information - perceived as being free.

  - User generated content (tipsters) is a good source of information that is becoming more widely used.

  - The day-to-day operations at transit agencies and DOT's is good.

TRB Intelligent Transportation Systems Committee Midyear Meeting

- **Top research needs identified:**

  - How do we relate data quality standards to different applications?

  - How do we integrate user generated data into traveler information systems?
    - What are the barriers to overcome?
    - How should it be managed?

  - How can agencies achieve optimal level of data collection considering key trade offs and constraints such as:
    - Funding
    - Coverage vs. quality
    - Public vs. private
    - Different users
    - Different modes

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TRB Intelligent Transportation Systems Committee Midyear Meeting

- **Top research needs identified:**

  - What are the specialized information needs of commercial vehicle operators and various modes?

  - What are the barriers to allow more incident data from emergency services to be available?

  - Do a better job of forecasting travel time information.

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Webinar Agenda

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Notice of Proposed Rule Making

- **Published January 14, 2009**

- **Comments received until April 14, 2009**

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Summary of Comments on NPRM

- *Thirty-two respondents provided comments on the NPRM. Although the number of respondents was smaller than expected, they do provide a good cross-section representation of those affected by the proposed rule. Responses were received from 15 DOTs, two MPOs, one public safety operations agency, AASHTO, TTI, ITSA, two coalitions, seven from industry, and two individuals.*

- *The majority of the respondents support the concepts presented in the proposed rule. However, many suggested that the requirements contained in the rule should be relaxed or negotiated.*

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Major Concerns Raised in Comments
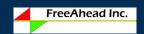
1. Insufficient time is allowed in the proposed rule to deploy the urban and rural segments of the system. FHWA needs to consider employing a phased approach, establishing goals and targets for the program with much longer timelines.

2. Implementation cost will be a barrier to many states.

3. In most states, the named eligible federal funds in the proposed rule are not available for implementation of the Real-time System Management Information Program (RTSMIP) as they are committed, through the planning process, to other projects. Any attempt to reallocate these funds will be problematic.

4. Generally CMAQ funds need to be expended within three years of programming. This shorter time frame and more limited flexibility make the use of CMAQ funds for this program more difficult.
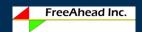
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Major Concerns Raised in Comments

5. We proposed that the goals of the NPRM be tied to the new authorization and a new program category with funding be established in the authorization.

6. Important implementation details are not contained in the proposed rule. It does not provide guidance as to consistency, accuracy, and validation or how often the states have to evaluate accuracy, timeliness, or how compliance will be determined.

7. A state cannot assure the accuracy and timeliness of data received from other parties.

8. The road and weather updates specified for rural areas are not realistic. Road weather information generally is obtained through observation, if at all, and it is impractical to provide 20 minute updates.
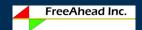
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Major Concerns Raised in Comments

9. The state and regional ITS architectures are developed based on regionally determined customer needs. The RTSMIP as proposed would not be, which is viewed by the states as a significant flaw or concern in the proposed program. The time required to update regional architectures could severely impact the timeframe for implementing the required program.

10. Many states do not provide, nor do they need, the 24/7 operations that is imposed to satisfy the requirement of the proposed rule.

11. A real-time system management information program requiring the inclusion of transit data may require agreements with other state and local agencies, which the state DOT has no control or jurisdiction over.
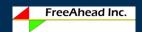
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Major Concerns Raised in Comments

12. For roadway or lane blocking incidents and events, it is requested that the delivery time of the information be clarified to mean detected, reported or verified by the DOT.

13. Several of the Metropolitan Areas identified are in more than one state. How will FHWA or respective Division Offices judge compliance with the rule in situations where one DOT has instituted a program in their portion of the metropolitan area, but the metropolitan area as a whole is not meeting the requirements of the program?

14. The time requirements within this rule may actually stifle region or statewide attempts to increase the spread of Real-time System Management.

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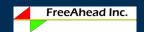
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Major Concerns Raised in Comments

15. Should incorporate a component to archive and generate aggregated planning level data with the Real-Time Information Program. The development of this component should be coordinated with an MPO's efforts on data archive and data warehouse when ever possible.

16. The requirement to provide lane closure information for roadway construction within 10 minutes of notification in metropolitan areas and 20 minutes in non-metropolitan areas with 90 percent availability and 85 percent accuracy is not attainable at this time because contractors have a tendency to change and not report updated construction start/end times and specific lane closures to the DOT.

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Major Concerns Raised in Comments

17. Reference in the proposed rule is made to data fusion and archiving. The amount of data that could be generated by the proposed rule adoption would be overwhelming to state's resources if required.

18. The automated linkage of incident information from state police to the state DOT often does not exist and will be a significant burden to implement to meet the requirement for reporting of incident information.

19. While the proposed segment lengths may be appropriate for some purposes, we believe a more appropriate segment definition should focus more on links between roadways such as interchanges and intersections.
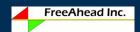
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Major Concerns Raised in Comments

20. If the un-funded NPRM goes in to effect as a rule, and states cannot fully comply due to staffing and/or funding limitations, would this create a legal vulnerability for the state in the event of an incident? Would the existence of the rule place the state at a higher legal risk due to funding limitations preventing them from executing all portions of the NPRM?

21. Although the proposed rulemaking requires states to determine "routes of significance" in metropolitan areas exceeding a population of 1,000,000 inhabitants, it does not provide clear factors for states and Metropolitan Planning Partners to select the "routes of significance."

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Next Steps

- **Final rule development**

  - **Based on comments received**

  - **Revised regulatory analysis**

  - **Aligned with DOT programs**

  - **Possible release in early 2010**
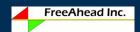
CAMBRIDGE
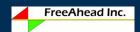**SYSTEMATICS**

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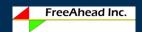
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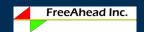# Data Exchange Formats

Section 1201 of SAFETEA-LU

- "Not later than 2 years after the date of enactment of this Act, the Secretary shall establish data exchange formats to ensure that the data provided by highway and transit monitoring systems, including statewide incident reporting systems, can readily be exchanged across jurisdictional boundaries, facilitating nationwide availability of information."

- "States shall incorporate the data exchange formats established by the Secretary … to ensure that the data provided by highway and transit monitoring systems may readily be exchanged with State and local governments and may be made available to the traveling public."

- ***But, Section 1201 does not specify a deadline for state's use of these data exchange formats***
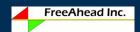
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Data Exchange Formats

- **On October 15, 2007, FHWA announced publication of interim guidance and solicited comments on the interim guidance in the Federal Register.**

- **The guidance contained a Real-time Information Program (RTIP) ConOps that used the National ITS Architecture as a source for the functional specifications.**

- **The RTIP concept was mapped to the ATIS01-Broadcast Traveler Information Market Package and defined seven functional specification categories.**

- **The categories were then associated with one or more ITS Standard**

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Data Exchange Formats

Functional Specification Categories

1. General Specifications

2. Traveler Information

3. Traffic Management

4. Transit Management

5. Maintenance and Construction Management
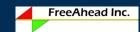
6. Parking Management

7. Emergency Management

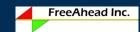CAMBRIDGE SYSTEMATICS

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Data Exchange Formats

Functional Specification Categories

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Data Exchange Formats

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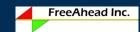CAMBRIDGE SYSTEMATICS

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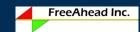# Data Exchange Formats

Functional Specification Categories

1. **General Specifications**

2. **Traveler Information**

3. **Traffic Management**

4. **Transit Management**

5. **Maintenance and Construction Management**

6. **Parking Management**

7. **Emergency Management**

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Data Exchange Formats

Functional Specification Categories

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4. Transit Management

5. **Maintenance and Construction Management**
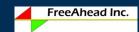
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Data Exchange Formats

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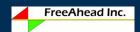CAMBRIDGE
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Data Exchange Formats

Functional Specification Categories

1. General Specifications

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Data Exchange Formats

Standards Referenced

- **IEEE 1512 - Common Incident Management Message Sets for Use by Emergency Management Centers**

- **IEEE 1512.1 - Incident Management Message Sets for Use by Traffic Management Centers**

- **SAE J2354 - Message Sets for Advanced Traveler Information System**

- **TMDD Standard for Traffic Management Center-to-Center Communications**

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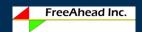
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Data Exchange Format Comments

- **In response to the solicitation for comments, 11 organizations responded**
  - DOT – 5
  - MPO – 1
  - Industry – 2
  - Operating agency coalition – 1
  - Academia – 1
  - Consultant – 1

- **BMW and Clear Channel both encouraged FHWA to adopt a standard data format. Both also supported and recommended implementing the Transport Protocol Expert Group (TPEG) traffic protocols as a successor to the SAE J2354 standard.**

- **The notice specifically solicited comments on the following nine questions**

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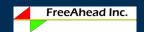
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Responses to Questions

1. **What guidance would facilitate the application of data exchange formats in your organization?**
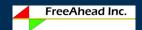
    - *A reference design that could be used by vendors, contractors, integrators, and a certification body*

    - *Type of data and content*

    - *Guidance regarding how global the interoperability needs to be, and is it the same for all data*

    - *Acknowledge existing systems that have proven ability to interoperate and not require changes merely to agree with this standard*

    - *Guidance on implementation approach including extent agencies are to design their systems around the RTIP and identify who provide oversight and approval*

    - *Collect best practices on how others used the formats*

    - *An information exchange portal*

Responses to Questions

2. **Does the reference document provide adequate detail on the nature of interoperability to be attained through application of the data exchange formats?**

   - *The guidance in the reference document succeeds in terms of the messages required to achieve interoperability*

   - *It is confusing regarding standards vs. guidance. Section 1201 (C) 2 says all states shall adopt the data exchange formats established. Yet, the guidance document says that this is not a regulation or standard for states, but recommended guidance that is considered good practice. If it is merely guideline and not a regulation or standard (and without a time frame), there is no assurance that states will comply.*
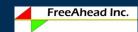
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Responses to Questions

3. **Does your organization make use of the ATIS–01 Broadcast Traveler Information Market Package defined in the National ITS Architecture?**

    - *All but one respondent stated that their agency had implemented portions of the market package. The exception stated that they were developing an information sharing platform.*
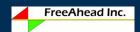
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Responses to Questions

4. **What is a reasonable interval between publications of new versions of the data exchange formats?**

    - *A minimum of 5 years, but no longer than 10 years*

    - *Likely 12 to 18 months*

    - *Should not adhere to a fixed time frame. Should be driven by need for new features, known deficiencies with the standard, and any ambiguities in interpreting the standard*

    - *No more frequently than every two years, three years is preferable*

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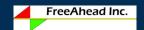
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Responses to Questions

5. **Is there sufficient detail in the "Functional Area/Requirement Description?" If not, how much further requirement description would be required?**

    - *The Functional Specification Descriptions are at a high level and seem to provide enough detail on the general information to be exchanged. While this is adequate for the planning level of the RTIP, there will need to be more guidance from FHWA as systems begin to move into design and implementation.*

    - *The detail required depends on whether the data formats are guidelines or standards. The interim guidance does not make this distinction.*
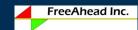
Responses to Questions

6. **Many of the requirements map to messages that have optional elements. Should there be changes to the identification of the optional elements, which would change the nature of the message as defined by the Standard Development Organization?**

   - *If an element is defined as optional in the identified standard but is required to fulfill the guidance requirement, then it should be identified as required in that context.*

   - *Due to the highly diverse nature from cities and counties to states and regions, optional elements are a must. If the suggestion is to eliminate optional elements, then the answer is NO!*

   - *It is recommended that the proposed RTIP Specifications table indicate which dialogs/messages are fully dependant on optional elements.*

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Responses to Questions

7. **Does your organization make use of the ITS Standards that are referenced in the data exchange formats?**

- *Two of the responses were simply, yes*
- *The remainder, except one, indicated that they used one or more of the referenced ITS standards*
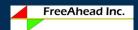- *TMDD was referenced by the largest number of responders*

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Responses to Questions

8. **Would independent certification or self-certification be more effective for validating the application of the data exchange formats?**

    - *Independent and self-certification should not be considered mutually exclusive. Self-certification through the standard document, valid authoritative schema, and a reference implementation would encourage use of the standards and promote interoperability.*

    - *Having a certified, working exchange format improves system design, implementation, and maintenance.*

    - *This question suggests standards rather than guidance, however self-certification would be more appropriate.*
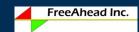
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Responses to Questions

8. **Would independent certification or self-certification be more effective for validating the application of the data exchange formats? - Continued**

   - *Either approach could work if resourced appropriately. We would prefer to self-certify. If no additional funds are made available, the self-certification requirements should be modest.*

   - *An independent certification body should be established.*

   - *Independent certification is more unbiased, however in-house is more timely and cost-effective.*

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Responses to Questions

9. **Do the data exchange formats relate to the operational practices of your organization?**

   - *The formats indicated are not currently implemented, but most of the functional specifications relate to our operational practices.*

   - *Some of the services, e.g. parking, emergency management, are not delivered in real-time.*

   - *Several indicated, "generally yes, but adaptations to existing systems must consider the agency's operational practices first.*

   - *There has been minimal interest in real-time data feeds in our state.*

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Data Exchange Format Guidance – Both Sides of the Issues
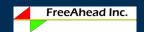
- ## *Requirements Detail*
  - To support testing compliance, further decomposed detailed requirements need to be defined
  - Since 1201 doesn't mention compliance, the current requirements are sufficient to point to the appropriate ITS standard/message

- ## *Mandatory and Optional Data Elements*
  - To meet some of the RTIP requirements, optional data elements need to be specified as mandatory in the guidance
  - It should be obvious which data elements are needed to meet a requirement. The specification of which ITS Standards data elements are mandatory should be left up to the SDOs

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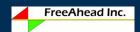# Data Exchange Format Guidance Issues

- **_Overlapping Standards_**
  - In some cases, more than one ITS Standard is referenced for an RTIP requirement. For purposes of RTIP interoperability only one standard should be specified.
  - It is unrealistic to mandate one ITS Standard since other constituent SDOs have viable messages to accomplish the same intent of the message.

- **_Interface Schema Definition_**
  - The guidance does not go into the details for unambiguous specification of the interface. A minimum RTIP interface schema definition needs to be provided by the guidance.
  - A RTIP interface schema definition is considered too restrictive and goes beyond what is provided by the ITS Standards.

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Other Considerations

- **Over two years have passed since the interim guidance was developed—many things have changed. We solicit your input about the use of**

  - **TMDD v2**

  - **Transport Protocol Experts Group (TPEG) Protocol**

  - **Traffic Flow and Prediction (TFP) Protocol**

  - **RDS TMC**

- **Your thoughts on the breadth-of-scope of the Interim Guidance's requirements**

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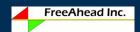
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Webinar Agenda

- Welcome and Introductions

- Recap Since Previous Data Quality Workshop

- Review of Comments Received on the NPRM and Status of Rulemaking

- Traffic Data Quality Measurement – Shawn Turner, TTI

- Guidance on the Information Sharing Data Exchange Formats

- **Review and Discussion of Advance Questions**

- Open Discussion, Questions and Answers

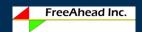CAMBRIDGE
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Advance Questions

1. **What information do you believe is needed or would be most helpful in future guidance documentation that will be developed to determine how the Real Time Traveler Information Program will be implemented and administered?**

   Clear guidance on how the compliance will be evaluated is needed. We assume performance will be evaluated using a sampling and analysis approach. We need to know the sample size, frequency, and timing of the sampling so a data archive system can be designed and implemented (including the report parameters) within the desired schedule. Need clear guidance on the activities being evaluated so that we can archive all the relevant data. In some cases this may require that a manual data input be made in addition to the software generated event data.
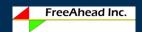
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Advance Questions

1. **What information do you believe is needed or would be most helpful in future guidance documentation that will be developed to determine how the Real Time Traveler Information Program will be implemented and administered? - Continued**

   I would like more guidance and/or lessons learned in working with statewide or national datasets that come from cell phone probe vehicles like INRIX or Navtech. Also an evaluation of the Pros and Cons to the various Real Time data collection devices would also be helpful in evaluating what technology to use.
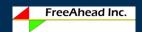
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Advance Questions

1. **What information do you believe is needed or would be most helpful in future guidance documentation that will be developed to determine how the Real Time Traveler Information Program will be implemented and administered? - Continued**

    Standardization of approach and data output by all agencies.

    Development of a guidance document that can be incorporated into a states real-time traveler information program.

    Show the connections between ATMS solutions, 511 Traveler Information Systems, and other State DOT operational tools

Advance Questions

2. **What data formats do you believe are most appropriate for use in developing the data exchange standards in any future guidance documentation? What are the constraints in using the formats and how can they best be overcome?**

   We have been using XML Direct for our center-to-center data exchanges and this seems to work well.
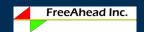
Advance Questions

2. **What data formats do you believe are most appropriate for use in developing the data exchange standards in any future guidance documentation? What are the constraints in using the formats and how can they best be overcome? - Continued**

Ideally we work with ESRI data for GIS, MS Access or MS Excel for tabular data. As long as I can import into any of these programs then I'm good to go. Whatever format you use, it should be documented with Metadata so we know what the fields and codes mean. Another idea is to use XML to package data but my feeling is most engineers and analysts are not software developers and would be unable to import into their software.
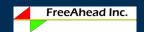
Advance Questions

2. **What data formats do you believe are most appropriate for use in developing the data exchange standards in any future guidance documentation? What are the constraints in using the formats and how can they best be overcome? - Continued**

We would recommend the XML feed we will be receiving through our 511 effort.

We currently do not have a tool to evaluate large data sources and it currently prevents real-time performance metrics to be established until the Department finds a solution. Currently the Department has not had a lot of experience with this format because it has not received real-time information from its 511 vendor.
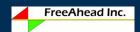
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Advance Questions

3. **How should existing standards for location referencing, such as LRMS and RDS-TMC codes, be addressed for the Real Time Traveler Information Program?**

   We use route number and milepost for our 511 referencing system.

   For point locations we can translate these values to lat/long if that would be preferable. Events that span over a section of the road could be described by the beginning and ending lat/long coordinates.
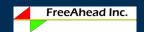
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Advance Questions

3. **How should existing standards for location referencing, such as LRMS and RDS-TMC codes, be addressed for the Real Time Traveler Information Program? - Continued**

   I could use KML/XML files to drape onto our geographic web application or some other geographic web service. If one has a tabular data with Lat/Long, or Northing/Easting coordinate pairs then I can easily figure out where in the world it is but this only works with points. All of us can work with ESRI data formats (SHP, Feature class).
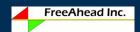
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Advance Questions

3. **How should existing standards for location referencing, such as LRMS and RDS-TMC codes, be addressed for the Real Time Traveler Information Program? - Continued**

   We recommend a standardized way of addressing location referencing.   Each referencing tool has there pros/cons, but all of the states should be consistent.

Advance Questions

4. **What quality assurance processes are appropriate for evaluating and reporting the data for the Real Time Traveler Information Program? How would you recommend that data and information quality be gauged?**

    We believe a sample evaluation case study needs to be developed so everyone can understand what is expected and prepare accordingly. We are not able to invest scarce resources into a 511 system enhancement if we really don't understand how we need to archive, retrieve and evaluate our data to measure compliance.
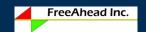
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Advance Questions

4. **What quality assurance processes are appropriate for evaluating and reporting the data for the Real Time Traveler Information Program? How would you recommend that data and information quality be gauged? - Continued**

   I would feel much more comfortable using data that has been pre-approved and QA'ed. If I have confidence that the information reflects what is truly going on the ground, I am more likely to use it. I think having an unbiased and independent review committee or entity approve data for consumption then I am much more willing to use it. For example, Consumers Reports (CR) ranks products. I figure if CR ranks something high then it is safe to buy and I don't have to waste my time doing my own research.
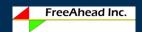
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Advance Questions

4. **What quality assurance processes are appropriate for evaluating and reporting the data for the Real Time Traveler Information Program? How would you recommend that data and information quality be gauged? - Continued**

We have just began to obtain and use real-time information for our operations and traveler information programs. The Department would like to obtain from this webinar, information to begin to effectively evaluate this data for accuracy and to also validate.

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Webinar Agenda

- **Welcome and Introductions**

- **Recap Since Previous Data Quality Workshop**

- **Review of Comments Received on the NPRM and Status of Rulemaking**

- **Traffic Data Quality Measurement – Shawn Turner, TTI**

- **Guidance on the Information Sharing Data Exchange Formats**

- **Review and Discussion of Advance Questions**

- **Open Discussion, Questions and Answers**

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Next Steps

- **Summary of webinar will be produced**

- **Final rule development and publication**

- **Guidance documentation to be developed and released**

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