

# *Management Information Systems: Moving to Asset- level Data*

**Energy Exchange 2016**  
Providence, RI • August 9, 2016

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INL/CON-16-37700/2

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## ***Topics***

- **The evolving shape of fleet data**
- **Where do you start?**
- **Implications of transition to vehicle-level data**
- **Resources: what's available?**
- **Considerations & Timeline**
- **Discussion / Q&A**



## Changing Shape: Old

### Section I – by vehicle type, size, engine configuration

- Current year inventory, acquisitions



### Section II – by vehicle class, ownership

- Lease Costs
- Maintenance Costs
- Indirect Costs
- Depreciation
- Mileage



### Section III – by fuel type

- Fuel consumption
- Fuel cost



## Changing Shape: Old

### Section 1 – by vehicle type, size, engine configuration

- Current year inventory, acquisitions
- Current-year disposals
- Out-year acquisitions, disposals



### Section 2 – by vehicle class, ownership

- Lease Costs
- Maintenance Costs
- Indirect Costs
- Depreciation
- Mileage
- Acquisition costs
- Subsets for law enforcement, armored, emergency response



### Section 3 – by fuel type, location, exemption

- Fuel consumption
- Fuel cost



## ***Problems With “Sectional” Data***

- **Inhibits detailed “cross-section” analysis**
  - Fuel consumption by vehicle type
  - MPG by fuel type or by vehicle type
  - Cost per mile by ... anything
  
- **Separate sections = possible data quality problems**
  - Missing data
    - Vehicles missing fuel consumption data
  - Inconsistent data
    - LE vehicles w/o LE fuel or LE miles and costs

## *Thinking About Per-vehicle Data*

- **Earliest discussions ~2009**
  - ... within FAST management team
  - ... suggested by a couple agencies
- **Discussions in earnest ~2014**
  - FAST management team
  - GSA Fleet systems team
  - Early lists of potential data elements floated with agencies
- **EO 13693 (March 2015)**
  - “... agency annual asset-level fleet data is properly and accurately accounted for in a formal agency Fleet Management System and ... submitted to the Federal Automotive Statistical Tool reporting database”

# Changing Shape: New



V-ID

- Vehicle Type
- Engine Configuration
- Acquisition Date
- Disposal Date
- etc.

- Lease Costs
- Maintenance Costs
- Indirect Costs
- Depreciation
- Mileage

- Fuel Consumption
- Fuel Cost



- Fuel Consumption
- Fuel Cost



V-ID

- Vehicle Type
- Engine Configuration
- Acquisition Date
- Disposal Date
- etc.

- Lease Costs
- Maintenance Costs
- Indirect Costs
- Depreciation
- Mileage

- Fuel Consumption
- Fuel Cost



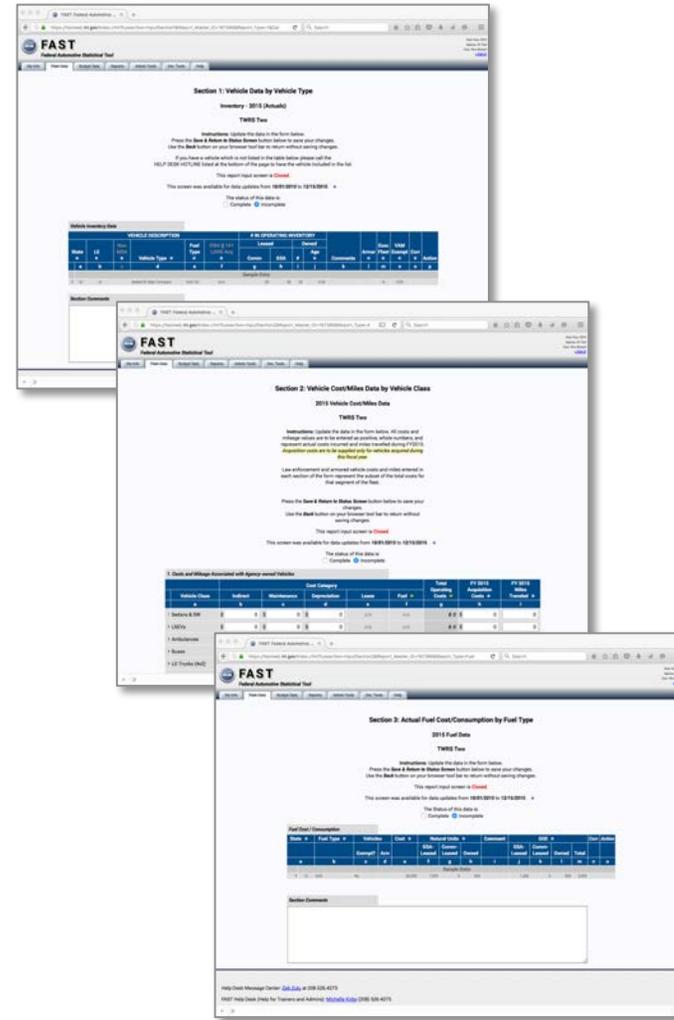
## ***Where Do You Start?***

- **Understand the available resources**
  - Data Element Reference: *What data?*
  - Business Rules Reference: *What is valid?*
  - XML Schema: *How is data structured and formatted?*
  - Excel Import Template: *Alternate data format (with caveats!)*
  
- **Keep up with changes**
  - Current versions of all resources:  
<https://fastweb.inl.gov/help/index.cfm/resources/vehicle-level-data>
  - FAST “what’s new?”
  - FAST emails to agency POCs
  -  @FASTdevs
  
- **Make a plan**
  - Data (including systems)
  - People and processes
  - Testing

## ***Implications: Data and Systems***

- **Data Elements and Business Rules**
  - Which elements do you have?
  - Which elements are you missing?
    - ... and where will they come from?
  - Any elements not relevant to your agency?
  - Some elements depend on agency-specific policy/approach
  - Does your data work with the business rules?
    - Fix the data?
    - ... or fix the business rules?
  
- **Systems**
  - Where is the data?
  - Which systems may need changes?
  - Impacts to both collection (in) and reporting (out)

# Implications: Data and Systems

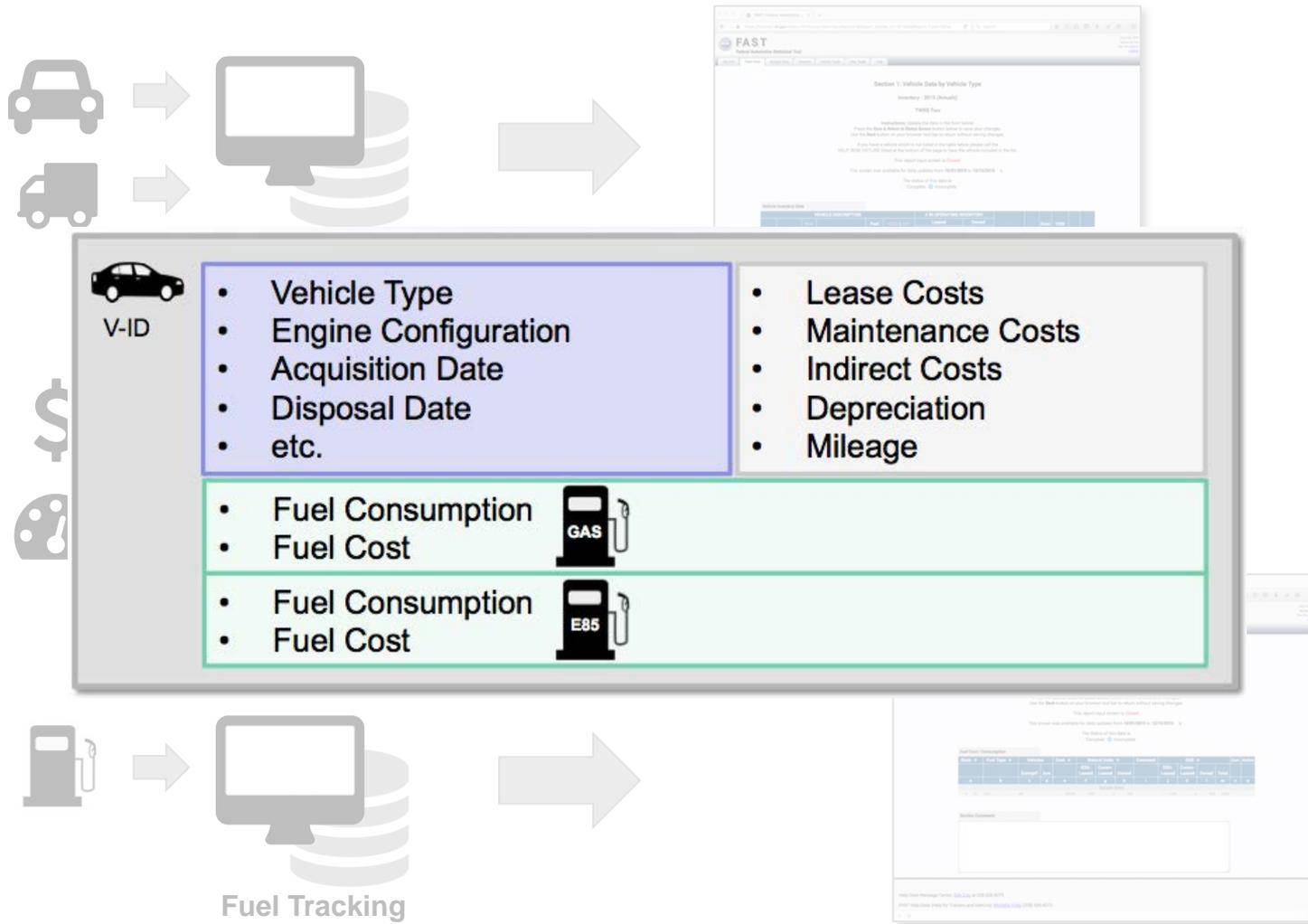



The screenshots show the FAST web application interface, which includes sections for:

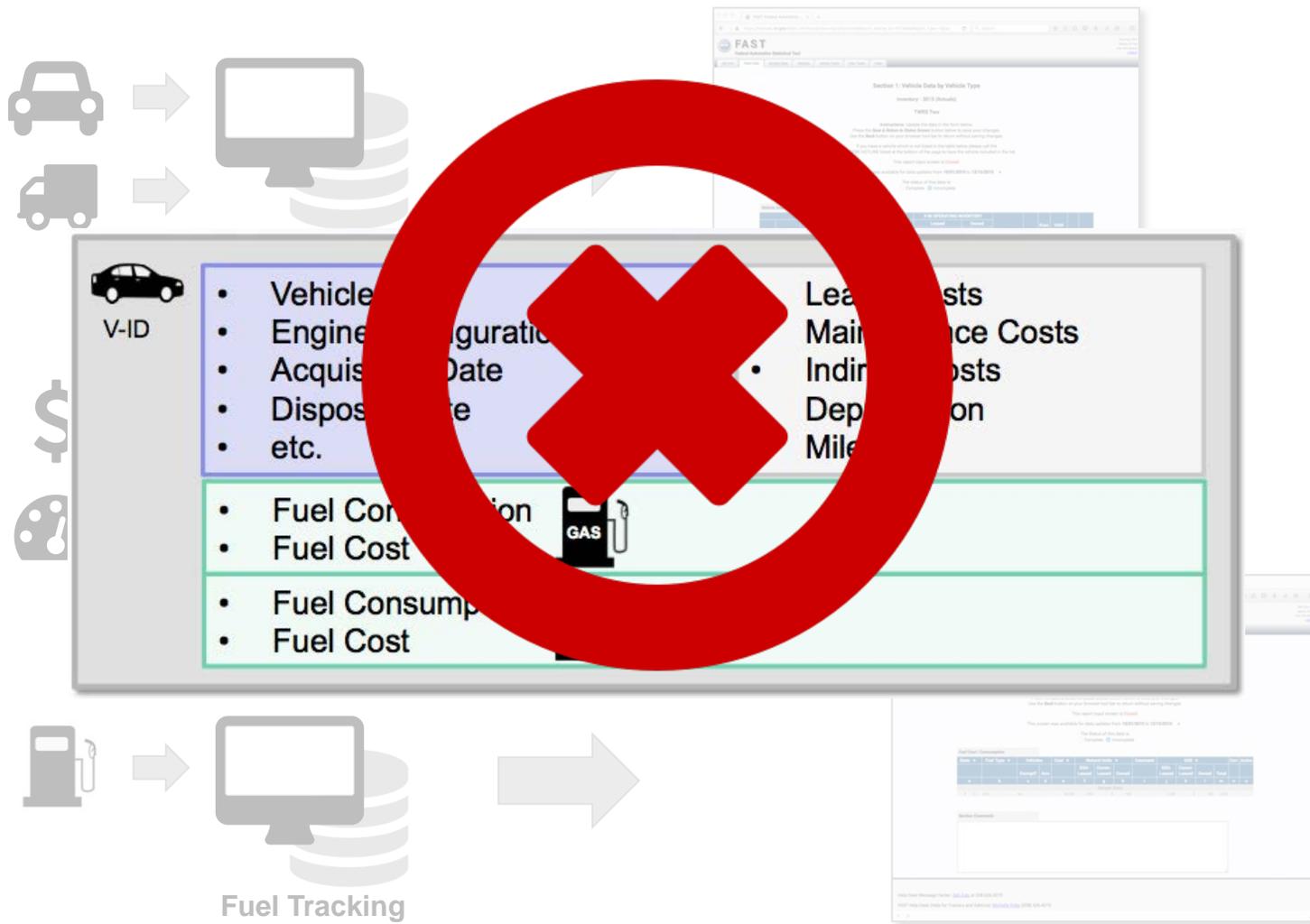
- Section 1: Vehicle Data by Vehicle Type** (Inventory - 2015 (Actuals))
- Section 2: Vehicle Cost/Miles Data by Vehicle Class** (2015 Vehicle Cost/Miles Data)
- Section 3: Actual Fuel Cost/Consumption by Fuel Type** (2015 Fuel Data)

Each section includes a 'TWBS Two' table with columns for Vehicle Type, Fuel, and various metrics. The tables are partially obscured by overlapping windows.

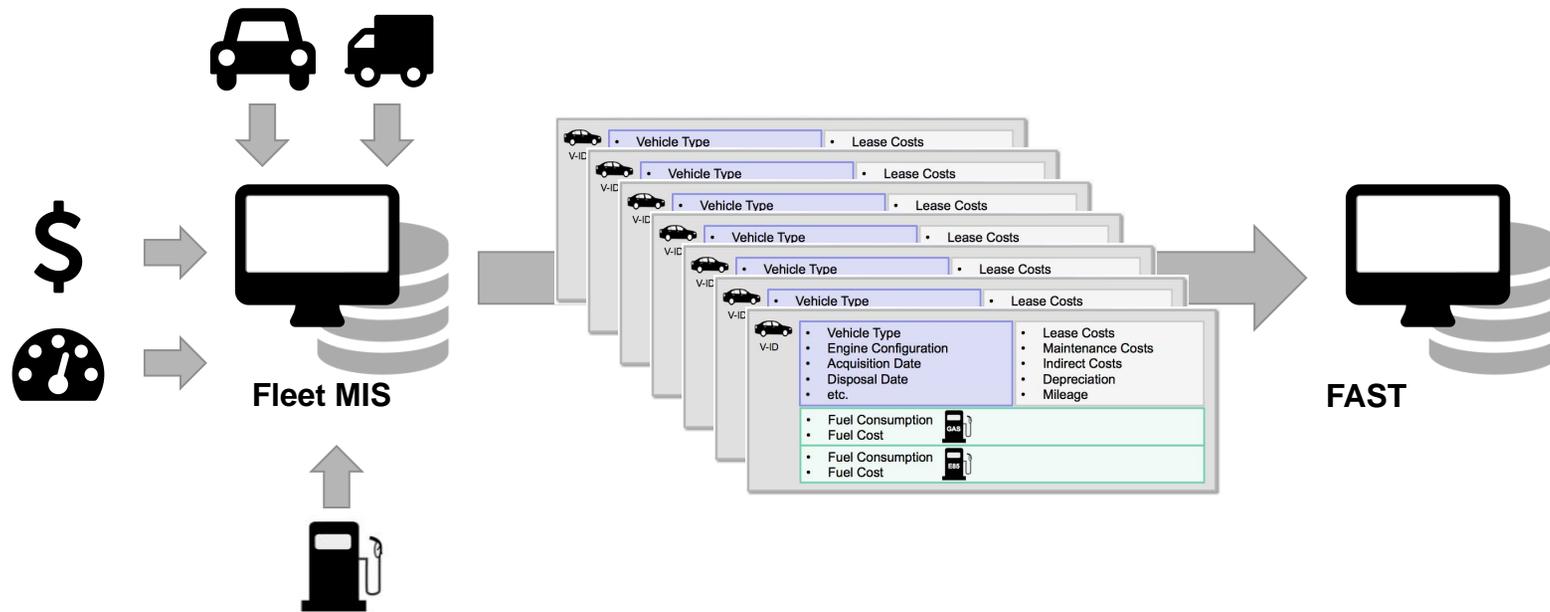
# Implications: Data and Systems



# Implications: Data and Systems



# Implications: Data and Systems



## ***Implications: Processes, People, Testing***

- **Processes and people**

- Changes to processes to get data
- Changes to reporting processes
  - Replaces existing Section 1/2/3 reporting
  - Far less manual data entry
  - Move toward primarily system-to-system reporting
- Who is involved now? In what role(s)?
- ... and who should be involved in the future? How? When?
- Who are your key technical resources?
- ... and how soon can you engage them?

- **Testing**

- How will you know if your data is complete?
- ... and correct?
- How will you test changes in processes?

## ***Resources: Data Element Reference***

- **Defines what will be collected for each vehicle**
- **Understanding the elements is crucial!**
- **New data to be collected:**
  - Make / Model / Year
  - GVWR
  - Vehicle Assignment Type
  - Reason for Disposal
  - Capitalization Designation
  - Salvage %
  - Useful Life
  - Accident Repair Costs

## ***Resources: Data Element Reference***

- **Elements grouped by section**
  - Fleet information (4 elements)
  - Vehicle-level data
    - Vehicle attributes (15)
    - Ownership information (5)
    - Special characteristics & exemptions (8)
    - Operational & cost data (12)
    - Fuel consumption & cost data (6)
  - Out-year projections
    - Acquisitions & disposals (13, 14)
    - Fleet cost projections (7)
  
- **Each element described with**
  - Identifier
  - Name
  - Type / format
  - Description

# Resources: Data Element Reference

Per-Vehicle Information			
Identifier	Name	Type	Description
A-1	Unique Vehicle Identifier	Text	Any identifier--vehicle information number (VIN), asset identifier, or other--that is unique within the agency (i.e., cannot ever be reused within the agency), is permanent (i.e., cannot ever change for a given vehicle), and avoids potential security concerns.
A-2	Make	Defined List	Vehicle manufacturer.
A-3	Model	Text	Vehicle manufacturer's model name.
A-4	Model Year	Numeric	Vehicle manufacturer's model year.
A-5	GVWR	Numeric	Gross vehicle weight rating (lbs).
A-6	Vehicle Type	Defined List	FAST vehicle type designation (e.g., "Sedan/St Wgn Compact").
A-7	Vehicle Fuel Type/Configuration	Defined List	Engine configuration and type(s) of fuel the vehicle is capable of consuming.
A-8	Garage - Domestic	Defined List	Indicates whether vehicle is located in an area considered to be domestic (as opposed to foreign) for FAST reporting.

## ***Resources: Business Rules Reference***

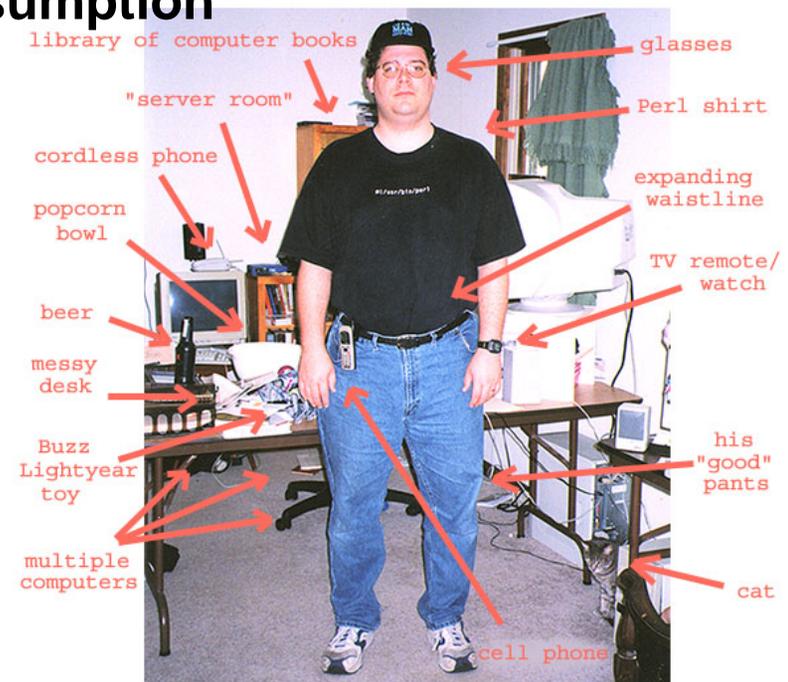
- **Defines what constitutes valid & reasonable data**
- **Identifies acceptable values for all data elements**
  - Type, content, size
  - Ranges of values
  - Lists of acceptable values
  - Inter-relationships with / dependencies on other elements
- **Two types of validation rules: blocking vs. flagging**
  - Blocking rules: prevent data from loading
  - Flagging rules: identify suspect data
- **Rules will evolve**
  - Ranges (e.g., costs) will change
  - Additional options (e.g., fuel types, fuel configurations)
  - Feedback from agencies

# Technical Resources: Business Rule Reference

Element Name		Rule Description		
Element Identifier	OW-1	Acquisition Date	<p>OW-1.1 Type: date in XML-standard YYYY-MM-DD format</p> <p>OW-1.2 Must be a valid date on or prior to the end of the report year for which data is being submitted</p> <p>OW-1.3 Vehicles with acquisition dates in the report year for which data is being submitted should not be present in previous year's submissions</p> <p>OW-1.4 Vehicles with acquisition dates in previous report years should also be present in previous year's submission (with exception for agency in first year of VLD reporting)</p>	<p>Block</p> <p>Block</p> <p>Flag</p> <p>Flag</p>
	OW-2	Ownership Type	<p>OW-2.1 Type: enumeration; must match one of the following values:</p> <p>AO (Agency-owned)</p> <p>CL-D (Commercial dry lease)</p> <p>CL-W (Commercial wet lease)</p> <p>GL-D (General Services Administration [GSA] dry lease)</p> <p>GL-W (GSA wet lease)</p>	Block
	Rule Identifier			
				Rule Type

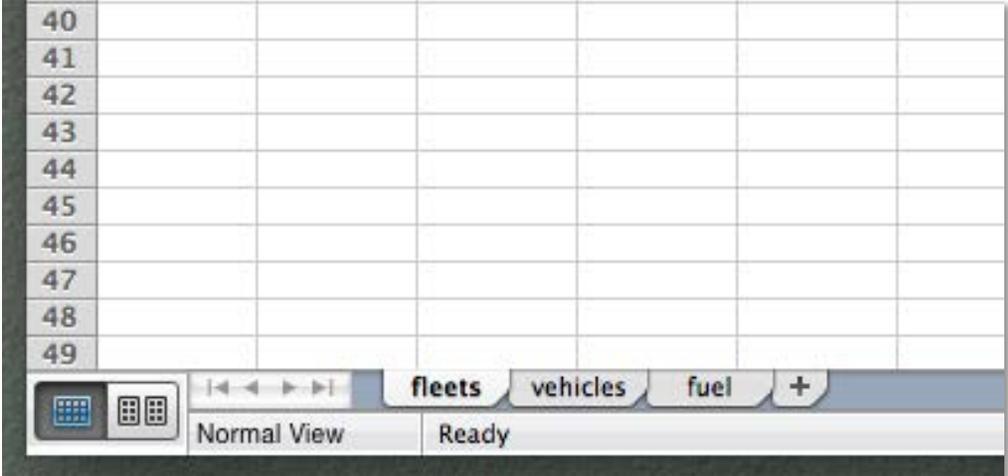
## Technical Resources: XML Schema

- **Schema: structured syntax definition**
  - Specific data format your MIS must produce
  - Tools available to validate XML
- **XML: not intended for human consumption**
  - ... or production



## *Technical Resources: Excel Import Template*

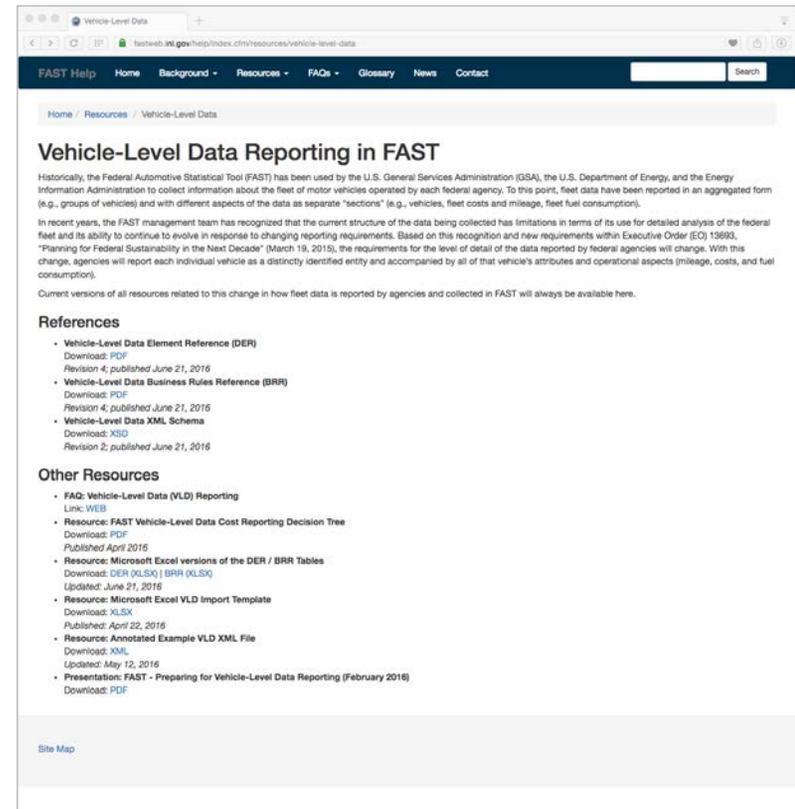
- **Limitations:**
  - Less scalable than XML
  - Will likely require manual effort
  - Subset of coverage of XML
- **May make short-term sense in some scenarios**
  - Data in multiple systems
  - Delay in MIS ability to generate XML



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## Resources: FAST Help

- **Links to current versions of all VLD resources**
  - Data element reference
  - Business rules reference
  - XML Schema
  - Excel import template
  - FAQ
  - Cost reporting decision tree
  - Example XML file
  - VLD-related presentations

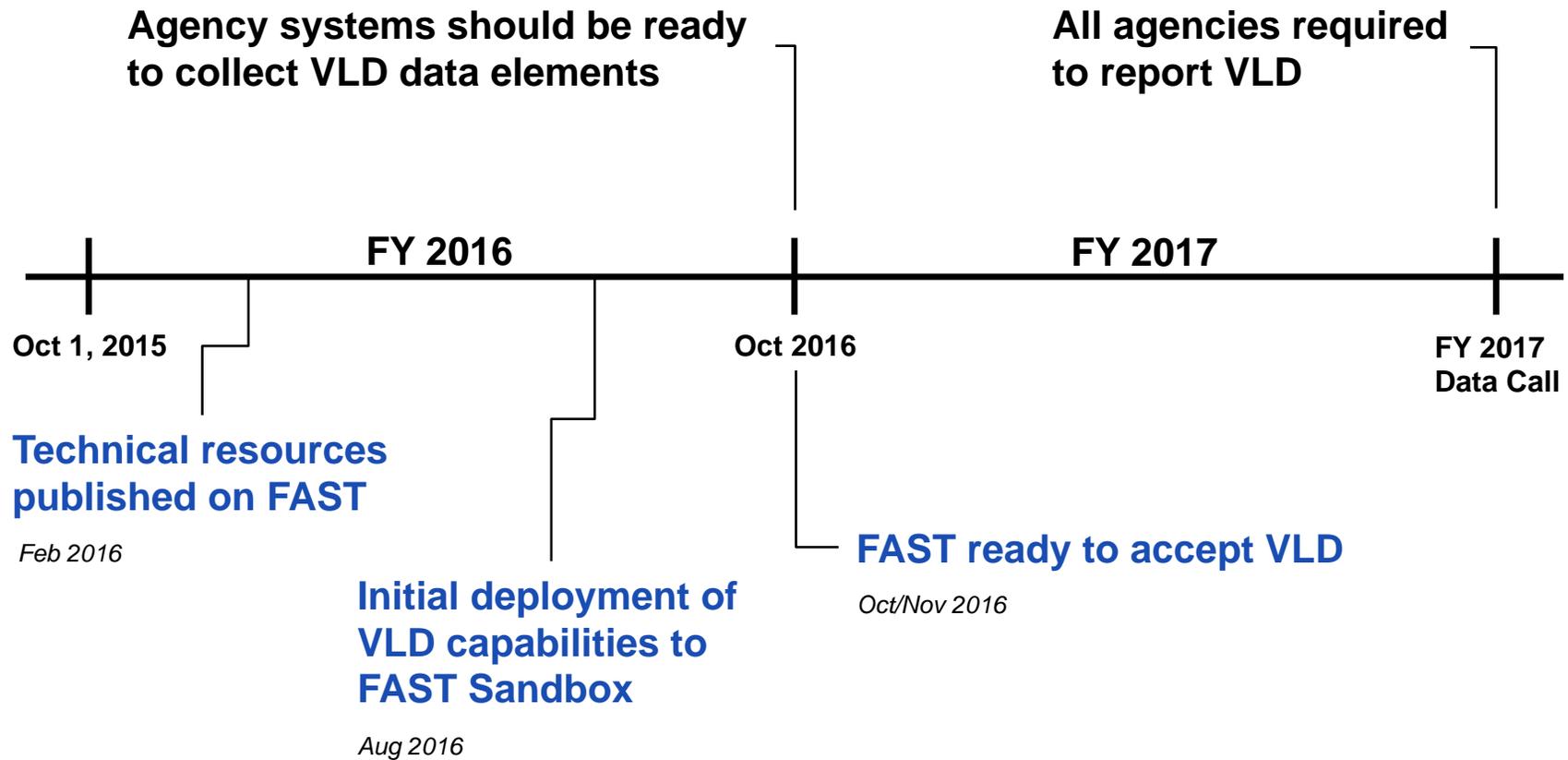


**URL:** <https://fastweb.inl.gov/help/index.cfm/resources/vehicle-level-data>

## ***Implications: Key Considerations***

- **FAST reporting hierarchy**
  - How much structure do you need?
  - Recommendation: simple as possible
  - Take advantage of VLD-related attributes to replace elaborate organizational structures in FAST
- **Approach to OMB A-11 development / reporting**
  - Single A-11 vs multiple?
  - Data sources: MIS vs other processes?
- **Timing of transition to reporting at per-vehicle level**
  - Availability of needed data?
  - Capability of systems?

# Timeline



## ***Tomorrow's session***

- **Preparing for Asset-level Data Reporting**
  - What does VLD look like
  - How will reporting work?
  - Linkages between MIS and FAST
  - Demo: Working with VLD in FAST



# Discussion

## Q & A

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