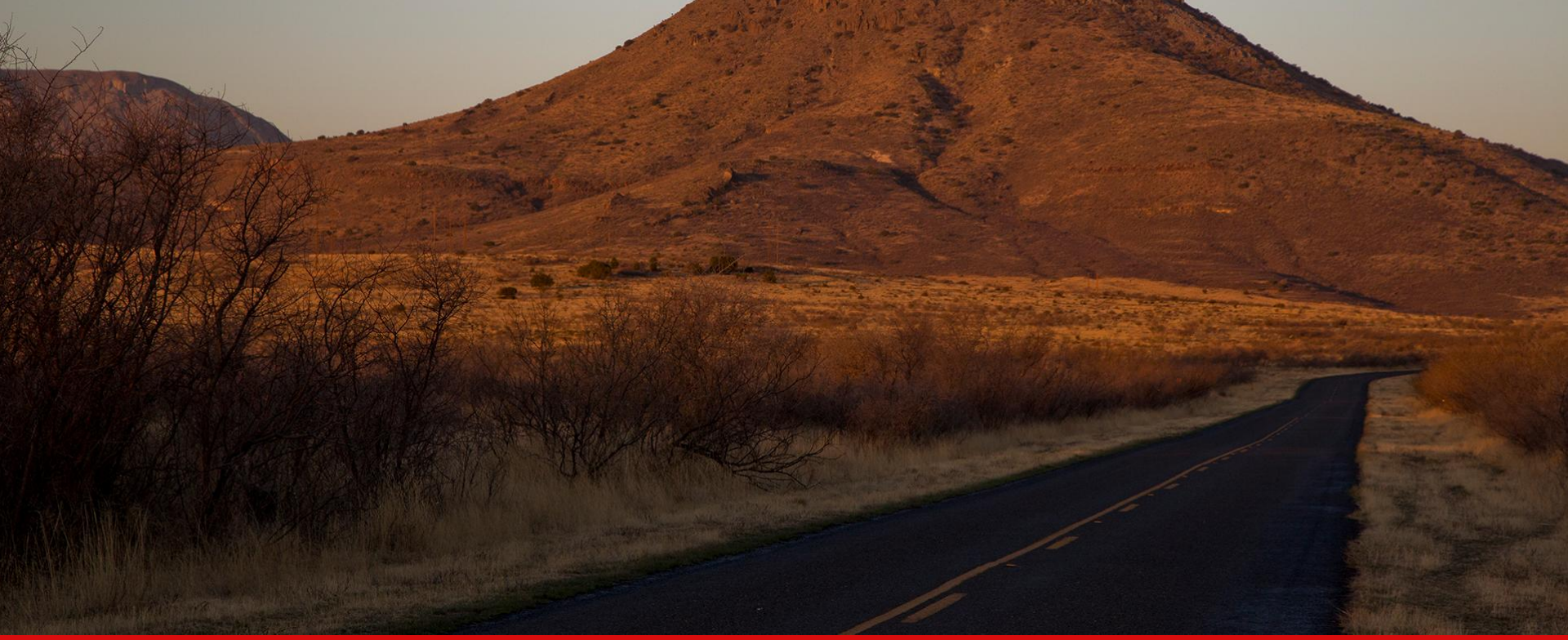

Statewide Traffic Management Systems Asset Management (TMSAM)

Richard Downs – SwRI Aaron Ramirez – TxDOT

Texas Department of Transportation

11/17/2025

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Introduction to TMSAM

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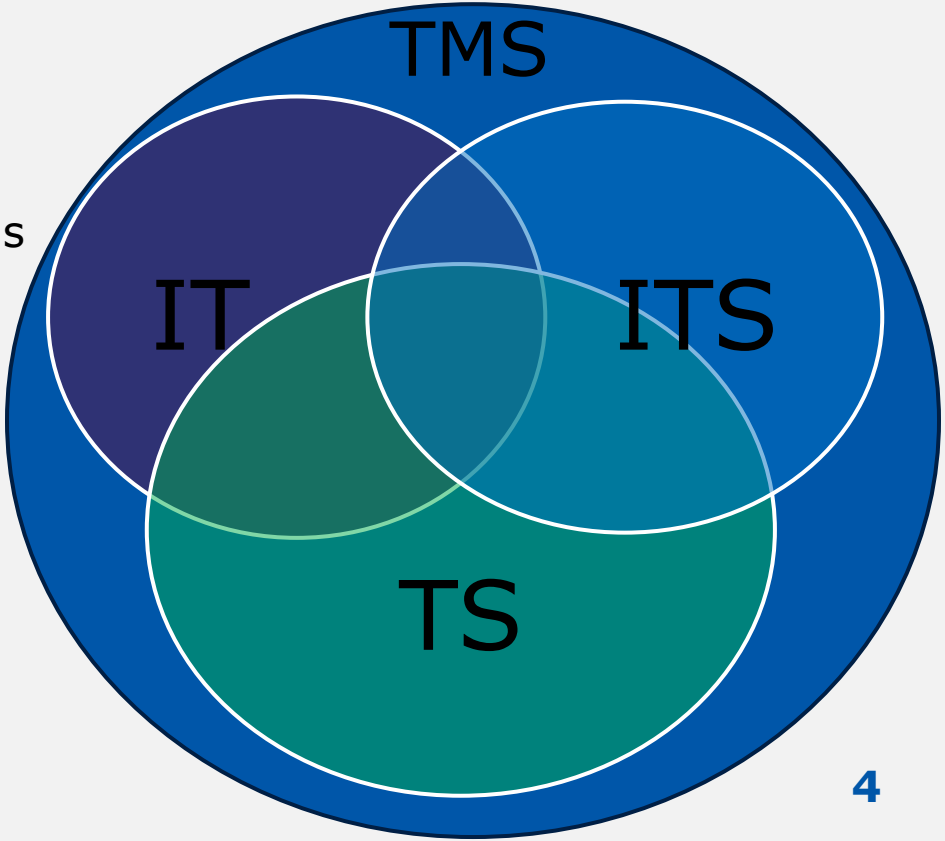
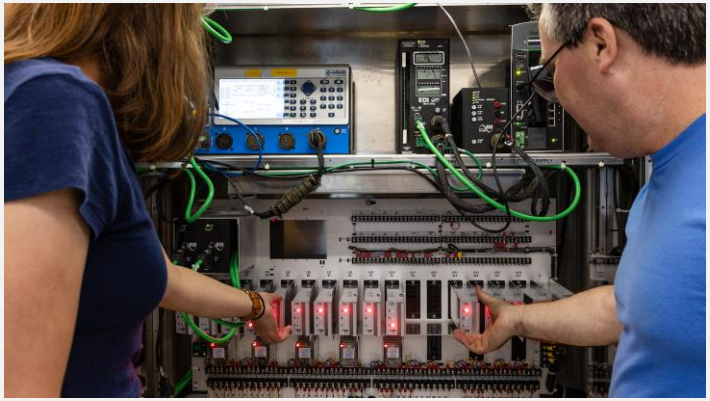
Definitions

- IT: Information Technology
  - Switches, Routers, Firewalls
- ITS: Intelligent Transportation Systems
  - CCTV, DMS, TSS, ESS, WWD
- TS: Traffic Signal
  - Signals, Detection, Cameras, Loops
- TMS: Traffic Management Systems
  - The above and much more
- TMSAM: Traffic Management Systems Asset Management



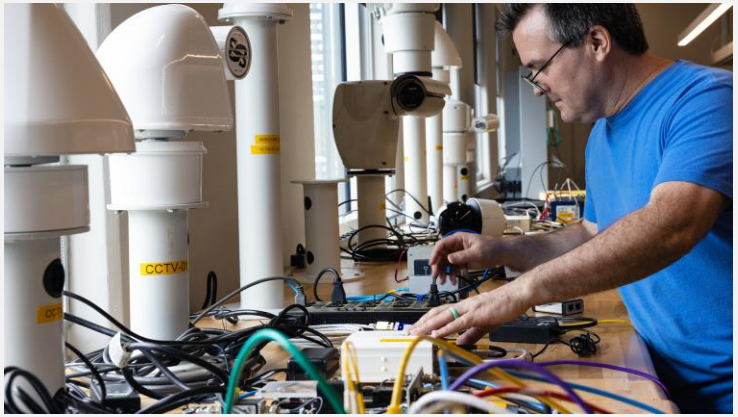
What is TMSAM?

- Involves maintaining transportation infrastructure
  - Planning, documenting, periodic maintenance, end-of-life devices
- Ensures that transportation networks are reliable, cost-effective, and safe



Roles within TMSAM

- **Role of Operators:** Work with the equipment daily, first to report issues
- **Role of Analysts:** Troubleshoot issues remotely, configure field devices, update documentation
- **Role of Technicians:** Make trips to the field to perform repairs or maintenance activities
- Used for proactive maintenance, lifecycle tracking, and resource allocation



Requirements Gathering Effort

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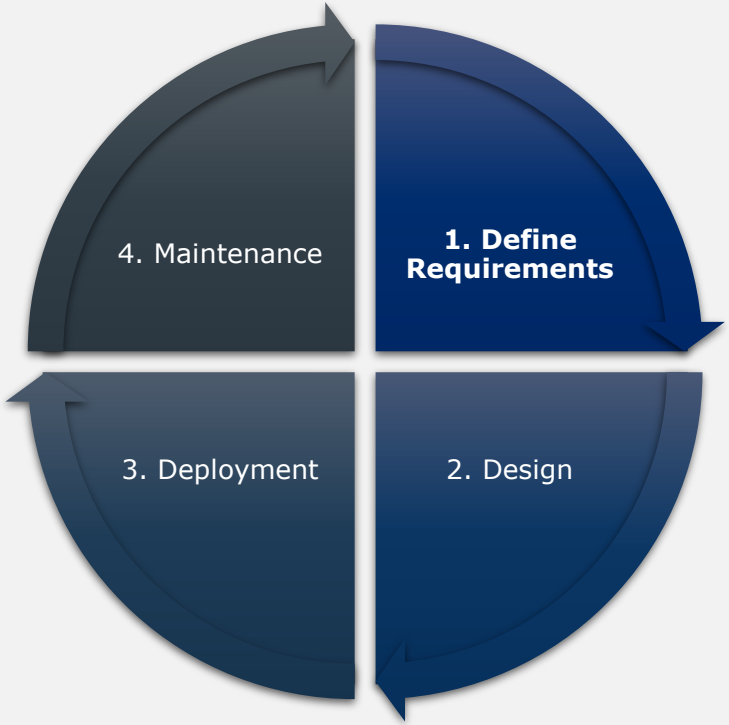
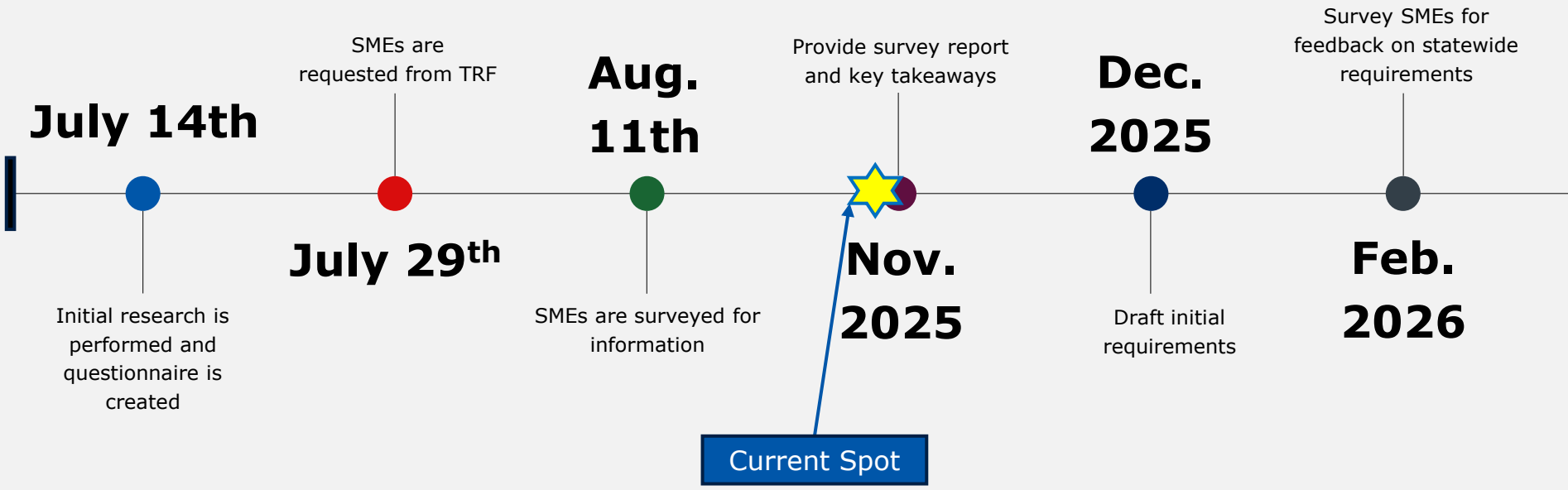
Technology Deployment Lifecycle



1. **Define Requirements**
   i. Gather data and needs from stakeholders
2. Design
   i. Develop a blueprint for implementation
3. Deployment
   i. Prepare for the migration
4. Maintenance
   i. Update information as needed

Project Timeline



Initial Research

Software	States Identified
dTIMS (Deighton Total Infrastructure Management)	AR, CO, CT, GA, IN, IA, ME, ND, OH, SD, VT
Agile Assets (Trimble)	IL, MN, NC, WY
Atom (Atom Maintenance Management System)	AL, HI, UT
Custom Software	NJ, NY, KY
ClearAsset	GA, VA
IBM Maximo	DE
AssetWorks EAM	NH

Public information on asset management tools for state DOTs was collected. Not all states have identified a tool in place.

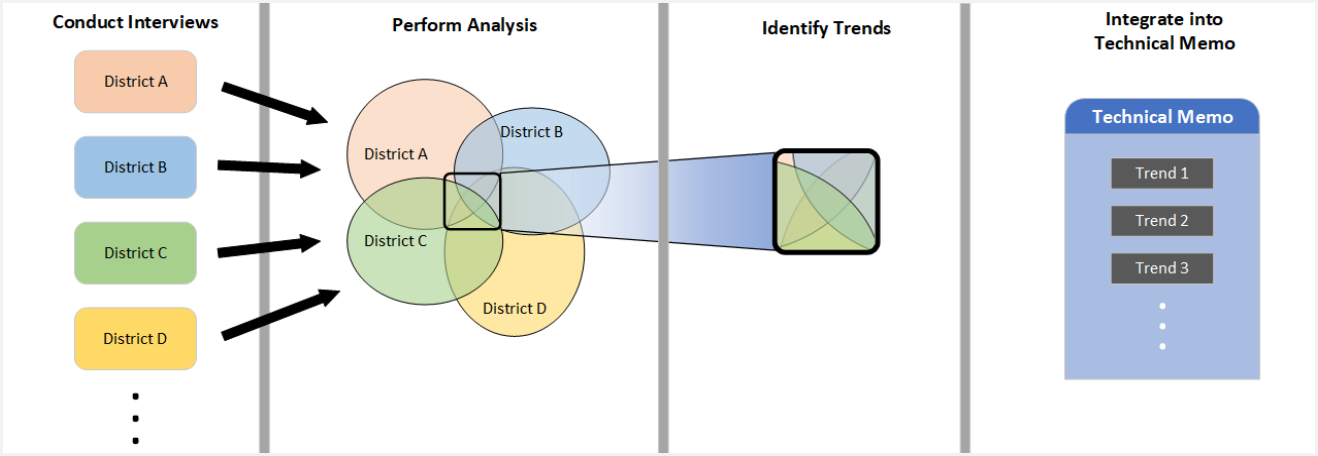
dTIMS:
- Designed for infrastructure assets
  - Pavements, bridges, tunnels
- Decision support tool for maximizing return on investment

Agile Assets:
- Full suite for managing transpiration assets
- Includes modules for maintenance management
- Focus on GIS inventory management

Atom:
- Computerized Maintenance Management System and Enterprise Asset Management
- Mobile application focused
- Supports real time field operations

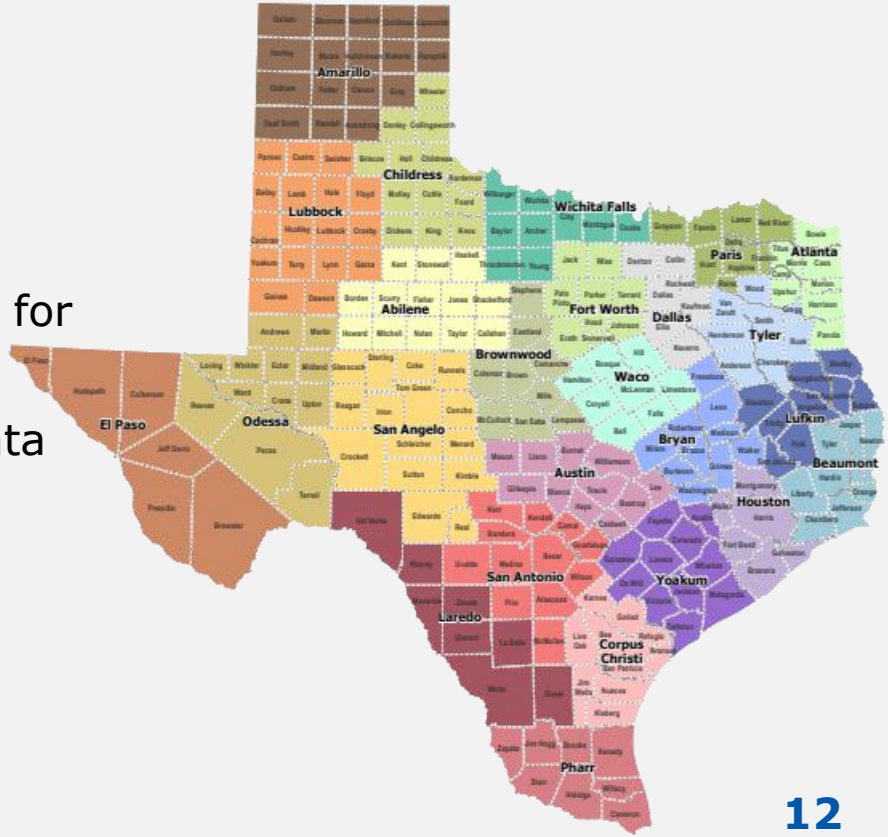
Scope of the Requirements Gathering Effort

- **Goal:** Identify requirements for TMSAM from TxDOT districts to manage TMS assets and activities.
- **Objectives:** Enhance the efficiency of TxDOT's asset management process
- **Methodology:** Surveys distributed to collect data from districts, Interviews conducted with stakeholders

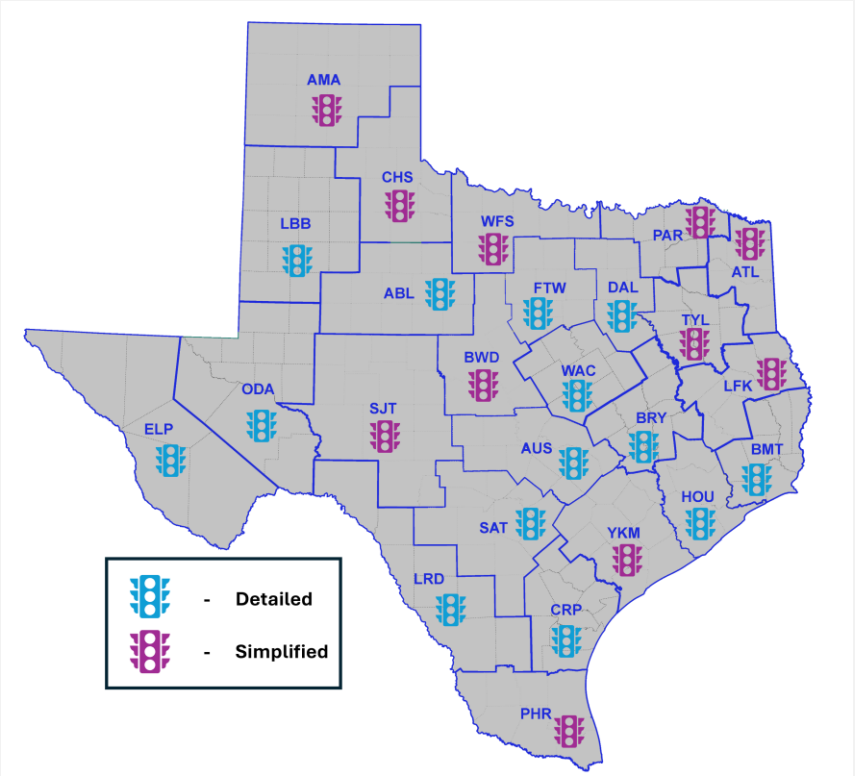


Stakeholder Involvement

- Key stakeholders:
  - TxDOT Districts – Responsible for the assets
  - TRF – Provides guidance and support for assets
  - Other TxDOT Divisions – Requests data about assets



District Categories



Info collected statewide for the purpose of determining user needs, constraints, and challenges involved in TMS asset management.

Detailed: ABL, AUS, BMT, BRY, CRP, DAL, ELP, FTW, HOU, LBB, LRD, ODA SAT, WAC

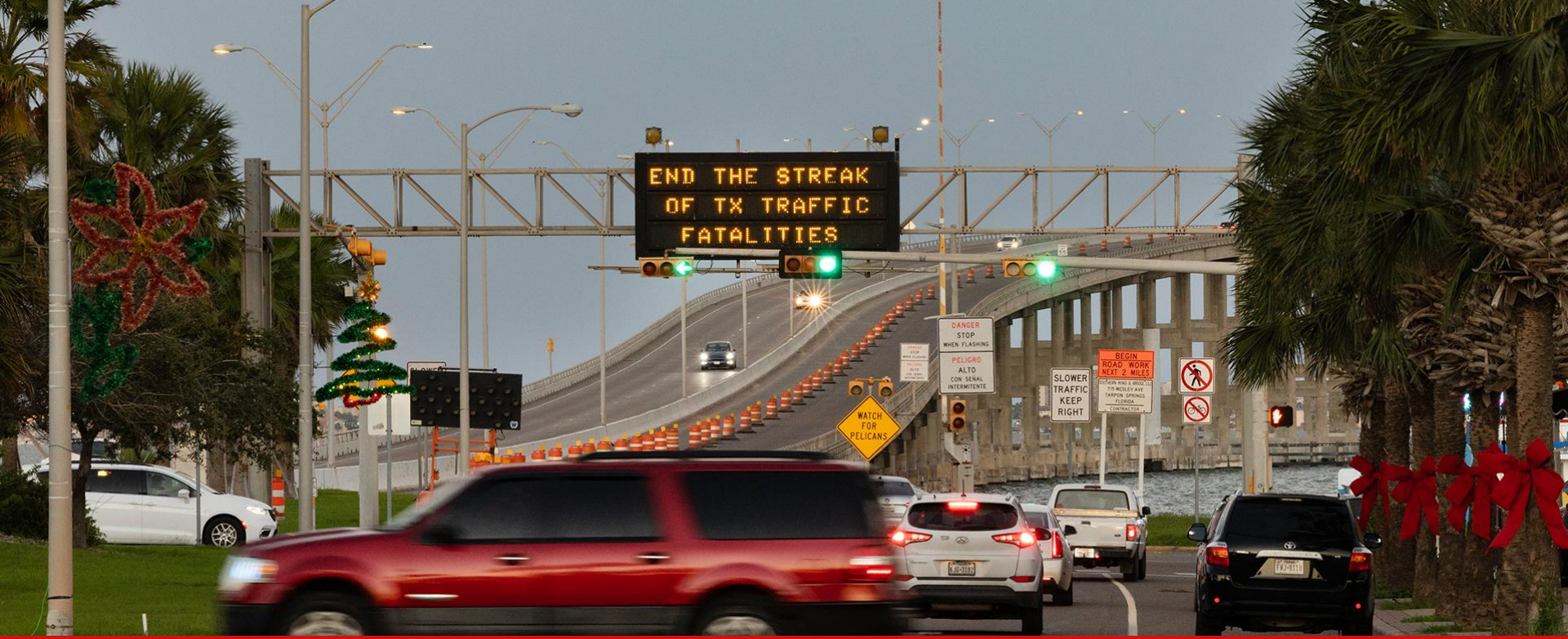
- Large number of TMS assets to manage
- More questions discussed in the interviews
- Questions are more complex
- Staff are well informed on their asset management system

Simplified: AMA, ATL, BWD, CHS, LFK, PAR, PHR, SJT, TYL, WFS, YKM

- Smaller districts with less devices to manage
- Fewer questions discussed in the interviews
- Questions are simpler
- Staff may not be as familiar with their asset management system

Interview Structure

- **Current AM Systems**
  - Specific Tools
  - Strengths
  - Challenges and Limitations
- **Asset Scope and Detail**
  - Primary Tracked Assets
  - Asset Volume
  - Demand for Detailed and Granular Tracking
- **Maintenance Tracking**
  - Specific Tools
  - Strengths
  - Challenges and Limitations
- **Requirements**
  - Core/Optional Features
  - Staff Requirements
  - District Preferences



Current Asset Management

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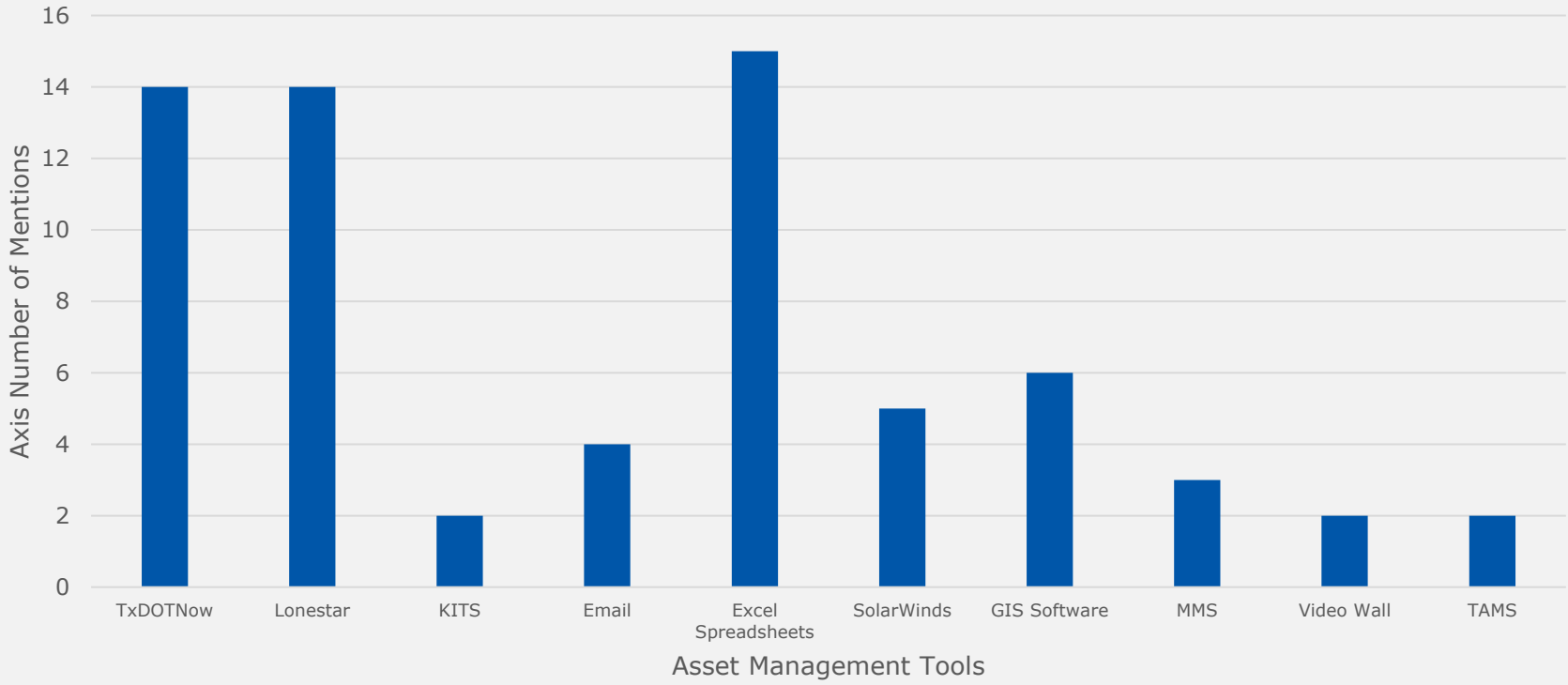
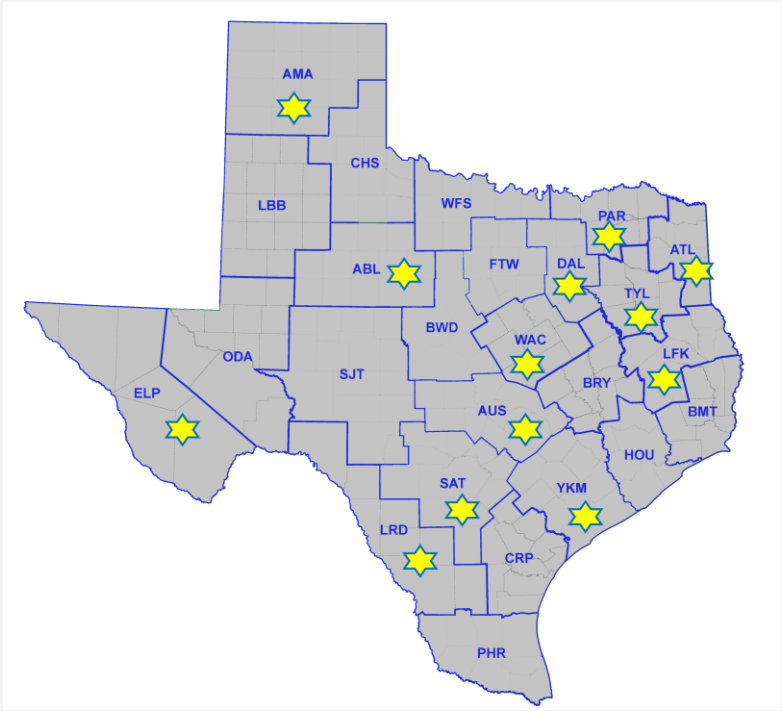
Mentioned Tools

Not all mentioned tools are shown



Excel Spreadsheets

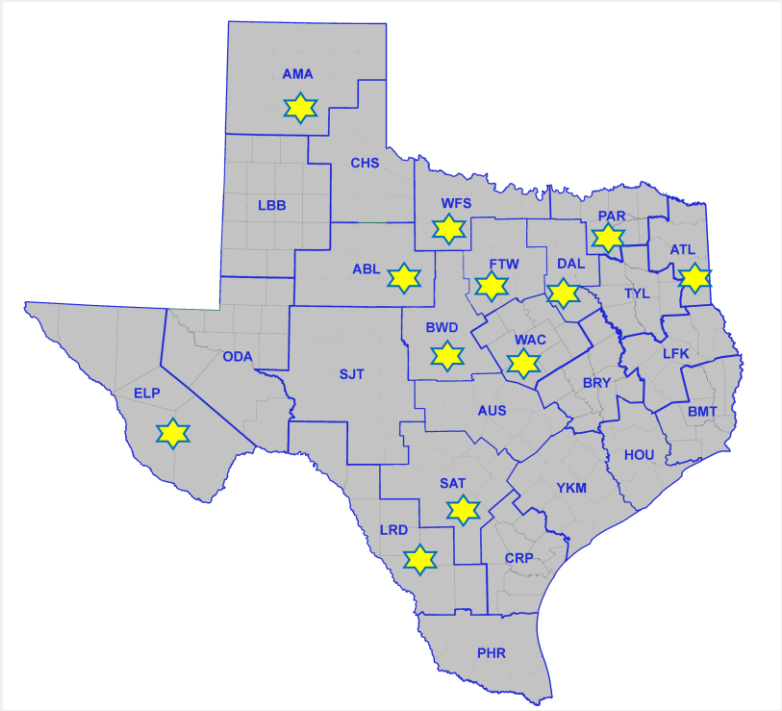
- Mentioned by 81% of districts interviewed
- Not built for large scale asset management
- Often sited a primary tracking method or internal backup
- Strengths
  - Data ownership
  - Simple and easy to use
- Weaknesses
  - Data entry duplication
  - Scalability issues
  - Field accessibility



Several districts are moving away from spreadsheets

TxDOTNow

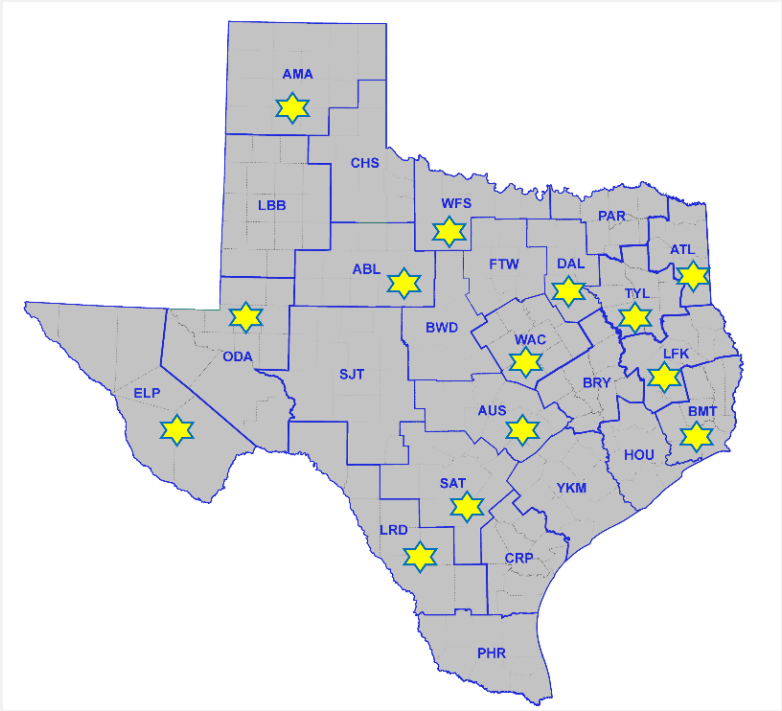
- Mentioned by 75% of districts interviewed
- Used for monitoring and ticketing
- Not configured as a true asset management tool
- Strengths
  - Effective work order and ticketing
  - Considered user-friendly
- Weaknesses
  - Data entry duplication
  - Redundant notifications
  - Asset hierarchy issues



Viewed as favorable by some large districts and cumbersome by smaller districts

Lonestar

- Mentioned by 75% of districts interviewed
- Used for monitoring and device operational status
- **Not currently considered an asset management system**
- Provides
  - Visual (map) asset tracking
  - Quick issue identification
- AM Needs
  - Expanded data access and reporting



Essential of daily operation and visual asset monitoring across several districts

Challenges Faced

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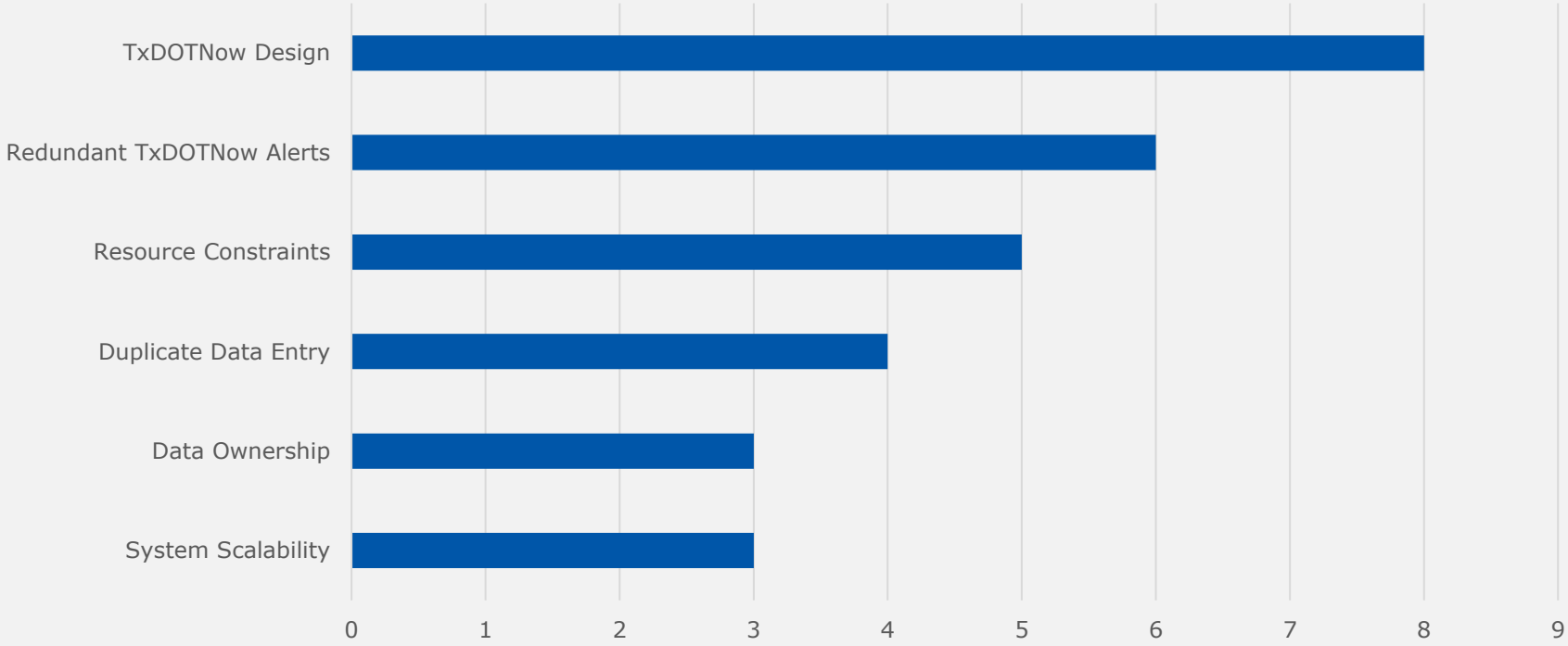
Major Challenges



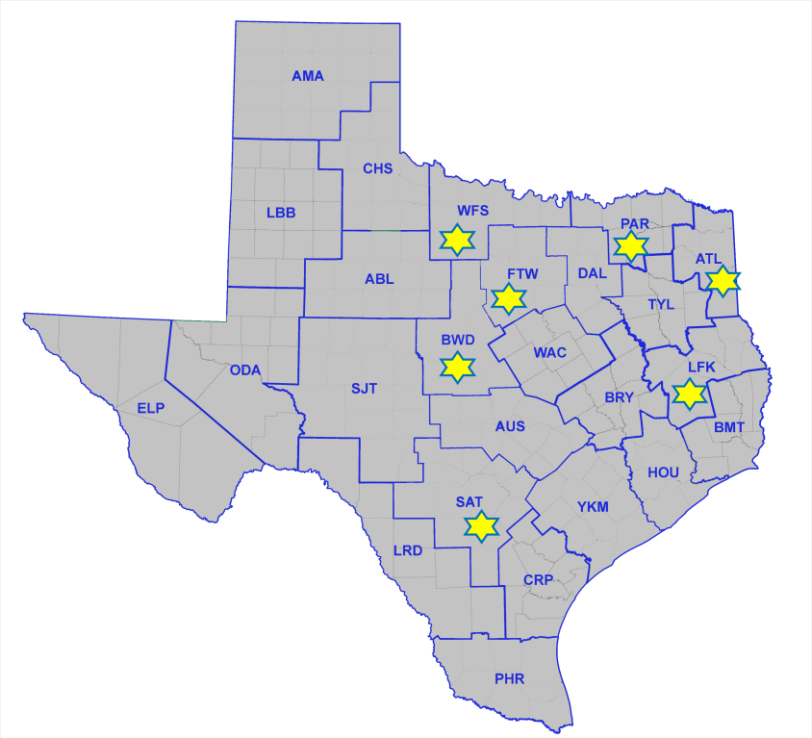
Some districts were satisfied with their current asset management tools

TxDOTNow Design

TxDOTNow is not designed for asset management

- Mentioned by 43% of districts interviewed
- Root Cause: Design prioritizes ticketing over enterprise asset management

- Requires a lot of data manipulation
- Data is often stored in inappropriate fields
- No map visualization
- Involves many steps unnecessary for smaller districts
- Initial data entry process is difficult

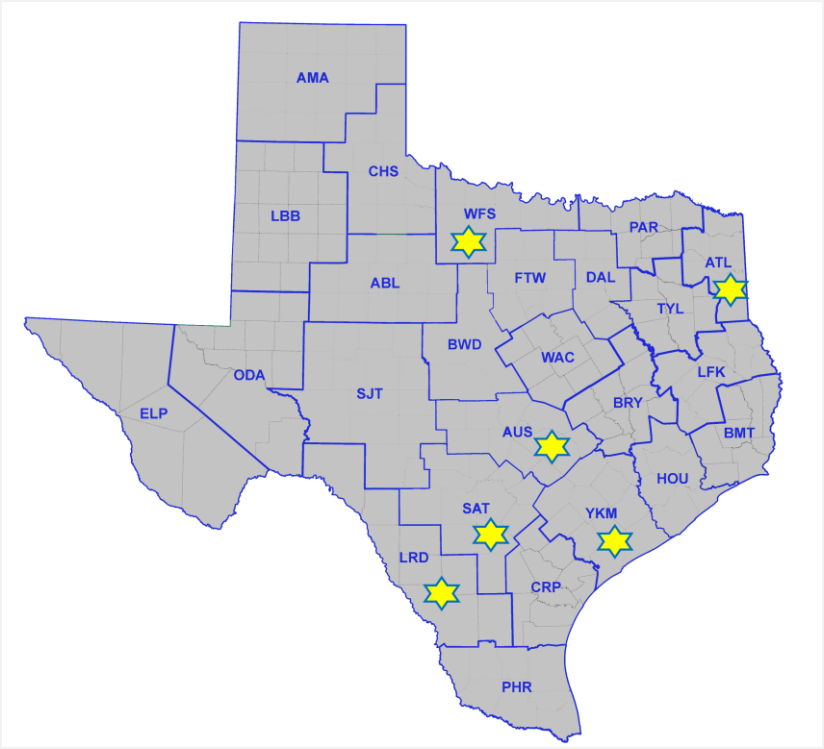


Duplicate Data Entry

Staff must enter the same information into multiple systems

- Mentioned by 37% of districts interviewed
- Root Cause: Reliance on multiple systems for asset management

- Separate spreadsheets must be maintained
- Maintenance staff use a different system instead of than TxDOTNow
- Entering data in TxDOTNow is seen as extra work
- Multiple tools overlap in different areas

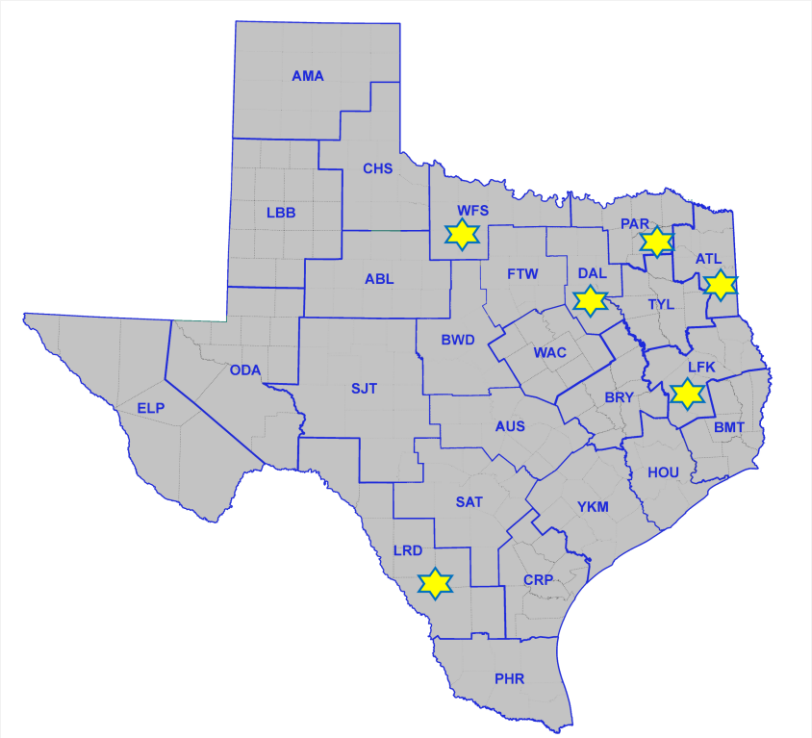


Data Ownership

Districts want ownership access rights to their asset data

- Mentioned by 37% of districts interviewed
- Root Cause: Districts do not have direct control over data in cloud-based systems

- Lack of ownership forces staff to maintain Excel Spreadsheets
- Data changes require slow ticketing process
- Districts are limited with data stored on external servers
- Excel compensates for lack of ownership



Requested Features

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Most Liked Feature

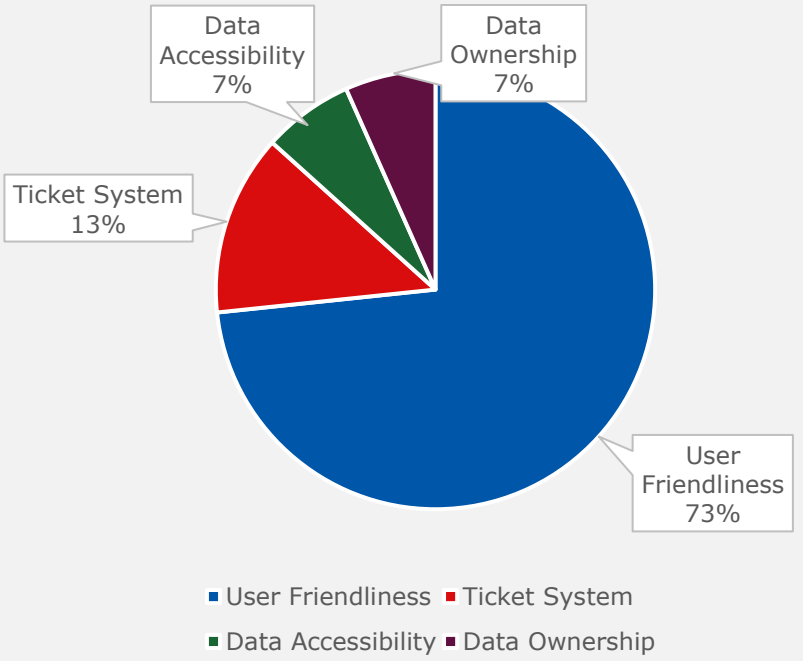
Districts prefer a system that is easy to use with strong preference for:

- Simplicity
- Clarity
- Ease of Access

Districts praise Excel for being intuitive and simple, but it lacks scalability.

Complex enterprise systems are manageable after significant training while others still find it difficult.

Challenge: How to find the balance between user-friendliness and software capabilities?



Highly Desired Features

- **GIS Map View / Geographical Tracking**
  - Information viewed by selecting an asset on a map
  - AUS, LFK, WFS, YKM moving towards a GIS centric system
  - ELP, DAL requested a map view similar to Lonestar
- **Training**
  - 75% of districts interviewed have informal in-person training
  - Formal manuals and training videos are useful for new staff and complex systems
- **Asset Lifecycle/Warranty**
  - Shift from reactive maintenance to proactive planning and budgeting
  - Warranty expiration is a preferred feature to plan preventative maintenance
- **Mobile Support for Field Staff**
  - Mobile/tablets are easier to use than laptops in the field

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