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69th Annual Asphalt Paving Conference

OPERATIONALIZING

the SAFE SYSTEM APPROACH through

Real-Time Digital Work Zone Data

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EDOT

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About Speaker

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- Based in Seattle, Washington
- Over **five years** at HaulHub Technologies
- Partnered with more than **43 agencies nationwide** to implement e-Ticketing solutions

Solutions Expert

EDOT

What Is a Safe System Approach?

U.S.Department of Transportation
Federal Highway Administration

The guiding paradigm to address roadway safety.

The Safe System Approach, adopted by USDOT and FHWA, recognizes that humans make mistakes, so the transportation system must be built to anticipate them, absorb them, and protect people from death or serious injury.

A modern Safe System relies on:

- **Shared Responsibility**
  - All stakeholders play a role in safety outcomes.
- **Safety is Proactive**
  - Identify and mitigate risks *before* crashes occur.
- **Redundancy Across the System**
  - Multiple safety layers ensure that if one fails, others prevent severe harm.

CDOT

Where are you on the Safe System Journey?

Most DOTs have embraced Safe System principles in planning and design.

Few have operationalized these principles inside the work zone itself, where conditions change by the minute and exposure risk is greatest.

The final mile of Safe System implementation, requires real-time, digital field data.

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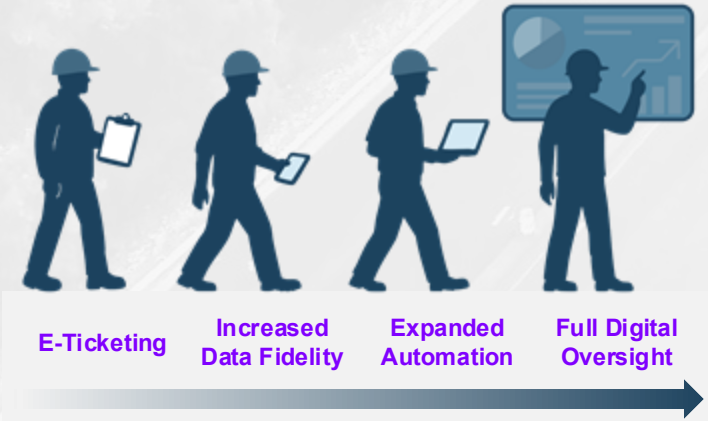
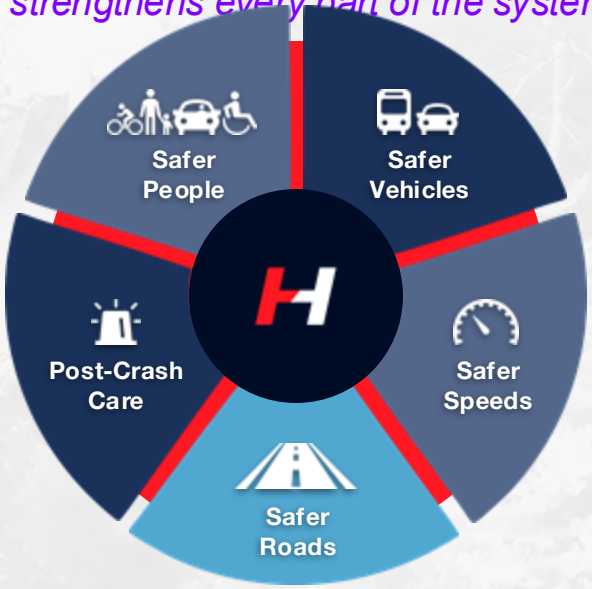
HaulHub's Role

One digital source of truth powering safety across every phase of the project lifecycle.



Each Phase Expands Capabilities and Strengthens DOT Value

Delivering real-time, field-generated data that strengthens every part of the system.



Operationalizing the Safe System Approach

Safer People

Protecting workers and drivers through live, trustworthy visibility of the work zone.

- **E-Ticketing Reduces High-Risk Hand-offs**
  - Removing paper exchanges removes the need for inspectors and drivers to enter unsafe proximity in active work zones.
- **Automated Worker Presence Alerts**
  - Real-time notifications to mapping platforms when workers are active on-site, improving driver awareness and reducing work zone incidents
- **V2X-Compliant Safety Feeds**
  - Connected vehicle technology receives direct alerts about active work zones through standardized data exchange

Operationalizing the Safe System Approach

Safer Vehicles

Providing drivers and autonomous vehicles what they need to behave safely in work zones.

Autonomous vehicles cannot operate safely at scale without real-time work zone data. HaulHub enables that data layer.

- **Vehicle-to-Infrastructure (V2I) Integration**
  - Work zone data feeds directly to connected and autonomous vehicles for enhanced collision avoidance
- **Real-Time Construction Activity**
  - V2X-compliant feeds transmit live work zone status to vehicle safety systems

Operationalizing the Safe System Approach

Safer Speeds

Ensuring drivers receive accurate, automated cues to slow down, where and when it matters.

Safer speeds require authoritative, real-time confirmation of when a work zone is truly active.

- **Dynamic Speed Limit Integration**
  - Work zone reduced speed limits automatically transmitted to consumer mapping platforms based on actual construction activity
- **Automated Enforcement Verification**
  - Real-time construction activity data validates active work zones for legitimate speed camera enforcement

Operationalizing the Safe System Approach

Safer Roads

Using digital field data to enhance roadway design, maintenance, and long-term performance.
Safer roads begin with better data about how they're built.

- **Digital As-Builts for Asset Management**
  - Geo-located construction data creates comprehensive infrastructure records for proactive maintenance planning
- **Construction Data Integration**
  - Material placement and equipment activity feed asset management systems for data-driven lifecycle decisions
- **“Single Source of Truth” for Roadway Assets**
  - Eliminates data silos preventing accurate life cycle decisions.

Operationalizing the Safe System Approach

Post-Crash Care

Faster, more coordinated response when every second counts.

Digital awareness accelerates response and saves lives.

- **On-Site Personnel Visibility**
  - Real-time roster of DOT inspection and construction staff, with active suppliers and contractors, on active sites enables faster emergency response coordination
- **Streamlined Emergency Communication**
  - Automated notifications to on-site personnel and emergency responders improve incident response times
- **Faster Access for Traffic Management Centers**
  - GIS-integrated location data helps responders navigate closures and reach victims without delay.

Operationalizing the Safe System Approach

Operationalizing Safe System Approach

Your transportation system already has the philosophy, policy direction, and long-term safety goals. Leverage real-time field data to activate all five pillars at scale.

Safety becomes actionable when the field becomes digital.

- ➔ One real-time system of record
- ➔ Standardized, machine-readable work zone activity
- ➔ Automated notifications to drivers, vehicles, and Traffic Management Centers
- ➔ A foundation for the next generation of autonomous vehicles and connected transportation

Operationalizing the Safe System Approach

Questions? Get In Touch

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