The Safety Data Transformation

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Data is what fuels safety transformation.
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**IMPORTANCE:**

- PHMSA oversees the safety 2.8 Million miles of pipeline
  - Risk management
  - Cost management
  - Infrastructure maintenance
BENEFITS of DATA FUSION and AI

• Combing information resources will create a more accurate picture of what is going on in the community (especially in better understanding the origin of rare events).

• Possession of complete and accurate data leads to deeper analysis and system safety enhancements that benefit the entire industry.

• Fused data equals shared analysis. Collaborative analysis by a broad-based community of experts has consistently provided superior risk reduction.

• AI allows us to capture data and covert it to actionable information.
DATA VOLUME and VARIETY

PHMSA holds hundreds of thousands of data points:

- **134,241 Event Records** that describe some aspect of pipeline operational risk
Non-destructive Evaluation (NDE)
The use of robotic systems “pigs” that crawl through the pipeline to identify anomalies that may be predictors of pipeline failures.
DATA FUSION – The Challenge

Extending our analytical capabilities

• Fusing different data types and

• Analytical scope from forensic to predictive
The Goal - Enhanced Threat Detection

... and accident prevention
BENEFITS of AI to NDE

• Allow us to identify a digital signature for potential failures and reduce the time it takes to act

• Reduce false positives and the associated costs

• ‘Allow Operators to compare significant anomalies identified/mile and assess impact of quality or process of NDE techniques vs. effectiveness.

• Ultimately – improve safety
A FUTURE AI CONCEPT

Level 4
AI applications running based upon multi-operator, multi-year experience

Level 3
Expert judgement and historical data combined

Level 2
Multiple field data sources compared based upon similar location, design, historical or performance factors

Level 1
Lessons learned reports and multi-operator historical experience