# Voluntary Information-Sharing System Workgroup

**Pipeline Operator Data Sharing**

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# Outline

- Pipes Act of 2016, Section 10 Summary
- Related Kinder Morgan (KM) Practices
  - In-line Inspection (ILI) Dig Data Sharing
  - Advanced Technologies
  - Industry Collaboration / Information Exchange
- ILI Dig Verification Data Sharing
  - Industry-wide ILI Data Repository Challenges
- General Data Sharing Concerns

# Pipes Act of 2016 – Section 10

- Summary
  - Establish opportunities, need for and identification of a system
    - For sharing dig verification data between pipeline operators and ILI vendors
    - Advantages and disadvantages of different in-line inspection technologies
  - Encourage
    - Development of Advanced Technologies
    - Development of Enhanced Risk Analysis
    - Exchange of Pipeline Information
- Other Considerations
  - Collaborative
  - Proprietary Sensitive
  - Voluntary
  - Confidential

# Examples of Ambiguities in the Statute

- Who is sharing what data?
- Who is the data shared with?
- What is the explicit objective in sharing the data?
- What is “Pipeline Information”?
- Many others

# Kinder Morgan Dig Verification Program

- Kinder Morgan In-line Inspection (ILI) Summary
  - 160 to 200 Segments In-line Inspected per Year
  - 3 to 6 ILI Technologies per segment
  - 6,000 to 8,000 Miles of Pipeline Assessed per year
- ILI Dig Verification Program
  - Robust Internal Processes
  - Application of advanced technologies
  - Non-Destructive Examination (NDE) Vendor Training and Testing on KM Procedures and Processes
  - NDE Field Technician Audits performed by KM
  - Robust QA/QC Review on Processes and Documentation
- ***All KM dig verification data shared with ILI vendors that performed the ILI survey***

# Kinder Morgan Technology Development

- Collaboration with Vendors
  - ILI vendors to develop, advance, refine and validate existing technologies
  - NDE vendors to validate and refine NDE technologies
- Pipeline Research Council International
  - Participating or leading various PRCI projects
  - Establishing proof of concept, developing and refining technologies and analysis processes
- Participating or leading Joint Industry Projects to establish practices
- Working with Advanced Engineering Companies to study threat mechanisms and develop innovative solutions

# ILI Technology Improvement Components

- A relationship between the pipeline operator and ILI vendor
- Interaction between ILI Vendor Pipeline Operator to:
  - Work collaboratively to educate one another on their respective areas of expertise
  - Work through iterative processes such as:
    - Request for operator to perform additional digs for additional data points
    - Opportunity for ILI Vendor adjustments analysis processes or ILI tool
    - Opportunities for new digs after adjustments to the analysis process
    - Repeat as necessary based on objective
  - Providing opportunities for ILI personnel to be present on dig sites to correlate signals to anomalies
- ILI vendor must have confidence in the quality of the documentation (QA/QC process)

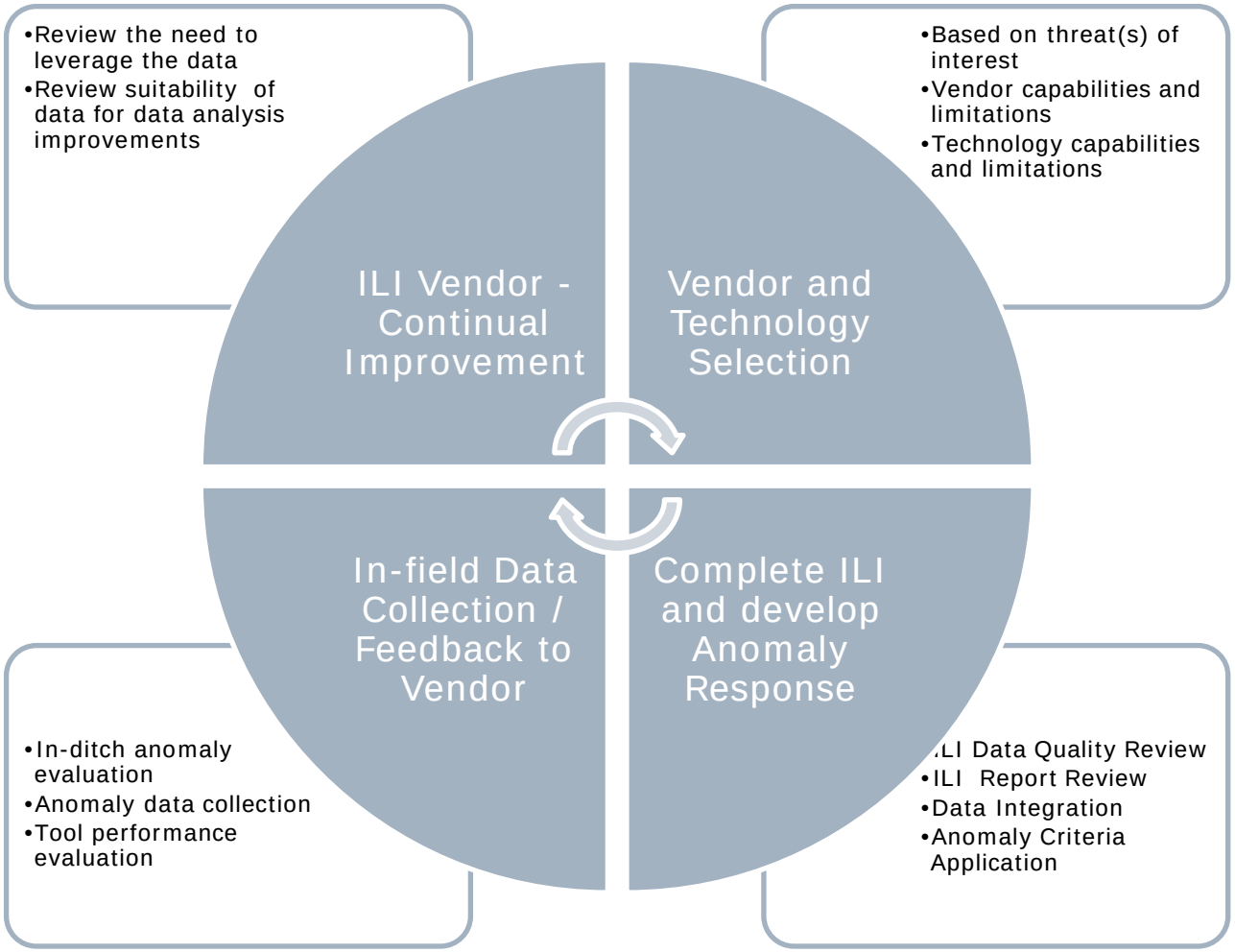
# Existing Industry Collaboration

- Major Conferences
  - ASME International Pipeline Conference (IPC)
  - ASME Banff Pipeline Workshop
  - NACE International Regional and National Conferences
  - SGA Transmission Operating Conference
  - Pipeline Pigging Inspection Conference (PPIM)
- Joint Industry Projects (JIP)
- Pipe Research Council International (PRCI)

# Existing Industry Collaboration

- Major Consensus Standards Organizations
  - American Society of Mechanical Engineers (ASME)
  - American Petroleum Institute (API)
  - NACE International
- Major Associations
  - Southern Gas Association (SGA)
  - American Gas Association (AGA)
  - Interstate Natural Gas Association of America (INGAA)

# ILI Process


•Review the need to leverage the data
•Review suitability of data for data analysis improvements
ILI Vendor - Continual Improvement
•Based on threat(s) of interest
•Vendor capabilities and limitations
•Technology capabilities and limitations
Vendor and Technology Selection
In-field Data Collection / Feedback to Vendor
•In-ditch anomaly evaluation
•Anomaly data collection
•Tool performance evaluation
Complete ILI and develop Anomaly Response
LI Data Quality Review
•ILI Report Review
•Data Integration
•Anomaly Criteria Application

# ILI Data Repository Challenges

- More than 30 ILI vendors globally
  - Unique tool designs
  - Unique processes and algorithms
  - Unique essential variables to be considered
- Must have “Right” Data
- Confidence of data in the repository for use in ILI improvement or establishing capabilities and limitations

# Tool Design

- Examples of Uniqueness in Tool Design
  - Sensor Density
  - Sensor Footprint
  - Specific technologies used on tool types (e.g. eddy current, coil sensors, hall sensors, etc.)
  - Technologies unique to an ILI Vendor
  - Emerging Tool Technologies
  - Performance specifications

# ILI Analysis

- Examples of ILI Analysis Differences:
  - Analysis Processes
  - Maturity of algorithm development based variables such as:
    - Vendor's time in the market with the technology
    - Available resources and level of focus for a given technology
  - Differences in analysis software
  - Differences in ILI user interfaces

# Right Data Within Repository

- Key is “Right Data” rather than volume (e.g. too much or too little)
- Different tools have different essential variables based on design (sensor type, sensor density, unique flux direction, wall thickness saturation capabilities, etc.)
- Essential variables change over time due to rapidly developing technologies
- Understanding of data quality and affect on performance specifications
- Must have actionable data

# Typical Considerations by ILI Vendors

- If there were differences in the call, was the location verified and how was it verified?
- Was the evaluated anomaly referencing the anomaly published by the tool (e.g. One ILI reported cluster is actually multiple clusters)
- Robust pipeline operator processes for capturing data
- Timing between the ILI survey date and the field examination date?
- Does morphology represent a complex area of corrosion?
- Type of in-ditch technology used and its relative capabilities and limitations
- Documentation QA/QC

# General Data Sharing Concerns

- Credibility, reliability, consistency and completeness of data within any repository
  - Any compromise of the data can yield an inaccurate conclusion
- Use of the data for something other than what was intended
- Lack full understanding of the technical process and associated interactions
  - Can yield an inaccurate analysis conclusion
  - Inaccurate conclusions can undermine the intent of the statute

# Examples of Data Analysis Pitfalls

- Confirmation Bias – seeking data patterns to support a hypothesis, philosophy or point of view
- Data Irrelevancy – Focus on data not relevant to the analysis or data not connected to analysis goal
- Causation without Correlation – correlation without cause and effect relationship
- Apples versus Oranges - comparing unrelated datasets and inferring

https://searchenginewatch.com/sew/how-to/2289574/big-data-big-trouble-how-to-avoid-5-data-analysis-pitfalls

Thank You