

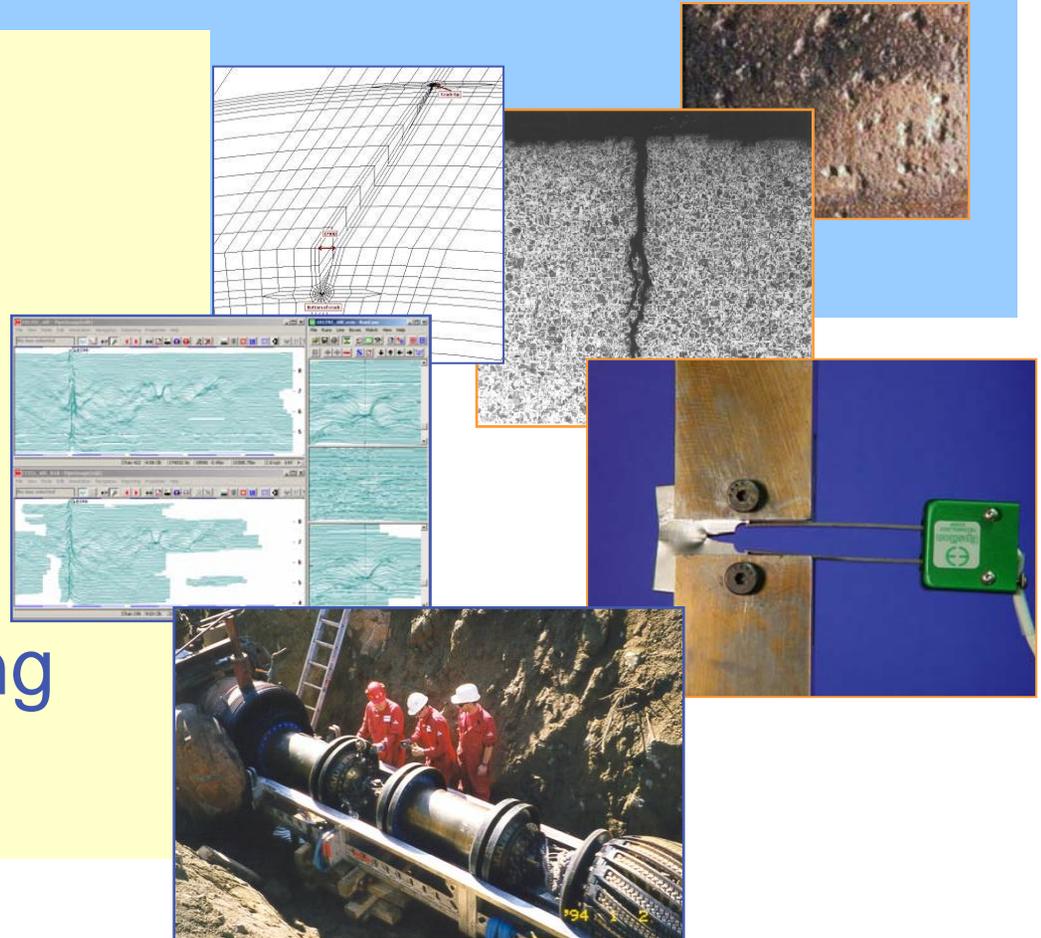
Advanced Analysis Methods

GE Energy

Shahani Kariyawasam

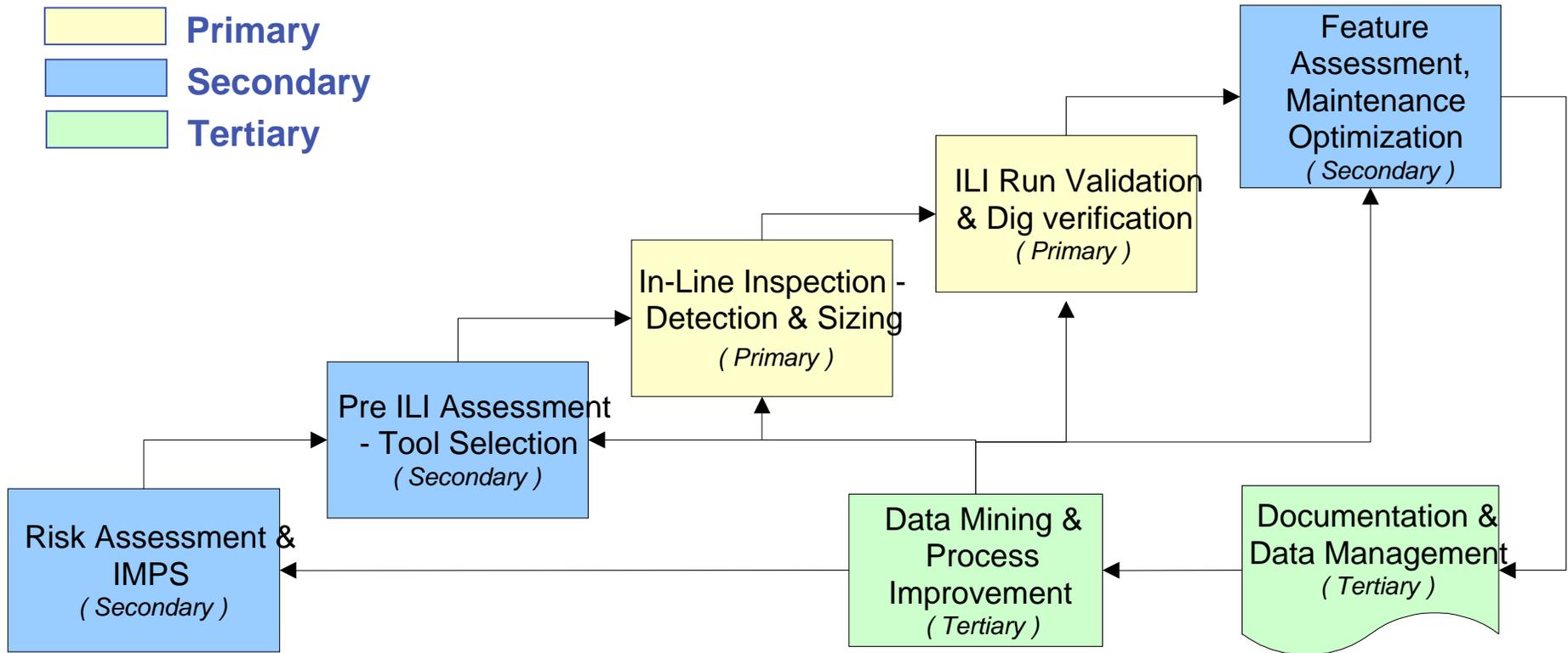
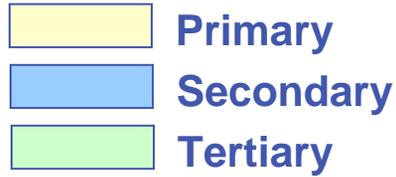
OPS ILI Public Meeting

Aug 11, 2005



imagination at work

Assuring Pipeline Integrity



Integrated solutions ensure reliable pipeline integrity

ILI Primary Analysis

Strengths of the existing ILI

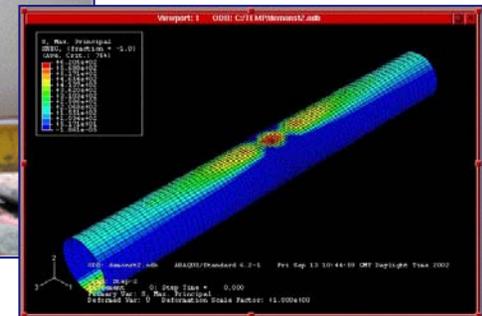
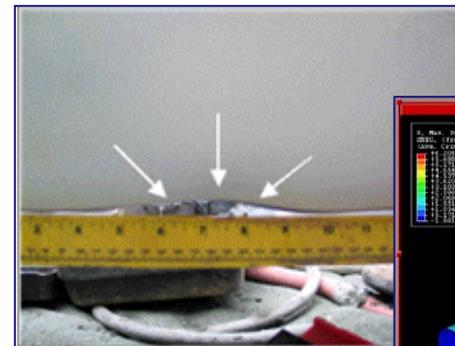
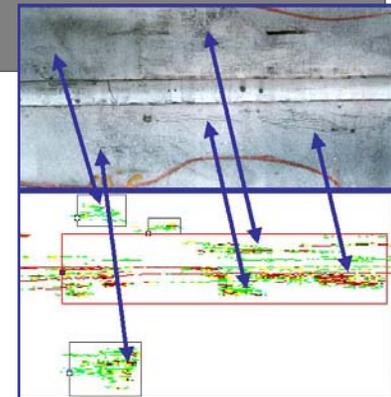
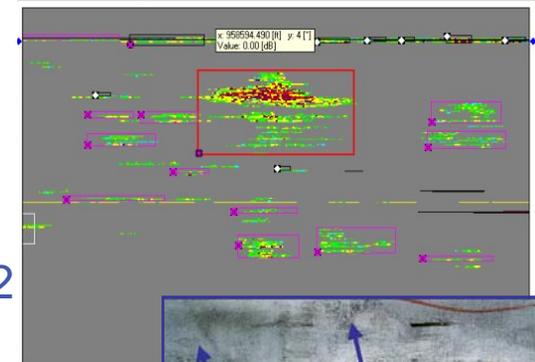
- Proven detection capability
- Multiple technologies for different types of defects
- ILI standards available for Quality Control (NACE RP 0102, API 1163, ASNT ILI PQ))

Improvements

- Streamlining the analysis process
- Consolidating data streams from other tools and data bases
- Improving defect sizing algorithms

Developments

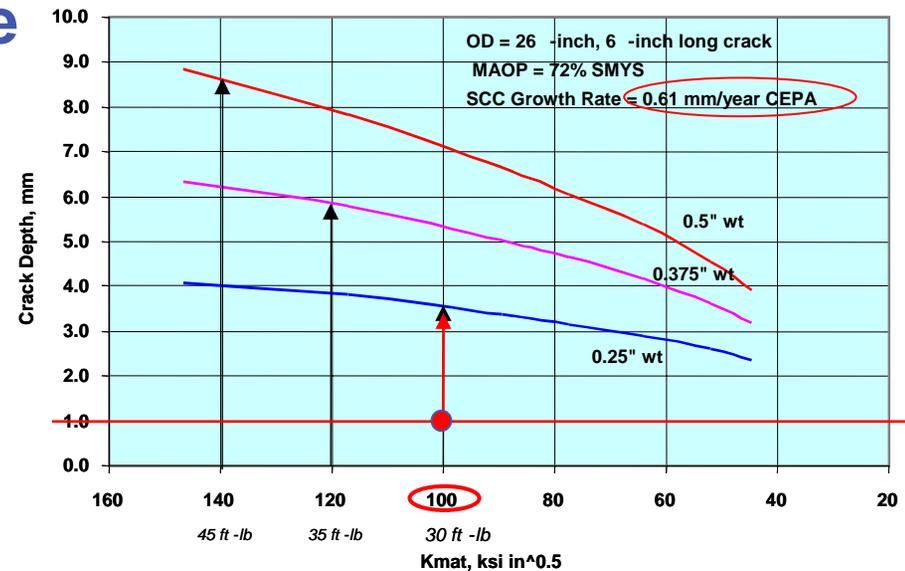
- Enhanced dig verification process
- Better data management and feedback
- Improved mechanical damage analysis



Pre-ILI Assessments for Crack Tools

To ensure adequate:

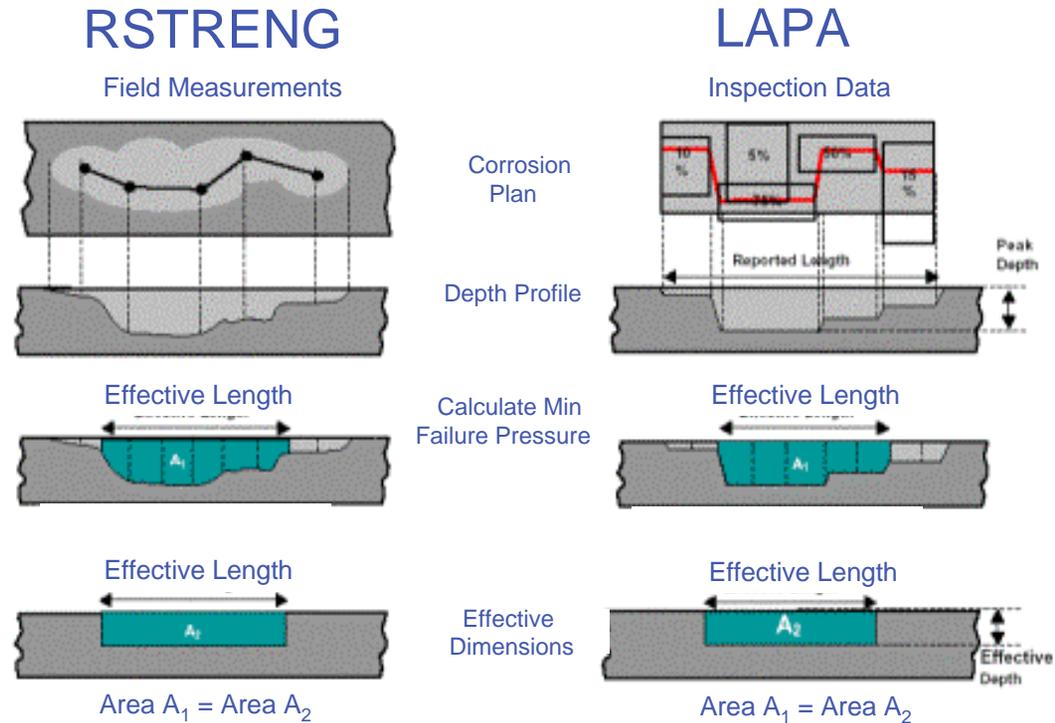
- **Detectability and confidence level** – Ensure critical crack sizes are within tool spec with adequate confidence
- **Re-test or re-inspection interval** – Ensure adequate inspection interval with appropriate growth rate



ILI Secondary Analysis

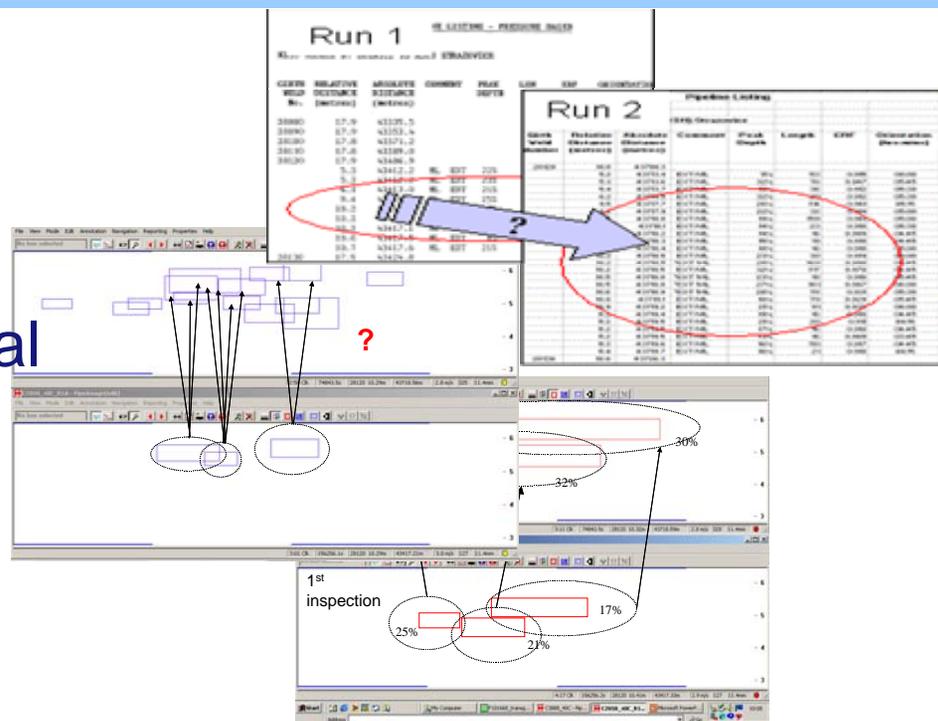
Length Adaptive Pressure Assessment

- Improved failure pressures - detailed ILI 'box' data - LAPA (RSTRENG approximation)
- Validated based on dig & burst test data
- Results in more accurate burst pressure predictions than conventional methods

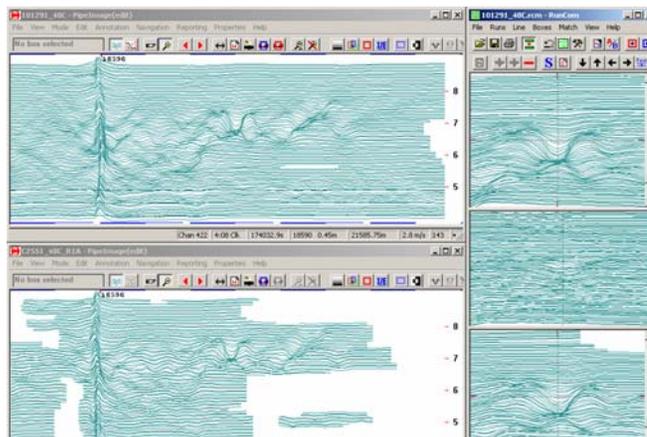


Corrosion Growth Rates from Repeat ILI Data

- Feature matching from spreadsheet data
- Feature matching using visual display software
- Box matching
- Signal matching (RUNCOM)



*Increasing level
of accuracy*



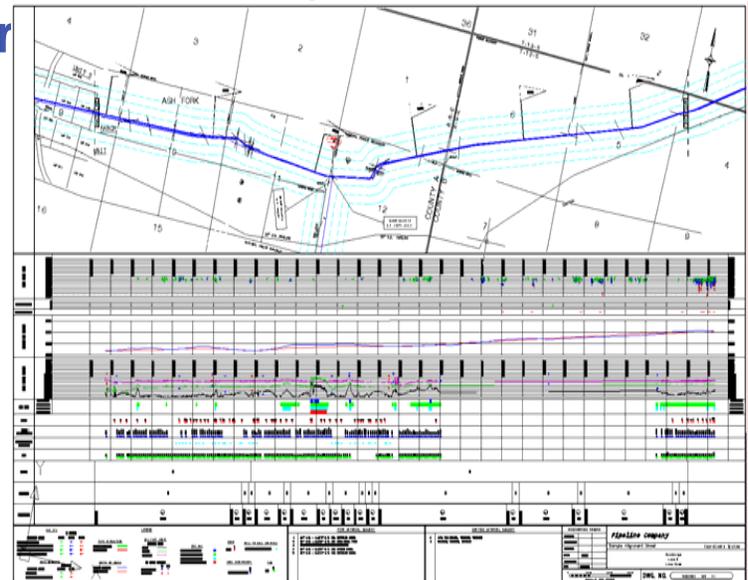
*Shown to be > 3 times
more accurate*

GE RUNCOM software

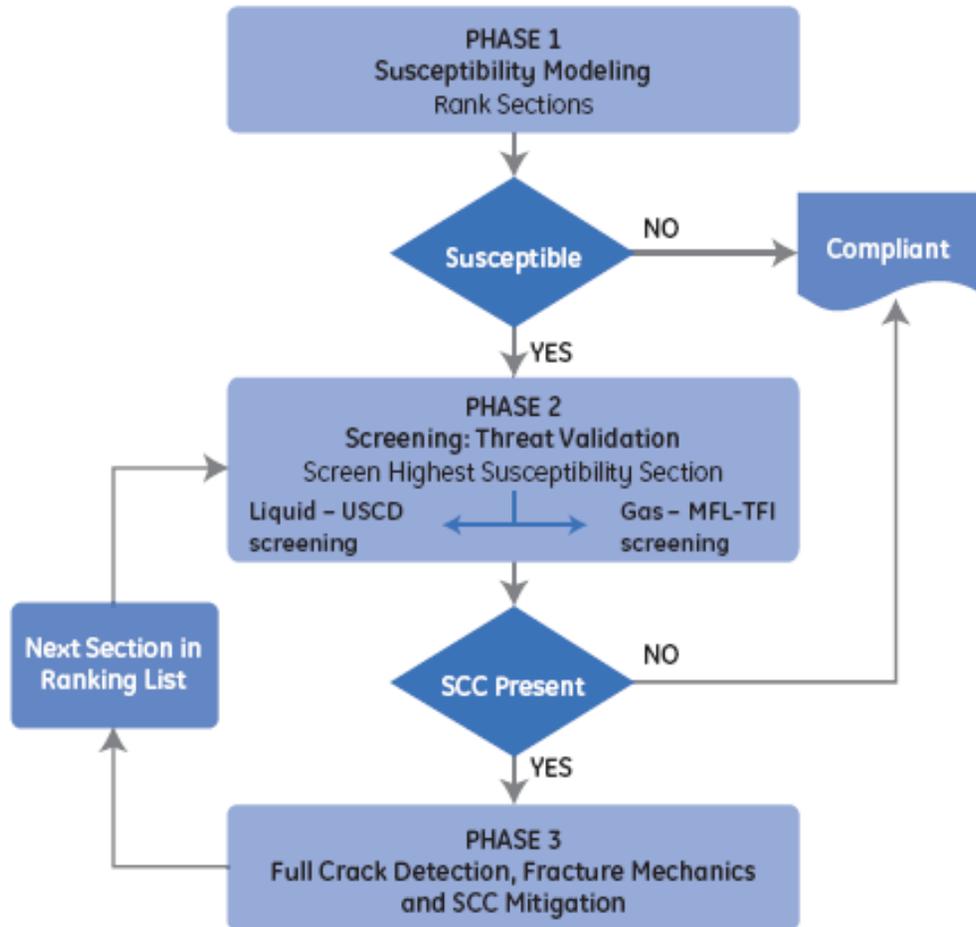
Benefits of “Digital” Data Integration

- Assists assessing features by..
Correlating ILI data with pipe attributes
- Aid in mobilizing remediation crews by...
Revealing ROW access issues
- Minimizes error locating defects
- Aids data mining and enables impr

Smart Current
Alignment sheets

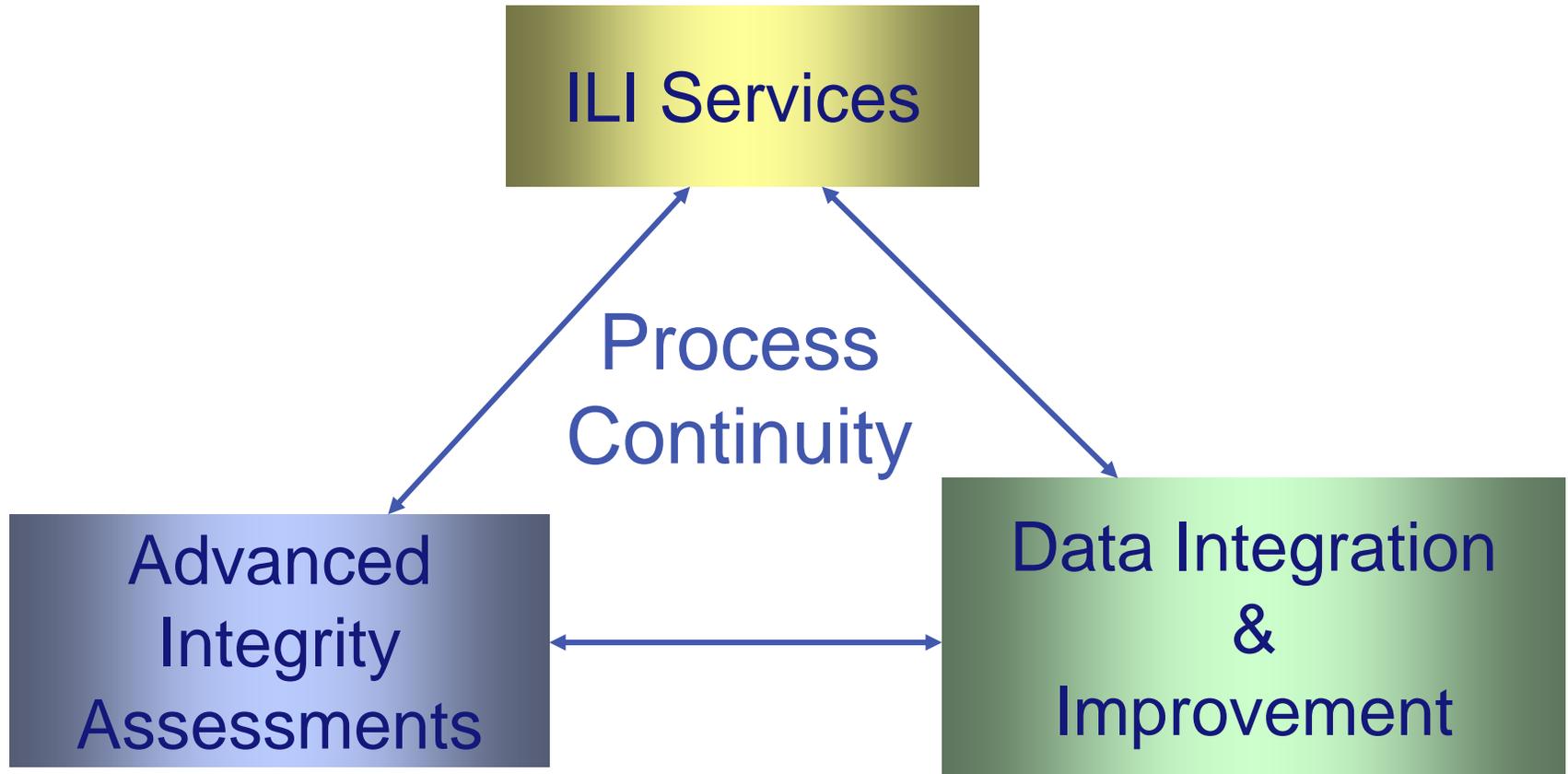


SCCScreen for SCC Threat Validation



- Reliable and economical method to validate the presence or absence of SCC
- Database of crack detection used to provide necessary reliability/confidence level

Effective decision making ...



Integrated solutions ensure reliable pipeline integrity

Thank you.

Questions?



For additional information contact:
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Corrosion Growth Evaluation

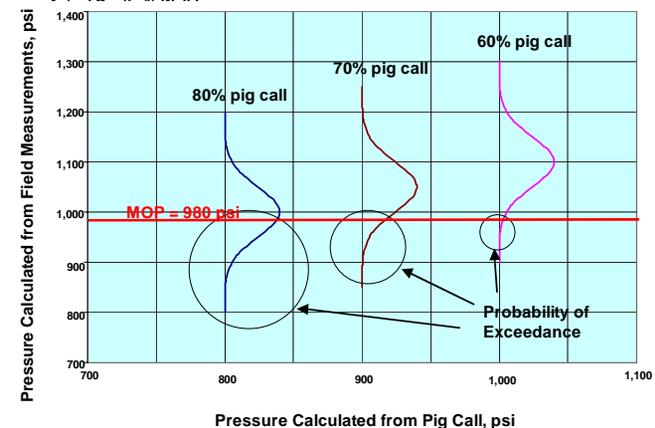
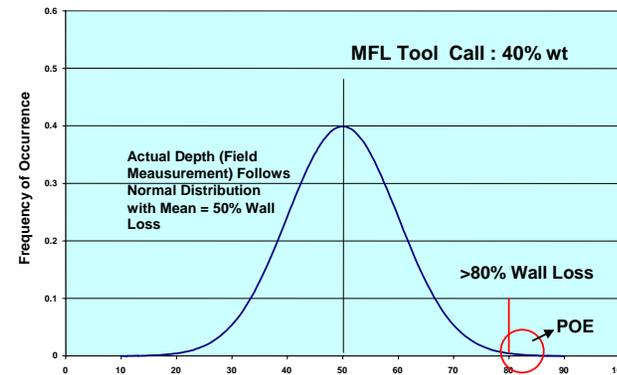
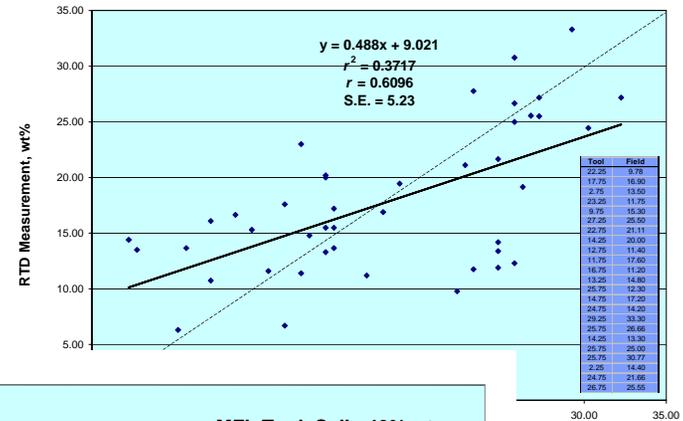
The challenge...

- ILI provides static snapshot of the pipeline condition
- Corrosion may continue to grow leading to the possibility of failure at a later date
- Need growth rates to determine future repair & maintenance needs

Operators can identify future corrosion growth

Calculate safety/reliability using POE

- POE is the probability of exceeding a given allowable value (e.g., a max defect size or burst pressure)
- POE gives likelihood of leak and rupture (burst)
- Field measurements are used to refine sizing uncertainty in ILI
- POE is calculated for every anomaly in the pipeline



Data Enabled Pipeline Integrity

Visualizes integrity data along a pipeline route allows interactions to be seen that would normally be missed enabling more effective integrity assessment and improving the decision making process

- Align ILI feature data with other ILI & integrity data
- Refine assessment accuracy
- Audit corrosion control
- Root cause analysis
- Generate clear, comprehensive dig plans

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Presentation