# Integration of ILI and GIS to Advance Pipeline Integrity

MPLX ENERGY LOGISTICS®

Voluntary Information-Sharing System Working Group
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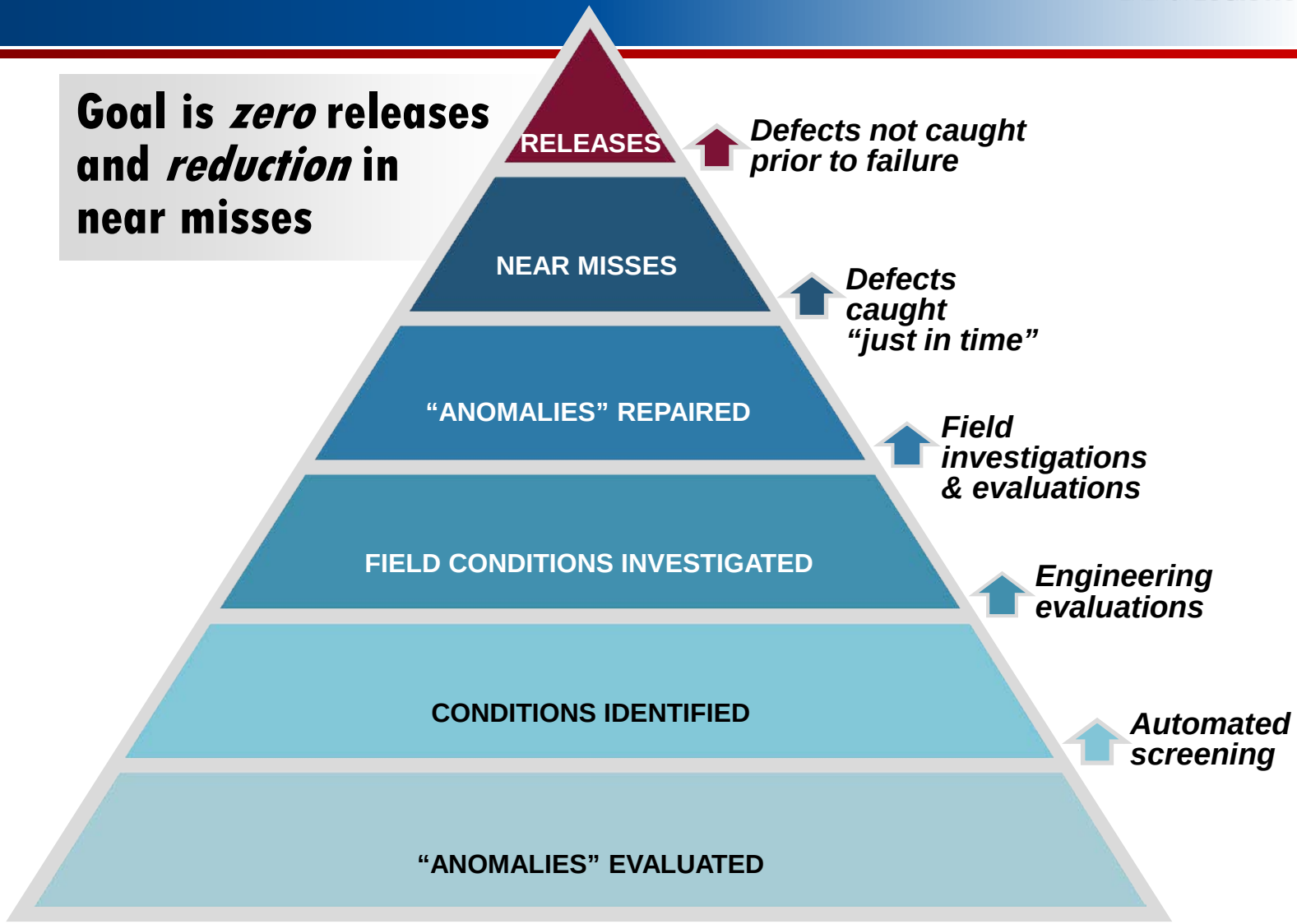
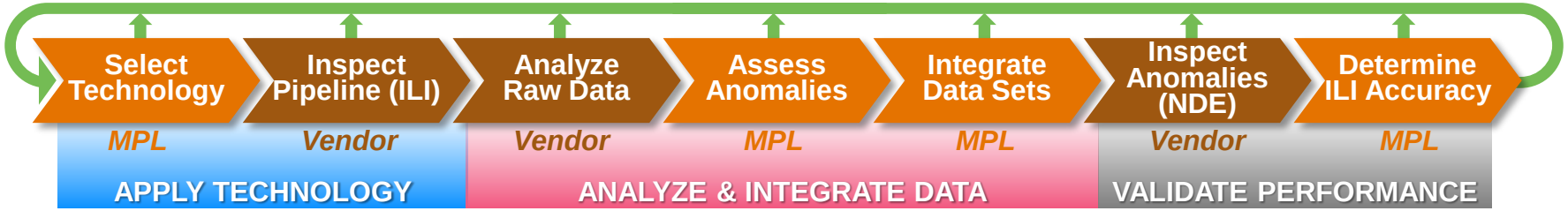
# *Identifying Risk:* Anomaly Pyramid Concept

**Goal is *zero* releases and *reduction* in near misses**

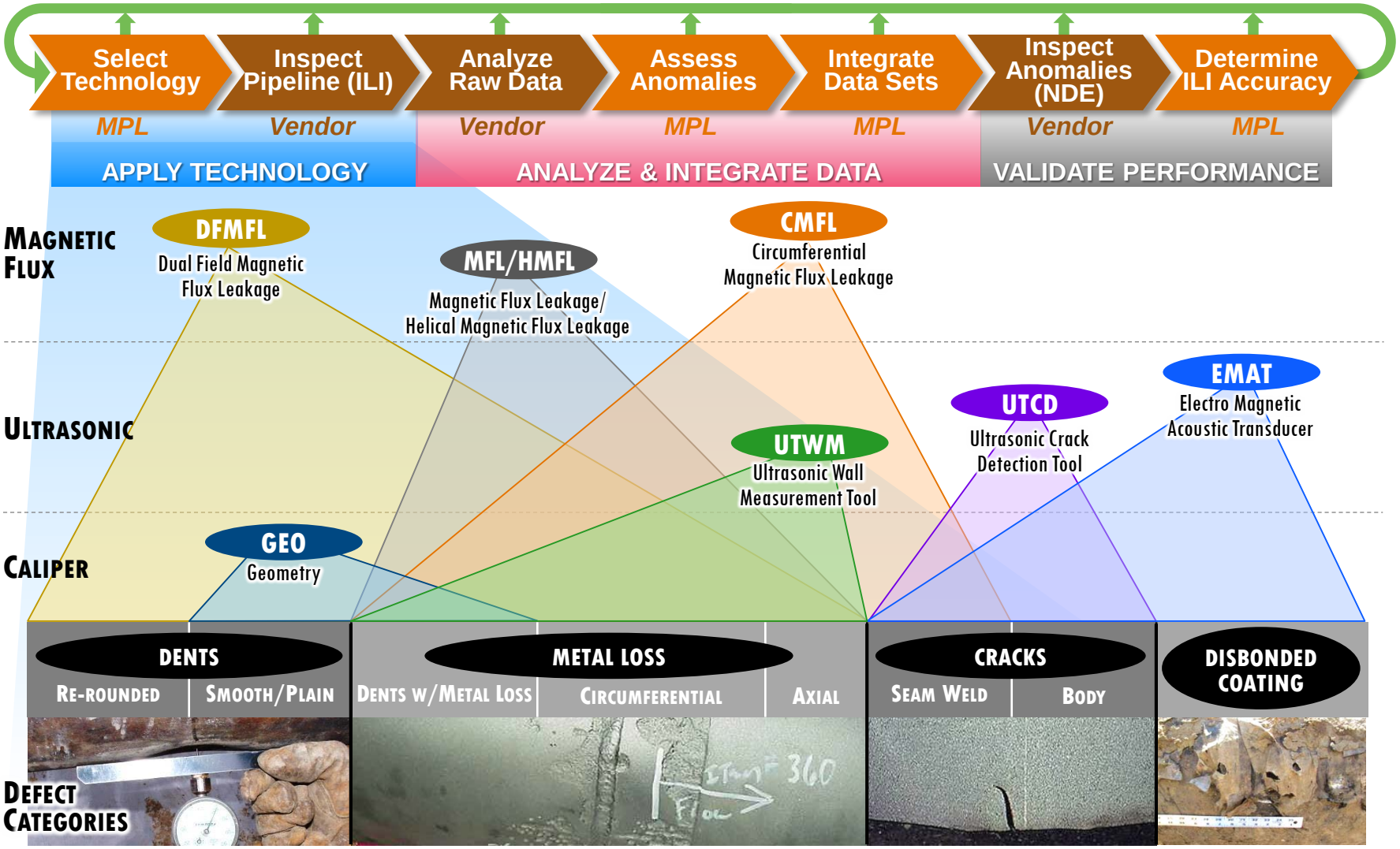


# *Identifying Anomalies:* Plan, Do, Check & Adjust At Work

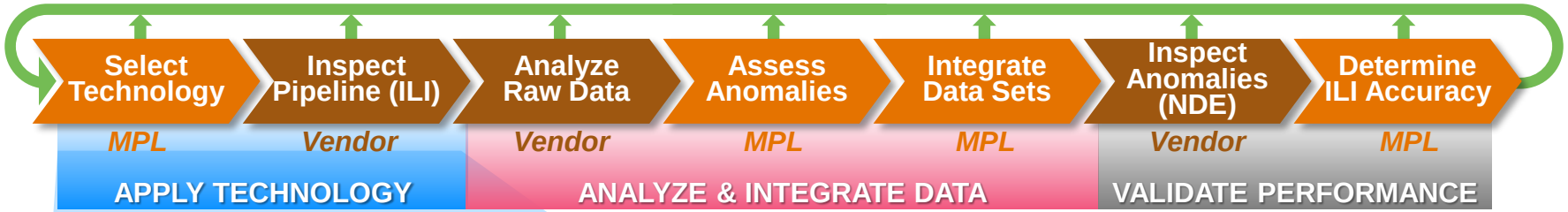


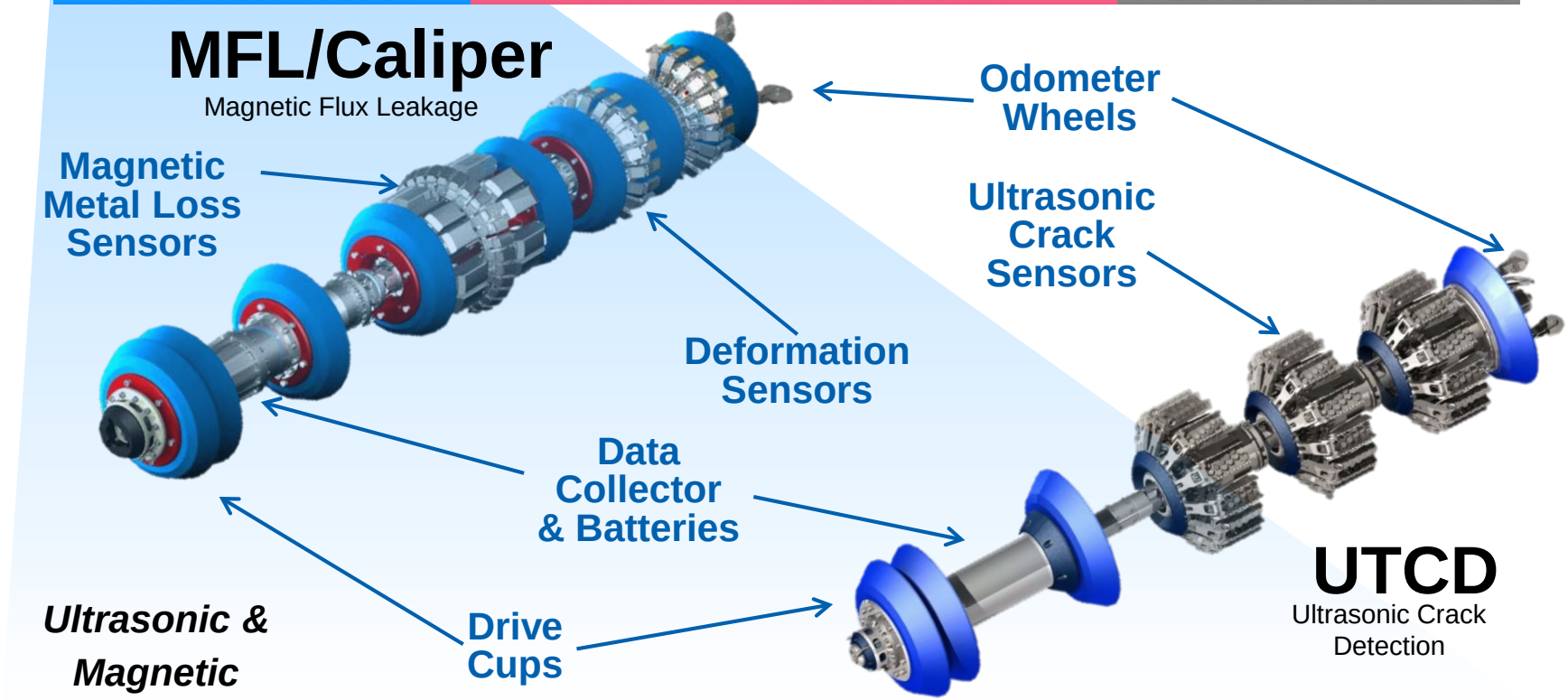

***Strong partnership between Operators and technology providers is <u>key</u> to success***

# *Selecting Technology:* Matching Tools to Threats



# *Using Technology:* Putting Tools to Work




***Ultrasonic & Magnetic Inspection Tools***

***Photos of Inline Inspection Tools provided by Rosen Group***

# *Data Integration:* GIS Data

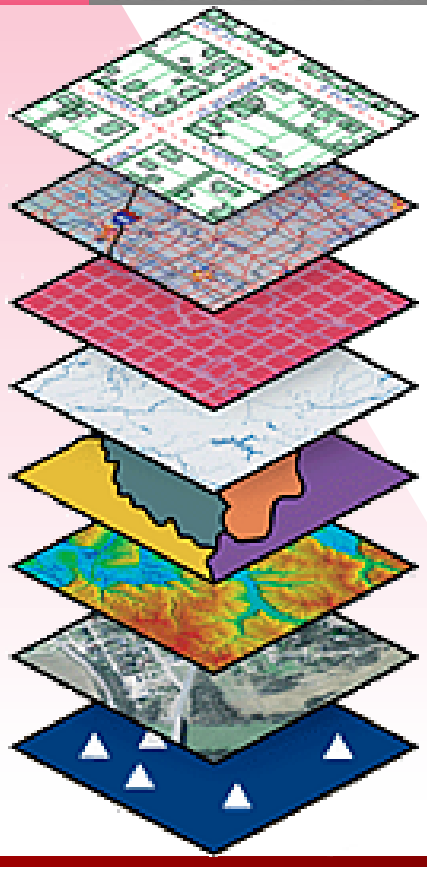
| Select Technology | Inspect Pipeline (ILI) | Analyze Raw Data | Assess Anomalies | Integrate Data Sets | Inspect Anomalies (NDE) | Determine ILI Accuracy |
|---|---|---|---|---|---|---|
| *MPL* | *Vendor* | *Vendor* | *MPL* | *MPL* | *Vendor* | *MPL* |
| APPLY TECHNOLOGY | | ANALYZE & INTEGRATE DATA | | | VALIDATE PERFORMANCE | |

## GIS

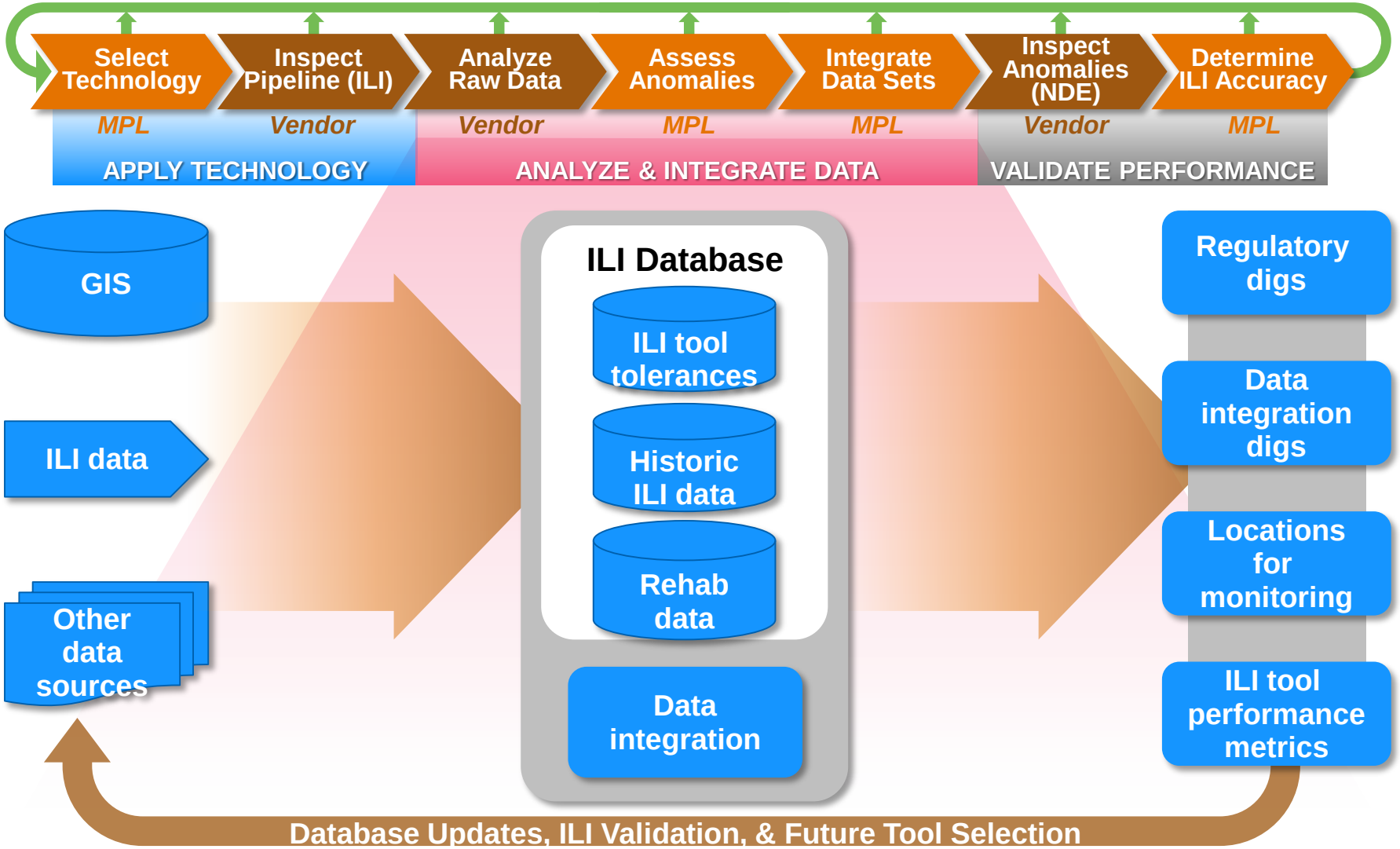
- *Pipe Properties*
- *Foreign Line Crossings*
- *Coatings*
- *Casings*
- *MOP*
- *Depth of Cover*
- *Line Survey Data*

## Other Data Sources

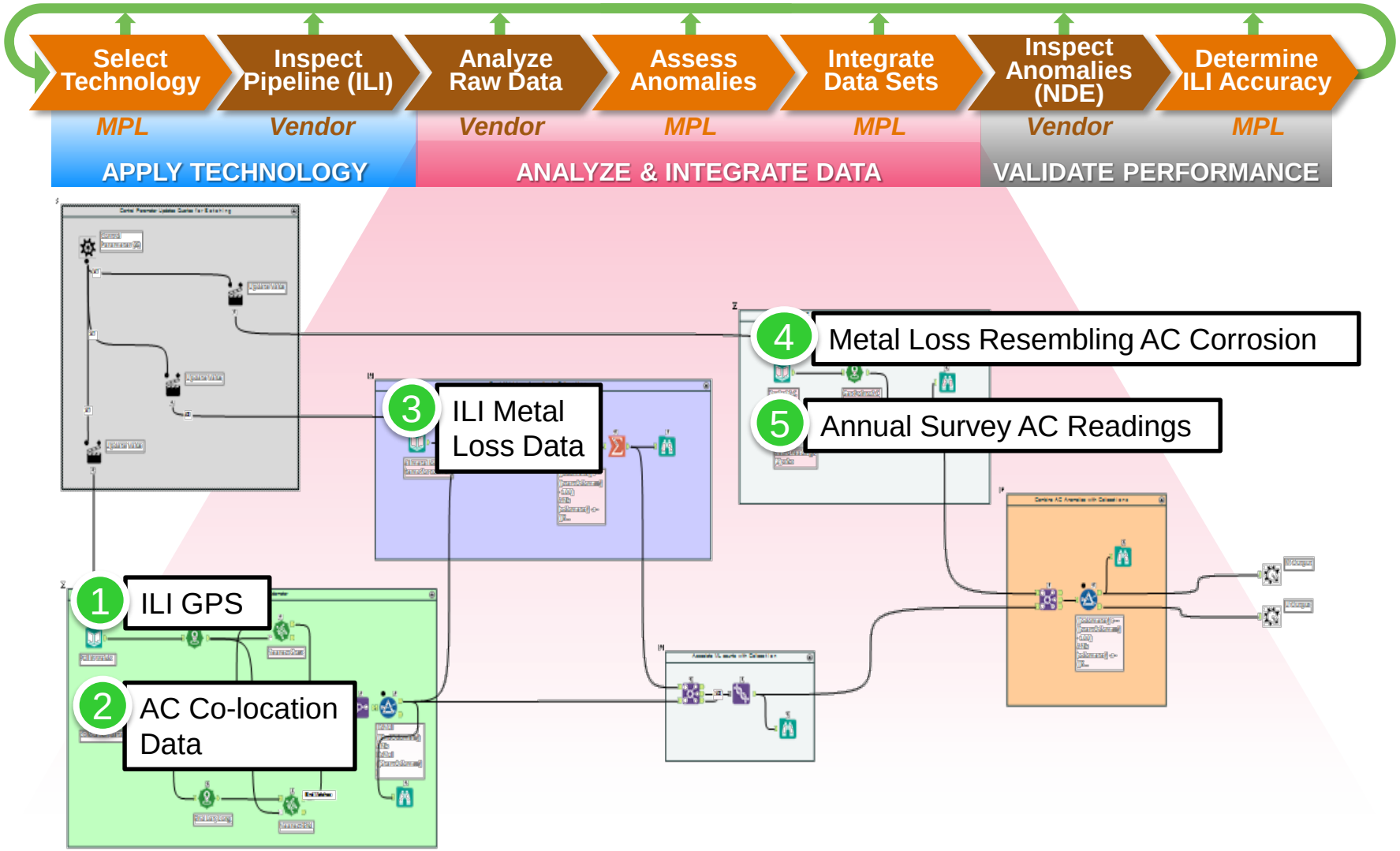
- *Close Interval Survey Data*
- *AC Power Co-locations*
- *Span Locations*
- *Waterway Crossings*
- *Land Use Data*
- *Aerial Imagery*
- *Operational Data*
- *Topography*



# *Data Integration:* ILI Data Overlay



# *Data Integration Example:* AC Corrosion Risk Screening



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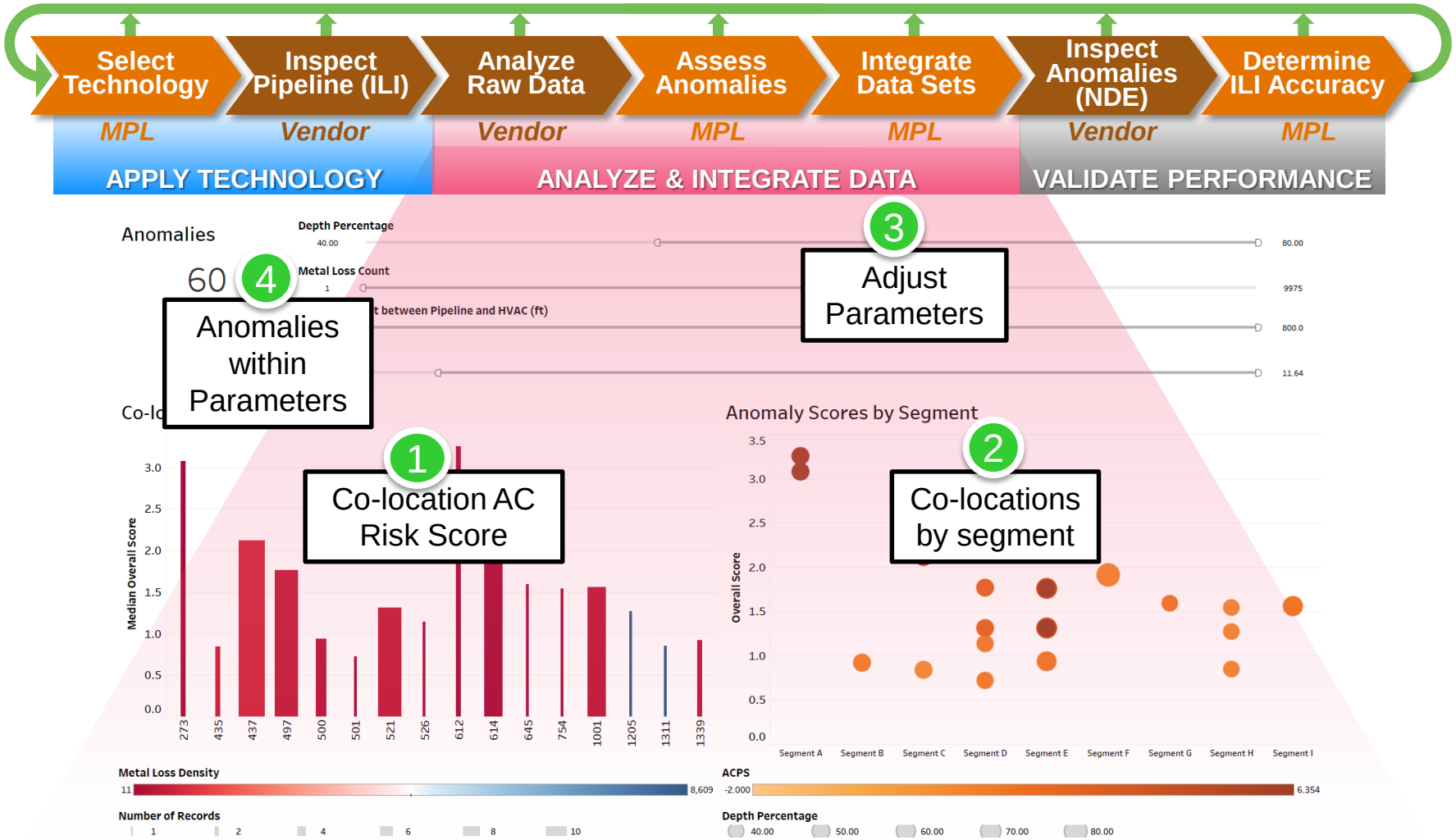


# *Validate Performance:* Field Excavation and Repair

| Select Technology | Inspect Pipeline (ILI) | Analyze Raw Data | Assess Anomalies | Integrate Data Sets | Inspect Anomalies (NDE) | Determine ILI Accuracy |
|---|---|---|---|---|---|---|
| *MPL* | *Vendor* | *Vendor* | *MPL* | *MPL* | *Vendor* | *MPL* |
| APPLY TECHNOLOGY | | ANALYZE & INTEGRATE DATA | | | VALIDATE PERFORMANCE | |

Google Earth dig site view

Staked dig location

Anomaly excavation

Anomaly inspection

Coating removal

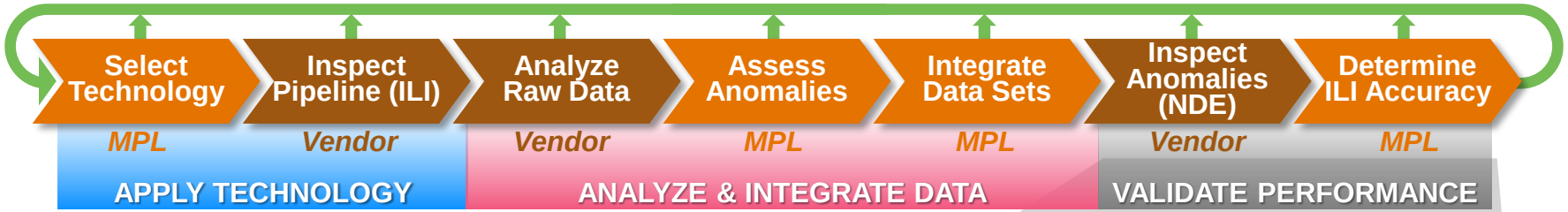
Sheet piling

Welding repair sleeve

Recoating exposed pipe

Underwater dig barge

# *Validate Performance:* Tool Tolerance and Specifications




- Tool performance vs. specifications
- Anomalies found compared to conditions called
- Probabilistic analyses

# Feedback & Continuous Improvement

- Working with vendors to improve technology
- Industry involvement
- Research and development participation