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CRITICAL ROLE OF ASSET AND DATA MANAGEMENT WITHIN AN OPERATOR

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HOST ASSOCIATION

AGA American Gas Association

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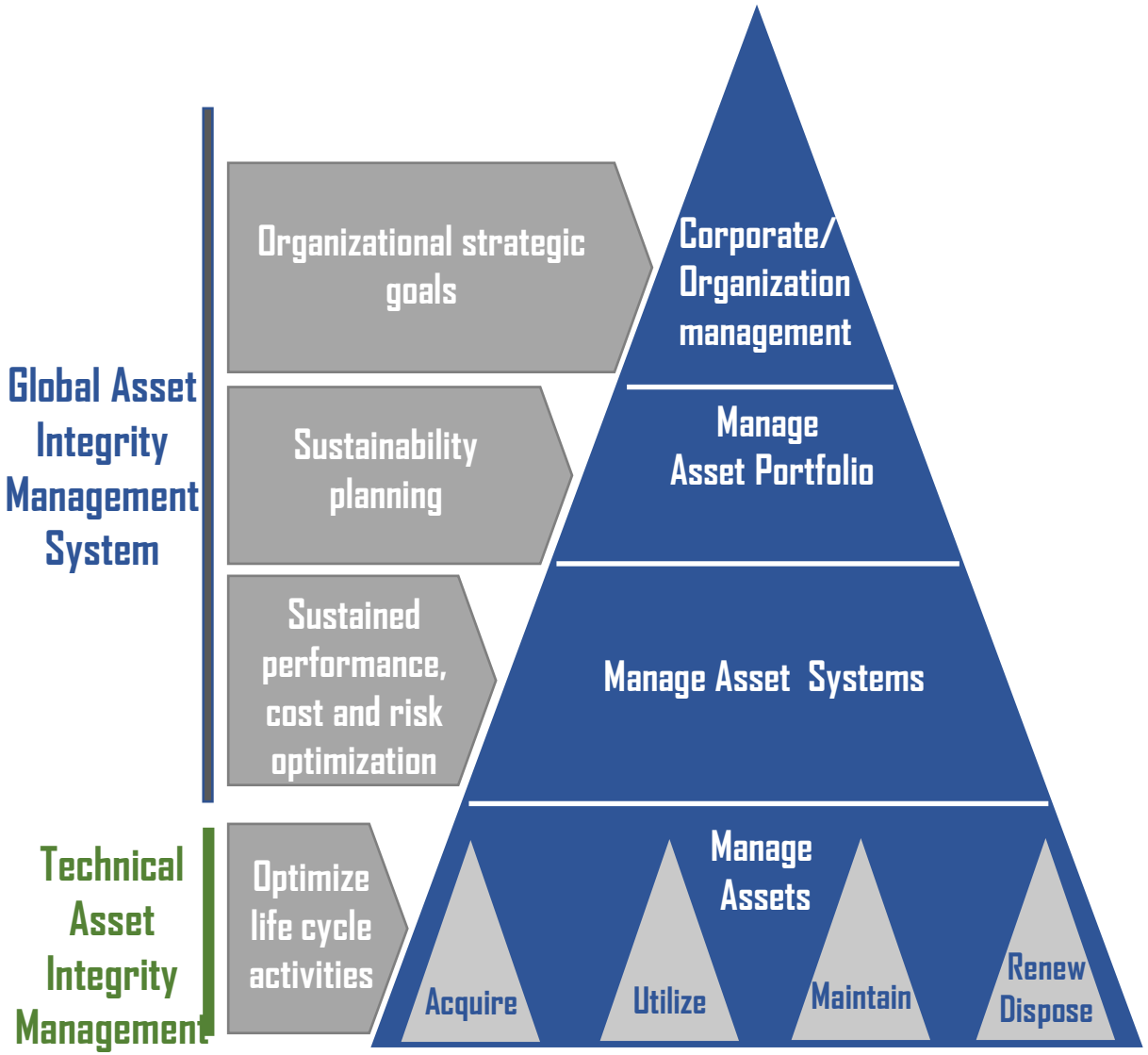
FUELING THE FUTURE

TGS Argentina

- **Transportadora de Gas del Sur**, S.A. transports over 60% of the total natural gas consumed and supplies it directly to distributors, electricity generators and industries.
  - *Transportation System*
    - Pipelines : 9183 km
      (>40 years average age)
    - Compression Plants: 32
      (778.600 HP power installed)
    - Measurement Stations: 355
  - *Processing System*
    - Processing Capacity: 43 MM m3/d
    - Liquid production : 0,90 MM MT / year

Introduction

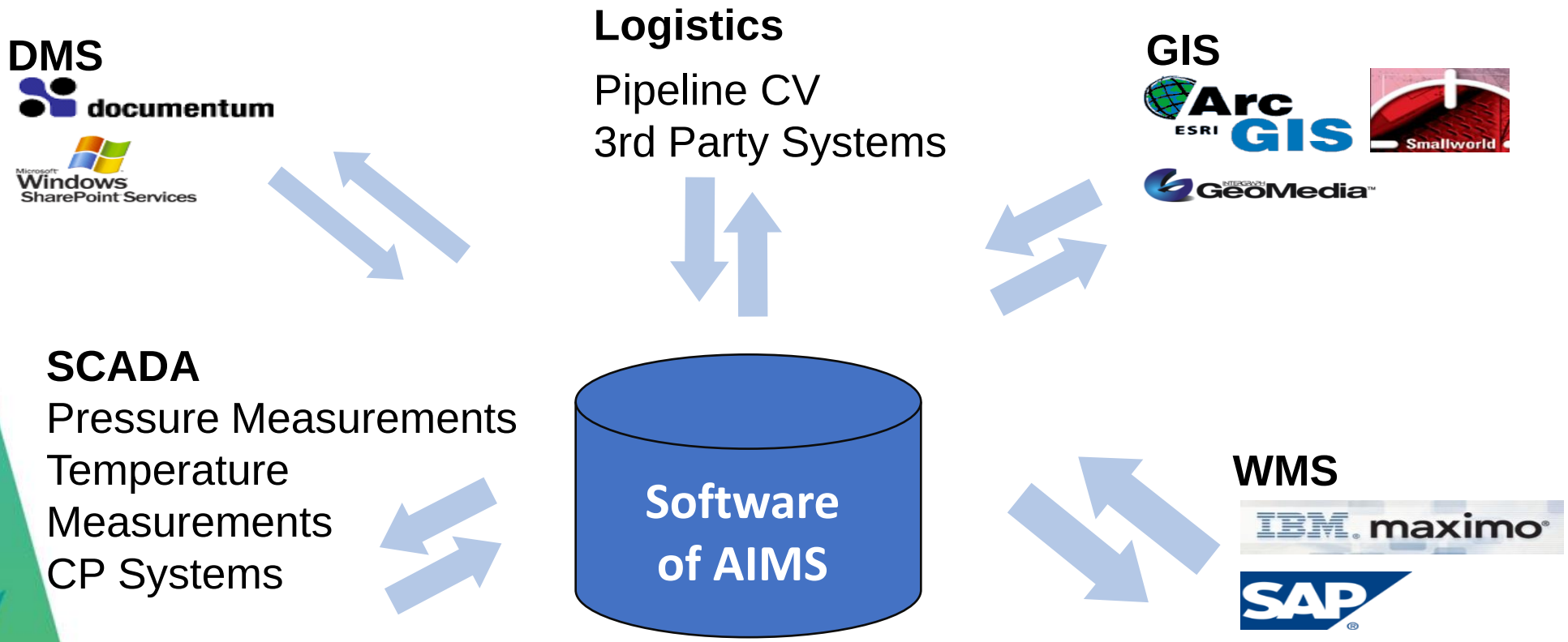
- The purpose of an AIMS is to ensure that an asset is maintained in a fit-for-service condition throughout its **life cycle** in the **most cost-effective**, reliable, and safe manner.
- A **range of codes, standards and frameworks** guides this development and implementation.
- Number of new standards related to asset management (for example **ISO 55000**, **EN 16348** and **API RP 1173**), a representation of AIMS implementation.
- **ISO 55000** describes the high-level requirements for organizations relating to quality in asset management.



ISO 55000-1. Asset Management

Centralized Approach

- The implementation of an IM System is not done “on the island”.

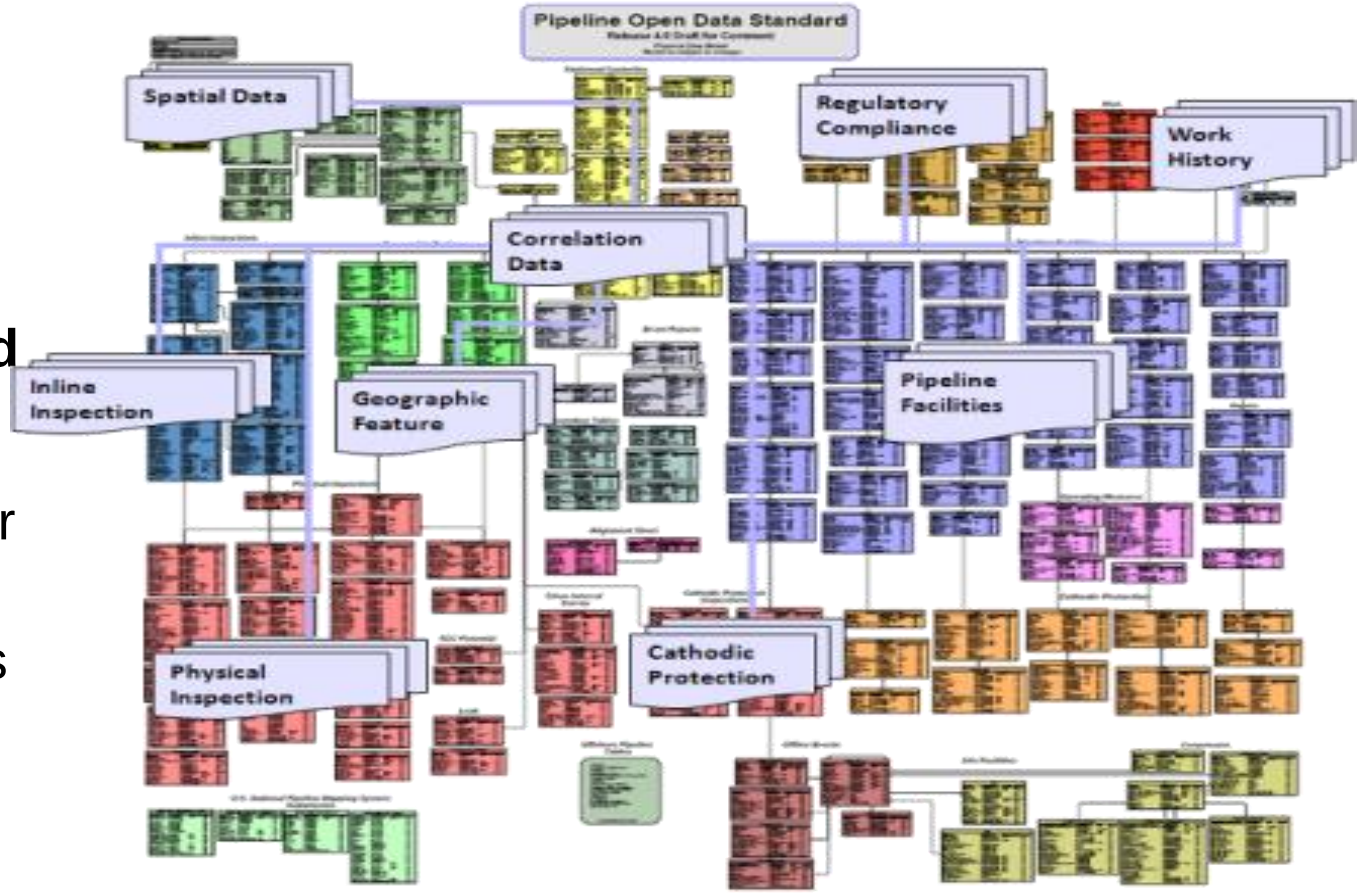


Project phases

- **Phase I: Gap Analysis**
  - Customized analysis of TGS' technology environment and the currently implemented geodatabase's structure was carried.
  - It included systems and technologies currently in place, server infrastructure, software, DB's and Web services presence and configuration.
- **Phase II: Software implementation and interfaces**
  - Conceptual design for the integration of the existing database with an asset integrity system.
  - Asset software implementation and installation
  - Client-specific enterprise interfaces and algorithm development for both defect and risk assessment
- **Phase III: Data migration**
  - Data migration from TGS' Geodatabase to PODS 4.2 Relational and PODS 6.0 Spatial databases and quality evaluation (QA/QC).
  - Initial Risk Assessment Calculation and Dashboard implementation

Data Management Modules

- **Alignment Manager** - Load, align and manage integrity related data which can be displayed on maps along the length of the pipeline.
- **Extract, Transform and Load (ETL):** Integrates data from various sources into the centralized PODS database (or customer specific data model)
- **Document Repository:** Links all integrity related documents and reports
- **User Permissions**

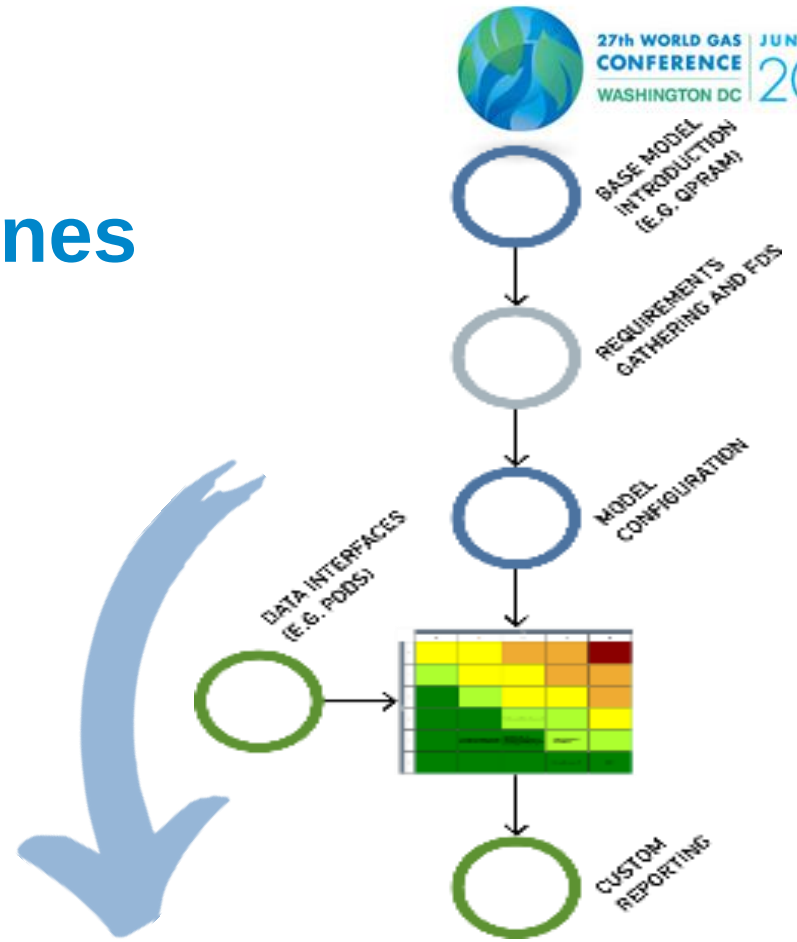


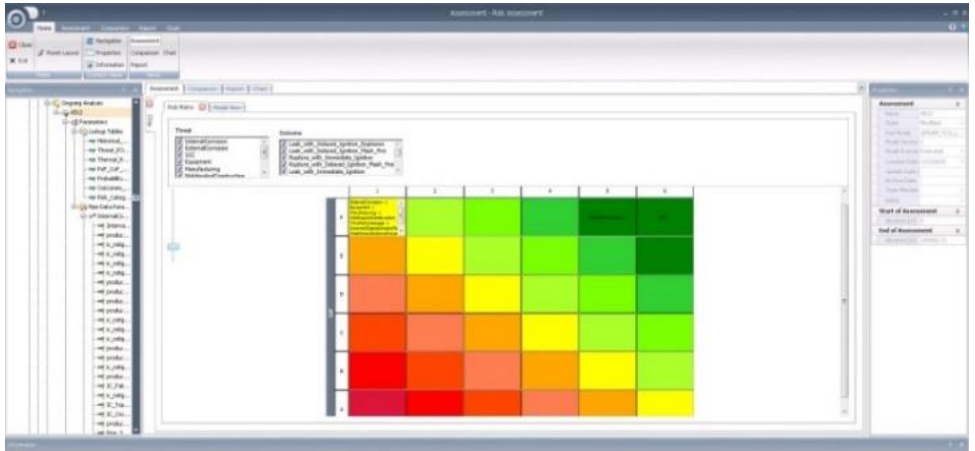
PODS™
Pipeline Open Data Standard

Pipeline Analysis Software for pipelines

Functionalities covered to support all integrity management requirements:

- **Asset Management:** management of all asset related information
- **Risk Assessment:** screening and prioritization
- **FFP Assessment:** immediate actions from defect analysis
- **Corrosion Growth Analysis:** future repair and inspection planning
- **Diagnosis of Threats:** e.g. how is the performance of the CP system?
- **Task Management:** Interfacing with SAP and capturing of field verification results
- **GIS Analysis:** e.g. data cross-checking

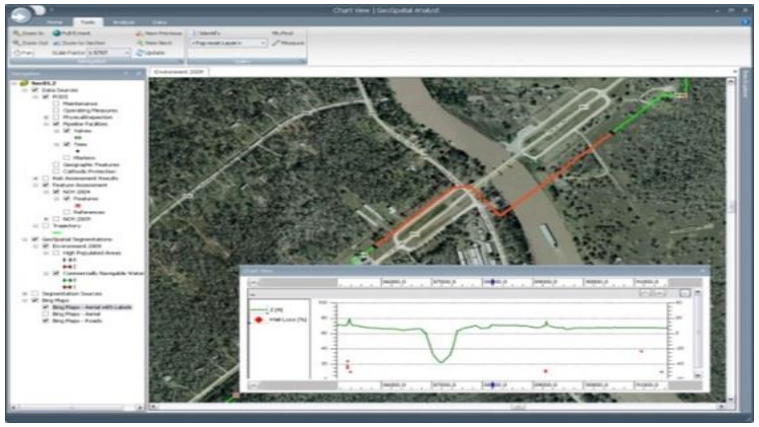




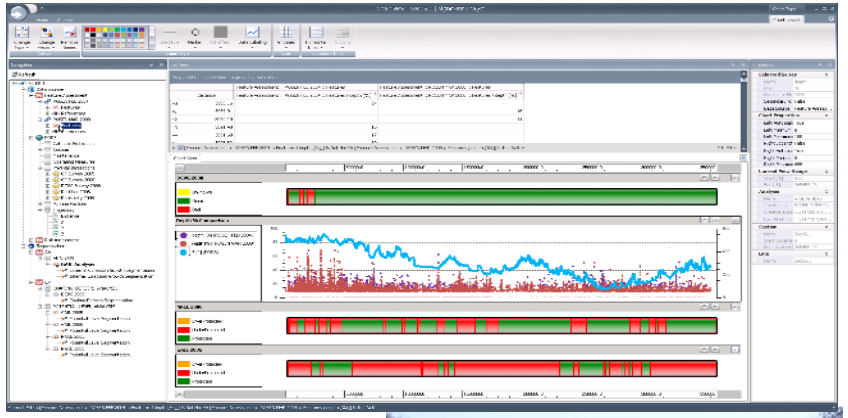
PIMS results: Combined Visualization & Analysis

In PIMS software all integrated and calculated data can be overlaid with each other:

- Comparison of consecutive ILI runs
- Overlaid internal and external inspection results
- HCA's or other geospatial conditions
- Risk Assessment outcome in geographical context
- Geographic queries (e.g. filtering, buffering)



GeoSpatial Analyst



Alignment Analyst

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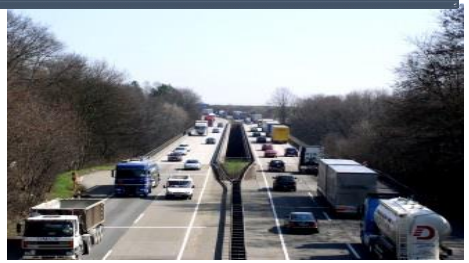
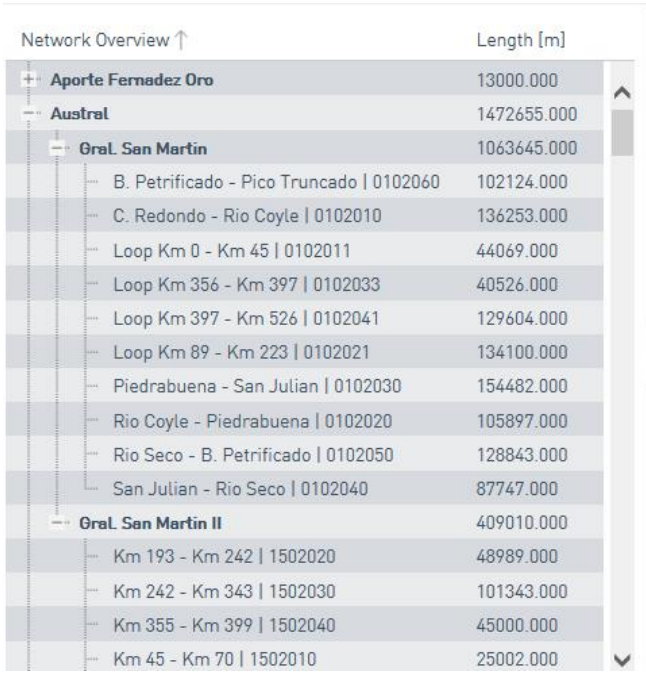
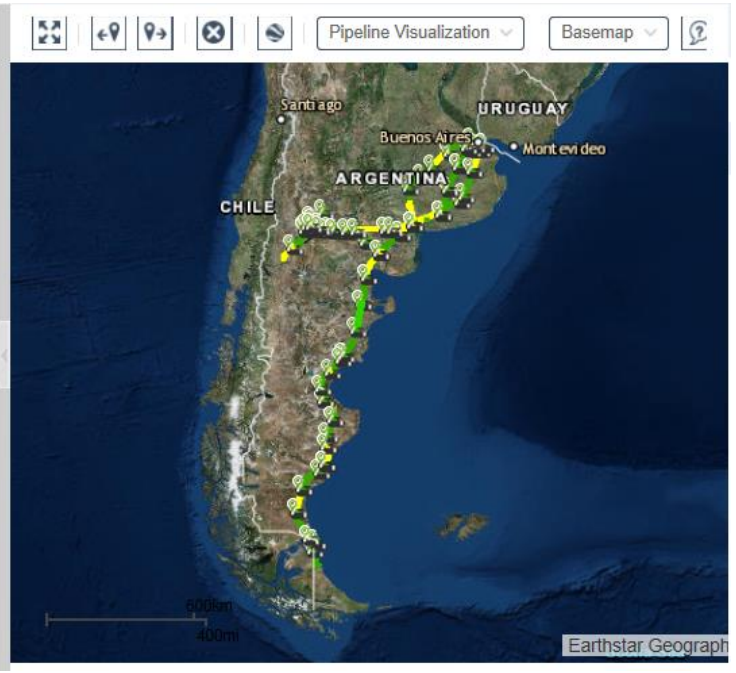


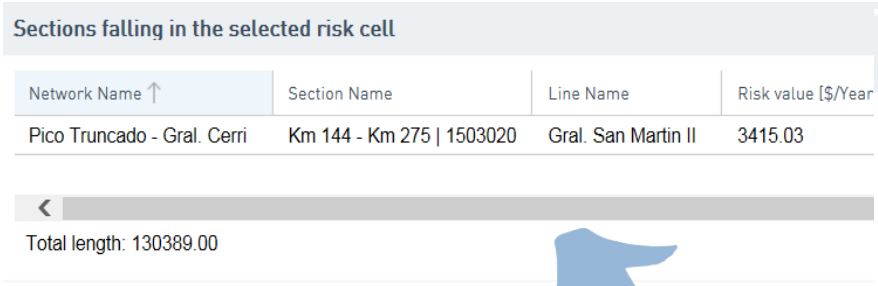
Management Dashboard

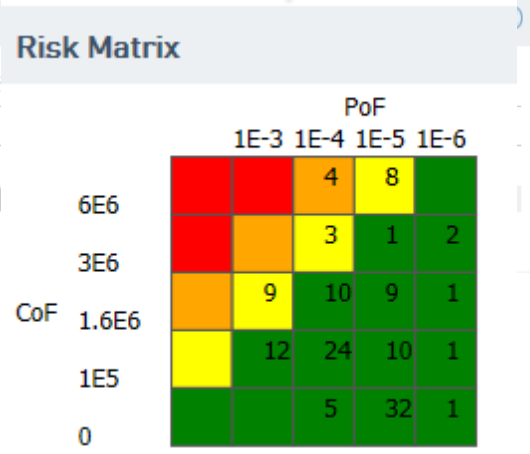
Functionalities covered to support all integrity management requirements:

- **Device-independent interface** designed to summarize and display key data
- **Overhead display in a control facility**, or on a tablet or smartphone
- **Three components**:
  - KPI view
  - Pipeline View
  - Section View









Conclusion

- An AIMS (Asset Integrity Management System) requires policies, resources, information and management should all be aligned.
- ISO 55000 and other new standards provide an industry standard framework for asset owners to benchmark and improve their asset integrity and performance.
- The ability to collect, integrate and analyze information about assets can help fine-tune asset performance and to better manage risk levels.
- Key client benefits:
  - Knowing where an asset is located and in what condition it is
  - Simplification of workflows
  - Improved data quality: importance of a cyclical approach PDCA
  - Improvements in reporting to regulatory bodies and other key stakeholders on availability, reliability and location.