Data wrangling for effective metadata extraction
Organizations are realizing that there is valuable information hidden within their legacy files (both paper and electronic) which can now be efficiently identified due to improved methods for extracting metadata. Metadata has several forms and can be located within many areas. For example, in the oil and gas industry, metadata contains information pertaining to fields, basins, geological provinces, etc. In addition to the company, third parties may use or need the metadata - contracting companies, vendors, fabricators and partners.

The importance of accurate and accessible metadata should not be undervalued. Accessible metadata attribution provides end users with confidence that the origin, history, and integrity of each attribute comes from a reliable source.

Document metadata is also utilized to populate system profiles for easy end-user access and less end-user copies.

**Organizational challenge**

Many organizations struggle to enforce the information management standards, processes or procedural guidance for metadata—often due to cost or resource constraints. However, with the right course of action, companies can unlock the value in previously inaccessible metadata and documents.

There are many metadata challenges that organizations are currently facing today, such as:

- There is a lack of consistent use of metadata.
- Information is stored in unstructured drives and cannot be instantly located.
- Documents containing foreign languages have not been translated.
- Information that was inherited during mergers and acquisitions does not contain data consistent with the acquiring company’s standards and systems.
- Metadata is available but has not been extracted to populate system attribution.
- There is no efficient method for quality-checking existing metadata.
- There is too much information to analyze and not enough manpower to do so.
- Existing paper or tape media is aging and deteriorating by the year.
Data wrangling services

Data wrangling services support an organization’s drive to digital by extracting accurate and complete metadata from previously inaccessible repositories of information. Furthermore, metadata associations and relationships between document revisions, attachments or mark-ups/comment sheets must be maintained.

Data wrangling solutions demonstrate an intimate understanding of the inherent challenges of digitizing data, as well as a scalable, structured and phased approach to metadata extraction. Metadata extraction utilizes targeted technologies to accomplish data extraction, such as computer vision, machine learning, and text analysis. Additionally, SMEs’ hands-on experience supports organizations drive to digital by maximizing the value of extracted metadata, such as:

- **Exact Phrase**: Intended for items like a list of Originators, Country, Basin, Field
- **Key word trigger**: Intended for items such as Title
- **Form based**: Used for repetitive forms to extract targeted information
- **Vision analysis based**: Used to dynamically find an area on the document and extract targeted information
- **Free form extractions**: To extract targeted data

Metadata extraction and cleansing activities can be customized by defined organizational rules, such as numbering and coding procedures, target system attribution requirements, etc. Data wrangling services would encompass several metadata extracting techniques, such as:

- **Exact Phrase**: Intended for items like a list of Originators, Country, Basin, Field

Transforming extracted metadata to align with taxonomies.

Utilizing extracted data to enable organizations to create structured repositories.

Aligning extracted metadata with target system attribution requirements.

Identifying gaps and missing or erroneous data.
By leveraging domain SME engineering IM knowledge, extracted metadata can be processed, mapped and aligned to organizational requirements, such as:

- Identifying gaps and missing or erroneous data
- Reviewing mandatory system metadata field requirements and expected data for each field
- Aligning metadata to numbering Specifications and/or Procedures
- Reworking metadata transformation to include newly aligned codes and ensure no gaps are present
- Identifying value-add opportunities with available attributes for enhancement of data capabilities (e.g. System Numbers, Area Codes, MOC Numbers, etc.)
- Aligning identified value-add opportunities with global taxonomies

The ability to extract rich and searchable data from previously inaccessible repositories can transform the way a company operates. Implementing data wrangling services can lead to:

- Increased data integrity
- Enhanced safety
- Streamlined processes
- Increased data traceability
- Improved decision quality
- Accelerated decision-making
- Increased operational use of information that was previously unreachable

**About the author**

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Janine Murray is an IM Consultant with over 15 years of experience in the O&G industry. She has extensive FE/Operations and Major Capital Project (MCP) Information Management experience. She also has deep experience with IM brownfield modifications, greenfield enhancements, MCP joint ventures, Closeout, and MCP handover to Operations. Additionally, she is experienced with document cleansing and data extraction techniques for digitizing O&G legacy assets.

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