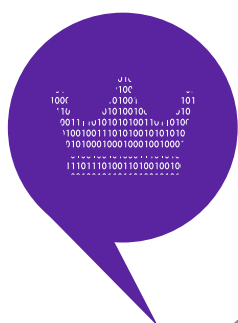


Data Hallmarking





OVERVIEW

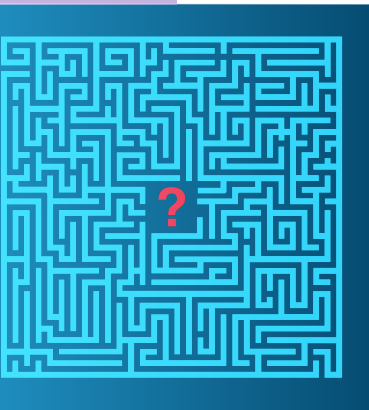
HCL and TIBCO have recently broadened their partnership to include working with TIBCO EBX and TIBCO Analytics that supports Master Data Management, Data Catalog, Embedded Analytics, Predictive Analytics, Machine Learning and Visual Analytics. The long-standing partners will focus on embedding HCL's strong solution delivery capabilities in Master Data Management and Analytics with TIBCO's Data and Analytics product line to deliver greater value to our customers that goes beyond traditional application development.



DATA HALLMARKING

Digitalization demands Golden Master Profile and not just Golden Data to provide a 360° view from a variety of platforms like Cloud Computing, Internet of Things, Big Data which feeds into the restructuring of processes, and outcome-focused business models that are adaptable and scalable across the enterprise. Data is not simply confined to structured datasets but now spans heterogeneous, machine-generated, unstructured, and externally sourced datasets. The change also demands techniques to adequately capture with data virtualization, curate and store data combined with the advent of analytics, machine learning and cognitive technologies, different strategies to capture metadata and management, and probabilistic matching and merging methods to enable the contextual and analytical models necessary for dynamic profiles. HCL's Data Hallmarking is the process of certifying the Golden Profile to provide confidence and trust across the data life cycle. The basic quality of data can be achieved by introducing data quality rules per business process by identifying high and low performing critical data elements. Data hallmarking can identify the low performing data elements and improve quality to next levels by imputing missing values, correcting wrong values etc. in an automated fashion using AI/ML technologies. Built-in automation identifies the critical data elements through end-to-end governance process by analyzing metadata having gold level data quality that needs to be part of Golden Record. Data hallmarking is certifying business data by clustering them into metals (Gold, Silver & Bronze). This helps to monitor improvements of data assets by the line of business. The basic quality of data can be achieved by introducing data quality rules as per business process. Identifying high and low performing critical data elements are important. Data hallmark can identify the low performing data elements and improve quality to next levels by imputing missing values, correcting wrong values etc. in an automated fashion using AI/ML technologies. Built-in automation identifies the critical data elements through end to end governance process by analyzing metadata having gold level data quality that needs to be part of Golden Record.

Challenges

- 
- Difficulties in Creating data governance framework and measuring and resolving data quality issues.
 - Scaling MDM solutions to deal with the volume and complexity of data especially with the increased use of unstructured, digital data can be a challenge.
 - Business and IT teams are sometimes poorly coordinated for achieving the desired end state.
 - Contextual and analytic solutions over traditional solutions to handle new approaches for multi-dimensional and complex hierarchical data, including social and commercial graphs that underlie digital business use cases.
 - Transforming model-driven approaches to be more flexible and agile so they can work with existing business processes to deliver business value.

Capabilities Required for Data Hallmarking



Microservices Architecture



AI/ML



Graph Database support for the complex hierarchies



Business outcome focused or persona based use cases



Cloud Support



Omni Channel Interactions



Information Governance



Data Hallmarking



Business Benefits:



Identifying key business data



Certifying data as per relevance and quality into multiple metals such as Silver, Gold



Associate Data Quality and related business impact to these hallmarked data elements



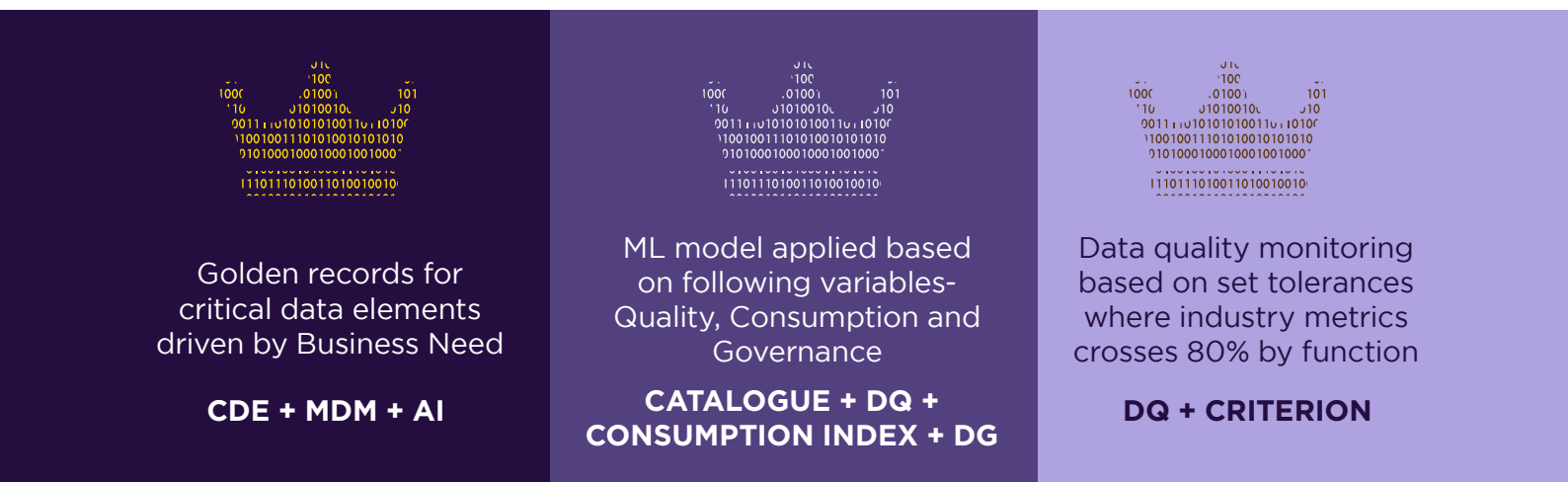
Monitoring the progress of data quality over time



Monitor overall data quality performance for business units and overall organization

Data quality is an important aspect of the quality of the business process and business outcomes. The importance associated with data quality is increasing considerably in the last few years. It is important to onboard an enterprise wide data quality program in order to manage data quality through definition and measurement. With the advent and infusion of AI/ML techniques into data quality tools, it can go beyond measuring by adding intelligence to data quality analysis and improvement.

HCL has devised a method to hallmark and manage data lifecycle by implementing data quality in 3 major phases – Bronze, Silver and Gold.



The first phase is to understand the business processes and related critical data catalog. This is done by consulting with multiple business leads and stewards. Data quality is measured by applying different business specific data quality rules on critical data elements. After the measurement process, the results of the evaluation are analyzed and poor quality data situations are detected and sent as inputs for improvement. In the improvement phase, the collection of poor quality data cases is deeply investigated and an improvement action is suggested. This is a manual process and after the process, data is considered to possess bronze level quality.

The improvement activities in case of poor quality data are always manual and defined as results of a periodical data quality analysis.

Error detection and correction will be automated in the next phase to bring the quality of data elements into silver class. In this phase, HCL used ML algorithms to identify data patterns and correct quality in an automated fashion. This is achieved by imputing the right values in places of missing values of data as well as correcting some of the data issues by learning from older patterns.

The next classification of Gold is achieved through analyzing business context and data quality patterns used to evaluate the quality of the information exchanged among multiple activities involved in the business process. Therefore, a list of data quality checks that are being performed on the specified component data items is associated with each master data entity or attribute. These will be then used to automatically suggest newer critical data elements to be considered within a master data context or altogether new master data entity. Implementing these will bring the quality of data into gold level.

CASE STUDY



Supply Chain Analytics for Medical Devices & Pharmaceutical Goods Manufacturer

Mergers and acquisitions created anomalies and inconsistency of data while consolidation of global MDM from different country specific data. Machine language was used to impute the missing data and certify it through the Data Hallmarking Process.

CHALLENGES

- Poor data quality in the Item Master data due to:

Inorganic Growth

- Mergers & Acquisitions
- Varied Product Lines

Systems Integration

- Disparate Systems
- Onboarding to Global SA

- Building DQ Rules is a time consuming and never ending process
- A lot of time is spent in data consolidation across systems to get a single view of sales across product lines

Approach to Solve Data Quality Issues



• Traditional Approach (IT Driven)

- Understand patterns via Data Profiling: done by Analysts
- Establish data cleansing and matching rule
- Measure the quality of each data set in regular intervals
- Defining matching rules is a very time-consuming process
- Performance of matching process is impacted by data volumes

• Modern Approach (ML Driven)

- ML model learns and predicts the matches
- ML model attributes missing values
- ML model classifies Good vs Bad reference data
- Fast and Scalable
- Gets better with more data

...

Our Solution

Use Machine Learning to improve data quality of the Material Master

Data Ingest

Item Master
Plant Master
Sales Master

Exploration

Automated Technical
Profiling in INFORMATICA
and TABLEAU Reporting

ML models

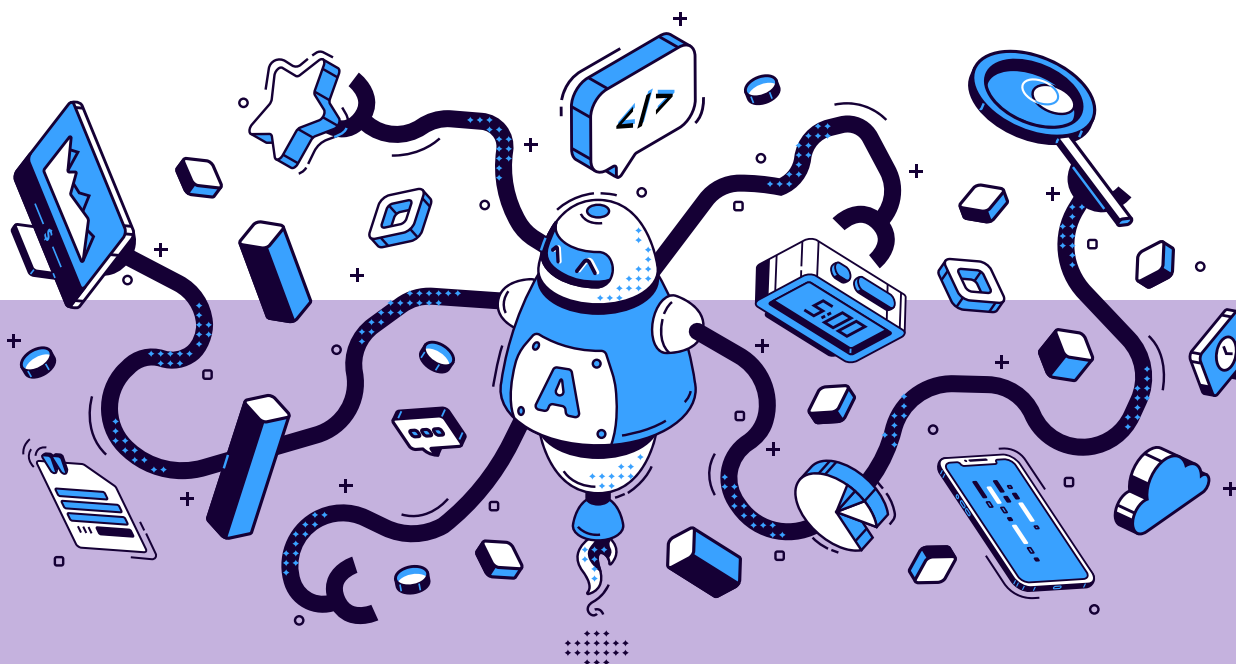
Build models to
uncover data patterns

Enrichment

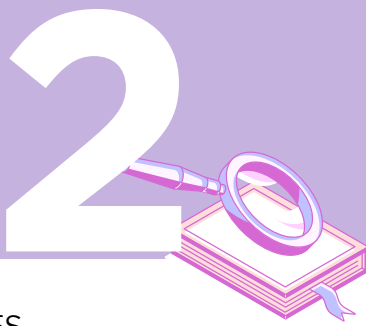
- Attribution :
Enrich the data quality by
predicting the missing
values using the models
- Misclassification:
Detect misclassification and
make recommendations
based on data hierarchy
- Automation :
Automation of portion of the
values as and when a new
product is launched

Validate

Domain SME validates
and takes action



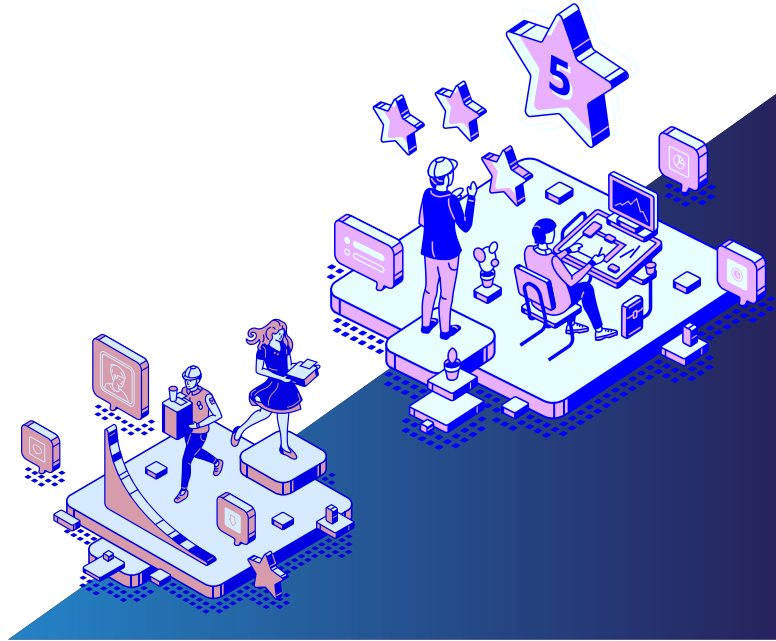
CASE STUDY



Data Governance/MDM for FS customers to better assess Credit Risk and understand issues

BUSINESS CONTEXT

Credit risk is the probable risk of loss resulting from a borrower's failure to repay a loan or meet contractual obligations. Banks need to ensure proper credit rating, exposure levels (current and maximum) of counter parties are in limits, geo and product level exposures are in control, defaulting probabilities are considered etc. on a regular basis. Information governance plays an important part in this entire process.



SOLUTION

- Partner with vertical to define critical data elements related to Credit Risk such as Current Credit Exposure, Risk Rating of CPs, MPE, CCE by Product/Geo, Risk Appetite Limit, etc.
- Personalized Dashboards for different roles within the organization such as CRO, Risk Officers, Senior Executive, etc. and empower them to address and handle customers/CPs based on Risk Rating/MPEs etc.
- Provide the visibility to data owners and make them accountable for the data quality through business glossaries/lineage/ stewardship etc.

BENEFITS

- A pre-built set of CDEs and related business rules pertaining to Credit Risk.
- Stewardship/Business Lineage and overall governance using IGC
- Data Profiling, Data Discovery, Smart Domain associations, end to end lineage etc. through IA/IGC
- Business personnel such as CROs/risk executives empowerment



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HCL offers its services and products through three lines of business - IT and Business Services (ITBS), Engineering and R&D Services (ERS), and Products & Platforms (P&P). ITBS enables global enterprises to transform their businesses through offerings in areas of Applications, Infrastructure, Digital Process Operations, and next generation digital transformation solutions. ERS offers engineering services and solutions in all aspects of product development and platform engineering while under P&P. HCL provides modernized software products to global clients for their technology and industry specific requirements. Through its cutting-edge co-innovation labs, global delivery capabilities, and broad global network, HCL delivers holistic services in various industry verticals, categorized under Financial Services, Manufacturing, Technology & Services, Telecom & Media, Retail & CPG, Life Sciences, and Healthcare and Public Services.

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