Eu-LISA Industry Roundtable 2020

Data Quality and Interoperability:

Addressing the Capability Gaps through Standardisation

Access to Data: Interoperability Architecture and Access to Information on the Ground

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OUTLINE

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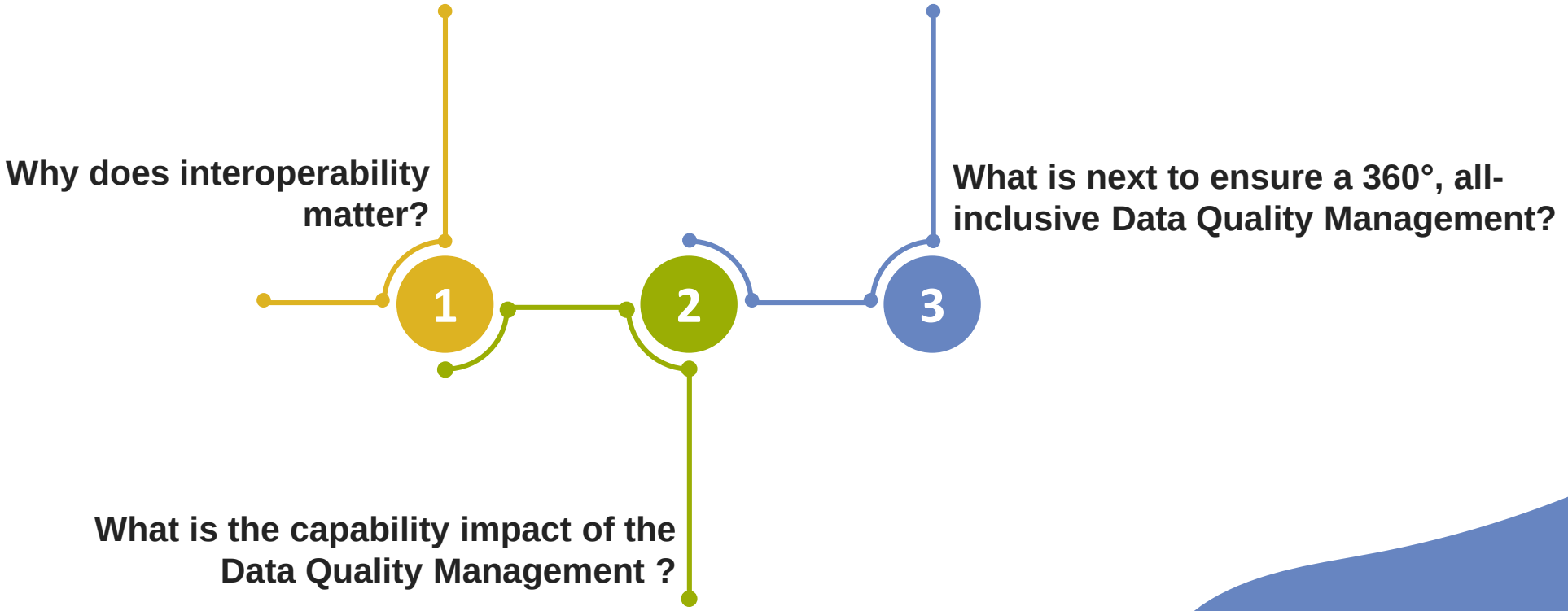
Data Quality and Interoperability: Addressing the Capability Gaps through Standardisation



OUTLINE

1 WHY DOES INTEROPERABILITY MATTER?

IN THE AREA OF JUSTICE AND HOME AFFAIRS INFORMATION SYSTEMS?

For the EU security, border and migration management, the interoperability between the EU Information Systems of justice and home affairs aim to address various challenges.

Improve effectiveness and efficiency of border checks at external borders

Contribute to the prevention and combatting of illegal immigration

Contribute to a high level of security

Assist in the examination of applications for international protection

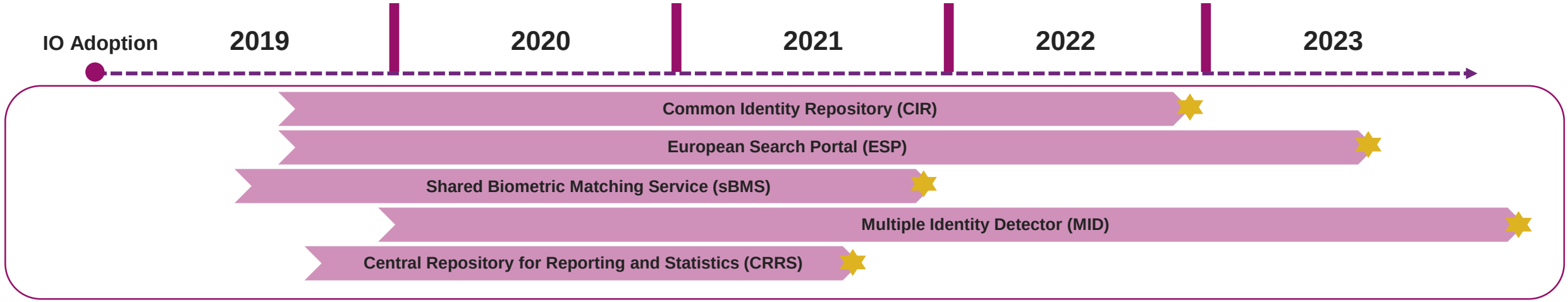
Contribute to the prevention detection and investigation of terrorist offences and serious criminal offences

Facilitate the identification of unknown persons unable to identify themselves

1 WHY DOES INTEROPERABILITY MATTER?

STATE-OF-PLAY IN THE EU REGULATORY AGENDA

Within the next four years, it is expected that the interoperability technical components will be established and introduced in the domain of justice and home affairs.



Interoperability technical components

Disclaimer:

The timeline is presented above is provided for illustrative purposes only.

Within this context, a large-scale interoperable integration is necessary to:

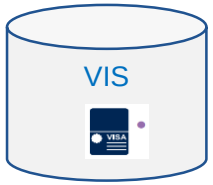
- **Facilitate the quality of system-to-system communication, and**
- **Enhance orchestration and information exchange within the operating landscape of eu-LISA.**

Source: Adapted from the Power point of EES-ETIAS Advisory Group 4th meeting (13/06/2019)

1 WHY DOES INTEROPERABILITY MATTER?

INTEROPERABILITY OVERVIEW

The Core Business Systems will be interlinked to the large EU databases in the area of justice and home affairs

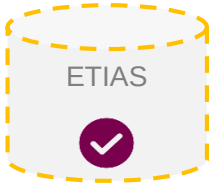


VISA INFORMATION SYSTEM
A system to process data and decisions relating to **applications for short-stay visas**, to visit or transit through the Schengen Area.

SCHENGEN INFORMATION SYSTEM
A system to issue and consult **alerts** on sought-after **persons** and **objects**

EUROPEAN DACTYLOSCOPY
A system to register and compare **asylum applicants fingerprints**

ENTRY-EXIT SYSTEM
A system to **electronically register the entry and exit** information of third-country nationals **crossing EU borders**.



EUROPEAN TRAVEL AUTHORISATION INFORMATION AND AUTHORISATION SYSTEM
A **pre-travel authorisation system for visa exempt travelers**, to verify if a third country national meets entry requirements before travelling to the Schengen area.

EUROPEAN CRIMINAL RECORDS – THIRD COUNTRY NATIONALS
A system to verify **criminal records** on the third country nationals or stateless person

LEGEND

Existing central systems for border, migration or security

Future central systems to be developed

STOLEN AND LOST TRAVEL DOCUMENTS
Contains **lost, stolen and revoked travel documents** – such as passports, identity cards, visas etc.

TRAVEL DOCUMENTS ASSOCIATED WTH NOTICE
Contains data on **Interpol 'red notices',** for a person pending extradition, surrender, or similar legal action.

EUROPOL DATA
Contains data on **serious international crimes**, **suspected and convicted persons**, criminal structures, and offences and the means used to commit them.

The existing CBSs (VIS, SIS and Eurodac) are being completed with the implementation of EES, ETIAS, and ECRIS-TCN; together with the technical components, they will provide the necessary tooling for the Justice and Home Affairs actors to ensure an interoperable and efficient border protection.

Source: Diagram designed by everis based on the understanding of the EU Interoperability Regulation EU 2019/817

1 WHY DOES INTEROPERABILITY MATTER?

INTEROPERABILITY OVERVIEW

Five technical components will ensure:

- **System-to-system interoperability for the EU information systems, and**
- **Cross-system reporting and statistics capabilities**

EUROPEAN SEARCH PORTAL (ESP)

A **singe interface**, enabling simultaneous searches, by using biographic and biometric identity data, in the multiple EU central systems, and in line with the query user access rights.

COMMON IDENTITY REPOSITORY (CIR)

Stores **individual files records** (biographical and biometric data) stored in relevant systems about non-EU citizens.

MULTIPLE IDENTITY DETECTOR (MID)

Automatic alert system, enabling the search of multiple identities in the multiple EU central systems, identification of identity fraud, multiple identifies, and identity disambiguation.

SHARED BIOMETRIC MATCHING SERVICE (sBMS)

A **service** storing biometric templates of biometric data (fingerprints and facial images) and enabling queries and comparison by cross-checking biometric data.

CENTRAL REPOSITORY FOR REPORTING AND STATISTICS (CRRS)

A **system** which serves as a data repository of **anonymous data** to provide cross-system statistical data and analytical reporting for policy, operational and data quality purposes.

These five technical components will work hand in hand with the six EU Large Scale IT Systems: VIS, SIS, Eurodac, EES, ETIAS, and ECRIS-TCN to complete the Interoperability 'big picture'

Source: Diagram designed by everis based on the understanding of the EU Interoperability Regulation EU 2019/817

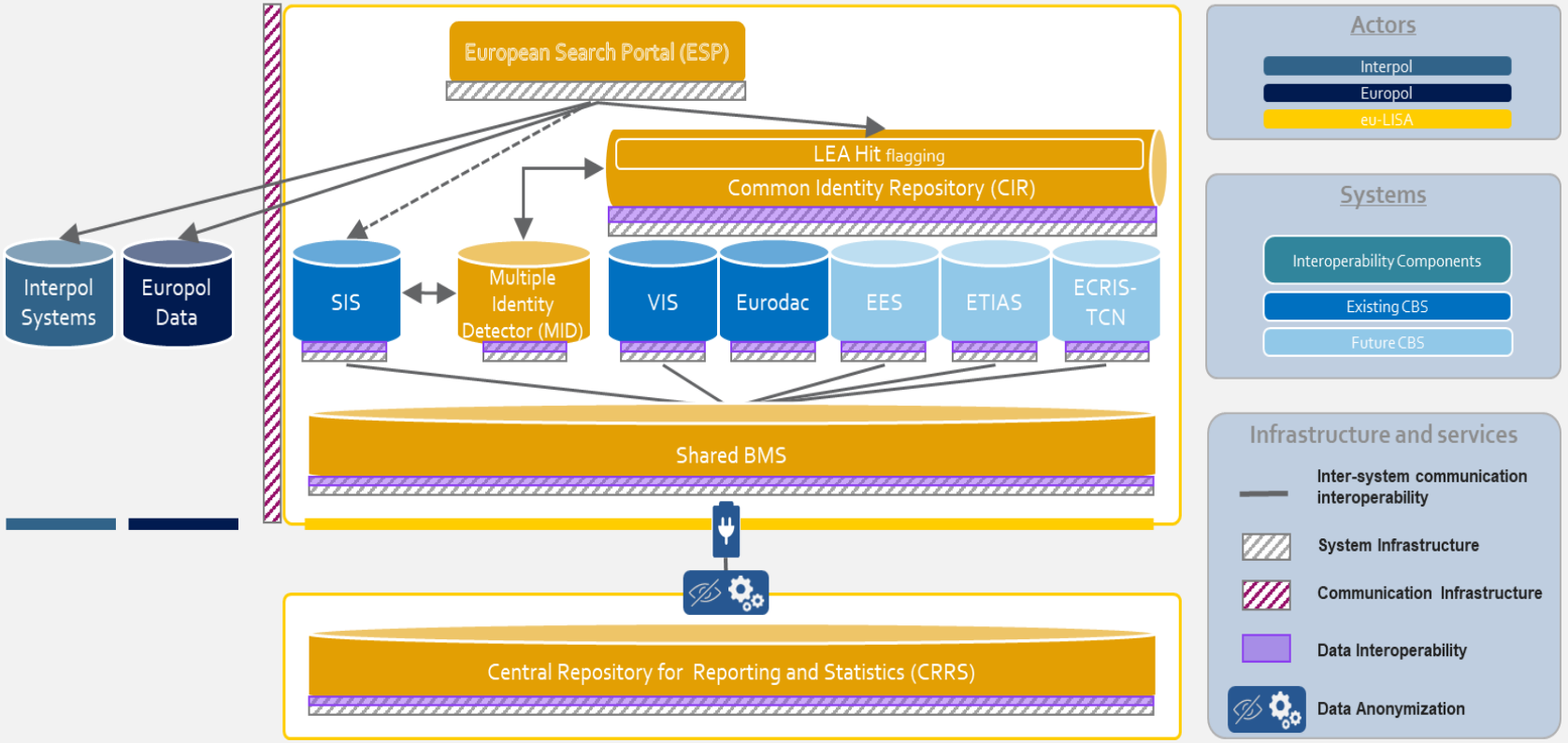
1 WHY DOES INTEROPERABILITY MATTER?

IMPLICATIONS OF EU INTEROPERABILITY REGULATORY DEVELOPMENTS

Multiple layers of the EU's envisioned interoperability components and services require interoperability resiliency at all levels, for which data quality management services are of high importance to:

- **Sustain and optimize the health and safety of the EU information systems at all control-points (i.e., source, movement, and target)**
- **To optimise the performance of the processes that bring data from outside and processes changing data from within.**

A holistic view of the future interoperability



Source: Diagram designed by everis based on the understanding of the EU Interoperability Regulation EU 2019/817

2 WHAT IS THE IMPACT OF THE DATA QUALITY MANAGEMENT ?

FUTURE-PROOF INTEROPERABILITY RESILIENCY

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Quality blocks of the interoperable EU information systems and exchange models

Data Quality

- Automated data quality control mechanisms and procedures
- Common data quality indicators
- Minimum quality standards for data storage
- Regular reporting to Member States, European Commission and on-request reporting to the European Parliament and the EU Council

Universal Message Format

- The Universal Message Format, established by the Interoperability Regulations, which shall be used in the development of information systems and information exchange models

Central Repository for Reporting and Statistics

- Establishment, implementation, and hosting of the CRRS at eu-LISA's technical sites to provide cross-system statistical data and analytical reporting for policy, operational and data quality purposes.
- Controlled, secured, role-based access policy and procedural mechanisms
- Automatic data anonymization

Yet the interoperable EU information systems and exchange models are subjected to multiple processes that affect data quality and thus the data analytics and reporting.

Processes bringing data

- Manual Data Entry
- Batch Feeds
- Real-time Interfaces

Processes causing data decay

- Changes not Captured
- System Upgrades
- New Data Uses
- Loss of Expertise
- Process Automation

Processes changing data from within

- Data Processing
- Data Cleansing
- Data Purging

2 WHAT IS THE IMPACT OF THE DATA QUALITY MANAGEMENT ?

CLOSER LOOK: DATA QUALITY MANAGEMENT (DQM) (1/3)

- Which is the architecture that will ensure the realization of eu-LISA's data strategy?

- Which are the use cases and business applications that will help the most to the business?
- How can eu-LISA use the data to achieve the challenges and objectives?

- Does eu-LISA have a data consumption strategy?
- Are the data fully available and democratised across eu-LISA and its stakeholders?

- Does all the eu-LISA organization embrace the data-driven strategy and all the technology involved?

- How do we secure the information that is being consumed?
- Do we have established processes, policies and roles to govern corporate data?

- Are there processes in ensuring quality, integrity and accuracy?
- What is the impact of a poor data quality in each Core Business Application?

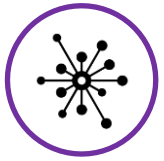
2

WHAT IS THE IMPACT OF THE DATA QUALITY MANAGEMENT ?

CLOSER LOOK: DATA QUALITY MANAGEMENT (DQM) (2/3)

A unified, end-to-end, Data Quality Framework has never been more integral to the operational efficiency, financial health, compliance effectiveness, and organizational reputation.

HOW DOES THE GLOBAL TECHNOLOGY LANDSCAPE OF DQM SOLUTIONS EVOLVE?



Quality Automation

- Automated DQ management tasks
- Continuous intelligence on Data Quality
- **Prediction** of Data Storage vulnerabilities

Data Integration & Cleansing

- Clean and enrich Data
- **Real-time** application integration
- Remedial Data Qualty (ML, RPA, Cognitive RPA)

Metadata acquisition

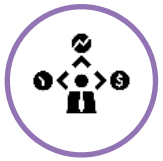
- **Automated** metadata acquisition and integrity validation
- Graph data catalogues for data management
- Definition of rules and quality metrics

Data Quality Governance

- Data Quality Management (roles, responsibilities)
- Augmented DQM with built-in **AI** towards **data lineage** and **data profiling** capabilities
- Hybrid and multi-cloud DQM

Data Standardisation

- Agreed international trade terms (Naming Convention Tracking) and data model (detail, granularity and scope)
- DQM workflow automation standardization



Data Mastering

- Entities consolidation
- **AI and Machine Learning in MDM**

2 WHAT IS THE IMPACT OF THE DATA QUALITY MANAGEMENT ?

CLOSER LOOK: DATA QUALITY MANAGEMENT (DQM) (3/3)

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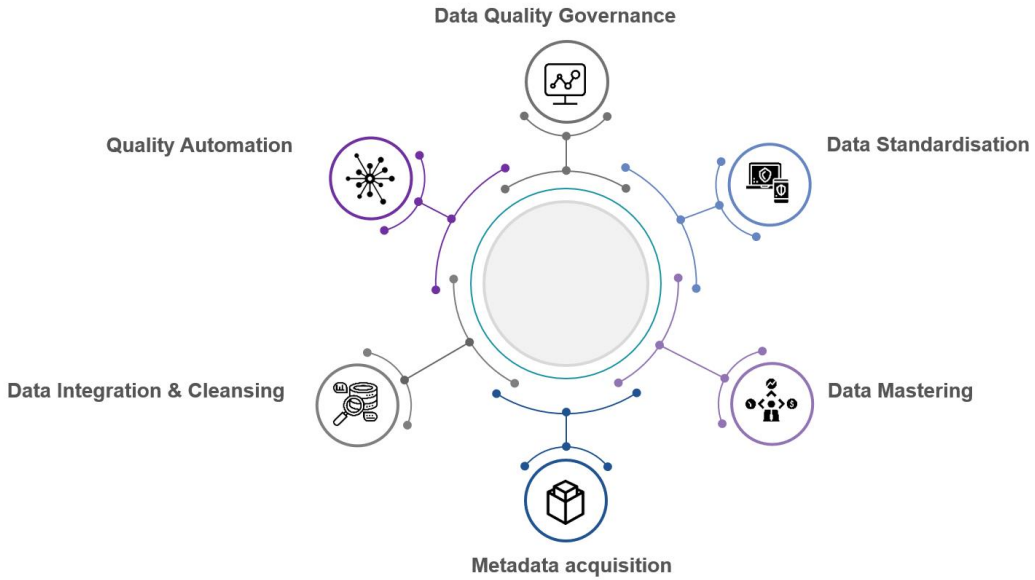
DQM vision pillars



360°, all inclusive DQM services and functions

SERVICES	Quality strategy	Quality operations	Quality Monitoring	Quality Improvement
KEY ROLES				
Data user	Consume and incidences report		Data monitoring and auditing	Data analysis and visualization
Data owner	Business vision and definitions	Data Quality Assessment	DQI analysis	Remediation execution
Data steward	Data quality definitions	Data verification and standardisation	DQ dashboard definition	Remediation proposals
Data technician	Master Data Management	Data profiling	Dashboard management	Process automation based on IA
		Metadata acquisition		

Governance and Capability Benefits

Data confidence · Decision Making · Regulatory compliance · Reduced operational costs · Unique language · Globalization of knowledge · Lineage and traceability · Promotion of silo reduction · Increased efficiency · Improved communication · Privacy of Information · Protected information

3 WHAT IS NEXT TO ENSURE A 360°, ALL-INCLUSIVE DATA QUALITY MANAGEMENT?

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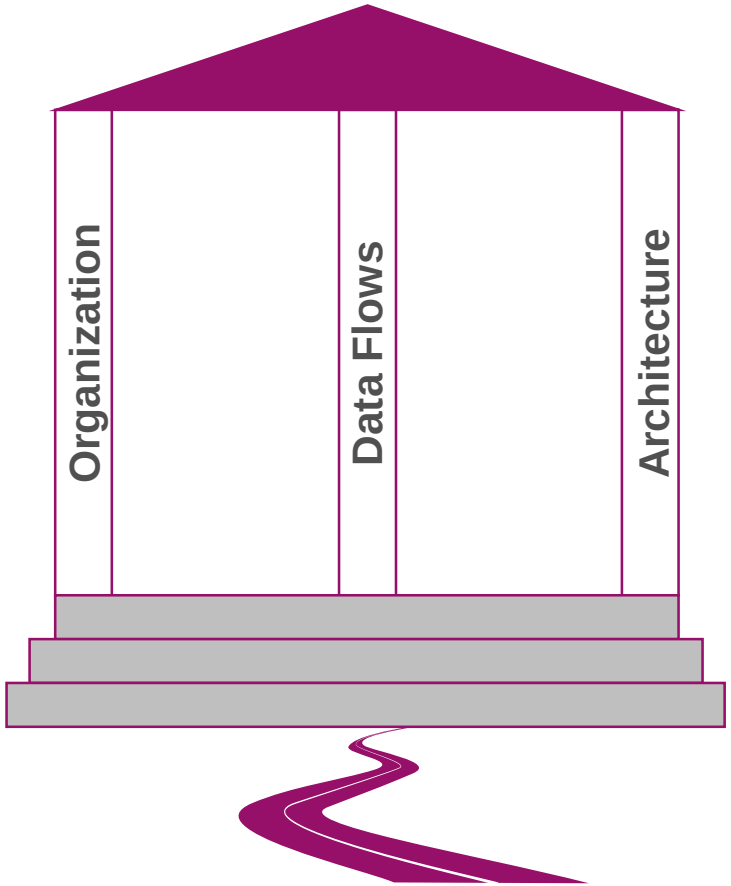
Building blocks of a 360°, all inclusive DQM



Organization

- ✓ Establishment of a **Data Governance Office** (DGO), with key data quality roles.
- ✓ Implementation of an effective **data quality framework** for the provision of processes and services on: data standardisation, data quality management, data integration and cleansing, metadata management and acquisition and data security access.
- ✓ Enhancement of organization-wide **data democratisation**, as a self-service strategy, through training and change management practices.

Data Flows

- ✓ Implementation of a **data quality technology landscape,** with a flexible solution sourcing strategy, identifying how **Data flows though the different systems** and applying augmented and automated data quality management capabilities and processes.

Architecture

Implementation of **effective and efficient IT tools** required to meet data quality objectives and support data quality processes.

CONCLUDING REMARKS

Actions towards a Unified Data Quality Governance ...