DEUTSCHE BUNDESBANK
EUROSYSTEM

Data Quality and Governance Issues to Bring the XBRL-Idea to Life

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The following presentation describes the personal opinion of the speaker and not necessarily the official position of the Deutsche Bundesbank/ German Central Bank.

Agenda

Motivation

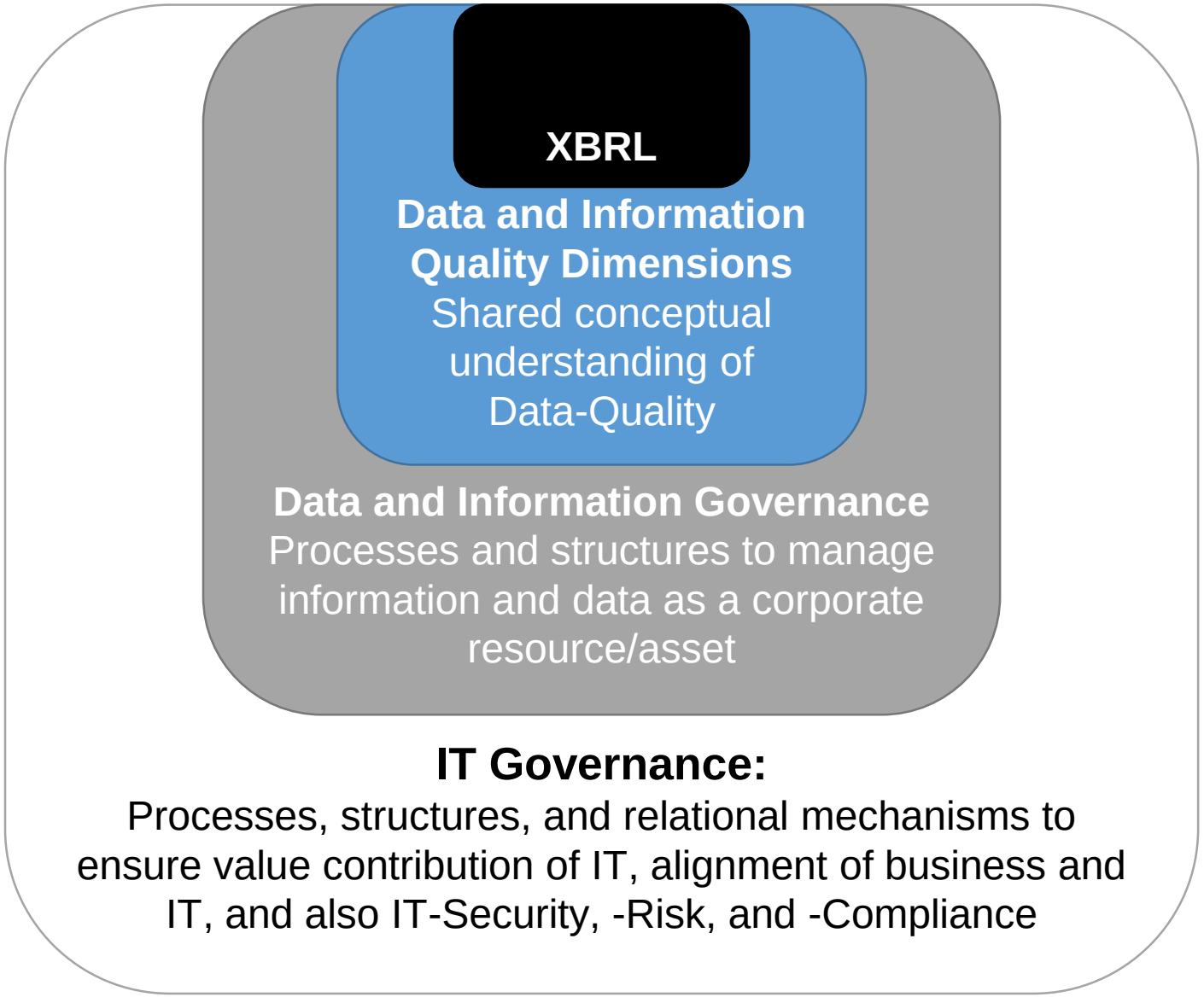
Basic Terms and Basic Aspects

COBIT – Enabling Information: Information Model

- Stakeholder
- Goals
- Life Cycle
- Good Practice

Summary and Conclusions

Motivation


XBRL
Data and Information Quality Dimensions
Shared conceptual understanding of Data-Quality
Data and Information Governance
Processes and structures to manage information and data as a corporate resource/asset
IT Governance:
Processes, structures, and relational mechanisms to ensure value contribution of IT, alignment of business and IT, and also IT-Security, -Risk, and -Compliance

Basic Terms and Basic Aspects

IT Governance, Data Governance & Management

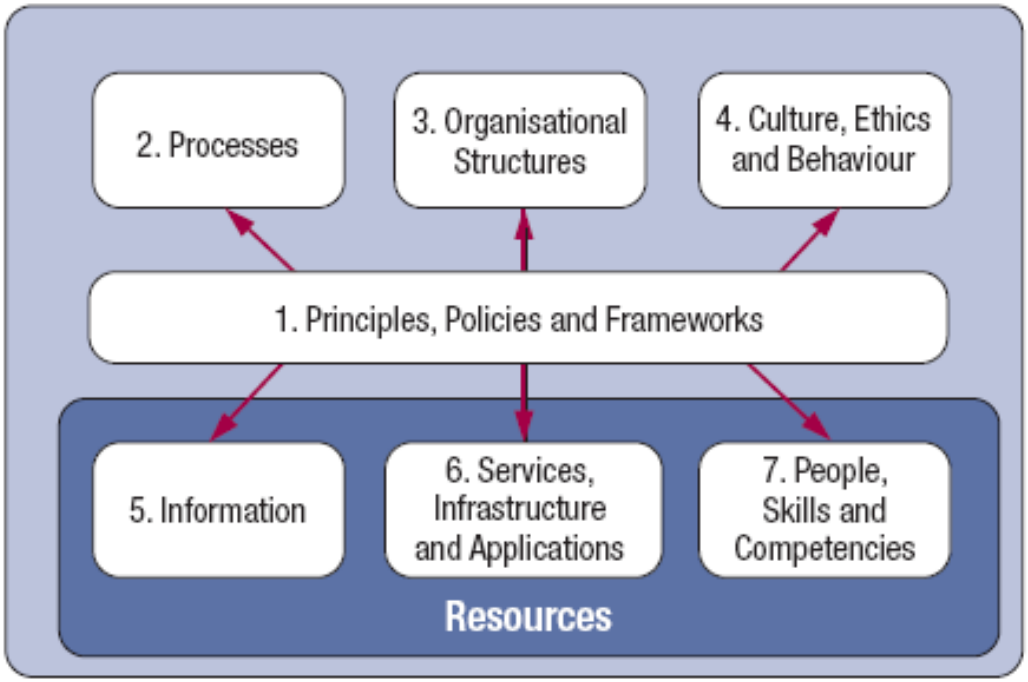
IT governance „Definition and implementation of processes, structures, and relational mechanism that enable both business and IT people to execute their responsibilities in support of business/IT alignment and the creation of value from IT-enabled business investments.” [vGdH15]

Information / data governance is the exercise of authority and control (planning, monitoring, and enforcement) over the management of information and data assets. The data governance function guides how all other data management functions are performed. [DMBOK09]

Information / data management plans, builds, runs and monitors the practices, projects and capabilities that acquire, control, protect, deliver and enhance the value of data and information assets. [ISACA13, 25]“

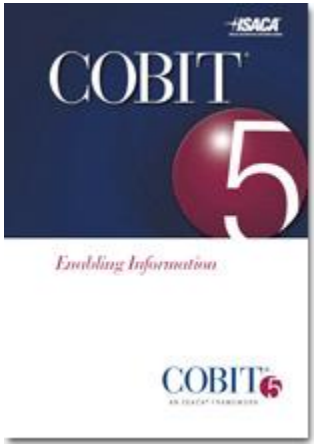
COBIT 5: Characteristics and Goals

- COBIT 5 helps enterprises create optimal value from IT by maintaining a balance between *realising benefits* and *optimising risk levels* and *resource use*
- COBIT 5 enables information technology to be governed and managed in a holistic manner for the entire enterprise
- COBIT 5 principles and enablers are generic and useful for enterprises of all sizes, whether commercial, not-for-profit or in the public sector



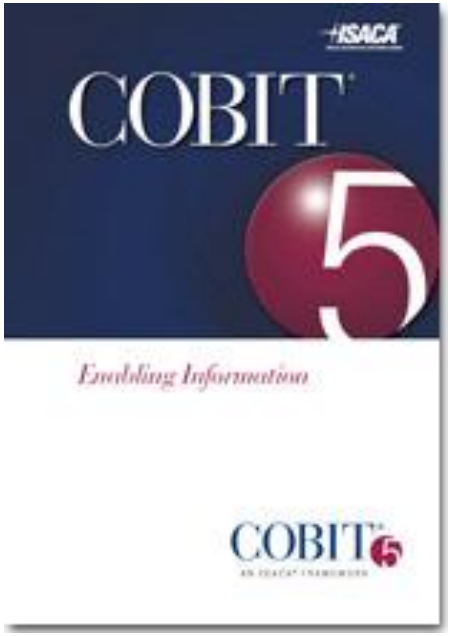
COBIT 5 Enablers

COBIT – Enabling Information Document



COBIT – Enabling Information
Idea and Benefits

The document “COBIT 5: Enabling Information” is a **reference guide** for *structured thinking about information and typical information governance and management issues* in any type of organization



Benefits:

- Helps with developing relevant, usable **information models** from a governance and management point of view
- Guidance on how to use COBIT 5 to address common **information governance** and **management issues**
- Helps to develop an **understanding** of the reasons why information needs to be managed and governed

pg 10

COBIT – Enabling Information
Information Model

Purpose: The information model answers (very basic) questions:

- How should enterprises deal with information?
- What do information practitioners need to consider to make information valuable for the enterprise?

The information model consists of four **„enabler dimensions“**:

- Stakeholders
- Goals
- Life Cycle
- Good Practices

pg 27

The dimensions of the information model can be applied to check to what extent XBRL covers the management and governance issues defined by the framework COBIT

COBIT – Enabling Information: Information Model

Enabler Dimension: Stakeholders

Definition: Anyone who has a responsibility for, an expectation from or some other interest in the enterprise (with respect to information).

Stakeholders can be categorized by their roles in dealing with information

- Internal vs. external stakeholders
- General roles:
  - Information producer —creating information
  - Information custodian — storing and maintaining information
  - Information consumer — using information
- Specific data or information roles e.g.
  architect, owner, steward, trustee, supplier, beneficiary, modeller, quality manager, or security manager

[pg. 27-28]

Enabler Dimension: XBRL Stakeholder

General roles	Specific data or information roles
Standardizer	XBRL taxonomers, Accounting Standard Setters, Legislators and Regulators>
Provider	Companies, Divisions, Subsidiaries, Governments and Governmental Units, Nonprofit Organizations
Intermediaries	Auditors, Financial Publishers Aggregators, Statisticans, Stock Exchange, System Developers, Researchers
Adresses	Analysts, Investors, Creditors, Regulators, Managers, Educators/Students

Based on Chang/Jarvenpaa; Baldwin/Brown/Trinkle; Felden/Koschtial

Stakeholder issues are broadly discussed and well reflected from a macro-perspective

COBIT – Enabling Information & XBRL

Enabler Dimension: XBRL Stakeholder

Senders/ Receivers	People Components	Description
Senders	Accountants	Responsible for preparing the financial statements, financial reports and tax financial statements
	Management	Responsible for signing off the financial reports
Receivers	Auditors	Responsible for providing assurance on financial statements
	Parent company	Responsible for consolidation of financial statements
	Tax offices	Receivers controlling the reporting entities in the context of tax assessment
	Commercial banks	Receivers controlling the reporting entities in the context of the credit risk management
	Companies registers	Receivers responsible for publication of financial reports
	Supervising institutions	Receivers responsible for controlling the reporting entities and securing the capital markets
	Investors, analyst and stock exchanges	Stakeholders and shareholders interested in information about the reporting entities
	Others	Employees, customers and other potential receivers interested in information about the reporting entity

People Components in Financial Reporting Supply Chain
Maciej Piechocki

It might be sensible to describe accountability, decision rights, ownership, activities, practices and other tasks with respect to XBRL in more detail (micro level)

Enabler Dimension: Goals

Each enabler in COBIT has a number of goals, which are expected outcomes. Enablers provide value by the achievement of these goals

Goals of information are expressed as *quality criteria* to be achieved

COBIT defines three *quality dimensions*:

- intrinsic,
- contextual and
- security/accessibility

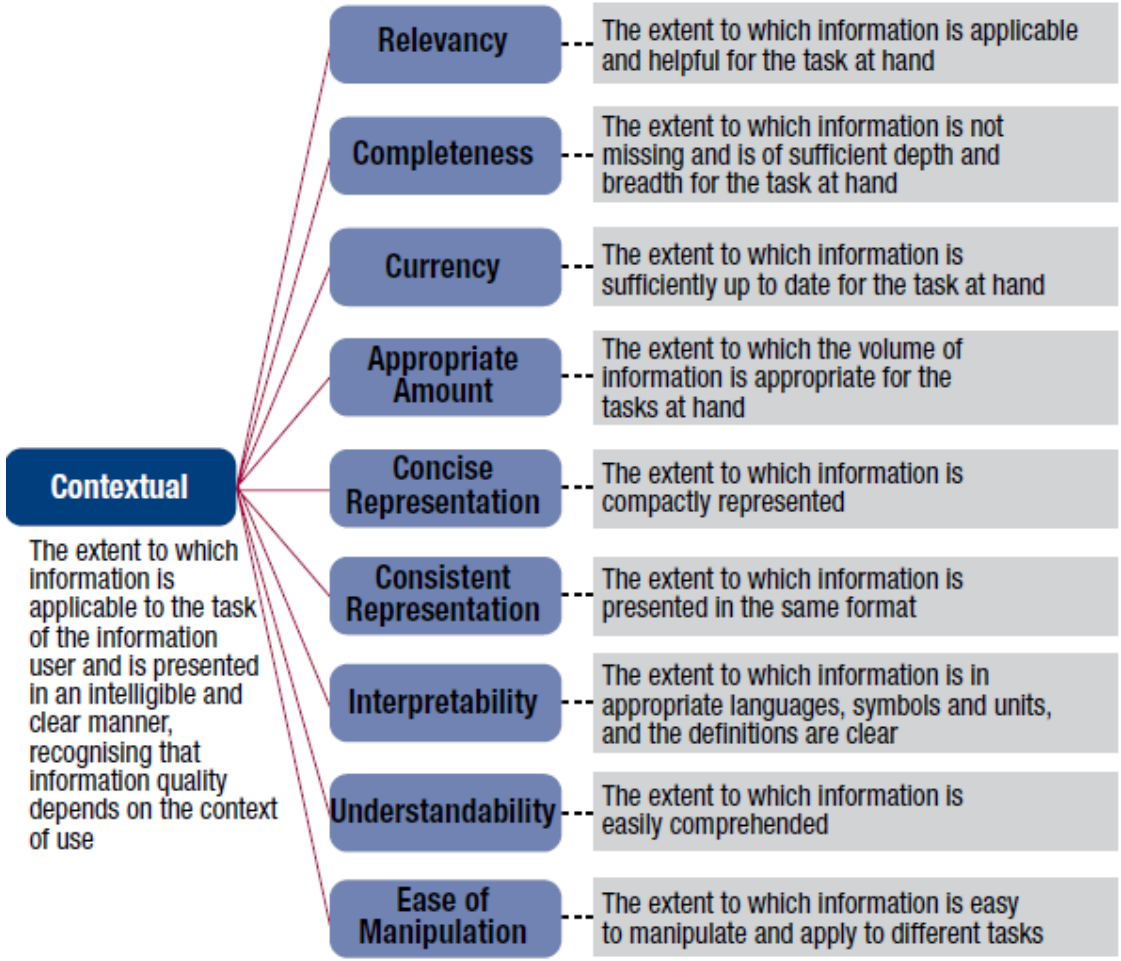
Each dimension (subgoal) is divided further into several *quality criteria*

[pg- 30]

COBIT – Enabling Information
Enabler Dimension: Goals

Each dimension (subgoal) is divided further into several *quality criteria*

Contextual quality: The extent to which enablers and their outcomes are fit for purpose given the context in which they operate.

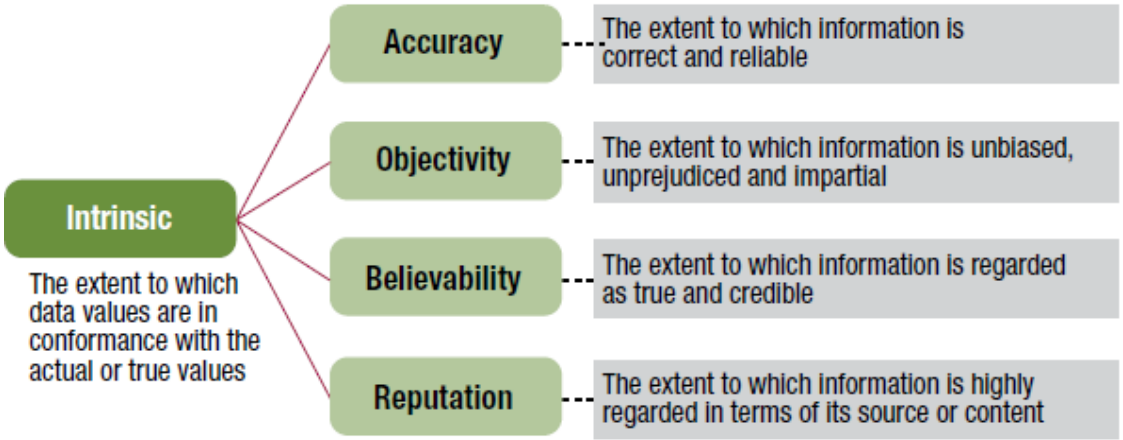


COBIT – Enabling Information

Enabler Dimension: Goals

Each dimension (subgoal) is divided further into several *quality criteria*

Intrinsic Quality: The extent to which data values are in conformance with the actual or true values

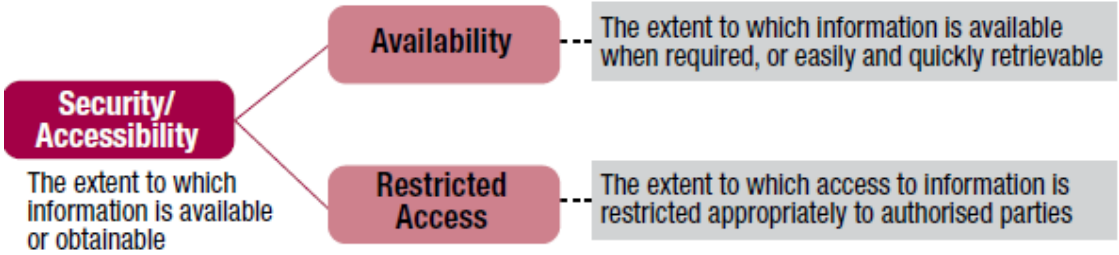


COBIT – Enabling Information

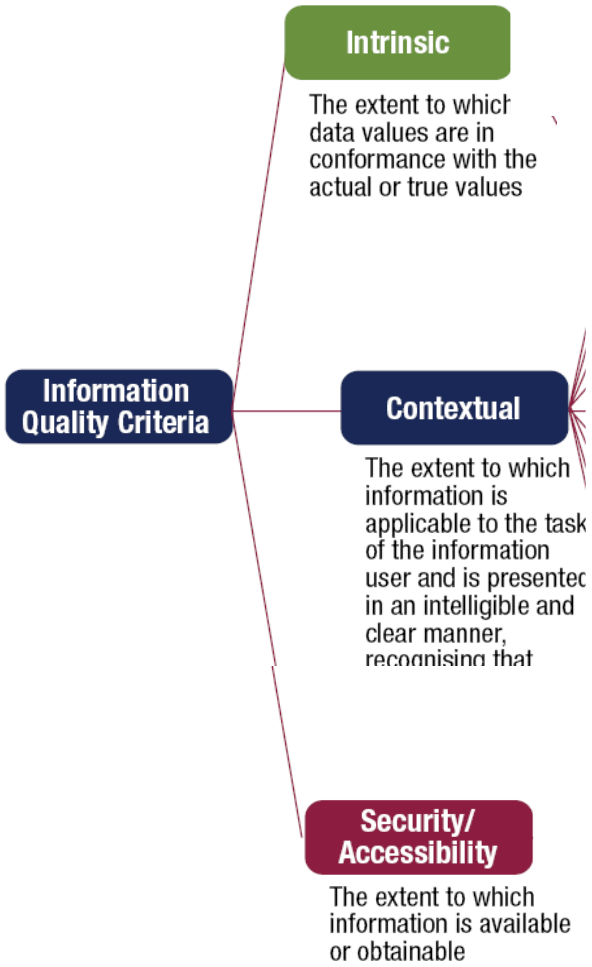
Enabler Dimension: Goals

Each dimension (subgoal) is divided further into several *quality criteria*

Access and security: The extent to which information is accessible — available when and if needed — and secured, i.e., access is restricted to those entitled and needing it



COBIT – Enabling Information
Enabler Dimension: Goals



Which goals (data quality dimensions and categories)

- are already discusses in the context of XBRL?
- are needed to bring the XBRL-idea to life?

COBIT – Enabling Information & XBRL

Enabler Dimension: XBRL & Data Quality Goals

COBIT 5: Quality Dimensions and Criteria		Findings from the Literature	
Dimension	**Criteria**	**Discussed impacts and issues in the XBRL Domain**	
Intrinsic	accuracy	XBRL facilitates the seamless integration of process steps along the … reporting supply chain • Reduction of error prone steps (like re-keying) • Encourages the development of homogeneous reporting processes including internal controls XBRL results in an increased accuracy [Mü13, 117] For the same reason it is stated that XBRL facilitates the implementation of a continuous monitoring/auditing and an improvement of audit quality as the auditors can access and process financial data in a standardized and timely manner [Mü13, 117]	◑
	believability	XBRL enables a consistent representation and an improved transparency as the trail from an aggregated element to the underlying business transaction can be traced by the help of the XBRL General Ledger taxonomy [Mü13, 117] credibility, data security, authentication, validity and integrity are not assured by XBRL; from this point of view, "XBRL is seen as a disadvantage" [Mü13, 120]	◑
	reputation	XBRL cannot assure that information is highly regarded in terms of its source or content	○
	objectivity	XBRL cannot assure that information is unbiased and impartial	○
Contextual	relevancy	relevancy is given, when information is applicable and helpful for the task at hand	○
	completeness	XBRL cannot ensure that information is not missing and is of sufficient depth and breadth for the task at hand	◔
	currency	reduces the effort for data conversion, facilitates an increased reporting frequency, information would be faster publicly available [Mü13, 119]; timeliness/currency cannot be assured by XBRL; it can only be improved by appropriate processes and technical measures (e.g. etl processes, data integration tools)	◑
	appropriate amount	XBRL cannot ensure that the volume of information is appropriate for the task at hand	○
	concise representation	XBRL helps to determine a consistent representation of information among firms and across time periods [Mü13]	◕
	consistent representation	standardized taxonomies avoid inconsistent terminology; clear and understandable mapping, eases the exchange of financial information [Mü13, 118]	◕
	interpretability	metadata improves the appropriate application of units, language, and definition [De09, 133]	●
	understand-ability	clearly defined metadata and agreed-upon terminology improve comprehension [De09, 2]. increases conceptual flexibility, XBRL supports the inclusion of company specific financial information, companies may adopt taxonomies to improve communication to specific stakeholders or address special information needs to benefit from a reduced cost of capital due to the enriched disclosure [Mü13, 118]	●
	ease of manipulation	XBRL-stored information can easily be manipulated and applied to different tasks	●
Security/ accessibility	availability	XBRL eases the access to relevant financial information resulting in a significant increase of search, manipulation and analysis capabilities (e.g. comparisons between companies or over different periods, OLAP analysis down to transaction level) [Mü13, 118].	◑
	restricted access	XBRL cannot restrict the access to information for authorized parties	○
Coverage represented by for following scale: ○◔◑◕●			

COBIT – Enabling Information

Enabler Dimension: XBRL & Data Quality Goals

Dim.	Criteria	Discussed impacts and issues in the XBRL Domain	
Contextual	relevancy	relevancy is given, when information is applicable and helpful for the task at hand, XBRL can improve decisions on relevance indirectly	◑
	completeness	XBRL cannot ensure that information is not missing and is of sufficient depth and breadth for the task at hand	◔
	currency	reduces the effort for data conversion, facilitates an increased reporting frequency, information would be faster publicly available [Mü13, 119]; timeliness/currency cannot be assured by XBRL; it can be improved by appropriate processes and technical measures (e.g. etl processes, data integration tools)	◑
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COBIT – Enabling Information

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COBIT – Enabling Information

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Enabler Dimension: XBRL & Data Quality Goals

Conclusions

- the greatest advantages can be found at the contextual quality dimension
- Intrinsic quality of data (accuracy, believability, reputation, objectivity) is addressed only to a small degree
- The same holds true for security and accessibility

Measures and mechanisms to address intrinsic data quality and security should be considered/must be developed

COBIT – Enabling Information
Enabler Dimension: Good Practices

Good practices

- support the achievement of goals,
- suggestions on how to best implement the enabler
- describe the required work products or inputs and outputs

COBIT – Enabling information suggests the description of "**information attributes":** It consists of six levels, or layers, to define and describe properties of information

- Physical layer — How and where is information *physically stored*?
- Empirical layer — What are the *access channels* to the information?
- Syntactic layer — How is the information *structured?*
- Semantic layer — What *type of information* is it? Is the information current or relating to the past or future?
- Pragmatic layer — What are the *availability* and *retention requirements*? Is information historic or operational?
- Social layer — What is the *context* that is important when using the information?

COBIT – Enabling Information
Good Practices from COBIT Processes

Relevant COBIT Processes (COBIT 4.1)

PO2 Define the Information Architecture: Objectives

- Establish and maintain an enterprise information model
- Maintain an enterprise data dictionary that incorporates the organisation's data syntax rules ….
- Establish a classification scheme that applies throughout the enterprise, based on the criticality and sensitivity …
- Define and implement procedures to ensure the integrity and consistency of all data …

DS11 Manage Data

- Effective data management requires identifying data requirements.
- The data management process also includes the establishment of effective procedures to manage the media library, backup and recovery of data, and proper disposal of media.
- Effective data management helps ensure the quality, timeliness and availability of business data
- Focuses on maintaining the completeness, accuracy, availability and protection of data

For each process, objectives, inputs/outputs, RACI charts and a maturity model are defined

COBIT – Enabling Information
Good Practices from COBIT Processes

DS11 Manage Data

CONTROL OBJECTIVES

DS11 Manage Data

DS11.1 Business Requirements for Data Management
Verify that all data expected for processing are received and processed completely, accurately and in a timely manner, and all output is delivered in accordance with business requirements. Support restart and reprocessing needs.

DS11.2 Storage and Retention Arrangements
Define and implement procedures for effective and efficient data storage, retention and archiving to meet business objectives, the organisation's security policy and regulatory requirements.

DS11.3 Media Library Management System
Define and implement procedures to maintain an inventory of stored and archived media to ensure their usability and integrity.

DS11.4 Disposal
Define and implement procedures to ensure that business requirements for protection of sensitive data and software are met when data and hardware are disposed or transferred.

DS11.5 Backup and Restoration
Define and implement procedures for backup and restoration of systems, applications, data and documentation in line with business requirements and the continuity plan.

DS11.6 Security Requirements for Data Management
Define and implement policies and procedures to identify and apply security requirements applicable to the receipt, processing, storage and output of data to meet business objectives, the organisation's security policy and regulatory requirements.

COBIT – Enabling Information
Good Practices from COBIT Processes

DS11 Manage Data

MANAGEMENT GUIDELINES

DS11 Manage Data

From	Inputs
PO2	Data dictionary; assigned data classifications
AI4	User, operational, support, technical and administration manuals
DS1	OLAs
DS4	Backup storage and protection plan
DS5	IT security plan and policies

Outputs	To
Process performance reports	ME1
Operator instructions for data management	DS13

RACI Chart

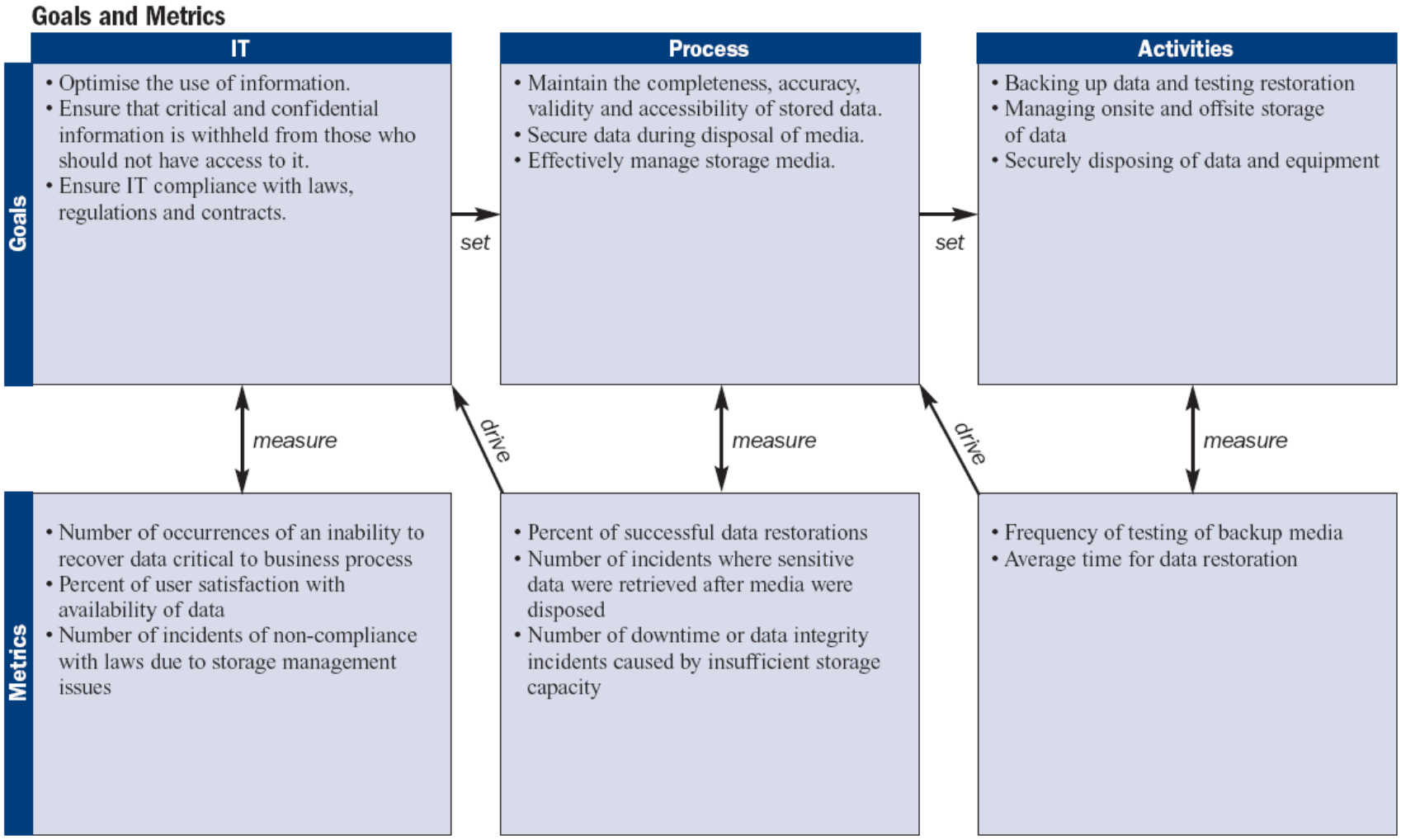
Functions

Activities	CEO	CFO	Business Executive	CIO	Business Process Owner	Head Operations	Chief Architect	Head Development	Head IT Administration	PMO	Compliance, Audit, Risk and Security
Translate data storage and retention requirements into procedures.				A	I	C	R				C
Define, maintain and implement procedures to manage the media library.				A		R	C	C	I		C
Define, maintain and implement procedures for secure disposal of media and equipment.				A	C	R			I		C
Back up data according to scheme.				A		R					
Define, maintain and implement procedures for data restoration.				A	C	R	C	C			I

A **RACI** chart identifies who is **R**esponsible, **A**ccountable, **C**onsulted and/or **I**nformed.

COBIT – Enabling Information
Good Practices from COBIT Processes

DS11 Manage Data



COBIT – Enabling Information
Good Practices from COBIT Processes

DS11 Manage Data

Maturity Model

DS11 Manage Data

Management of the process of *Manage data* that satisfies the business requirement for IT of *optimising the use of information and ensuring that information is available as required* is:

0 Non-existent when
Data are not recognised as corporate resources and assets. There is no assigned data ownership or individual accountability for data management. Data quality and security are poor or non-existent.

1 Initial/*Ad Hoc* when
The organisation recognises a need for effective data management. There is an *ad hoc* approach for specifying security requirements for data management, but no formal communications procedures are in place. No specific training on data management takes place. Responsibility for data management is not clear. Backup/restoration procedures and disposal arrangements are in place.

2 Repeatable but Intuitive when
The awareness of the need for effective data management exists throughout the organisation. Data ownership at a high level begins to occur. Security requirements for data management are documented by key individuals. Some monitoring within IT is performed on data management key activities (e.g., backup, restoration, disposal). Responsibilities for data management are informally assigned for key IT staff members.

3 Defined when
The need for data management within IT and across the organisation is understood and accepted. Responsibility for data management is established. Data ownership is assigned to the responsible party who controls integrity and security. Data management procedures are formalised within IT, and some tools for backup/restoration and disposal of equipment are used. Some monitoring over data management is in place. Basic performance metrics are defined. Training for data management staff members is emerging.

4 Managed and Measurable when
The need for data management is understood, and required actions are accepted within the organisation. Responsibility for data ownership and management are clearly defined, assigned and communicated within the organisation. Procedures are formalised and

Summary and Conclusions

- In this presentation I applied the dimensions of the information model to check to what extent **XBRL covers the management and governance issues** defined by the framework COBIT

- **Stakeholder** issues are discussed and well reflected from a ***macro-perspective***;
- Nevertheless, it might be sensible to describe accountability, decision rights, ownership, activities, practices and tasks with respect to XBRL in more detail (***micro level***)

- Instruments and mechanisms to address intrinsic data quality and security should be considered/must be developed

- **Processes** and other **methodological support** is provided by COBIT as “good practices”; these help to improve governance and management of information and hereby help to better benefit from XBRL

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