



Data Quality Management: Framework and Approach for Data Governance

5th German Information Quality Management Conference

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Agenda

- Introduction to University of St. Gallen and the Research Context
- Business Drivers for Data Quality Management
- Data Governance: Design Elements and Implementation
- Summary

Introduction to University of St. Gallen (HSG)

→ **Founded in 1898**

→ **5,000 students on bachelor, master, and doctorate level**

- Two thirds of the students in business administration
- Largest business administration faculty in Switzerland



→ **80 professors, 35 permanent lecturers, 260 associate lecturers**

→ **30+ institutes**

→ **1,000 staff**

→ **50 per cent industry funding**

Project partners of the Competence Center Corporate Data Quality (CC CDQ)



Bayer CropScience AG
Monheim, Germany



DB Netz AG
Frankfurt am Main, Germany



ETA^{SA}
MANUFACTURE HORLOGÈRE SUISSE
DEPUIS 1793

ETA SA Manufacture Horlogère Suisse
Grenchen, Switzerland



BOSCH

Robert Bosch GmbH
Stuttgart-Feuerbach, Germany

DAIMLER

Daimler AG
Stuttgart, Germany



Deutsche Telekom AG
Bonn, Germany

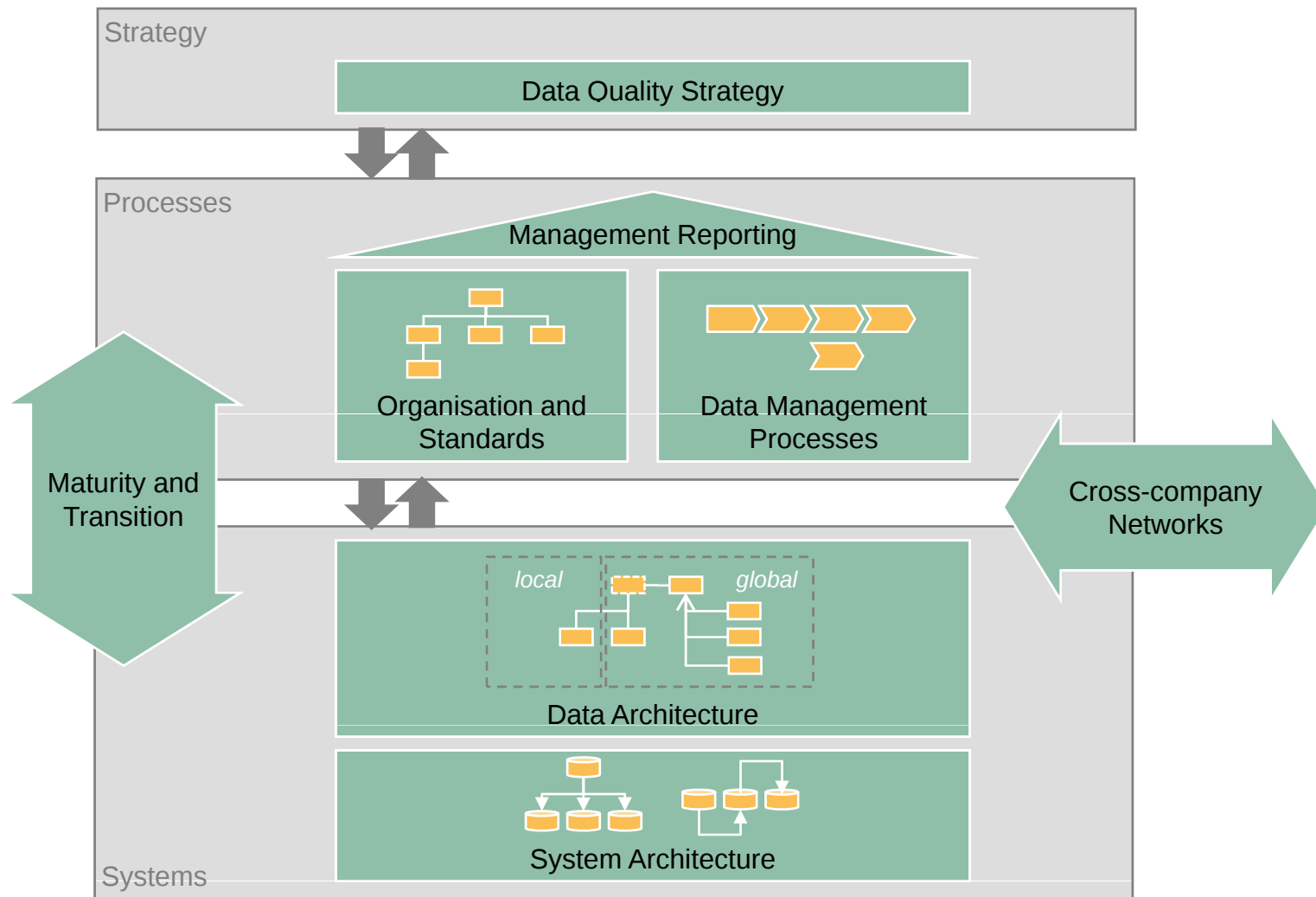


ZF Friedrichshafen AG
Friedrichshafen, Germany



IBM Deutschland GmbH
Stuttgart, Germany

CC CDQ research scope in the context of Business Engineering



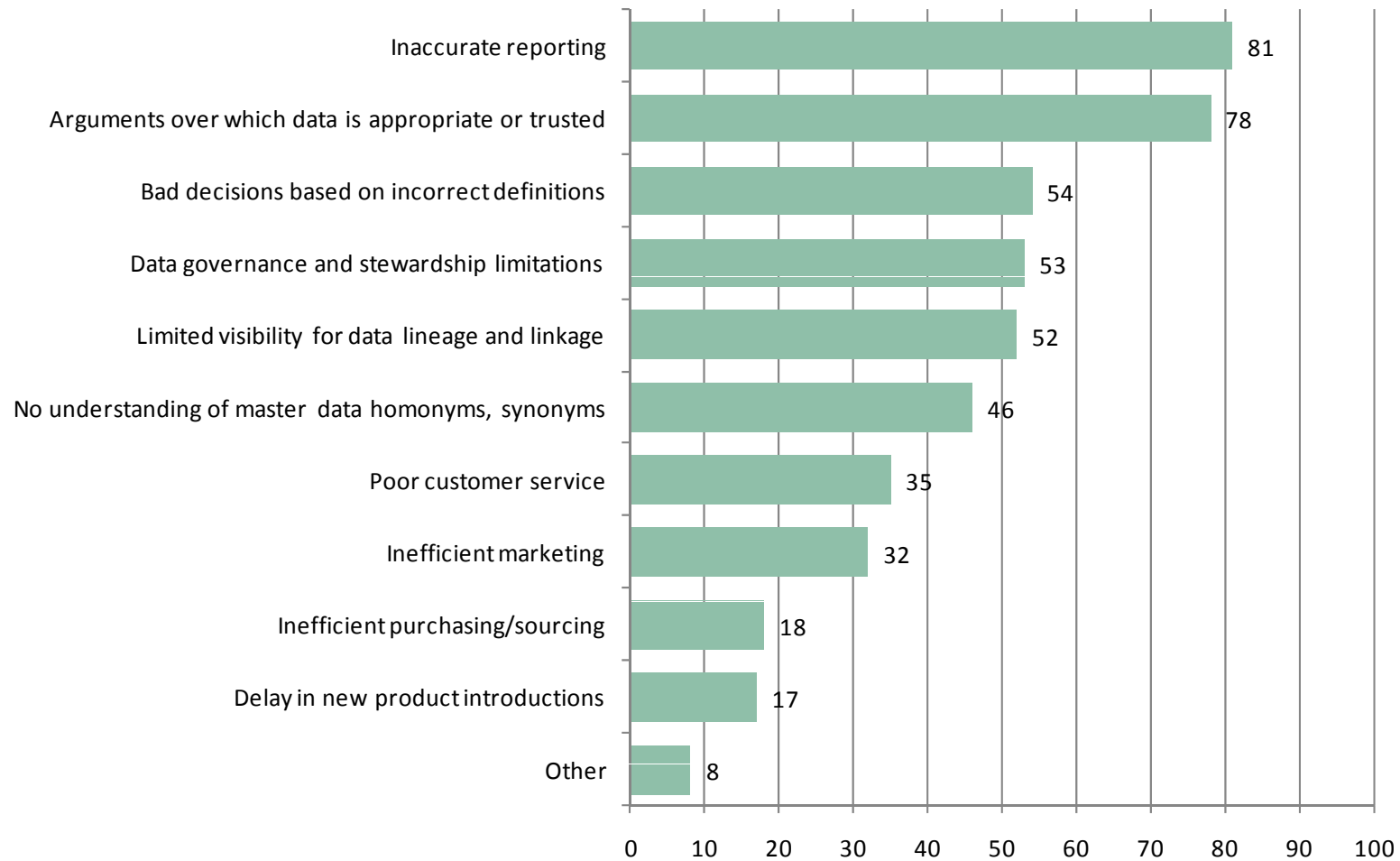
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Business drivers for data quality management can be found literally across the entire enterprise

Corporate Management/ Business Intelligence	▪ Poor data quality causes “blurry” management decisions ▪ No single point of truth ▪ Manual effort necessary during report creation
Compliance	▪ Legal and regulatory risks through bad or incomplete corporate data ▪ Contractual breaches and liability cases likely
Process Integration along the Value Chain	▪ Common material and partner data as a mandatory pre-requisite for efficient order-to-cash and procure-to-pay processes ▪ Necessity to establish unique data integration methodologies
Customer-centric Business Models	▪ One-face-to-the-customer requires consistent and sustainable customer and contract data management ▪ Data integration necessary on business unit and regional level
Electronic Product Information	▪ Customers and business partners demand high-quality electronic product information ▪ Information lifecycle management from F&E to Sales & Distribution

Consequences of poor data quality



Source: Russom, P.: Master Data Management - Consensus-Driven Data Definitions for Cross-Application Consistency. The Data Warehousing Institute, 2006

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Data quality management in a corporate-wide context

Companies have difficulties with institutionalizing data quality management

- Definition of responsibilities
- Integration in organizational structure
- Enforcement of mandates

Different internal and external stakeholders with divergent interests

- CxOs, IT, Sales, Procurement, Controlling, Business Units, Customers etc.
- Company-wide requirements, laws and regulations vs. regional and local differences
- Separation of data maintenance and data usage

Data quality management without data governance



Strassmann, P.: The Politics of Information Management, The Information Economics Press, New Canaan, Connecticut, 1995

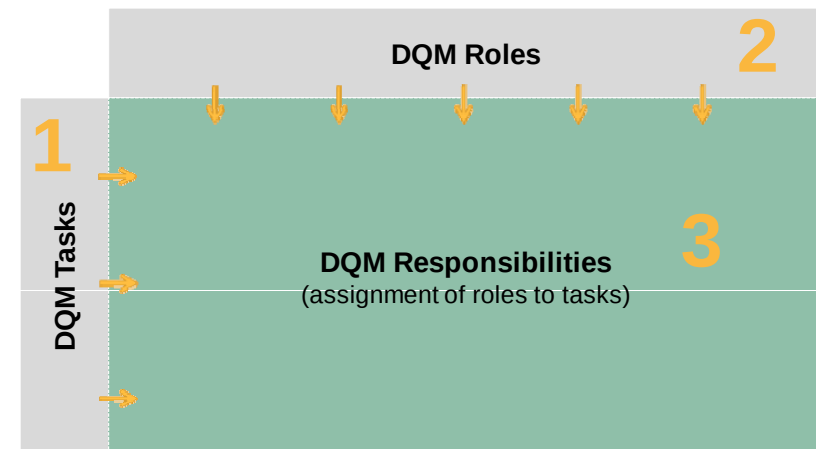
Data governance specifies the framework for decision rights and accountabilities as part of data quality management

Data Governance

- Definition of roles and assignment of responsibilities for decision-areas to these roles
- Definition of organization-wide guidelines and standards and assurance of compliance to corporate strategy and laws governing data.

Data Governance Model

- Combination of roles, tasks and responsibilities for data quality management.



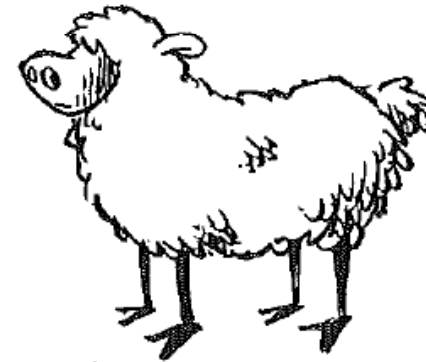
Data governance defines clear roles and responsibilities for data quality management



REGIONAL LIVESTOCK
OPERATIONS AND ANALYSIS
MANAGER



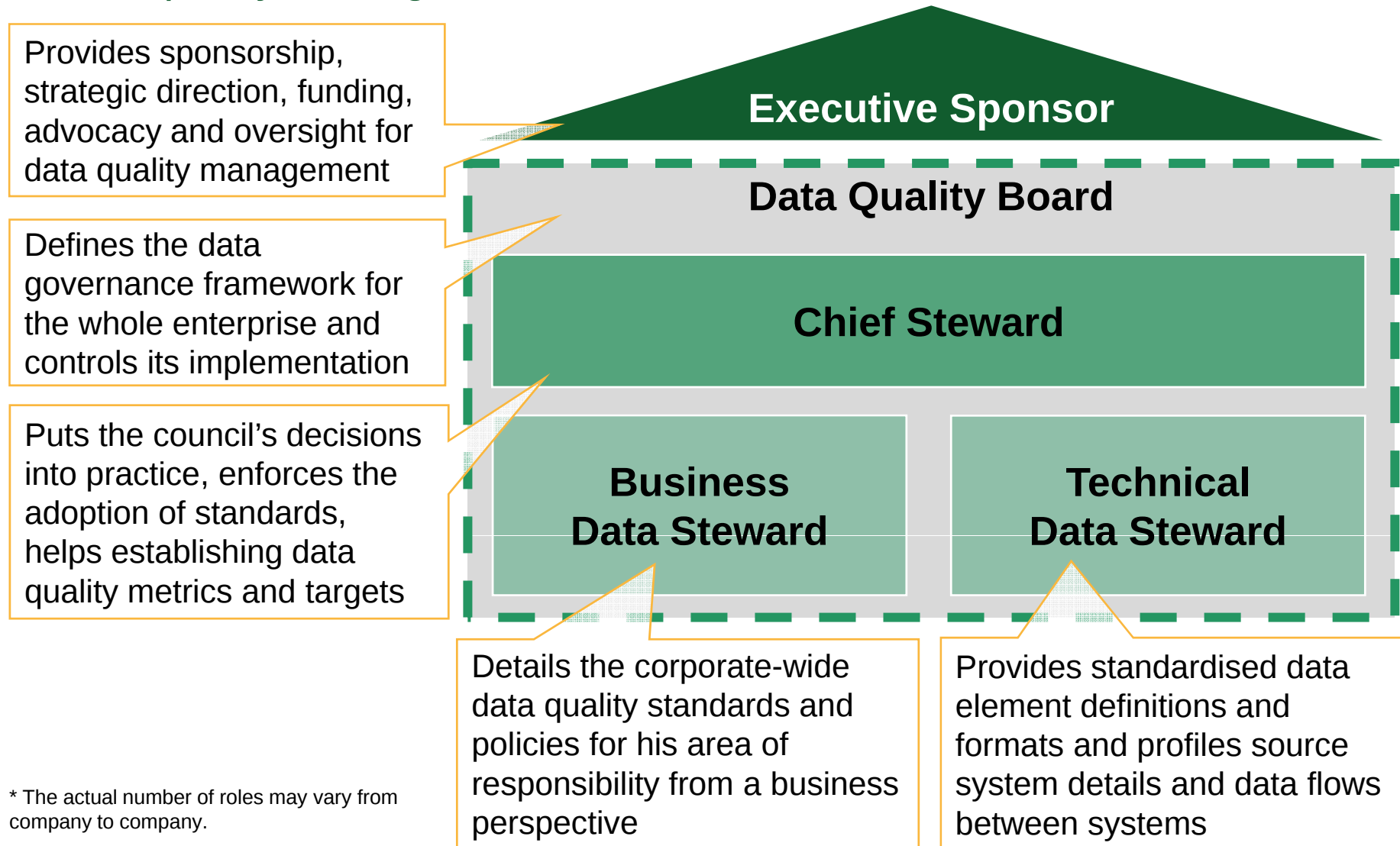
LIVESTOCK
DIRECTIONAL
CONSULTANT



REGIONAL GRASSLAND
ENGINEER

Strassmann, P.: The Politics of Information Management, The Information Economics Press, New Canaan, Connecticut, 1995

The current state-of-the-art suggests 4 roles and 1 committee for data quality management as a common denominator*



Data governance sets standards and guidelines for the major decision areas and tasks in data quality management

Data quality strategy

Alignment with business strategy, business benefits of DQM, measurement and control of DQM

DQM controlling

Measures and metrics, scorecards, incentive systems

Organization and processes

Assignment of roles, definition of data management processes

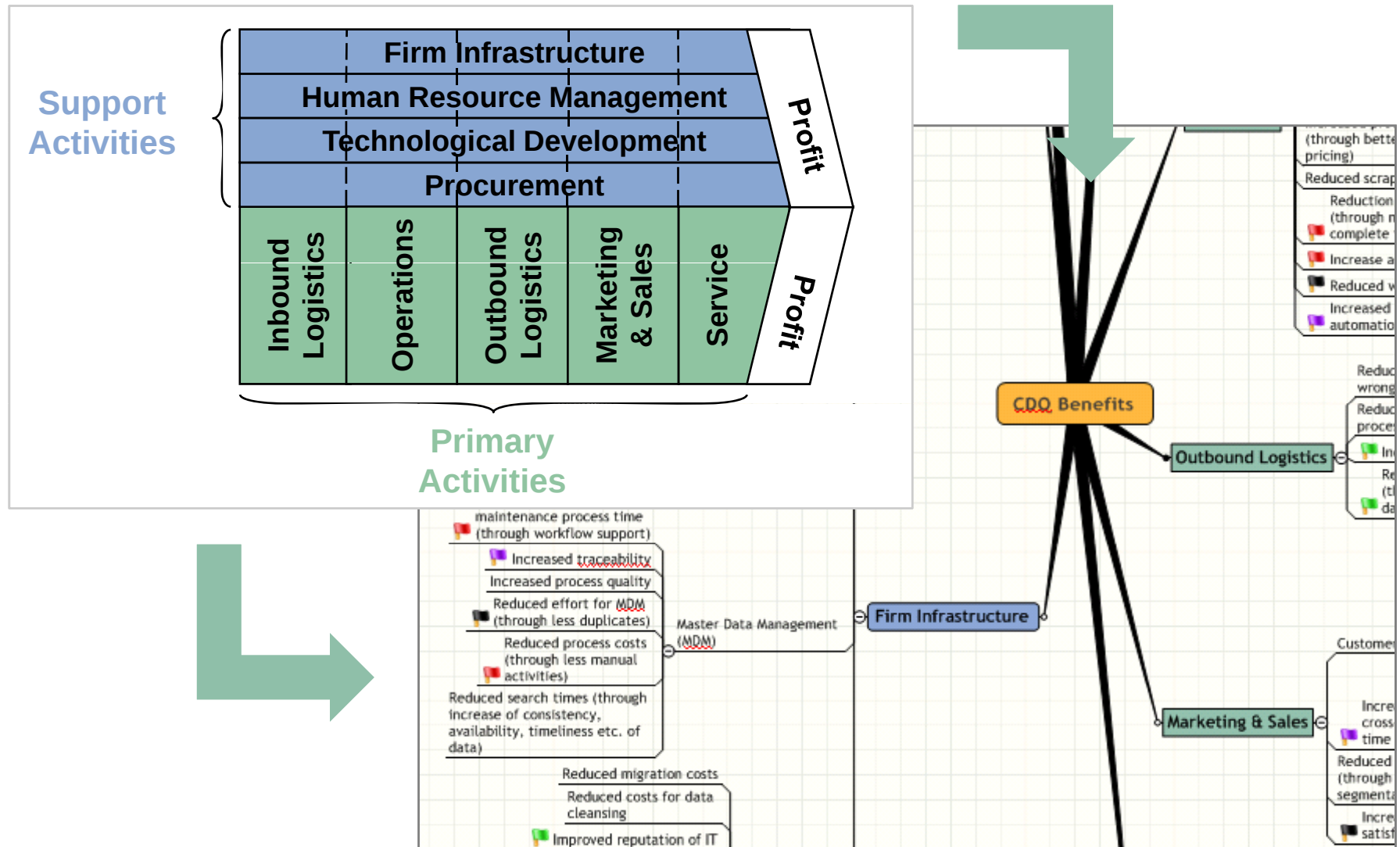
Data architecture

Meta data definition, logical data modeling, global vs. local distribution of information objects

System architecture

Functional architecture for data management, standards for data repository, data cleansing, data distribution

Excursus: A benefit tree for data quality management



Example: Key performance indicators for data quality in the retail industry

KARSTADT

Kennzahl	Bezugsgrösse	Berechnungsvorschrift	Ebene	Periodizität
Formatwechsel	Wert	$(\text{Absolutwert der Formatwechsel}) / \text{Verbrauch} * 100$	Filiale, Abteilung	Monatlich
Pseudo-Bepo	Wert	$(\text{Wert Pseudo-Bepo}) / \text{Wert Bepo Gesamt} * 100$	Filiale, Abteilung	Monatlich
Minusbestand	Anzahl	$(\text{Anzahl Bepo ohne Bestand}) / (\text{Anzahl Bepo Gesamt}) * 100$	Filiale, Abteilung	Monatlich
Inventurbestand ohne Bestellpositionen	Wert	$(\text{Inventurbestand ohne Bepo}) / \text{Inventurbestand} * 100$	Filiale, Abteilung	Jährlich
EK-Differenzen	Anzahl	$(\text{Anzahl fehlerhafte Repo}) / (\text{Anzahl Repo Gesamt}) * 100$	Abteilung	Monatlich
Rechnungen ohne Auftrag	Anzahl	$(\text{Anzahl Rechnungen ohne Auftrag}) / (\text{Anzahl Rechnungen Gesamt}) * 100$	Filiale, Abteilung	Monatlich
Fehlerlisten	Anzahl	$(\text{Absolutwert der Menge mit Fehlern}) / (\text{Absolutwert der Gesamtmenge}) * 100$	Filiale, Abteilung	Monatlich
Stapf-Korrekturen	Wert	Wert der nachträglichen Ergebniskorrekturen	Filiale, Abteilung	Monatlich

Source: Schemm, J.; Otto, B.: Stammdatenmanagement bei der Karstadt Warenhaus GmbH, Institut für Wirtschaftsinformatik, Universität St. Gallen, St. Gallen, 2007

Excursus: Demarcating business data dictionaries from related concepts

Evaluation Criteria	Glossary	Data Model	Data Dictionary	BDD	Classification Systems
Semantically enriched definitions					
Mapping of relationships					
Intelligibility for potential users					
Manageability, Maintainability					
User friendly integration into other applications					

Key:



Very high



High



Medium



Low



Very low

Example: Business data dictionary at Mars

Core Data			
Name	? Finished Product Dimension	Alias	? Product Dimensions Item Dimensions Height Width Depth PegVertical : CPE PegHorizontal : CPE Diameter : CPE
Subject Area	? Item - Outbound	Keywords	?
Lead Project	? GRD	Data Classification	? Unclassified
Version	? GRD V 1.0	Scope	? Global
Where Used	? Apollo ATLAS Outbound CPE GRD Mercury	Internal Review	? No
		Originator	? David A. Ellis Send Email
Definition	? Finished Product Dimension is the dimensions of a finished product in terms of its depth, width and height as defined by the Mars measuring standards for Finished Products and consistent with the GS1 Standards.		
Definition Links	?  Finished Product <i>General EAN.UCC Specifications, See Section 6.8.1.4 ---- http://194.203.97.138/EANUCC/.</i>		
Rationale	? The size of a finished product is required throughout the business and also by our customers for shelf planning etc. It is very important that we have a consistent approach to defining the measurement which is in line with the global standards such as EAN, UCC (GS1) etc. The attached give the standards that we should adopt throughout the business. In the meantime we are at Version 1.5, revised November 2006. 		

Source: Schemm, J.: Fallstudie Mars Inc.: Global Data Synchronization in der Konsumgüterindustrie, Institut für Wirtschaftsinformatik, Universität St. Gallen, St. Gallen, 2007

For the assignment of responsibilities, concepts like the RACI notation may be used

R *Responsible* Responsible roles perform tasks or specify the way of performing tasks

A *Accountable* Accountable roles authorize decisions or the results of tasks

C *Consulted* Consulted roles have specific knowledge necessary for decision-making or performing tasks

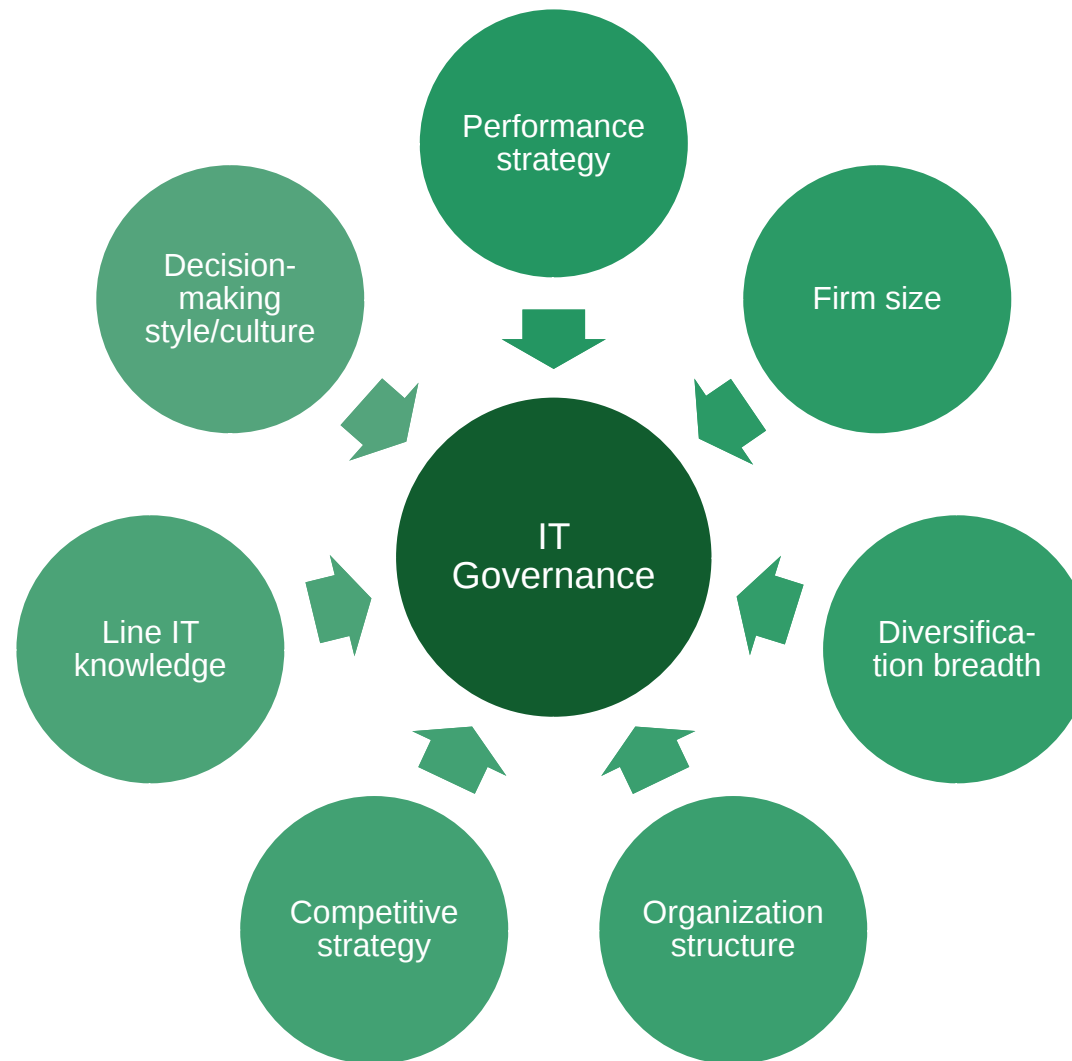
I *Informed* Informed roles will be informed about decisions made or results of tasks

Data governance materializes in a responsibility matrix

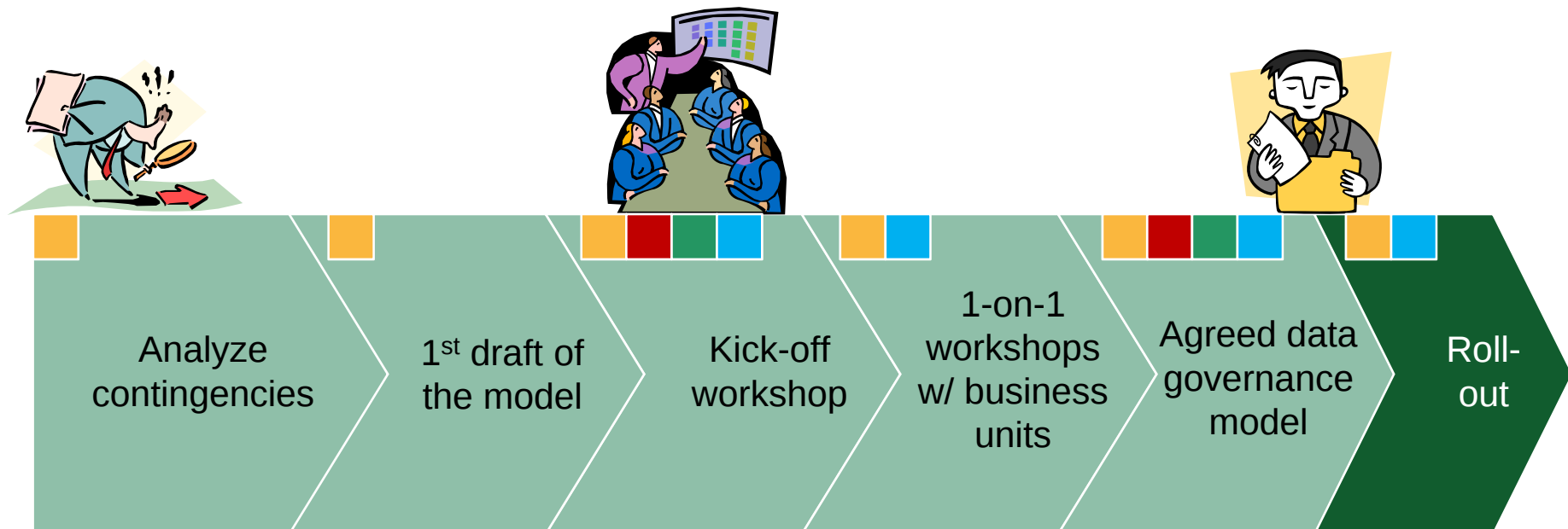
Tasks	Roles	Executive Sponsor	Data Governance Council	Chief Data Steward	Technical Data Steward	Business Data Steward	...
Data quality strategy		A	R	C			
Measures and controls		A	R				
Data management processes			A	R	C	C	
Metadata management and business data dictionary				A	R	C	
Data architecture				A	R	C	
System architecture			I	A	R	I	
Data quality tools				A	R		
...							

Key: R - Responsible; A - Approver; C - Consulted; I - Informed.

There is no “one fits all” solution - in analogy to IT management, contingencies determine the individual data governance model



The establishment of a data governance model is a change process



Involved roles



Core team



Sponsor



Data governance council



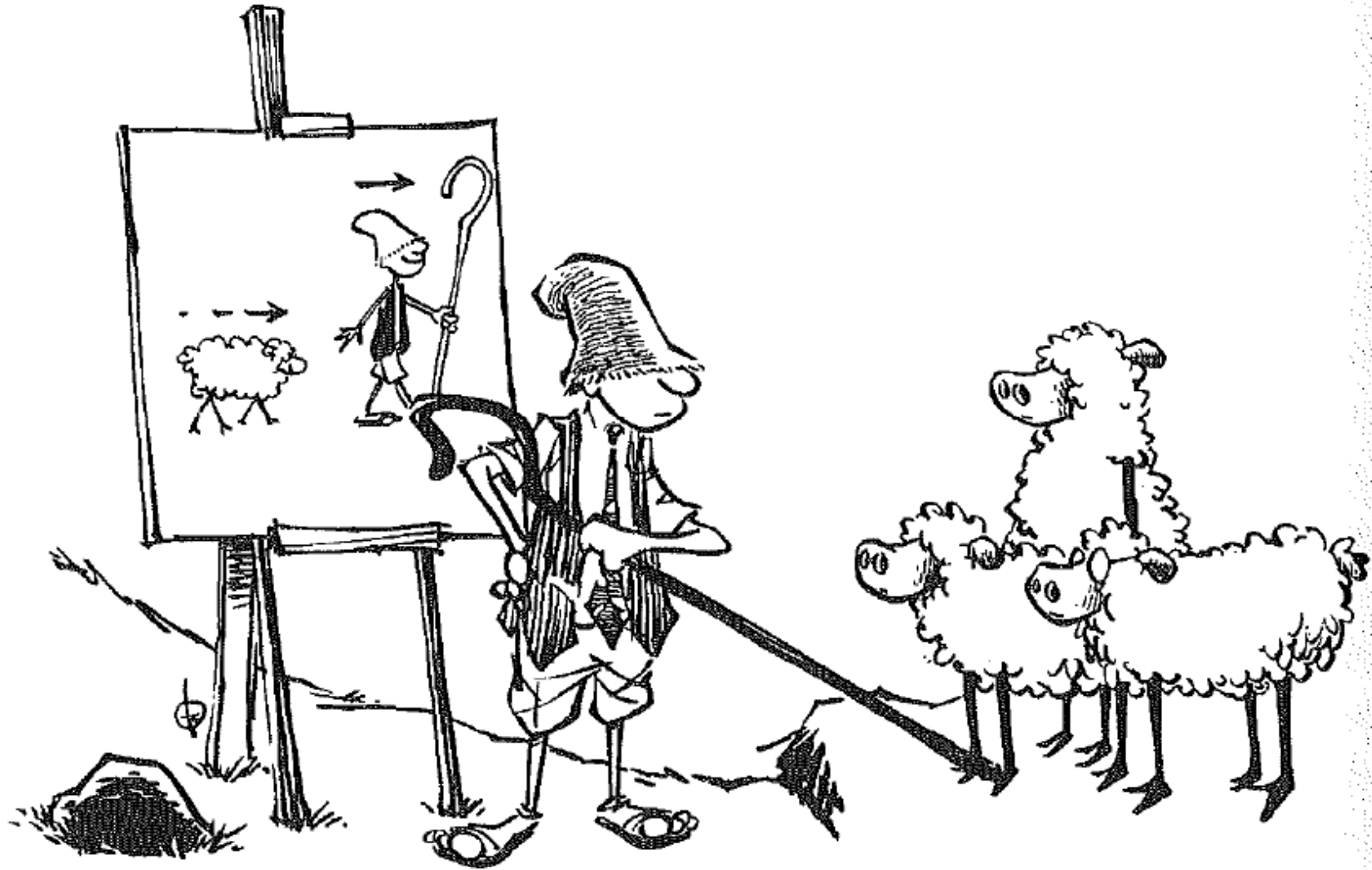
Process owners

How to ensure failure in a data governance programm

- Silver bullet syndrome
- Ivory tower syndrome
- Poor organizational change management
- Lack of executive sponsorship

Quelle: IBM, 2006.

Don't forget: Simplicity is the clearest policy



Strassmann, P.: The Politics of Information Management, The Information Economics Press, New Canaan, Connecticut, 1995

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Summary

- Multiple business drivers for data quality management exist - throughout the entire organization of a company
- However, organizations have difficulties assigning responsibilities for data quality management
- Data governance is an instrument for the strategic alignment of data quality management and the definition of standards
- It is no “one fits all” concept, but is rather influenced by a company’s contingencies

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