TOGAF

Version 9 Enterprise Edition

Module 18A
Phase C
Data Architecture – Catalogs, Matrices and Diagrams

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Module Objectives

The objectives of this module are to understand:

- The Catalogs, Matrices and Diagrams of Phase C, Data Architecture
- What they consist of
- How they are used

TOGAF 9 Artifacts

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<tr>
<td>Preliminary Phase

• Principles catalog

Phase A, Architecture Vision

• Stakeholder Map matrix
• Value Chain diagram
• Solution Concept diagram</td>
<td>Phase B, Business Architecture
• Organization/Actor catalog
• Driver/Goal/Objective catalog
• Role catalog
• Business Service/Function catalog
• Location catalog
• Process/Event/Control/Product catalog
• Contract/Measure catalog
• Business Interaction matrix
• Actor/Role matrix
• Business Footprint diagram
• Business Service/Information diagram
• Functional Decomposition diagram
• Product Lifecycle diagram
• Goal/Objective/Service diagram
• Use-Case diagram
• Organization Decomposition diagram
• Process Flow diagram
• Event diagram</td>
<td>Phase C, Data Architecture

• Data Entity/Data Component catalog
• Data Entity/Business Function matrix
• System/Data matrix
• Class diagram
• Data Dissemination diagram
• Data Security diagram
• Class Hierarchy diagram
• Data Migration diagram
• Data Lifecycle diagram</td>
<td>Phase C, Application Architecture

• Application Portfolio catalog
• Interface catalog
• System/Organization matrix
• Role/System matrix
• System/Function matrix
• Application Interaction matrix
• Application Communication diagram
• Application and User Location diagram
• System Use-Case diagram
• Enterprise Manageability diagram
• Process/System Realization diagram
• Software Engineering diagram
• Application Migration diagram
• Software Distribution diagram</td>
</tr>
<tr>
<td colspan="2">Phase D, Technology Architecture
• Technology Standards catalog
• Technology Portfolio catalog
• System/Technology matrix
• Environments and Locations diagram
• Platform Decomposition diagram
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• Networked Computing/Hardware diagram
• Communications Engineering diagram</td>
<td>Phase E. Opportunities & Solutions
• Project Context diagram
• Benefits diagram</td>
<td>Requirements Management
• Requirements catalog</td>
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</table>

Catalogs, Matrices and Diagrams

Catalogs

- Data Entity/Data Component catalog

Matrices

- Data Entity/Business Function matrix
- System/Data matrix

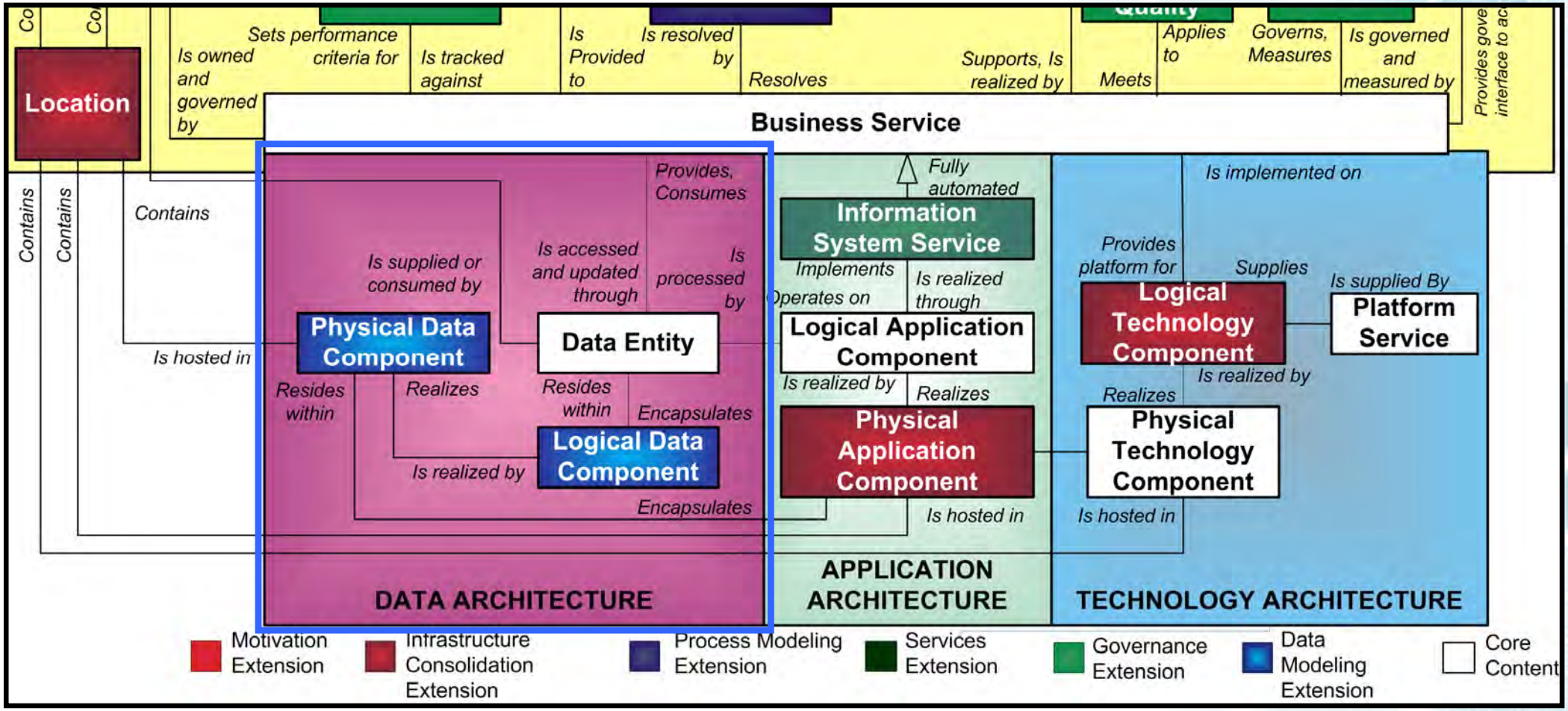
Diagrams

- Class diagram
- Data Dissemination diagram
- Data Security diagram
- Class Hierarchy diagram
- Data Migration diagram
- Data Lifecycle diagram

Catalogs

Catalog	Purpose
•Data Entity/Data Component Catalog	To identify and maintain a list of all the data use across the enterprise, including data entities and also the data components where data entities are stored. It contains the following metamodel entities: •Data Entity •Logical Data Component •Physical Data Component

Exercise



Matrices

- Data Entity/Business Function matrix
- System/Data matrix

Data Entity/Business Function Matrix

- The purpose of the Data Entity/Business Function matrix is to depict the relationship between data entities and business functions within the enterprise.
- The mapping of the Data Entity-Business Function relationship enables the following to take place:
  - Assignment of ownership of data entities to organizations
  - Understand the data and information exchange requirements business services
  - Support the gap analysis and determine whether any data entities are missing and need to be created
  - Define system of origin, system of record, and system of reference for data entities
  - Enable development of data governance programs across the enterprise (establish data steward, develop data standards pertinent to the business function, etc.)

Example Data Entity/Business Function Matrix

BUSINESS FUNCTION (Y-AXIS) AND DATA ENTITY (X-AXIS)	CUSTOMER MASTER	BUSINESS PARTNER	CUSTOMER LEADS	PRODUCT MASTER
Customer Relationship Management	▪ Business partner data management service ▪ Owner – Sales & Marketing business unit executive ▪ Function can Create, read, update and delete customer master data	▪ Business partner data management service ▪ Owner of data entity (person or organization) ▪ Function can Create, read, update and delete	▪ Lead Processing Service ▪ Owner – Customer Relationship Manager ▪ Function can only Create, read, update customer leads	▪ N/A
Supply Chain Management	▪ Customer Requirement Processing Service ▪ Owner – Supply Chain Manager	▪ N/A	▪ N/A	▪ Product data management service ▪ Owner – Global product development organization

System/Data Matrix

- The purpose of the System/Data matrix is to depict the relationship between systems (i.e., application components) and the data entities that are accessed and updated by them.
- Systems will create, read, update, and delete specific data entities that are associated with them. For example, a CRM application will create, read, update, and delete customer entity information.

Example System/Data Matrix

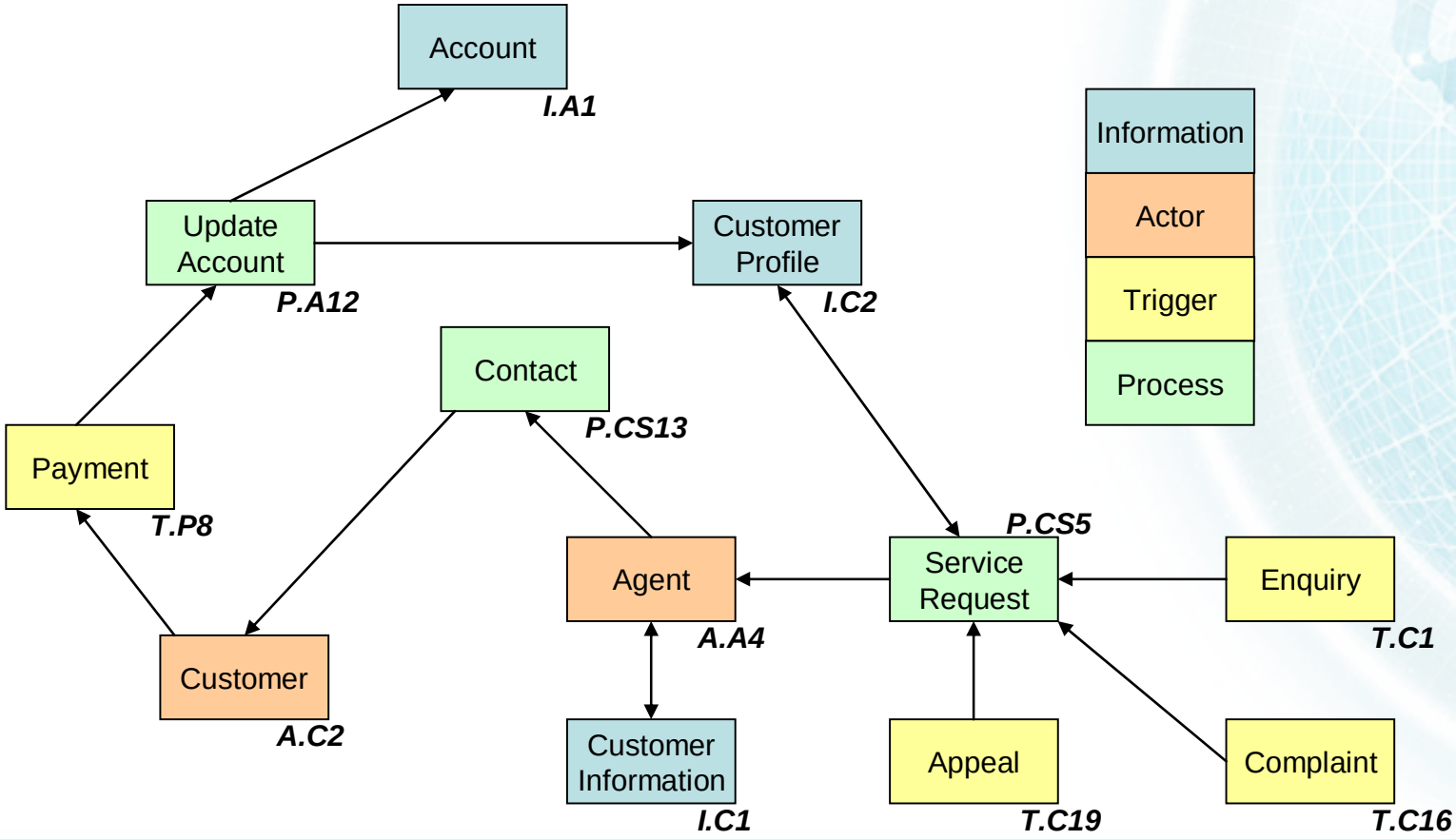
APPLICATION (Y-AXIS) AND DATA (X-AXIS)	DESCRIPTION OR COMMENTS	DATA ENTITY	DATA ENTITY TYPE
CRM	▪System of record for customer master data	▪Customer data	▪Master data
Commerce Engine	▪System of record for order book	▪Sales orders	▪Transactional data
Sales Business Warehouse	▪Warehouse and data mart that supports North American region	▪Intersection of multiple data entities (e.g. All sales orders by customer XYZ and by month for 2006)	▪Historical data

Diagrams

- Class diagram
- Data Dissemination diagram
- Data Security diagram
- Class Hierarchy diagram
- Data Migration diagram
- Data Lifecycle diagram

Class Diagram

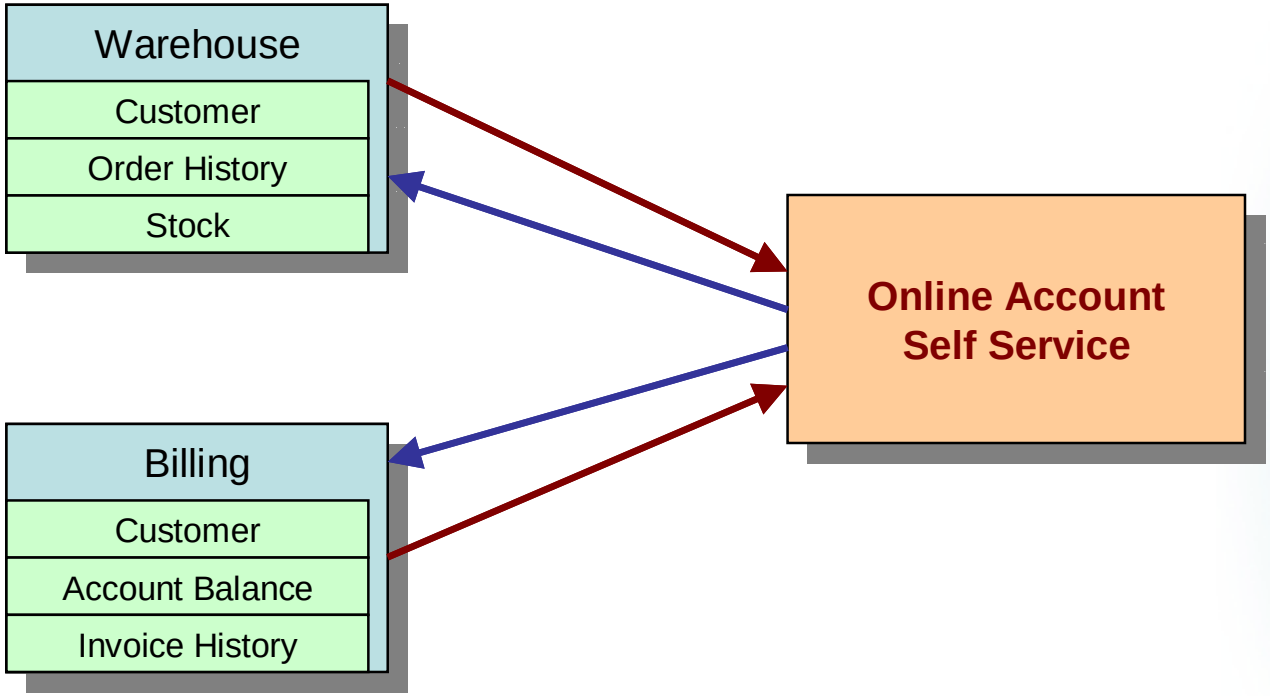
- The purpose is to depict the relationships among the critical data entities (or classes) within the enterprise.



Data Dissemination Diagram

- The purpose of the Data Dissemination diagram is to show the relationship between data entity, business service, and application components.
- The diagram should show how the logical entities are to be physically realized by application components.
- Additionally, the diagram may show data replication and system ownership of the master reference for data.

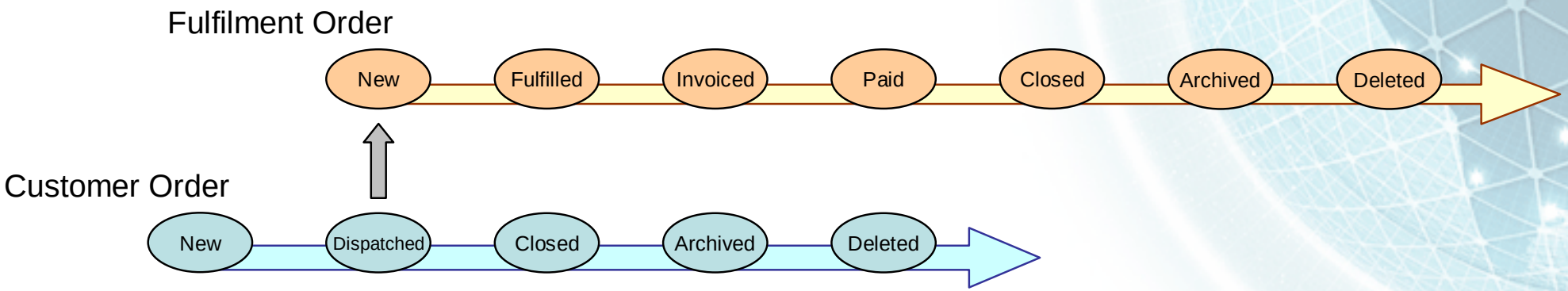
Example Data Dissemination Diagram



Business Service	Data Entities	Application
Online Account Self Service	Customer	▪Warehouse ▪Billing
	Order History	▪Warehouse
	Stock	▪Warehouse
	Account Balance	▪Billing
	Invoice History	▪Billing

Data Lifecycle Diagram

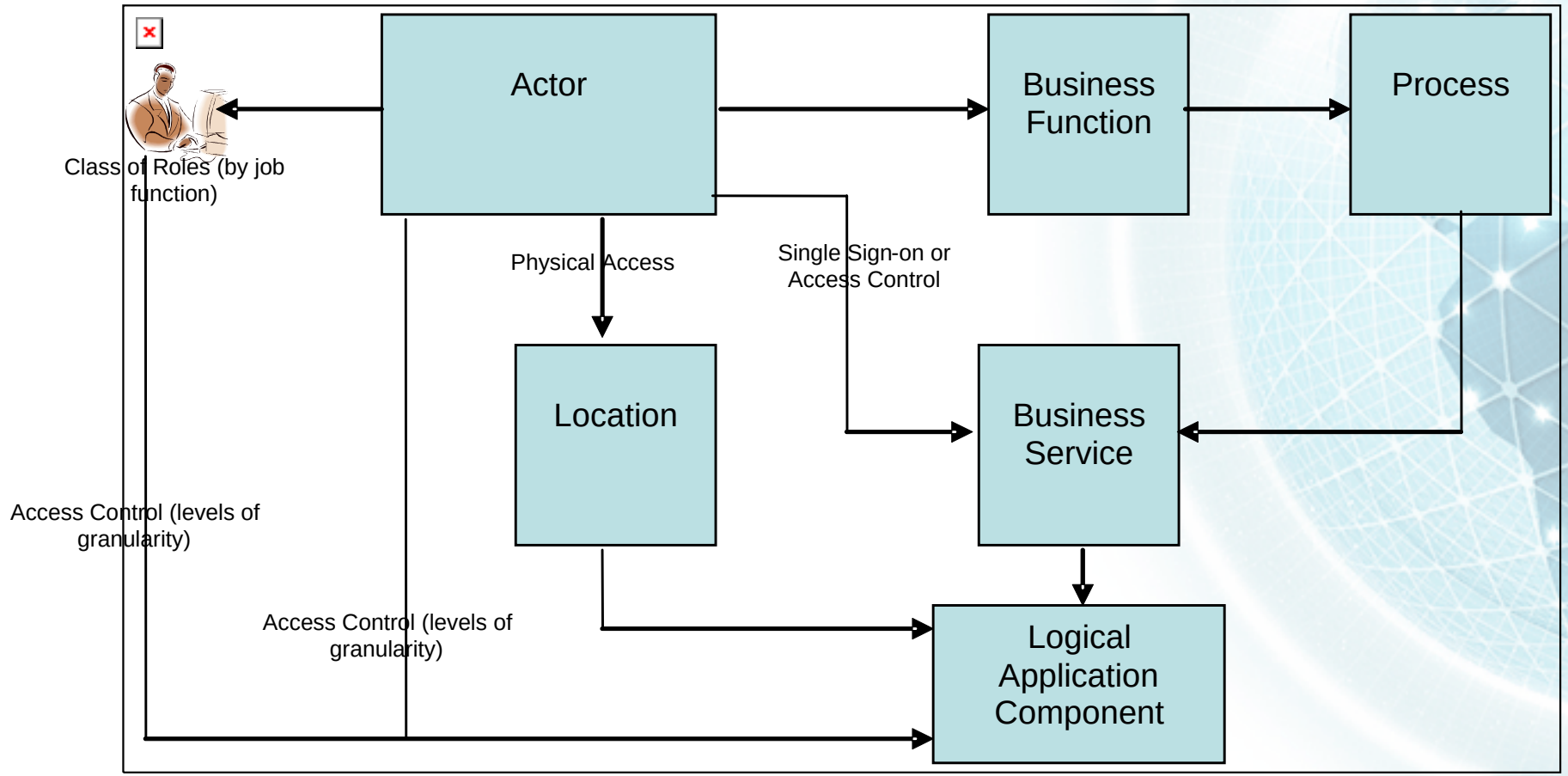
- The Data Lifecycle diagram is an essential part of managing business data throughout its lifecycle from conception until disposal within the constraints of the business process.



Data Security Diagram

- The purpose of the Data Security diagram is to depict which actor (person, organization, or system) can access which enterprise data.
- This relationship can also be shown in a matrix form between two objects or can be shown as a mapping.

Example Data Security Diagram



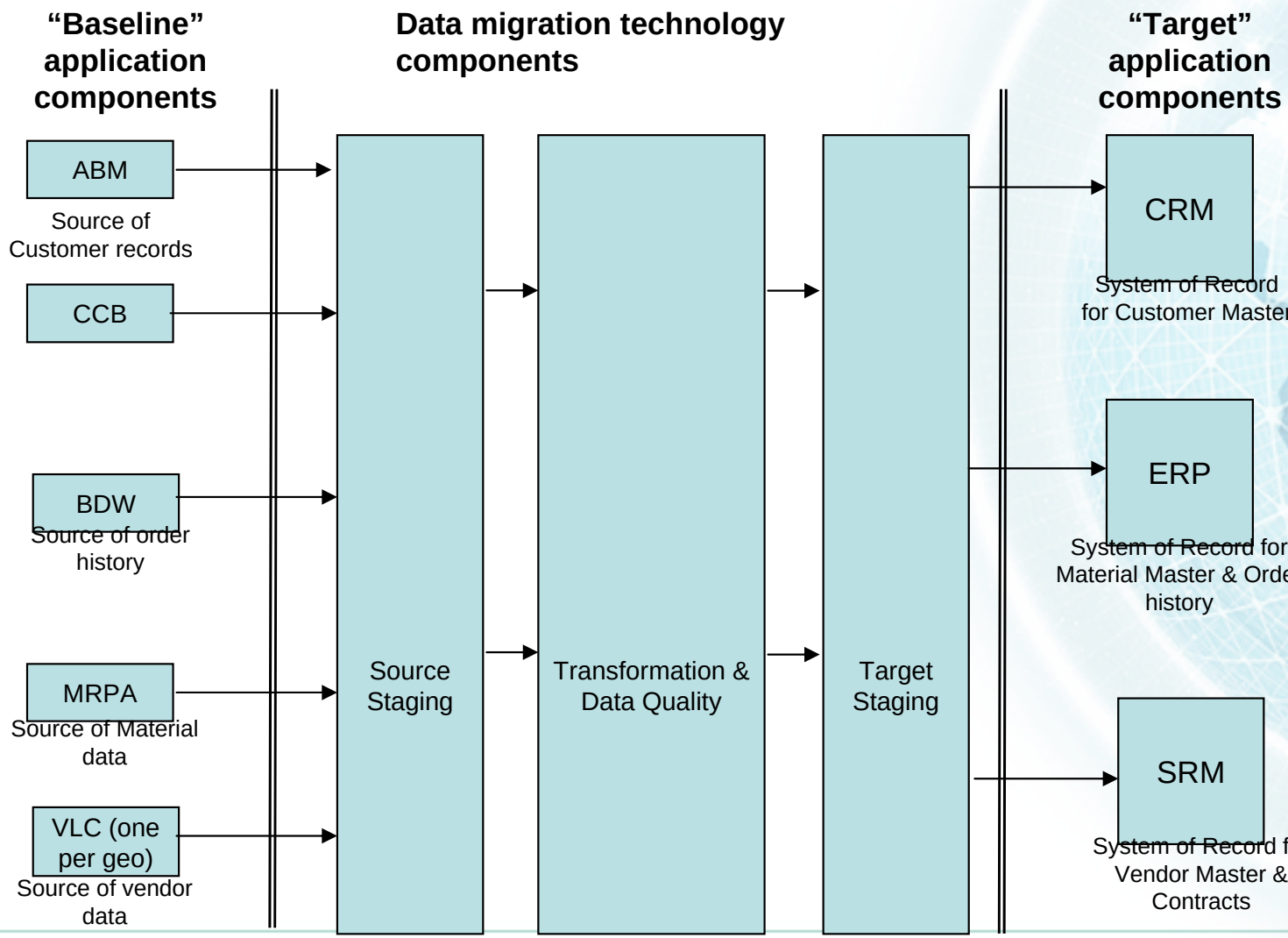
Example Data Security Matrix

ACTOR	CLASS OF ROLES (JOB FUNCTION)	FUNCTION	BUSINESS SERVICE	LOCATION	TYPE OF ACCESS
Financial Analyst	SOA Portfolio Financial Analyst	Financial Analysis	SOA portfolio service	▪ NA (US, CA) ▪ EMEA (UK, DE) ▪ APJ	▪ Physical ▪ Access Control (tables xyz only)
Procurement & Spend Analyst	Procurement Management and Control	WW Direct Procurement	Supplier portal Service	▪ NA (US Midwest)	▪ Access control
WW Contracts System (application)	Not applicable	WW Direct Procurement	Supplier Portal Service	▪ LA	▪ Access control (system to system)
WW Product Development (Org Unit)	Geo Brand Managers	WW Direct Procurement	Supplier Portal Service	▪ WW (all Geos)	▪ Access Control

Data Migration Diagram

- The purpose of the Data Migration diagram is to show the flow of data from the source to the target applications.
- The diagram will provide a visual representation of the spread of sources/targets and serve as a tool for data auditing and establishing traceability.

Example Data Migration Diagram



Example Data Migration Mapping

SOURCE LOGICAL APPLICATION COMPONENT	SOURCE DATA ELEMENT	TARGET LOGICAL APPLICATION COMPONENT	TARGET DATA ELEMENT
ABM	Cust_Name	CRM	CUSTNAME
	Cust_Street_Addr		CUSTADDR_LINE1
	Cust_Street_Addr		CUSTADDR_LINE2
	Cust_Street_Addr		CUSTADDR_LINE3
	Cust_ContactName		CUSTCONTACT
	Cust_Tele		CUSTTELEPHONE

Class Hierarchy Diagram

- The purpose of the Class Hierarchy diagram is to show the technical stakeholders a perspective of the class hierarchy.
- This diagram gives the stakeholders an idea of who is using the data, how, why, and when.

Example Class Hierarchy Diagram