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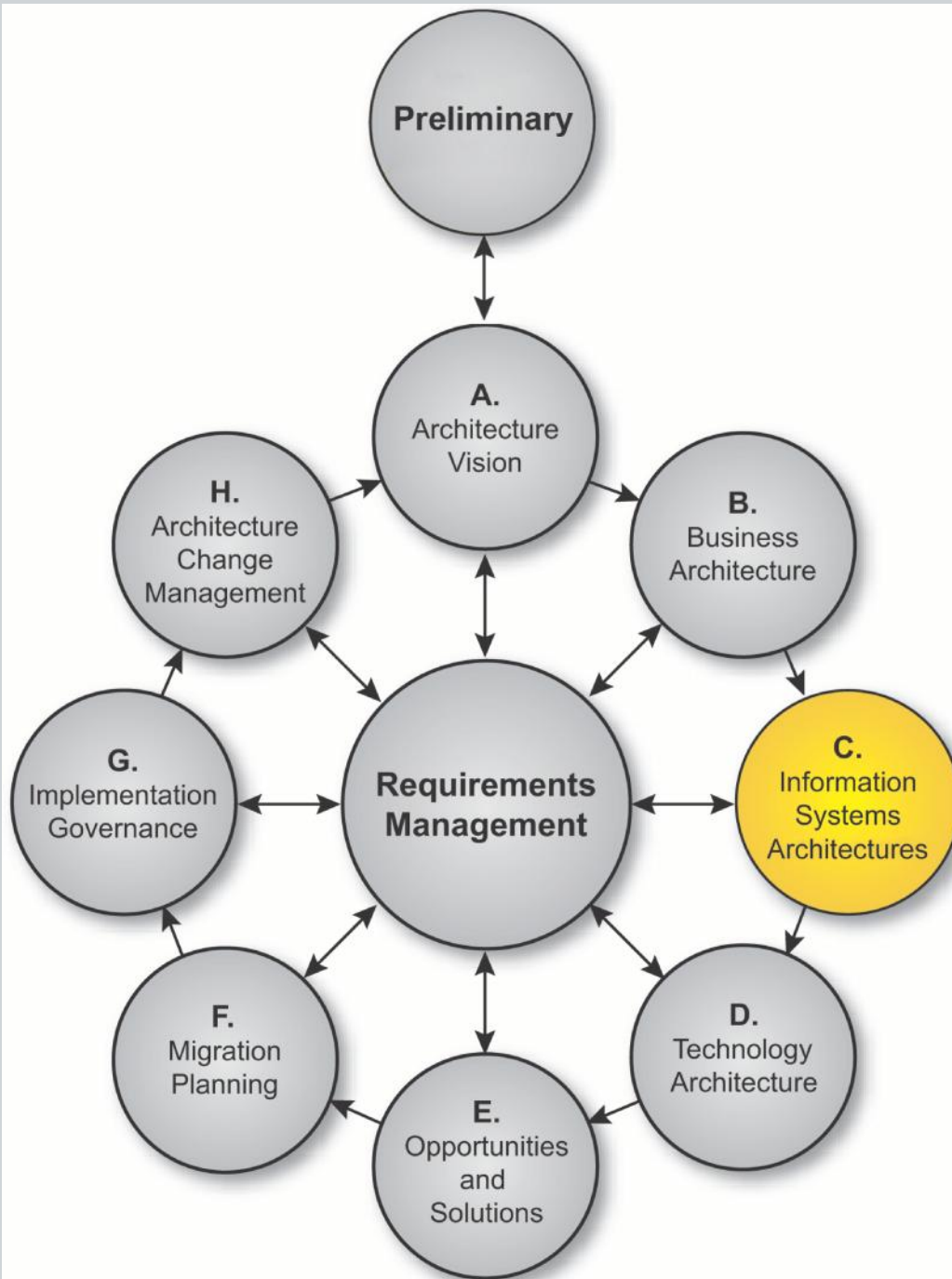## Version 9.1 Enterprise Edition

Module 20A
Phase C
Application
Architecture – Catalogs,
Matrices and Diagrams
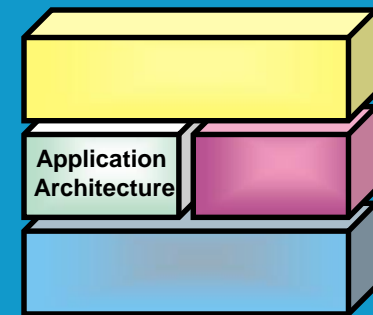
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Phase C: Application Architecture – Catalogs, Matrices and Diagrams

Application Architecture

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Module Objectives

The objectives of this module are to understand:

- The Catalogs, Matrices and Diagrams of Phase C, Application Architecture

- What they consist of

- How they are used

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Preliminary Phase	Phase A, Architecture Vision		
• Principles catalog	• Stakeholder Map Matrix	• Solution Concept diagram	• Value Chain diagram

Requirements Management	• Requirements catalog

Phase B, Business Architecture	Phase C, Data Architecture	Phase C, Application Architecture	Phase D, Technology 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 • Business Use-Case diagram • Organization Decomposition diagram • Process Flow diagram • Event diagram	• Data Entity/Data Component catalog • Data Entity/Business Function matrix • Application/Data matrix • Logical Data diagram • Data Dissemination diagram • Data Security diagram • Class Hierarchy diagram • Data Migration diagram • Data Lifecycle diagram	• Application Portfolio catalog • Interface catalog • Application/Organization matrix • Role/Application matrix • Application/Function matrix • Application Interaction matrix • Application Communication diagram • Application and User Location diagram • Application Use-Case diagram • Enterprise Manageability diagram • Process/Application Realization diagram • Software Engineering diagram • Application Migration diagram • Software Distribution diagram	• Technology Standards catalog • Technology Portfolio catalog • System/Technology matrix • Environments and Locations diagram • Platform Decomposition diagram • Processing diagram • Networked Computing/Hardware diagram • Communications Engineering diagram

Phase E. Opportunities & Solutions
- Project Context diagram
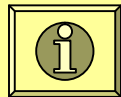- Benefits diagram

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Catalogs, Matrices and Diagrams

Catalogs

- Application Portfolio catalog
- Interface catalog

Matrices

- Application/Organization matrix
- Role/Application matrix
- Application/Function matrix
- Application Interaction matrix

> **The exact format of the catalogs, matrices and diagrams will depend on the tools used**

Diagrams

- Application Communication diagram
- Application and User Location diagram
- Application Use-Case diagram
- Enterprise Manageability diagram
- Process/Application Realization diagram
- Software Engineering diagram
- Application Migration diagram
- Software Distribution diagram

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Catalogs

Catalog	Purpose
Application Portfolio Catalog	To identify and maintain a list of all the applications in the enterprise. This list helps to define the horizontal scope of change initiatives that may impact particular kinds of applications. An agreed Application Portfolio allows a standard set of applications to be defined and governed. It contains the following metamodel entities: •Information System Service •Logical Application Component •Physical Application Component
Interface Catalog	The purpose of the Interface catalog is to scope and document the interfaces between applications to enable the overall dependencies between applications to be scoped as early as possible. It contains the following metamodel entities: •Logical Application Component •Physical Application Component •Application *communicates with* application relationship
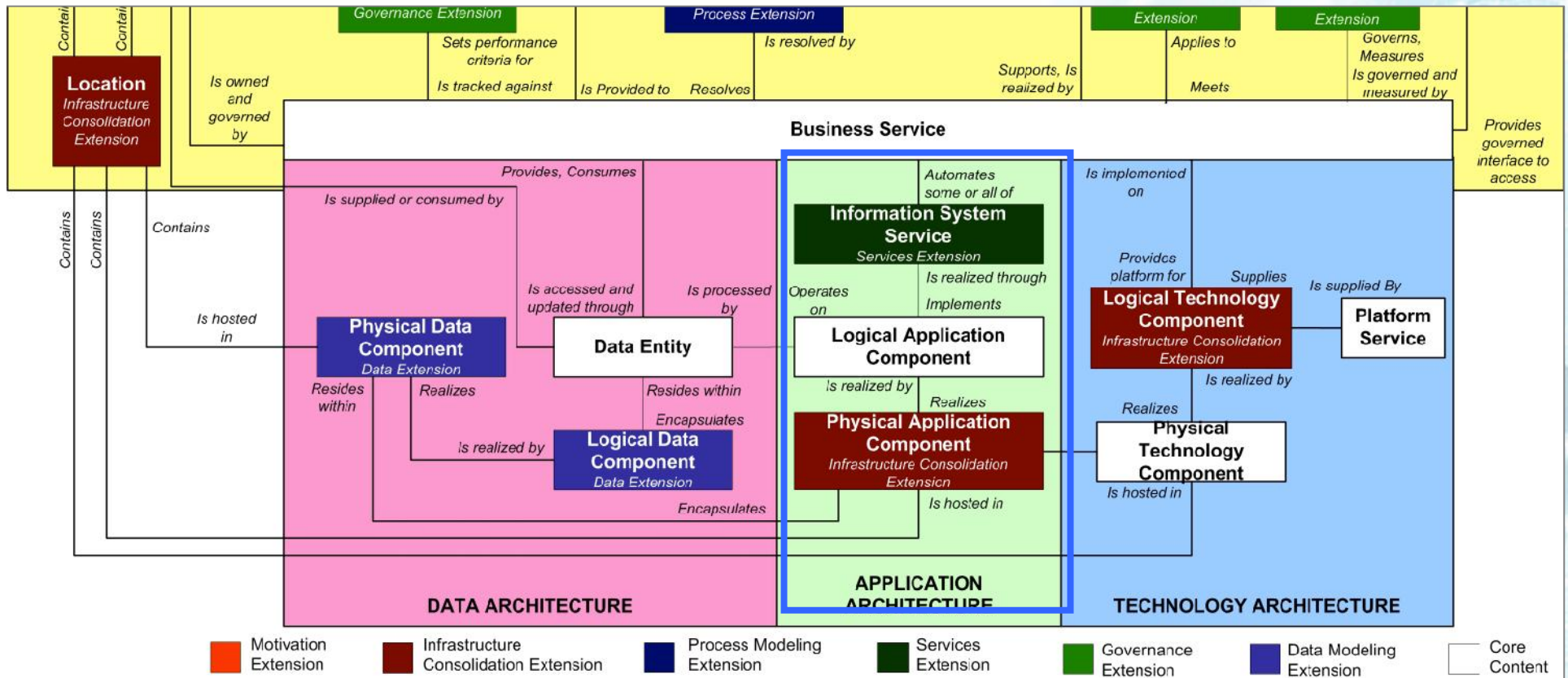
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Exercise

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Matrices

- Application/Organization matrix
- Role/Application matrix
- Application/Function matrix
- Application Interaction matrix

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Application/Organization Matrix

- The purpose of this matrix is to depict the relationship between applications and organizational units within the enterprise.

- The mapping of the Application Component-Organization Unit relationship is an important step as it enables the following to take place:
  - Assign usage of applications to the organization units that perform business functions
  - Understand the application support requirements of the business services and processes carried out by an organization unit
  - Support the gap analysis and determine whether any of the applications are missing and as a result need to be created
  - Define the application set used by a particular organization unit

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Example Application/Organization Matrix

APPLICATION (Y-AXIS) AND ORGANISATION UNIT (X-AXIS)	CUSTOMER SERVICES	PROCUREMENT AND WAREHOUSING	HR	CORPORATE FINANCE
SAP HR	X	X	X	
SIEBEL	X	X		
SAP FINANCIALS	X	X		X
PROCURESOFT	X	X		

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Role/Application Matrix

- The purpose of this matrix is to depict the relationship between applications and the business roles that use them within the enterprise.
- The mapping of the Application Component-Role relationship is an important step as it enables the following to take place:
  - Assign usage of applications to the specific roles in the organization
  - Understand the application security requirements of the business services and processes supporting the function, and check these are in line with current policy
  - Support the gap analysis and determine whether any of the applications are missing and as a result need to be created
  - Define the application set used by a particular business role; essential in any move to role-based computing

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Example Role/Application Matrix

APPLICATION (Y-AXIS) AND FUNCTION (X-AXIS)	CALL CENTRE OPERATOR	CALL CENTRE MANAGER	FINANCE ANALYST	CHIEF ACCOUNTANT
SAP HR	X	X	X	X
SIEBEL	X	X		
SAP FINANCIALS	X	X	X	X
PROCURESOFT	X	X		

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Application/Function Matrix

- The purpose of this matrix is to depict the relationship between applications and business functions within the enterprise.

- The mapping of the Application Component-Function relationship is an important step as it enables the following to take place:

  - Assign usage of applications to the business functions that are supported by them
  - Understand the application support requirements of the business services and processes carried out
  - Support the gap analysis and determine whether any of the applications are missing and as a result need to be created
  - Define the application set used by a particular business function

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Example Application/Function Matrix

APPLICATION (Y-AXIS) AND FUNCTION (X-AXIS)	CALL CENTRE 1ST LINE	WAREHOUSE CONTROL	VACANCY FILLING	GENERAL LEDGER MAINTENANCE
SAP HR	X	X	X	X
SIEBEL	X	X		
SAP FINANCIALS	X	X		X
PROCURESOFT	X	X		

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Example Application Interaction Matrix

|	Application 1	Application 2	Application 3	Application 4
Application 1				**Consumes**
Application 2	**Communicates with**			
Application 3		**Consumes**		**Communicates with**
Application 4				

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Diagrams

- Application Communication diagram
- N2 model or Node Connectivity diagram
- Application and User Location diagram
- Application Use-Case diagram
- Enterprise Manageability diagram
- Process/Application Realization diagram
- Software Engineering diagram
- Application Migration diagram
- Software Distribution diagram

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Application Communication Diagram

- The purpose of this diagram is to depict all models and mappings related to communication between applications in the metamodel entity.

- It shows application components and interfaces between components.

- Communication should be logical and should only show intermediary technology where it is architecturally relevant.

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Application Communication Diagram

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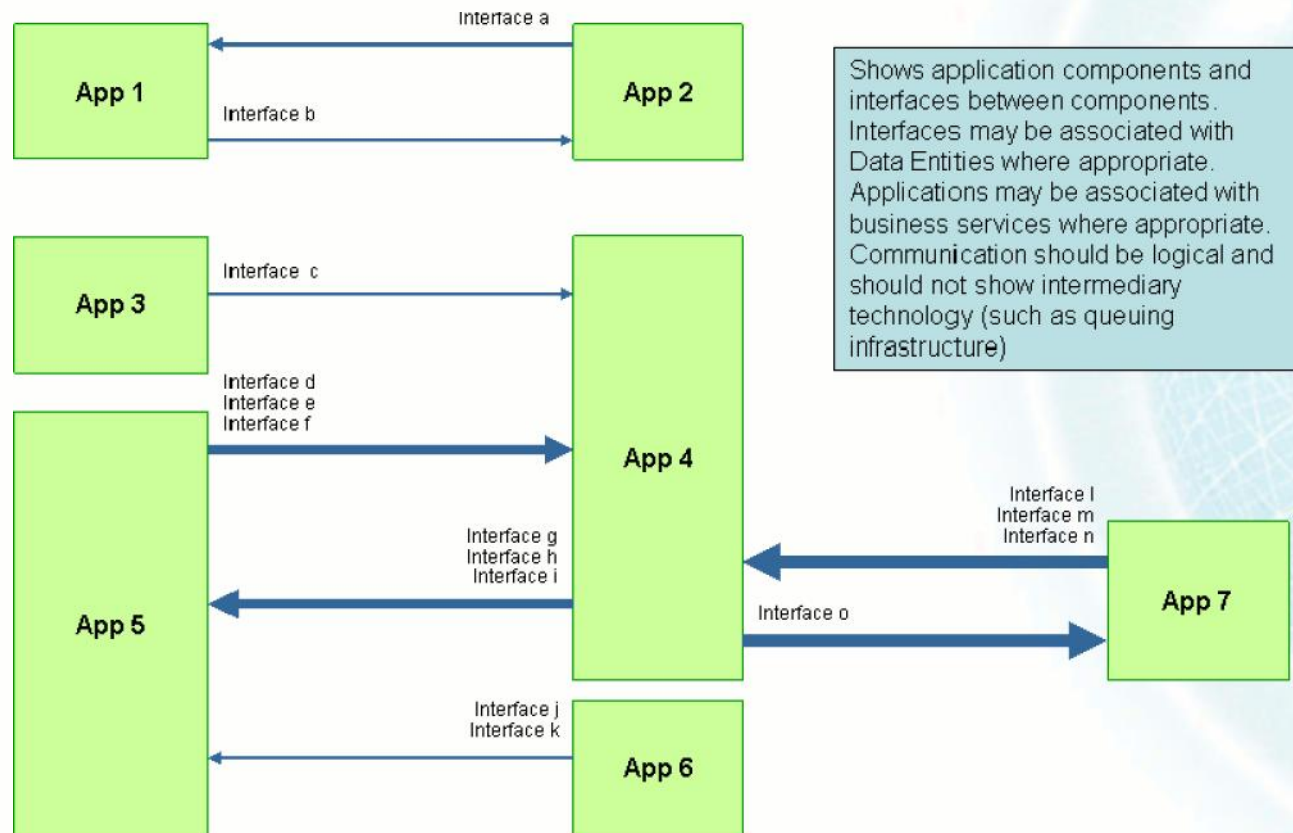
Alternate Example:
N2 Model

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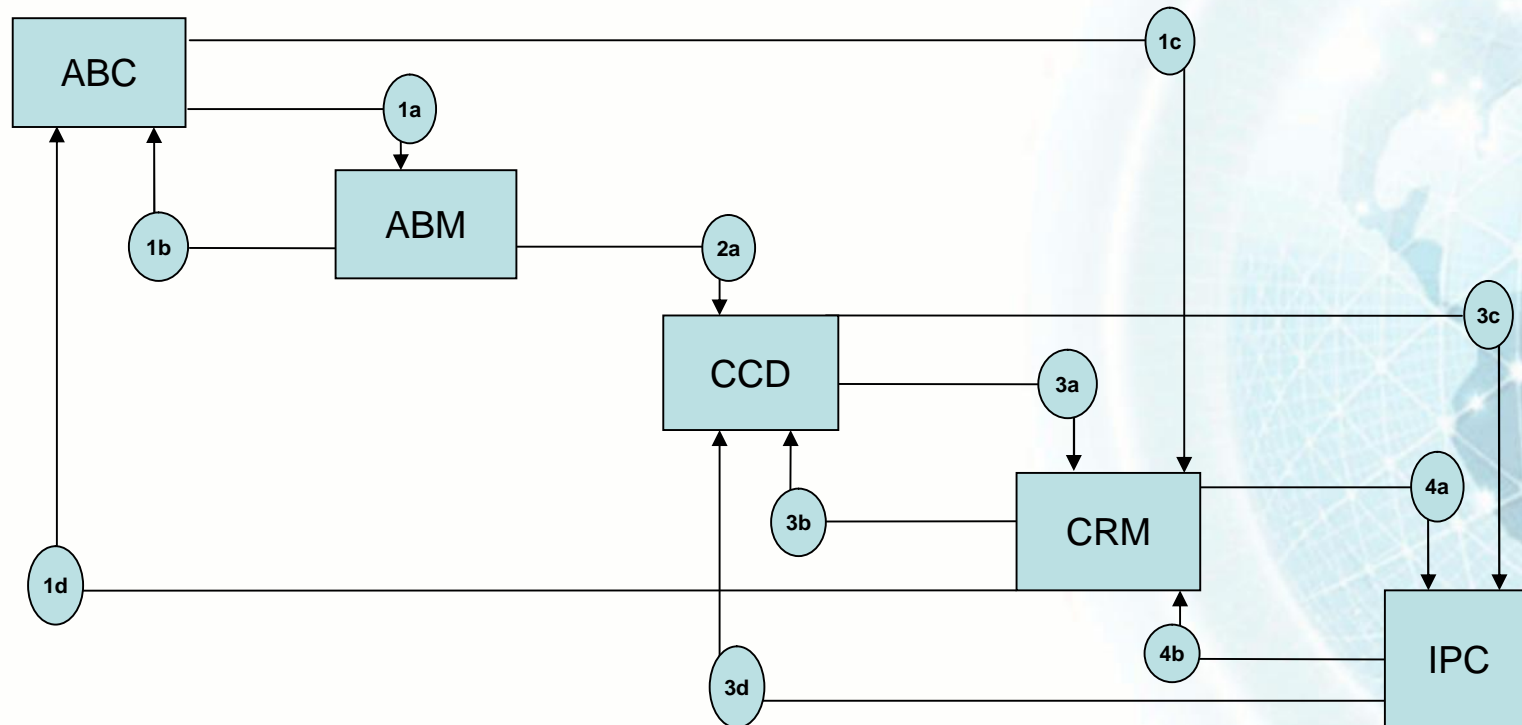
Alternate Example:
Information Exchange Matrix

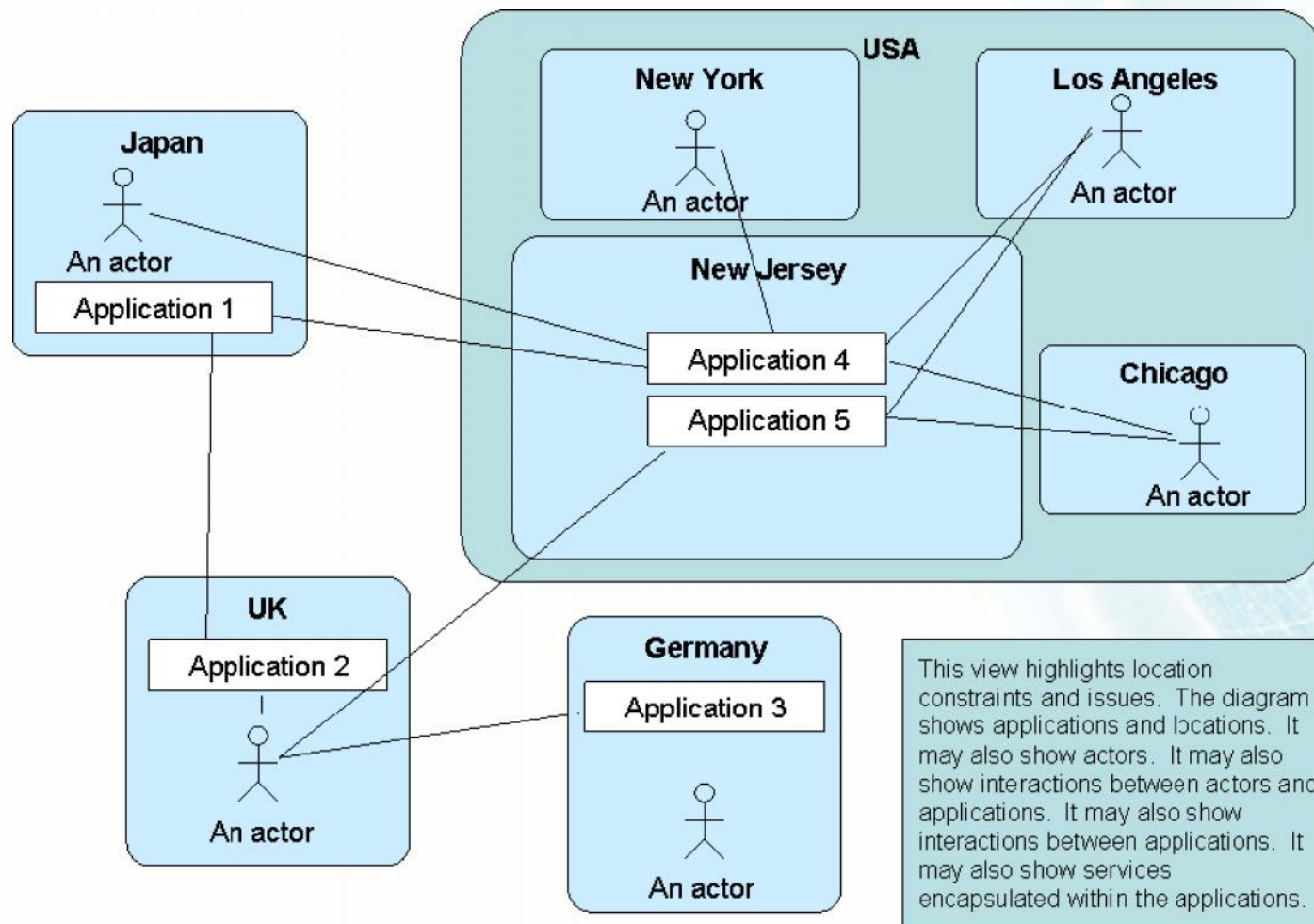| LABEL	SOURCE	DESTINATION	DATA ENTITY	EVENT TRIGGERED
1a	▪ ABC	▪ ABM	▪ Sales order (create request)	▪ New sales order from front end
1b	▪ ABM	▪ ABC	▪ Sales order (confirm create)	▪ Order created in the backend ERP system
2a	▪ ABM	▪ CCD	▪ Product catalog	▪ Subscribe/ Publish timer

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Application & User Location Diagram

- The purpose of this diagram is to clearly depict the business locations from which business users typically interact with the applications, but also the hosting location of the application infrastructure.

- The diagram enables:
  - Identification of the number of package instances needed
  - Estimation of the number and the type of user licenses
  - Estimation of the level of support needed
  - Selection of system management tools, structure, and management system
  - Appropriate planning for the technological components of the business
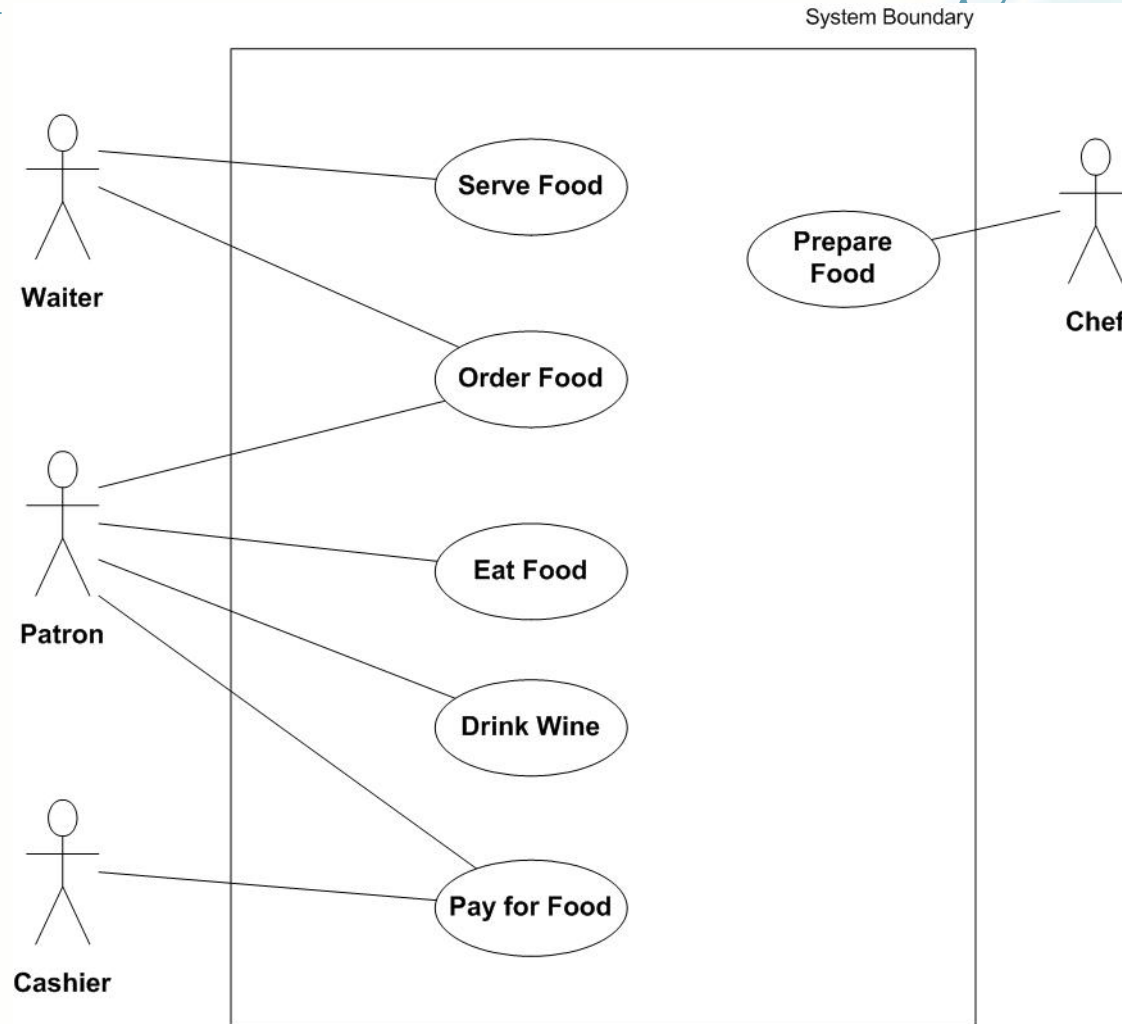 - Performance considerations while implementing solutions

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Example Application & User Location Diagram (part 1)

APPLICATION	USER TYPE	INTERNAL, CUSTOMER OR PARTNER	USER BUSINESS LOCATION	LOCATION ADDRESS	ORG UNIT (USER BELONGS TO)
CRM	Developer Super User Administrator	Internal	NA Western Region EMEA Headquarters, UK	Chicago Sears tower office Chicago Downtown office Middlesex, London	NA Sales & Marketing EMEA Sales
SAP R/3	Test Engineers Mechanical Engineers Procurement managers	Internal	Beijing Manufacturing Plant		Manufacturing & logistics

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Example Application & User Location Diagram (part 2)

This view highlights location constraints and issues. The diagram shows applications and locations. It may also show actors. It may also show interactions between actors and applications. It may also show interactions between applications. It may also show services encapsulated within the applications.

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Application Use Case Diagram

System Boundary

Serve Food

Prepare Food

Waiter

Chef

Order Food

Eat Food

Patron

Drink Wine
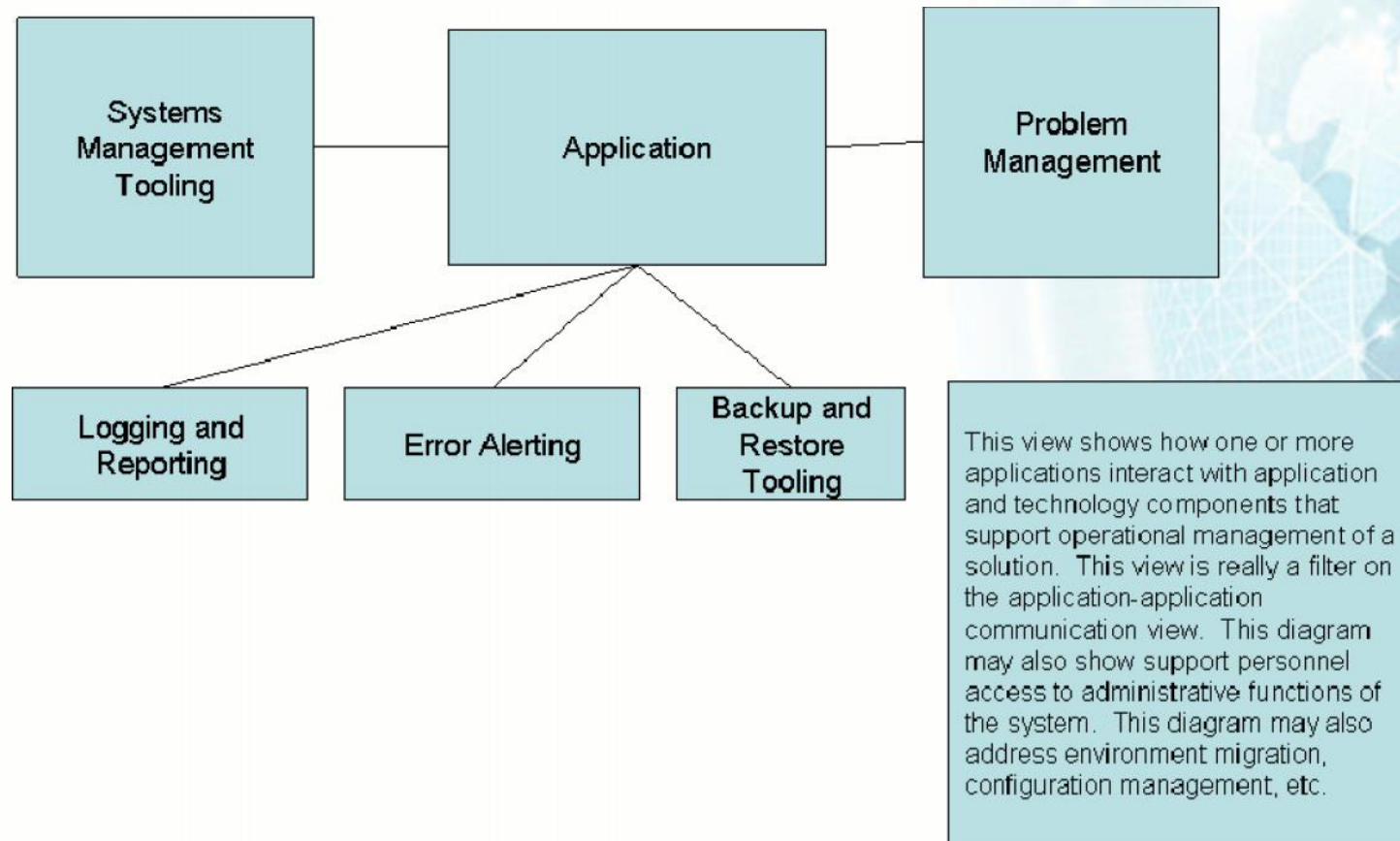
Pay for Food

Cashier

Source: wikipedia.org

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Enterprise Manageability Diagram

- The Enterprise Manageability diagram shows how one or more applications interact with application and technology components that support operational management of a solution.

- Analysis can reveal duplication and gaps, and opportunities in the IT service management operation of an organization.

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Example Enterprise Manageability Diagram

Systems Management Tooling	Application	Problem Management

Logging and Reporting	Error Alerting	Backup and Restore Tooling

This view shows how one or more applications interact with application and technology components that support operational management of a solution. This view is really a filter on the application-application communication view. This diagram may also show support personnel access to administrative functions of the system. This diagram may also address environment migration, configuration management, etc.

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Process/Application Realization Diagram

- The purpose of this diagram is to depict the sequence of events when multiple applications are involved in executing a business process.

- It enhances the Application Communication diagram by augmenting it with any sequencing constraints, and hand-off points between batch and real-time processing.
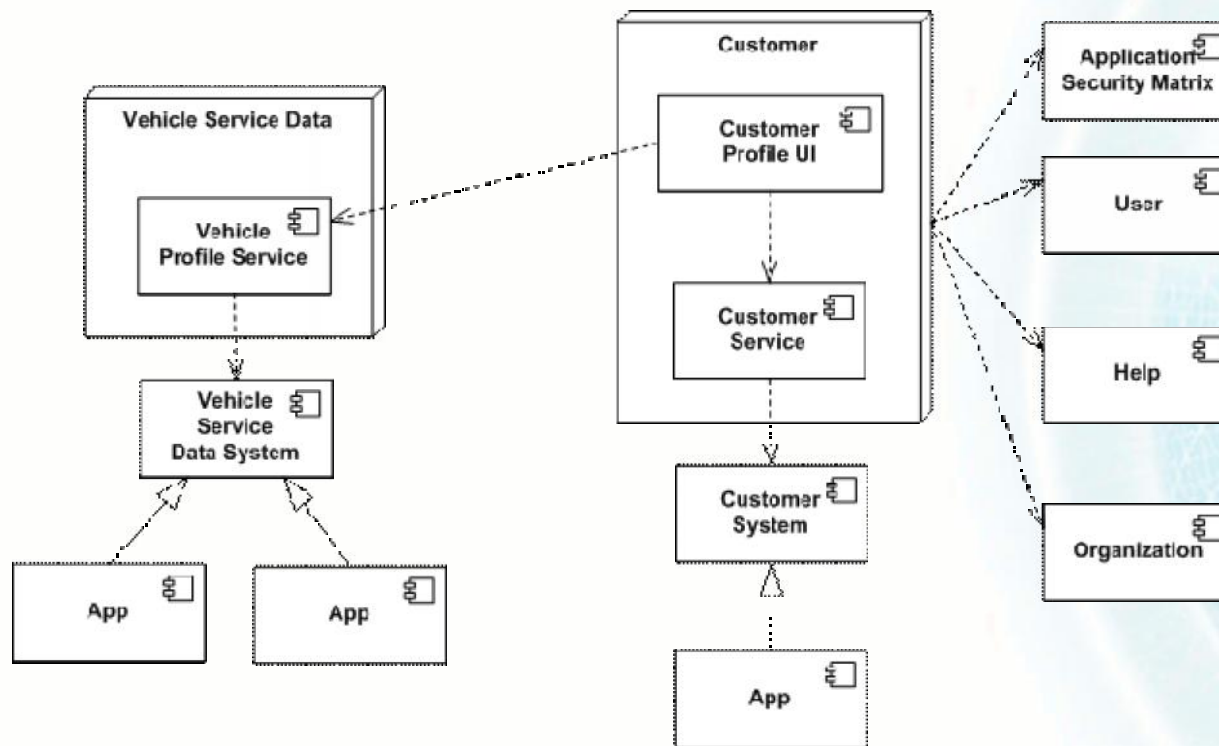
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Example Process/Application Realization Diagram

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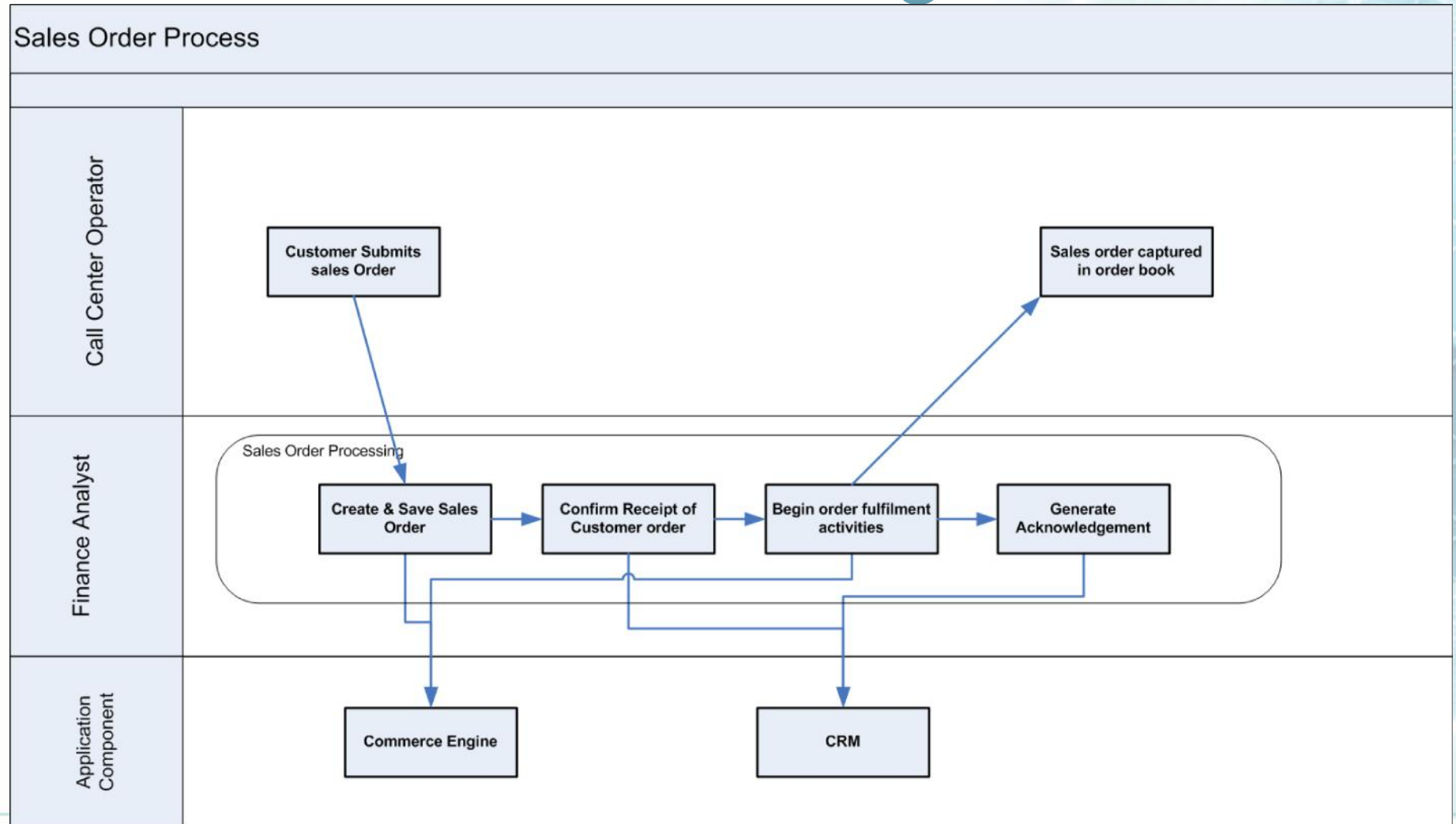
Software Engineering Diagram

- The Software Engineering diagram breaks applications into packages, modules, services, and operations from a development perspective.

- It enables more detailed impact analysis when planning migration stages, and analyzing opportunities and solutions.

- It is ideal for application development teams and application management teams when managing complex development environments.

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Example Software Engineering Diagram

Breaks applications into packages, modules, services and operations from a development perspective. May show dependencies between functional components
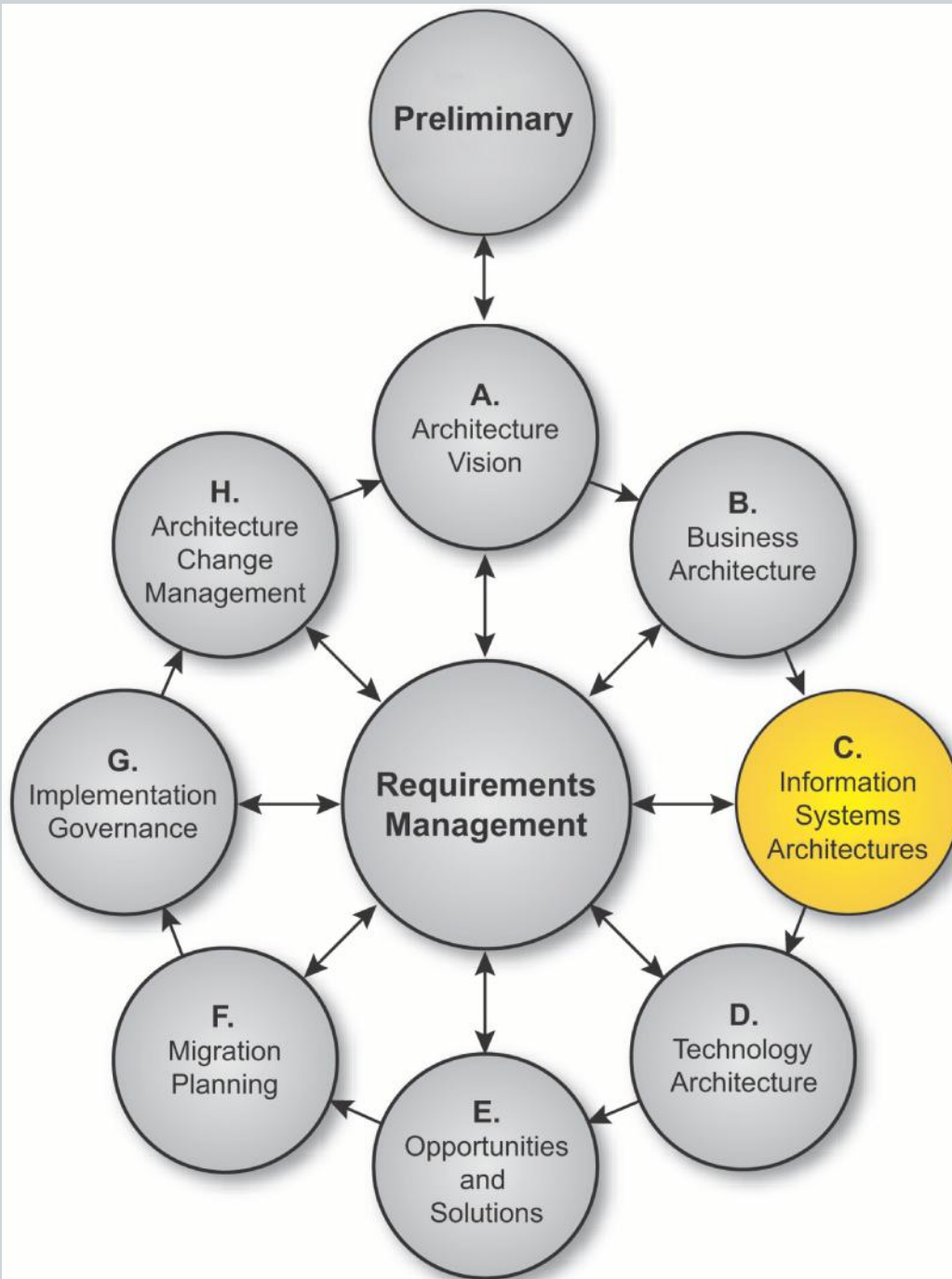
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Application/Migration Diagram

- The Application Migration diagram identifies application migration from baseline to target application components.

- It enables a more accurate estimation of migration costs

- It should be used to identify temporary applications, staging areas, and the infrastructure required to support migrations

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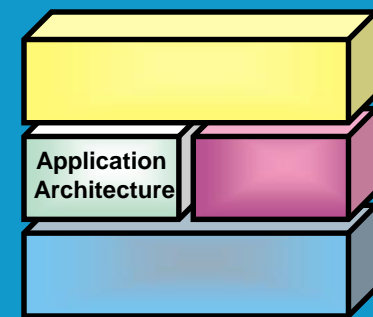# Example Application/Migration Diagram

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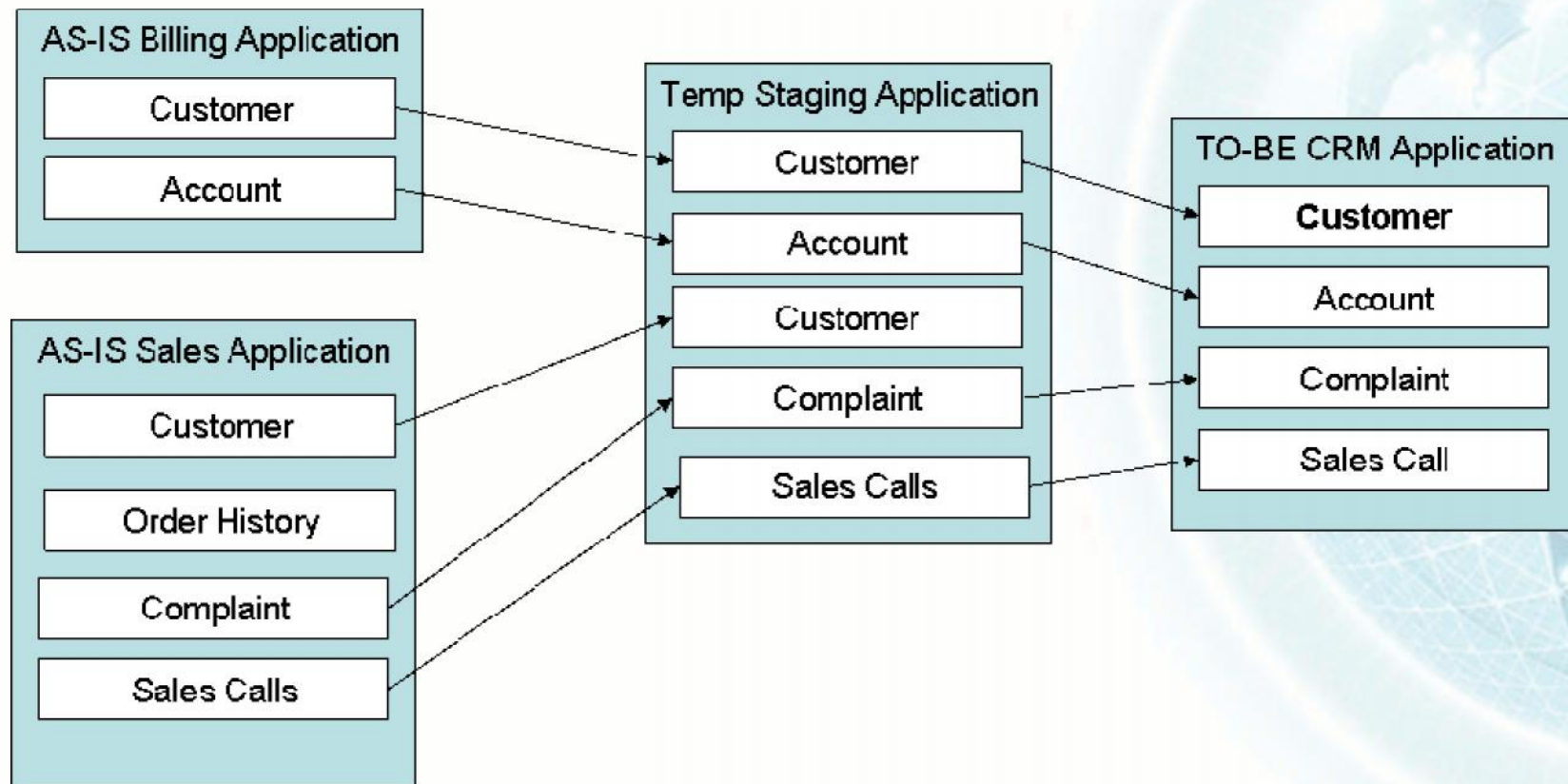
Software Distribution Diagram

- This diagram is a composite of the Software Engineering diagram and the Application-User Location diagram.

- Depending on the circumstances, this diagram alone may be sufficient, or may not be needed.

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Phase C: Application Architecture – Catalogs, Matrices and Diagrams

Application Architecture

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