

Architecture Building Blocks

IS 5960 MRP

Information Systems Department

SAINT LOUIS
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A. Define the Business Architecture

Describe the business goals and key activities.

What is the company trying to achieve? (Example: improve customer satisfaction, increase efficiency)

What business processes support these goals? (Example: order processing, marketing, customer service)

Business Architecture Table (add slides as you require to fit the information in the table)

SECTION	DESCRIPTION	YOUR RESPONSE
Business Strategies	Capabilities needed to deliver strategy (e.g., loyalty programs, store operations).	AI-Assisted Assignment Review Capability – Enables faculty to perform first-level feedback on student submissions using rubric and syllabus context. Centralized Course & Syllabus Management Capability – Allows faculty to create courses, upload syllabi, and manage course data through a unified dashboard. Syllabus-Based Chatbot Capability – Provides faculty with an AI assistant that answers questions strictly within the uploaded syllabus scope to maintain academic alignment.
Business Process	Describe the business processes needed to accomplish your Business Strategies (Define at least 4 processes)	Course Setup & Syllabus Upload – Faculty create new courses and upload syllabi that serve as the knowledge base for AI-driven feedback and chatbot responses. Assignment Selection & Retrieval – Faculty open the Feedback Analyzer and select an assignment category (Assignment 1, 2, 3); the system retrieves all student submissions from the shared database. Rubric Upload & AI Feedback Generation – Faculty upload the rubric for the chosen assignment; Gemini analyzes each submission against the rubric and syllabus to generate structured first-level qualitative feedback (no grading). Syllabus Chatbot Interaction – Faculty ask course-related questions; the chatbot responds only within the uploaded syllabus to support academic accuracy and lesson preparation. Schedule Viewing / Update – Faculty review and modify weekly class schedules through the portal dashboard to coordinate course activities efficiently.

B. Define your IS Architecture

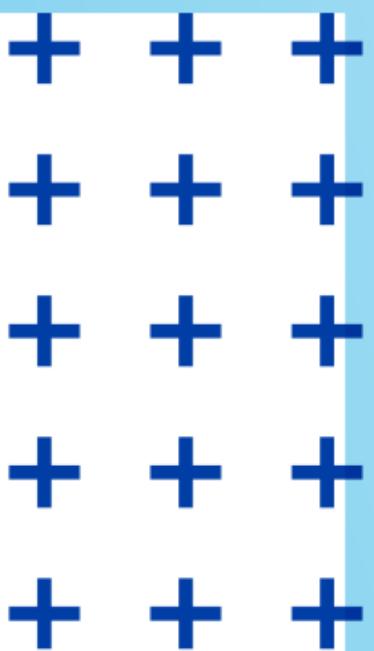
List the important data and applications the business uses.

What kinds of data are needed? (Example: customer data, product data)

What systems or apps work with this data? (Example: mobile app, website, point of sale system)

Keep it general—do not mention specific brands or tools.

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IS Architecture Table (add slides as you require to fit the information in the table)

SECTION	DESCRIPTION	YOUR RESPONSE
Data	Data your organization needs (e.g., <i>Customer Data</i>),	Faculty Data – details of faculty users and login credentials. Course & Syllabus Data – course information and uploaded syllabi that form the AI knowledge base. Assignment Data – assignment categories and student submissions linked to each course. Rubric Data – evaluation criteria and weights provided by faculty. Feedback Data – AI-generated first-level comments and suggestions on assignments.
App/Interfaces	Applications or interfaces required to process, store, or use that data	Faculty Portal – main dashboard for course access and assignment review. Course Manager – creates courses and handles syllabus uploads. Assignment Feedback Analyzer – retrieves assignments and rubrics → generates AI feedback via Gemini. Syllabus Chatbot – uses syllabus data to answer faculty queries within course scope. Database System & AI Integration Layer – stores core data and connects Gemini API for processing.

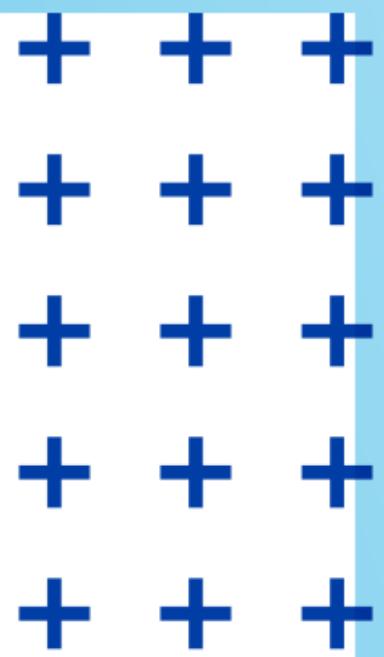
C. Define your Technology Architecture

List the technology and security needs.

What infrastructure is needed? (Example: cloud storage, mobile-first design)

What security features are required? (Example: encryption, access controls, data protection)

Technology Architecture Table (add slides as you require to fit the information in the table)



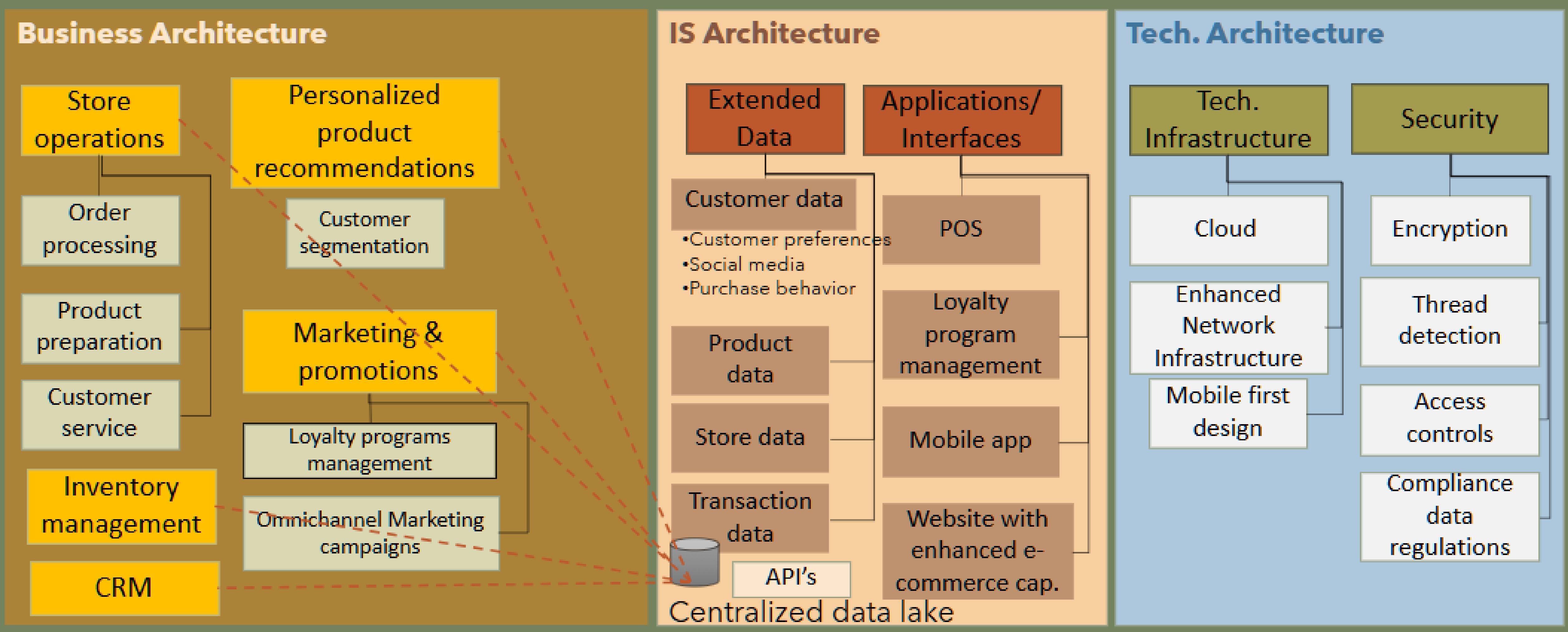
SECTION	DESCRIPTION	YOUR RESPONSE
Technology	Define tech infrastructure (e.g., cloud, networking).	<p>Web Application Layer – hosts the Faculty Portal interface and API services.</p> <p>Application Server Layer – runs the Course Manager, Feedback Analyzer, and Chatbot modules.</p> <p>Database Server – stores faculty, course, rubric, assignment, and feedback data.</p> <p>AI Integration Layer – secure connector that transmits syllabus and rubric data to Gemini API.</p> <p>Cloud or Local Hosting Environment – provides scalable storage and runtime infrastructure.</p>
Security Integration	Include security, integration, and analytics needs.	<ul style="list-style-type: none">• User Authentication & Role-Based Access – only authorized faculty can log in.• Data Encryption – secure communication (HTTPS) and encrypted database storage.• Audit & Activity Logs – track all user actions and AI feedback generation for accountability.• Secure API Management – protects Gemini keys and prevents unauthorized AI access.• System Analytics Dashboard – monitors usage trends (feedback count, chatbot queries, rubric compliance).



Solution Architecture Example

Leveraging digital channels

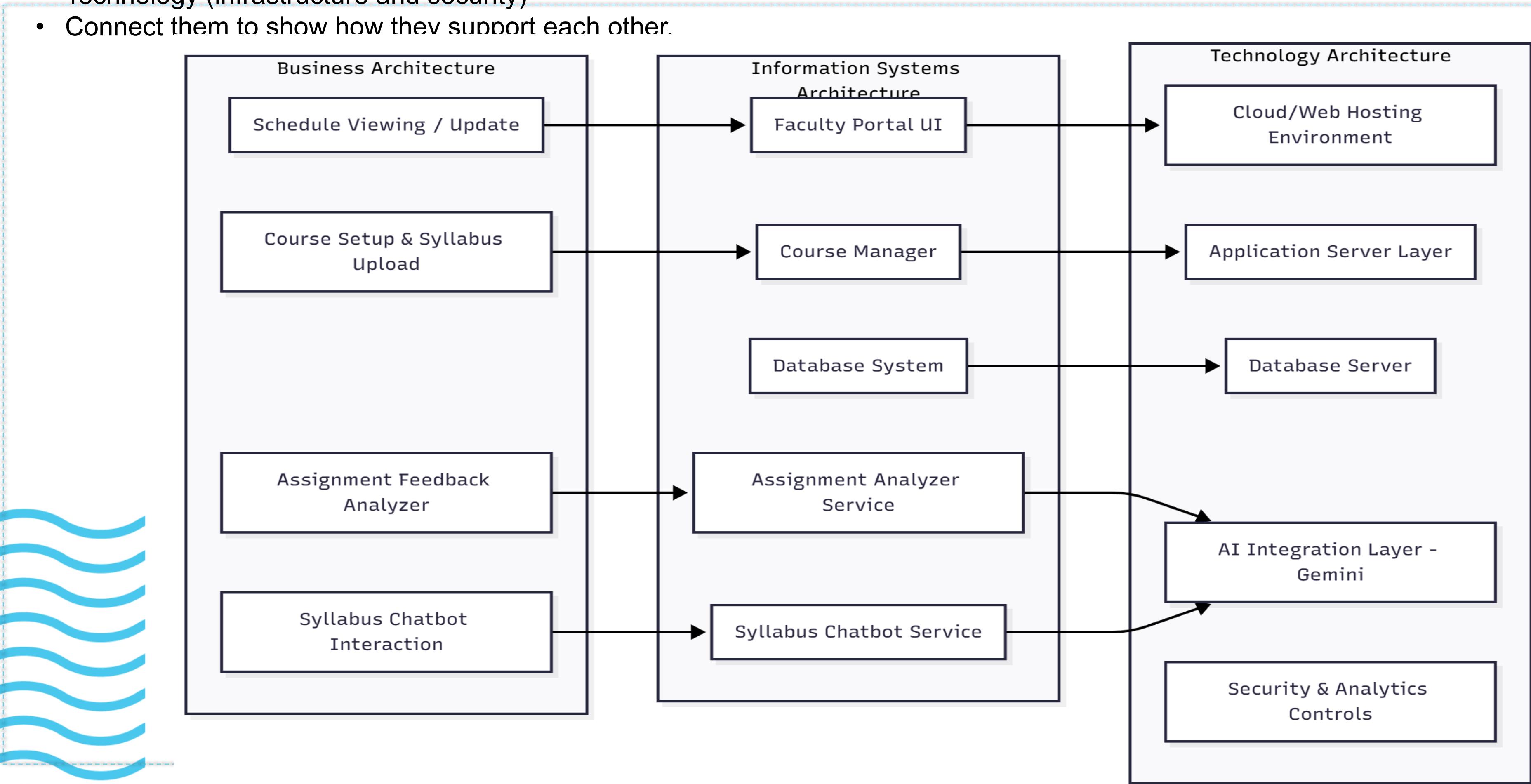
ABB



1. Solution Architecture

Create a diagram that shows how the business, IS, and technology layers work together.

- Business functions
- Information systems (data and apps)
- Technology (infrastructure and security)
- Connect them to show how they support each other.





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ENTITY RELATIONSHIP DIAGRAM (ERD)

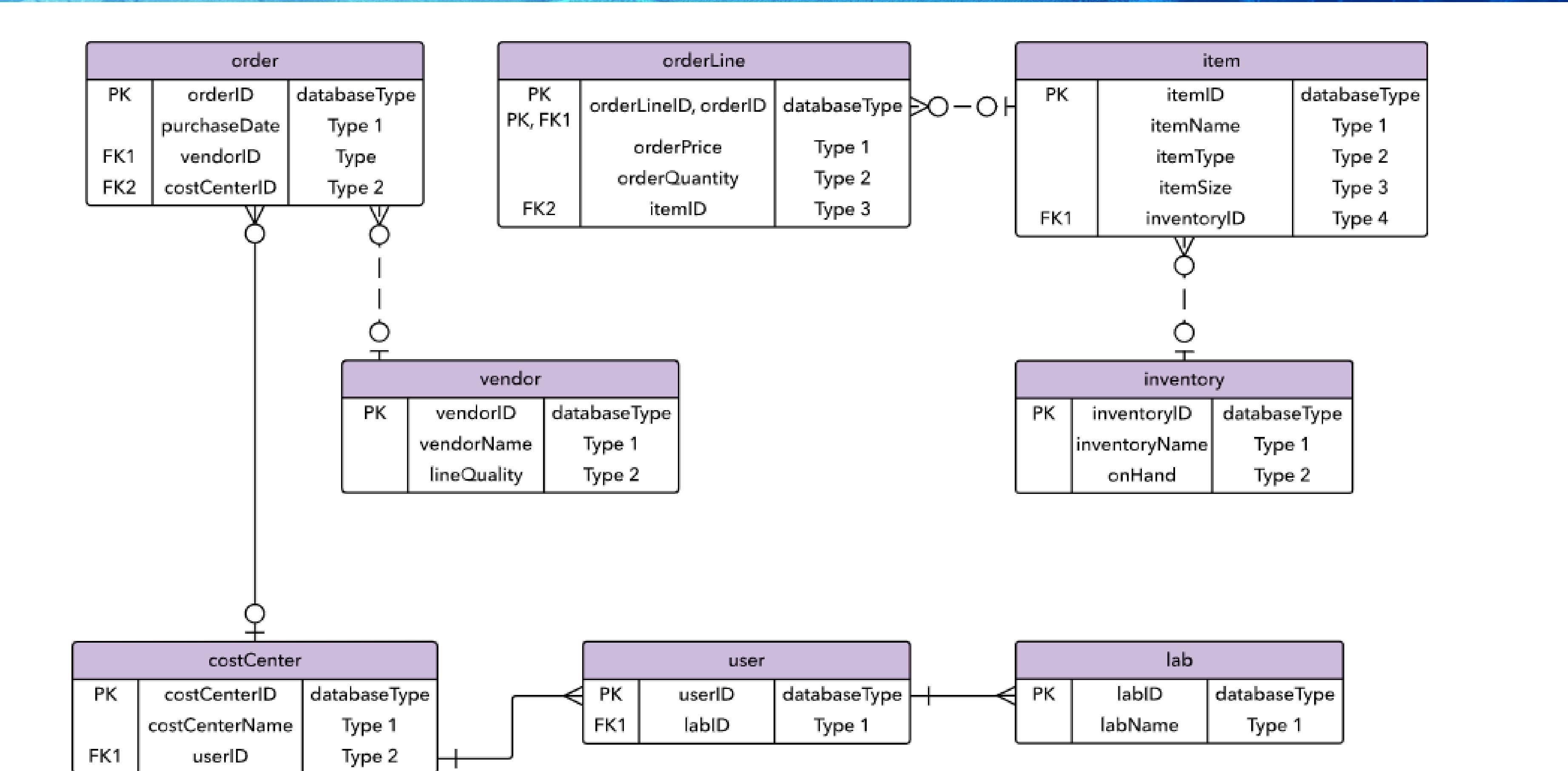


Entity Relationship Diagram (ERD) Example

- Entity

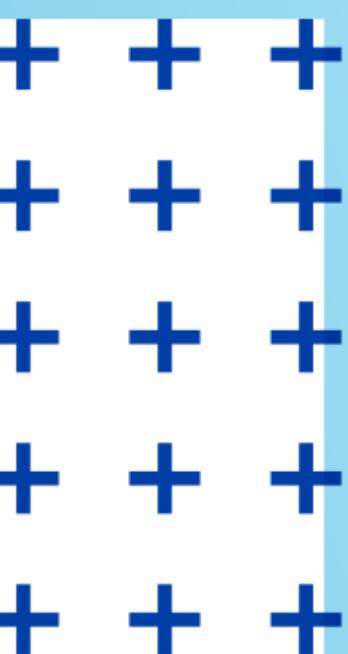
Relationships

- Attributes



Source: lucidchart.com

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2. Create an ERD

Draw a data model that shows how information is stored and related.

- List key entities (Example: Customer, Order, Product)
- Add important attributes (Example: name, date, price)
- Show relationships (Example: one customer can place many orders)
- Include Primary Keys (PK) and Foreign Keys (FK)

