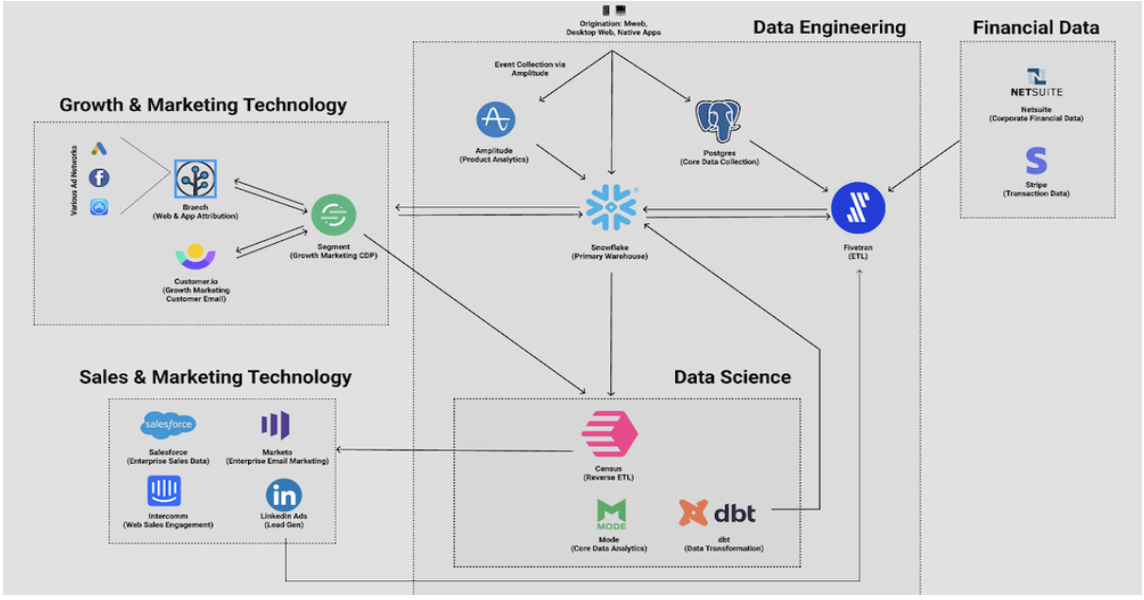
Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	02 NOVEMBER 2025
Team ID	NM2025TMID06605
Project Name	Optimizing User, Group, and Role Management with Access Control and Workflows
Maximum Marks	4 Marks

Technical Architecture:

The deliverable includes a comprehensive **architecture diagram** (to be created) and the following detailed information as per **Table 1** and **Table 2**.

This architecture defines how the system automates and optimizes user, group, and role management through **Access Control Lists (ACLs)**, **workflow automation**, and **approval mechanisms**. It is built to ensure centralized governance, high scalability, and secure role-based access within an enterprise environment.



Example: https://developer.ibm.com/patterns

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web-based dashboard for administrators and managers to manage users, groups, and roles.	ServiceNow Web UI
2.	Application Logic-1	Automates user creation, group assignment, and role mapping through defined workflows.	ServiceNow Flow Designer, Server Scripts
3.	Application Logic-2	Enforces access control using Role-Based Access Control (RBAC) and ACLs.	Access Control Lists (ACLs), Scoped Apps
4.	Application Logic-3	Manages approval and escalation workflows for access requests or role modifications.	ServiceNow Flow Designer, Approval Actions
5.	Database	Automatically revokes access and roles when users change departments or exit the organization.	Business Rules, Background Scripts
6.	Cloud Database	Stores user, group, and role relationships with permissions data.	ServiceNow Cloud Database
7.	File Storage	Maintains secure storage of user and workflow data managed through ServiceNow's cloud backend.	System Logs, ServiceNow Attachments
8.	External API-1	Minimal use; only audit logs and access reports are stored internally.	REST API (ServiceNow IntegrationHub)
9.	External API-2	Integrates with external HRMS systems for user identity validation and onboarding.	LDAP / OAuth / SAML APIs
10.	Machine Learning Model	(Future Scope) Analyze access trends and suggest optimized role assignments.	ServiceNow Predictive Intelligence
11.	Infrastructure (Server / Cloud)	Entire solution hosted on ServiceNow SaaS platform ensuring security, scalability, and high availability	ServiceNow Cloud (SaaS Infrastructure)

Guidelines Followed

- All processes are defined as application logic blocks.
- Clear infrastructural demarcation (Local / Cloud) is maintained.
- External interfaces (APIs) are defined for HR and authentication systems.
- Data storage components are integrated with ServiceNow's CMDB and Access Control tables.
- Incorporates workflow orchestration and approval logic using Flow Designer

Table-2: Application Characteristics

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Not applicable (ServiceNow is proprietary, but supports standard REST integrations).	-
2.	Security Implementations	Includes role-based access control (RBAC), ACLs, and scoped application boundaries for secure data access.	ServiceNow ACLs, Scoped Apps
3.	Scalable Architecture	SaaS-based system with horizontal scalability and multi-instance redundancy.	ServiceNow Cloud Architecture
4.	Availability	Highly available, load-balanced ServiceNow instances ensure minimal downtime.	ServiceNow Multi-Zone Cloud
5.	Performance	Optimized via asynchronous flows and indexed tables	GlideRecord, Background Scripts