

Requirement Analysis

Data Flow Diagrams and User Stories

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| Date | 1 NOV 2025 |
| Team ID | NM2025TMID00759 |
| Project name | Optimizing User, Group, and Role Management with Access Control and Workflows |
| Maximum mark | 4 Marks |

1. Data Flow Diagrams (DFDs):

The high-level overview, represented in Level 0 DFD, identifies the major processes and data interactions within the system. The primary system under consideration is the ServiceNow User, Role, Group, and ACL Management module. The external entities interacting with this system include administrators and employees or users of the system. The system is responsible for managing users, roles, groups, and access control policies, while maintaining relevant data in four key data stores: the User Table, Role Table, Group Table, and ACL Table.

Data flows between entities and the system are straightforward. Administrators input requests to add, update, or delete users, roles, and groups. The system processes these requests and provides confirmations or reports back to the administrator. Employees or users interact with the system by making access requests, to which the system responds by granting or denying access according to predefined ACL rules.

At Level 1, a more detailed breakdown is provided. The User Management process involves administrators adding, updating, or deleting users. The system validates the data, assigns appropriate roles and group memberships, and updates the user record while notifying the administrator. The Role Management process allows administrators to define new roles or modify existing ones. The system ensures proper permissions are assigned and checks for potential conflicts, subsequently updating the role table and logging the changes. In the Group Management process, administrators can create or modify groups, assign roles to these groups, and manage memberships, with the system updating the group table and sending notifications as needed. Finally, the Access Control process governs how users interact with the system. When a

user attempts to access a module or data, the system evaluates the request against ACL rules, user roles, and group permissions, granting or denying access accordingly and logging each attempt for audit purposes.

The data flow across these processes can be visualized as follows: the system receives user, role, or group management requests from the administrator, processes the requests, updates relevant data stores, and sends confirmations or notifications. Access requests from users are processed in real time to ensure secure and appropriate access.

2. User Stories:

The project's functionality is captured in the form of user stories to define system requirements from the perspective of end-users and administrators. The primary epic focuses on optimizing user, role, and group administration along with ACL management.

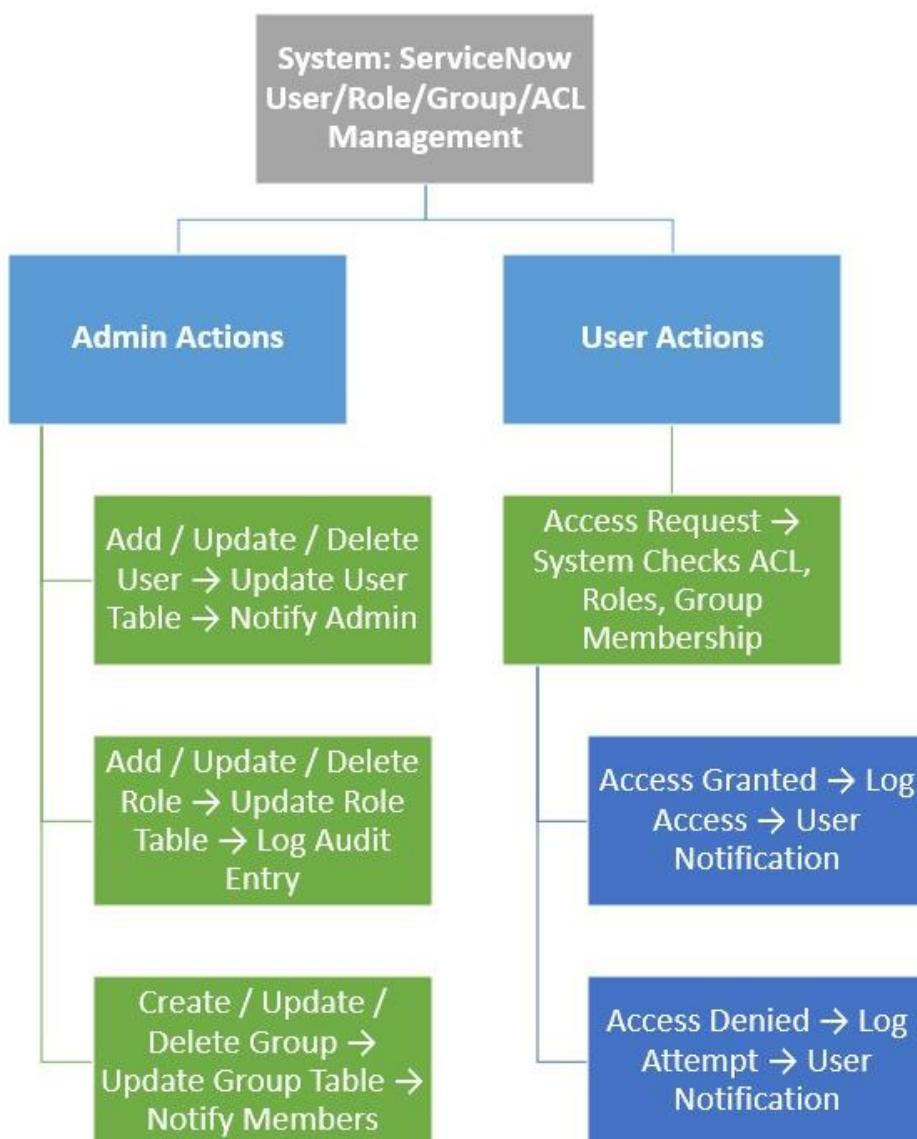
From the administrator's perspective, the system should enable the addition, modification, and deletion of users efficiently, ensuring that the user data remains accurate and up to date. Administrators should also have the ability to define and modify roles with specific permissions, thereby minimizing errors in access assignments. Furthermore, group management is essential for managing multiple users collectively, allowing administrators to assign roles to groups, maintain memberships, and simplify access control.

From the user's perspective, it is crucial that the system enforces access control rules effectively. Users should only have access to data and modules they are authorized for, which maintains both security and compliance standards.

Lastly, the system should support reporting and auditing functionality. Administrators must be able to generate reports detailing user activity, role assignments, and ACL changes. This capability ensures transparency, helps monitor compliance, and supports quick detection of any unauthorized access or configuration errors.

This requirements analysis phase establishes a solid foundation for designing and implementing an optimized ServiceNow environment for user, role, and group administration along with robust ACL management. The detailed data flows and user stories ensure clarity of system behavior and provide a blueprint for subsequent phases of development.

Data Flow:



User Stories Flowchart:

