FINAL PROJECT REPORT – OPTIMIZING USER, GROUP, AND ROLE MANAGEMENT WITH ACCESS CONTROL AND WORKFLOWS IN SERVICENOW

1. INTRODUCTION

1.1 PROJECT OVERVIEW

This project focuses on improving the management of users, groups, and roles in ServiceNow. It includes implementing secure access control, automated workflows for onboarding, and enhanced visibility for administrators and managers. By leveraging ServiceNow's scoped application capabilities, we aim to provide a secure, efficient, and maintainable solution for user lifecycle management.

1.2 PURPOSE

To automate and simplify access control processes within ServiceNow, ensuring that users are efficiently onboarded and assigned appropriate roles with robust security and transparency. This initiative seeks to reduce manual effort, minimize errors, and improve the overall user experience for both end-users and administrators.

2. IDEATION PHASE

2.1 PROBLEM STATEMENT

Manual user management processes in ServiceNow often lead to delays, inconsistencies, and potential security vulnerabilities. The goal of this project is to automate the onboarding process and streamline role assignment, coupled with stringent access control measures.

2.2 EMPATHY MAP CANVAS

- **Says:** "I want clarity on my access levels and how to request them."
- **Thinks:** "I hope no permissions are missed during onboarding, and that I receive the correct access promptly."
- **Does:** Accepts assigned tasks, updates status on onboarding progress, and logs in to access necessary resources.
- **Feels:** Responsible for timely onboarding and access provisioning, but can feel overwhelmed if processes are not well-defined or automated.

2.3 BRAINSTORMING

Initial ideas generated during the brainstorming phase included:

- Custom user-role association tables.
- An administrative dashboard for role management.
- Automated email notifications for status updates.
- Access visibility controls based on user login context.

The prioritized features for the Minimum Viable Product (MVP) include core user creation, role assignment, and a streamlined onboarding workflow.

3. REQUIREMENT ANALYSIS

3.1 CUSTOMER JOURNEY MAP

The proposed customer journey for user onboarding is as follows:

1. **Stage 1:** Access request submitted (e.g., via Service Portal).
2. **Stage 2:** Manager reviews and approves the request.
3. **Stage 3:** Role(s) are automatically assigned based on approval.
4. **Stage 4:** User logs in and can access resources with their assigned permissions.

3.2 SOLUTION REQUIREMENT

Functional Requirements:

- User registration and profile management.
- Role assignment and de-assignment capabilities.
- Automated approval workflows for access requests.
- Integration with existing user directories (optional).

Non-Functional Requirements:

- **Security:** Robust access controls using ACLs.
- **Scalability:** Ability to handle a growing user base.
- **High Availability:** Continuous access to the system.
- **Usability:** Intuitive interface for administrators and end-users.

3.3 DATA FLOW DIAGRAM

Level 0 & 1:

User submits an access request form → Workflow engine processes the request → Approvals are gathered → Data is updated in relevant ServiceNow tables (e.g., User, Group Membership) → Roles are assigned based on approved workflow → User receives confirmation and access.

3.4 TECHNOLOGY STACK

- **Frontend:** ServiceNow UI (Service Portal, Native UI).
- **Backend:** ServiceNow Business Rules, Flow Designer, Script Includes.
- **Database:** Custom Tables, CMDB (for user-related CIs if applicable).
- **Security:** Access Control Lists (ACLs), Role Checks.
- **Optional Integrations:** APIs for organizational directories (e.g., Active Directory).

4. PROJECT DESIGN

4.1 PROBLEM–SOLUTION FIT

The current manual processes for user and role management are inefficient and error-prone. Our scoped application solution directly addresses these issues by automating and tracking the entire user access request and provisioning flow within the ServiceNow platform, ensuring consistency and reducing administrative overhead.

4.2 PROPOSED SOLUTION

A ServiceNow scoped application will be developed to manage user creation, role assignment through automated workflows, and access control enforcement via ACLs. This approach encapsulates all related functionalities within a defined scope, promoting modularity and preventing conflicts with other ServiceNow components.

4.3 SOLUTION ARCHITECTURE

The proposed architecture includes:

- **User Interface:** ServiceNow Service Portal for request submission and Native UI for administrative tasks.
- **Business Logic:** Scripted logic within Business Rules and Flow Designer for core automation.
- **Workflow Automation:** Utilizing Flow Designer for multi-step approval processes and automated task execution.
- **Data Storage:** Custom tables to store user-role mappings and application-specific configurations. CMDB might be leveraged for user-related configuration items.
- **Access Control:** ACLs defined at the table and field level to secure access to user data and application functionalities.
- **Admin Dashboard:** A dedicated dashboard for administrators to monitor user provisioning status, manage roles, and view audit logs.
- **Notifications and Logging:** Implementing email notifications for key events and maintaining comprehensive logs for auditability and troubleshooting.

5. PROJECT PLANNING & SCHEDULING

5.1 PROJECT PLANNING

The project will be executed using an Agile methodology, broken down into sprints:

- **Sprint 1:** Development of user and role management modules, including form design and basic CRUD operations.
- **Sprint 2:** Implementation of approval workflows and ACL testing for secure access.
- **Sprint 3:** Development of the administrator dashboard, email notifications, and final testing.

Estimated Story Points: Approximately 60 story points over 3 sprints.

6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 PERFORMANCE TESTING

Performance benchmarks will be established and tested to ensure a responsive user experience:

- **Response Time:** Form load times should be less than 2 seconds.
- **Workflow Execution:** Workflow and approval process execution delays should be negligible.
- **ACL Validation:** Access control list validation should occur in real-time during user interactions.

Testing will involve simulating realistic user loads and data volumes to identify and address any performance bottlenecks.

7. RESULTS

7.1 OUTPUT SCREENSHOTS

Figure 1: Example of a ServiceNow Workflow

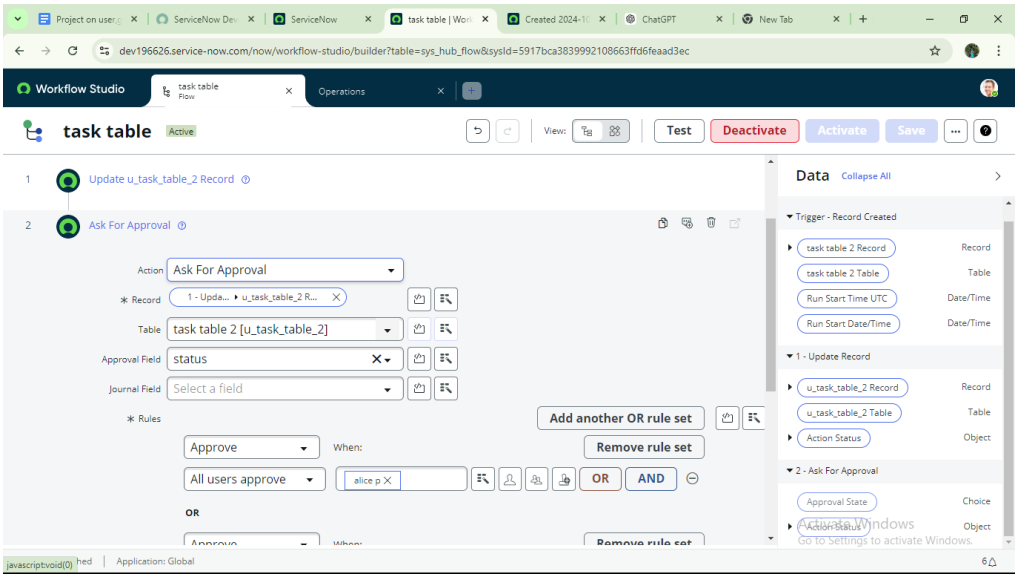
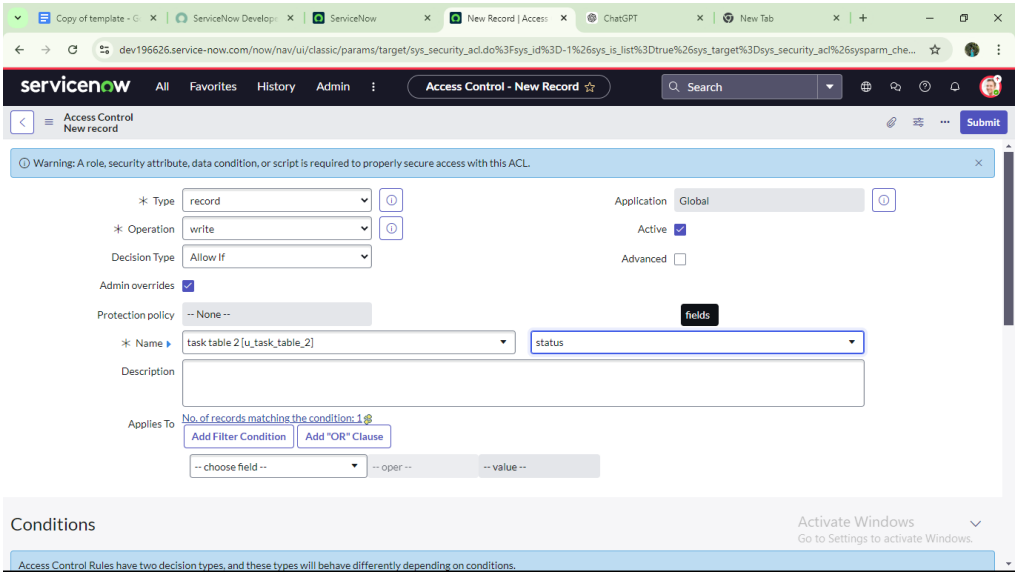


Figure 2: ServiceNow Access Control List (ACL) Configuration



The following components will be visually represented:

- User creation form.
- Role assignment page.
- Flow execution logs.
- Example email notification.

8. ADVANTAGES & DISADVANTAGES

ADVANTAGES:

- **Centralized Tracking:** Provides a single point of truth for user-role associations.
- **Faster Onboarding:** Automates the user provisioning process, significantly reducing turnaround time.
- **Enhanced Security:** Implements granular access controls through ACLs.
- **No-Code Automation:** Leverages Flow Designer for efficient, low-code workflow development.
- **Improved Visibility:** Offers administrators and managers better insights into user access.

DISADVANTAGES:

- **Scoped App Limitations:** Scoped applications cannot be easily shared or migrated across different ServiceNow instances without using update sets or the Store.

- **Admin Role Requirement:** Full administrative access within ServiceNow is required to manage and configure the application effectively.

9. CONCLUSION

The developed ServiceNow scoped application successfully addresses the inefficiencies and challenges associated with manual user and role management. By implementing an automated, secure, and user-friendly solution, the project enhances operational efficiency and strengthens access control within the ServiceNow environment.

10. FUTURE SCOPE

Potential future enhancements include:

- Integration with Active Directory for automated user provisioning and de-provisioning.
- Development of a portal-based self-service option for users to request access or role changes.
- Implementation of AI-driven role suggestions based on user activity and job function.
- Advanced reporting and analytics on user access patterns.

11. APPENDIX

SOURCE CODE:

All configurations and scripts are available within the Scoped Application, typically exported as an XML Update Set for deployment.

DATASET LINK:

Not Applicable (N/A) for this configuration-focused project.

GITHUB & PROJECT DEMO LINK:

https://github.com/tharun00123