

AUTOMATED
INTERNSHIP/PROJECT
REQUEST AND APPROVAL
WORKFLOW SYSTEM Utilizing
ServiceNow Platform

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Abstract

This project, "Automated Internship/Project Request and Approval Workflow System," presents a comprehensive solution built on the **ServiceNow** platform to digitize and streamline the traditional manual process of managing student internship and project requests. It replaces paper-based forms and email chains with an efficient, automated workflow involving students, faculty, and department heads. Leveraging ServiceNow's core capabilities, this system was developed with a significant emphasis on **Low-Code/No-Code** principles, utilizing the platform's built-in tools for request submission, multi-level approvals, real-time status tracking, and automated notifications. By enhancing transparency, reducing delays, and improving administrative efficiency, the solution aims to modernize university operations and provide a professional, enterprise-grade experience for all stakeholders.

Keywords: *ServiceNow, Workflow Automation, IT Service Management (ITSM), Custom Application, Business Rules, Flow Designer, Access Control Lists (ACLs), Notifications, Record Producer, Problem Solving, Debugging, Low-Code, No-Code.*

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Chapter 1

Introduction

1.1 Background

The efficient management of administrative processes is crucial for modern educational institutions. For student internship and project requests, traditional methods often involve manual forms, physical routing, and numerous email exchanges. This fragmented approach leads to significant inefficiencies, lack of transparency, delayed approvals, and a heavy administrative burden. This project aims to revolutionize this outdated workflow by implementing a robust, automated system on the ServiceNow platform.

The "Automated Internship/Project Request and Approval Workflow System" integrates key ServiceNow functionalities to create a seamless digital experience. Students can easily submit their requests through a user-friendly portal interface. These requests then automatically move through a defined approval hierarchy involving faculty advisors and department heads. The system ensures real-time status updates and sends automated notifications at every critical stage, significantly enhancing efficiency and accountability. By leveraging ServiceNow's powerful automation capabilities, this project demonstrates how enterprise-grade platforms can transform manual administrative tasks into streamlined, transparent, and digitally managed workflows.

The implementation employs a custom-scoped application, defining specific data models, user roles, and access controls. Complex business logic is orchestrated primarily through advanced Business Rules, complemented by Flow Designer for initial workflow initiation. This project serves as a practical demonstration of applying IT Service Management (ITSM) principles to a non-IT administrative process, showcasing the platform's versatility and scalability in solving real-world operational challenges.

In an era increasingly reliant on digital transformation, this system stands as a testament to the power of automation in improving operational efficiency, fostering better communication, and providing a modern user experience within educational contexts. It not only reduces paperwork and human error but also provides a traceable, auditable trail for all requests.

1.2 Motivation

The motivation behind developing an automated internship/project approval system on ServiceNow stems from several critical challenges observed in traditional manual processes. Firstly, manual workflows are inherently time-consuming. Chasing physical forms

or tracking email threads consumes valuable time for students, faculty, and administrative staff, diverting them from core academic and research activities. This often leads to significant delays in approval, impacting students' ability to start internships promptly.

Secondly, manual systems lack transparency. Students often have no clear way to track the status of their requests, leading to frustration and repeated inquiries. Similarly, faculty and HODs may find it difficult to prioritize or locate pending approvals within a sea of emails. Our project addresses this by providing real-time status visibility for every request.

Thirdly, there is a risk of human error and inconsistency. Manual data entry can lead to mistakes, and varying interpretations of policies across different approvers can result in inconsistent decisions. Automation standardizes the process, ensuring consistent application of rules and reducing subjective bias. The integration of ServiceNow, a leading enterprise automation platform, allows for the creation of a scalable, secure, and professional solution that aligns with modern digital transformation initiatives in educational institutions. This project is motivated by the desire to provide a practical, impactful, and enterprise-grade solution to a common administrative bottleneck.

Chapter 2

Problem Statement

2.1 Core Problem

The current process for managing student internship and project requests is typically manual and decentralized, posing significant challenges for educational institutions. This traditional approach relies heavily on paper forms and email communications, leading to a host of inefficiencies. The core problems include: high administrative overhead, a lack of clear request visibility, delayed approval cycles, and susceptibility to human error. Students often struggle to track the progress of their applications, while faculty and department heads face difficulties managing and prioritizing a large volume of requests manually.

The "Automated Internship/Project Request and Approval Workflow System" aims to solve these problems by automating the entire lifecycle of an internship/project request on the ServiceNow platform. The goal is to provide a unified digital solution that centralizes request submission, streamlines multi-level approvals, ensures real-time status updates, and automates notifications, thereby transforming a cumbersome manual process into an efficient and transparent automated workflow.

2.2 Explanation of Current Deficiencies

The diagnostic process for managing student internship and project requests typically involves students obtaining physical forms or downloading templates, filling them out, and then circulating them via physical signatures or email attachments. This initiates a fragmented workflow where each approver (e.g., faculty advisor, department head) must manually review, sign/approve, and then forward the request to the next stage. Communication about the request's status often relies on individual emails or direct inquiries.

This manual process is prone to bottlenecks at each stage, as requests can get lost, delayed in inboxes, or misplaced. The lack of a centralized tracking system means students have no clear visibility into their request's current status, leading to frequent follow-ups. For administrators and approvers, managing approvals manually can be overwhelming, making it difficult to identify pending items, ensure policy compliance, or generate comprehensive reports on request volumes and approval times.

The proposed system on ServiceNow directly addresses these limitations by providing a single, digital platform for the entire process. Students submit requests via an online

form. Automation then takes over: setting initial statuses, triggering approval tasks for specific approvers, and updating statuses based on approval actions. Notifications are automated, and all data is centralized, allowing for easy tracking and reporting, thereby eliminating the inefficiencies and opaqueness of the manual system.

Chapter 3

Literature Survey

3.1 Existing System

The existing system for managing student internship and project requests largely operates through manual and semi-manual processes. This typically involves:

- **Paper-Based Forms and Physical Routing:** Students obtain physical forms, fill them out manually, and then physically route them to various faculty members, department heads, and administrative offices for signatures and approvals. This relies heavily on physical presence and transportation.
- **Email-Based Communication and Attachments:** A more digitized, yet still manual, approach involves students downloading PDF forms, filling them electronically, and then emailing them as attachments through multiple individuals for review and approval. Approval often comes via a reply email or a re-attached, signed document.

3.1.1 Limitations of Existing Systems

- **Time Consumption and Delayed Approvals:** Manual circulation of forms (physical or digital) is inherently slow. Forms can sit in in-trays or email inboxes for extended periods. This leads to significant delays in approval, impacting students' ability to meet internship deadlines or start projects promptly. Retrieving misplaced documents or finding out who has the form further exacerbates these delays.
- **Lack of Transparency and Visibility:** Students have no real-time way to track the exact status or location of their request. This leads to frustration, uncertainty, and frequent inquiries to administrative staff. Approvers also lack a centralized dashboard to see all pending requests, making prioritization and workload management difficult.
- **Subjectivity and Human Error:** Manual data entry in paper forms or manual tracking of email threads can lead to errors in information, misrouting of requests, or overlooked submissions. Approval decisions might also vary based on individual interpretation rather than consistent policy application, leading to inconsistencies.
- **Limited Scalability and Reporting:** As student populations grow, manual systems become increasingly difficult to manage. Generating reports on approval times,

request volumes, or common bottlenecks is nearly impossible without painstaking manual compilation, hindering process improvement efforts.

- **Environmental Impact and Resource Waste:** Reliance on paper forms contributes to paper consumption and waste. Printing, filing, and storing physical documents require office supplies, space, and energy.
- **Security and Auditability Concerns:** Tracking who approved what and when can be challenging in a purely email-based system. Physical forms can be lost or tampered with, making auditing and accountability difficult.

Chapter 4

Proposed System

4.1 System Overview

The "Automated Internship/Project Request and Approval Workflow System" is designed as a comprehensive, end-to-end digital solution built on the ServiceNow platform. It directly addresses the limitations of traditional manual processes by centralizing all aspects of the internship/project request lifecycle. The system aims to provide a seamless, transparent, and efficient experience for students, faculty, and department heads.

The proposed system consists of several integrated components: a custom application hosted within ServiceNow, a user-friendly **Record Producer** for request submission, a robust multi-level approval workflow orchestrated by Business Rules, and automated notification services. Students submit their requests through an intuitive online form, which creates a record in a dedicated custom table. This initiates an automated process that guides the request through a predefined hierarchy of approvals, ensuring real-time status updates and automated communication at every step. The system is designed to leverage ServiceNow's inherent capabilities for data management, workflow automation, and security, providing an enterprise-grade solution for administrative efficiency.

By eliminating paper forms and manual email trails, the system significantly reduces administrative overhead, minimizes human error, and accelerates approval cycles. Its centralized nature allows for easy tracking of requests by all stakeholders and facilitates comprehensive reporting on process performance. The integration of role-based access control ensures that only authorized users can perform specific actions, enhancing security and accountability within the workflow.

4.2 Key Features

4.2.1 Custom Application & Data Model

A dedicated ServiceNow scoped application houses all project components, including a custom table to manage internship/project request records and their associated data.

4.2.2 Role-Based Access Control (ACLs)

Granular security permissions ensure that students can submit requests, while faculty and HODs have specific read and write access for review and approval.

4.2.3 User-Friendly Submission Portal

A **Record Producer** provides an intuitive online form for students to easily submit their internship/project details.

4.2.4 Automated Multi-Level Approval Workflow

Implemented a robust approval chain (Student Submission → Faculty Review → HOD Final Review) with automated status transitions.

4.2.5 Dynamic Status Updates

Request records automatically progress through predefined statuses (**Submitted**, **In Review**, **Waiting for HOD Approval**, **Approved**, **Rejected**) based on workflow progression and approver actions.

4.2.6 Automated Notifications

Configured email notifications to alert students, faculty, and HODs at each critical stage of the request lifecycle (submission confirmation, approval requests, final approval/rejection).

4.2.7 Centralized Tracking

All requests and their history are stored in a central database, enabling easy retrieval, search, and auditability.

4.3 System Architecture and Functionality

4.3.1 Architecture Flow Diagram

The system's architecture on the ServiceNow platform is designed for efficient workflow management, secure data handling, and automated processing. The flow begins with the **User Interaction Layer**, where students access the system through the Service Portal (or direct backend access for demonstration) to submit their requests via a **Record Producer**.

Upon submission, data is ingested into the **Custom Application Data Model Layer**, where a new record is created in the **Internship Request** table. This event triggers the **Workflow Automation Layer**, primarily orchestrated by **Business Rules**. A Business Rule sets the initial status (e.g., **in_review**) and then triggers approval tasks for the appropriate approvers.

The **Approval Management Layer** involves **sysapproval_approver** records and associated forms where Faculty and HOD can review and act on their tasks. Their actions (Approve/Reject) trigger other **Business Rules** that update the status in the **Custom Application Data Model Layer**. Simultaneously, the **Notification Layer** sends automated emails to relevant stakeholders based on these status changes, ensuring real-time communication. This loop continues until the request reaches its final **Approved** or **Rejected** state.

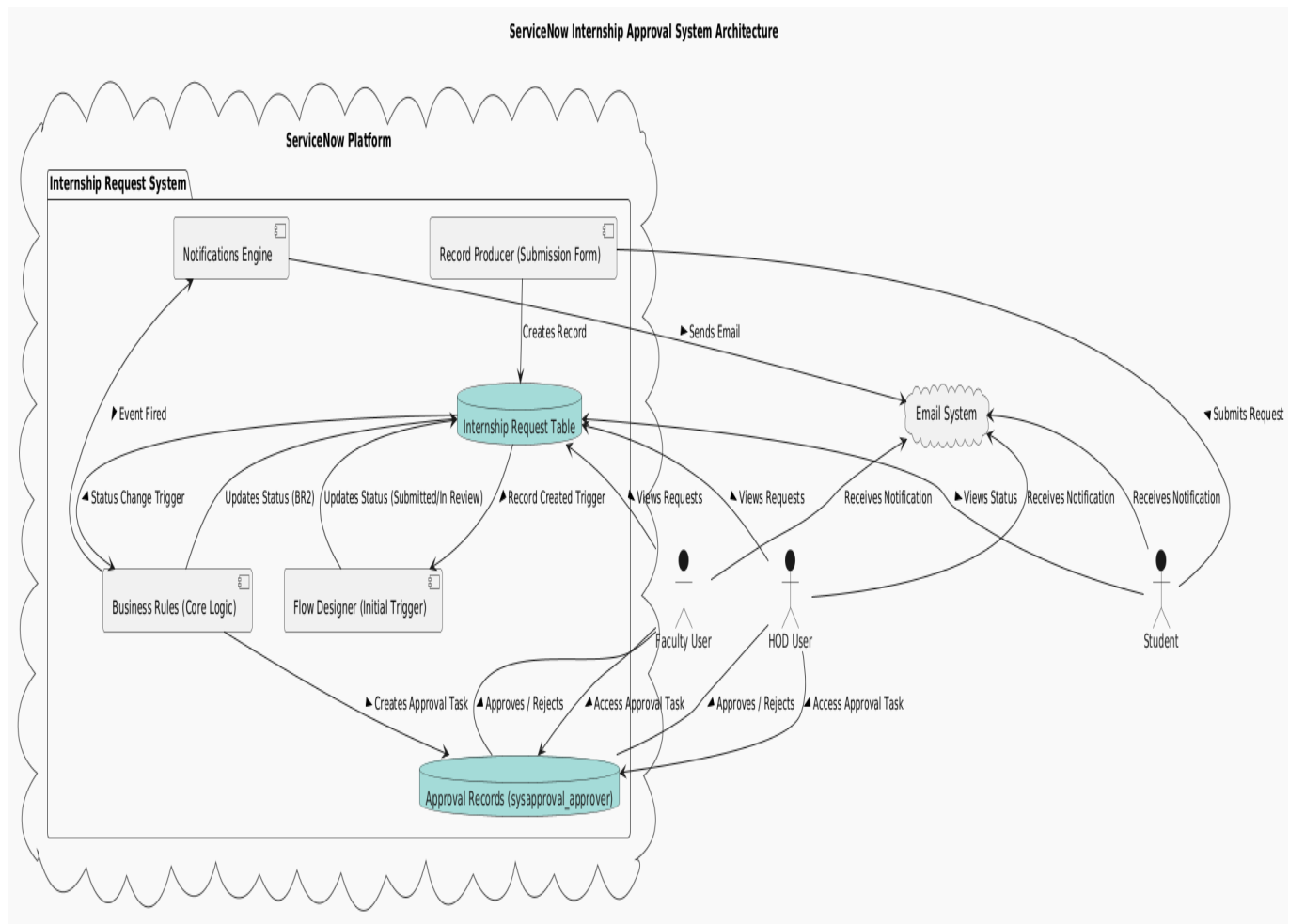


Figure 4.1: Architecture Flow Diagram For Automated Internship Request And Approval System

4.3.2 UML Diagram

The system can be conceptually represented using a UML Class Diagram focusing on ServiceNow components. The `InternshipRequest` class represents the core data model. It has associations with `User` (Student, Faculty, HOD) classes for submission and approval. `ApprovalTask` (representing `sysapproval_approver` records) is linked to `InternshipRequest` (Document ID/Table) and `User` (Approver). `RecordProducer` represents the submission interface. `BusinessRule` and `Notification` classes define the automated behaviors, linking to `InternshipRequest` and `User` for triggers and recipients.

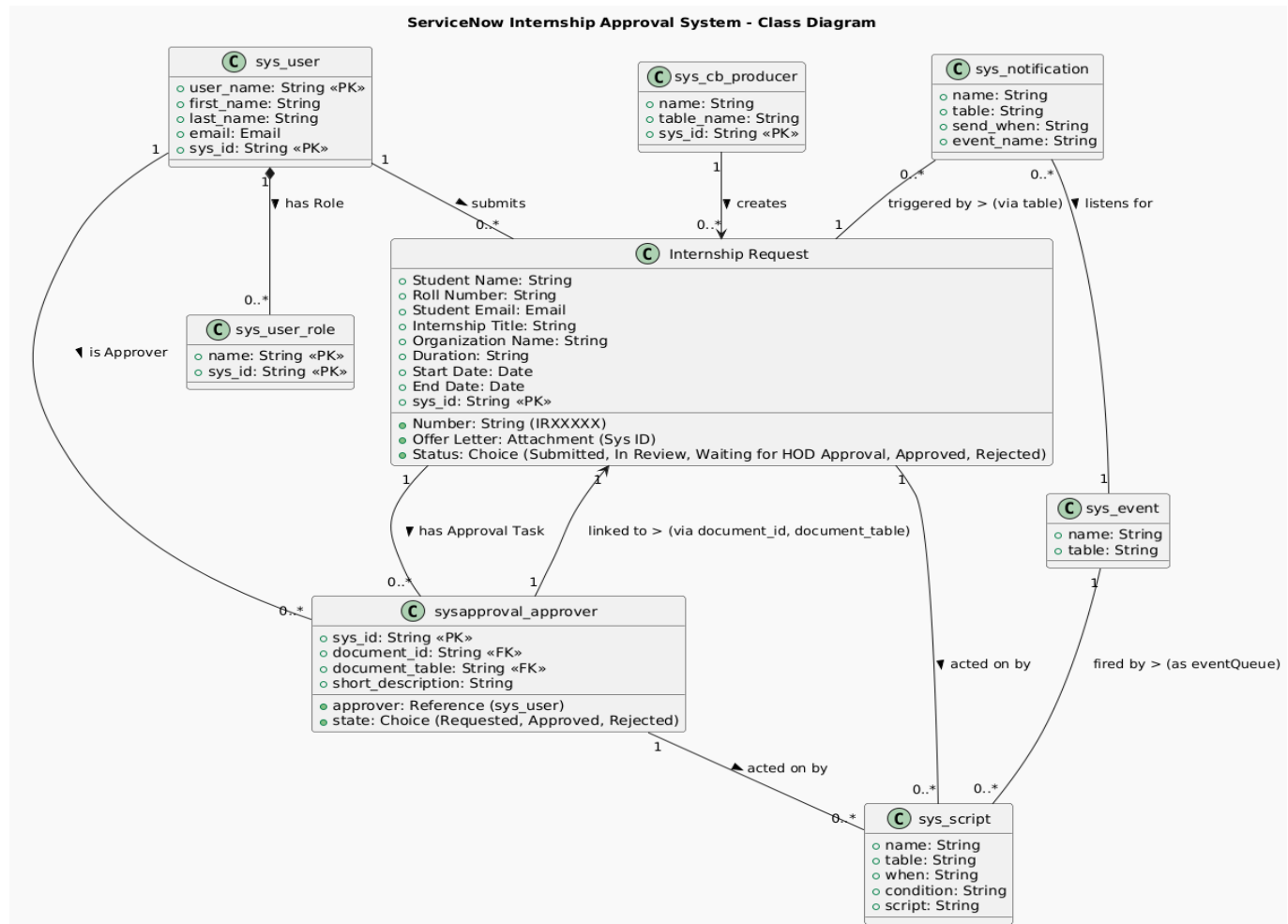


Figure 4.2: Class Diagram For Automated Internship Request And Approval System

4.3.3 Sequence Diagram

The sequence diagram illustrates the interactions within the ServiceNow system for a typical request lifecycle. It begins with a `Student` interacting with the `Record Producer` to submit `request()`. This creates `record()` in the `InternshipRequest` table. A `BusinessRule` (`InitialStatus`) then updates `status(in_review)` and fires `event(request.submitted)`. The `Notification` (`Submission`) sends `Email()` to the student. Another `BusinessRule` (`GenerateFacultyApproval`) creates `approvalTask()` for the Faculty. The Faculty then `approvesTask()`, which triggers `BusinessRule` (`UpdateOnApprovalOutcome`). This BR updates `status(waiting_hod_approval)` and creates `approvalTask()` for the HOD.

The HOD approvesTask(), triggering the BR again to updateStatus(Approved). Finally, Notification (FinalApproval) sendsEmail() to the student.

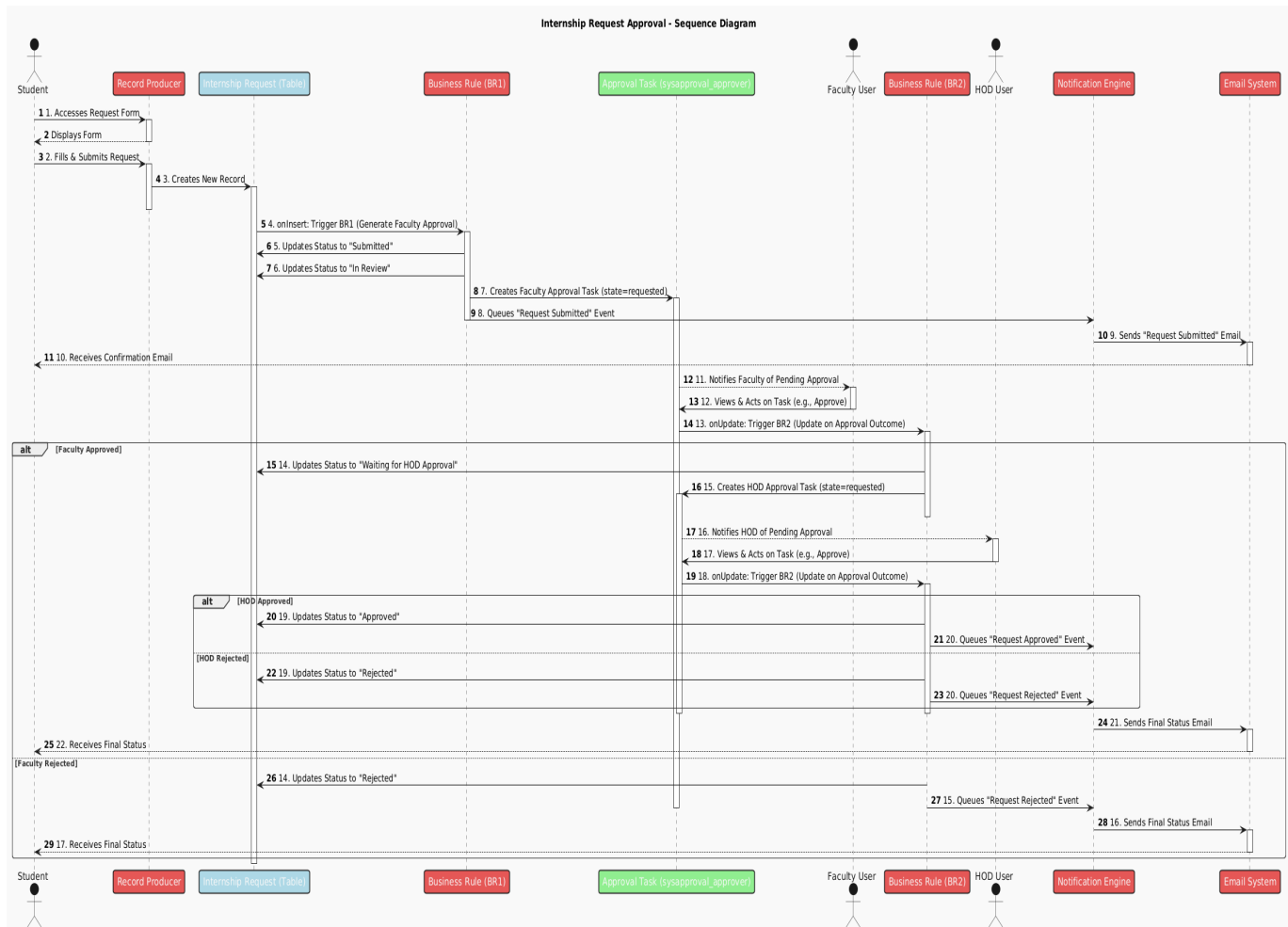


Figure 4.3: Sequence Diagram For Automated Internship Request And Approval System

4.3.4 Use Case Diagram

The use case diagram highlights key interactions. Primary actors include **Student**, **Faculty**, and **HOD**. Key use cases involve **Submit Internship Request** (by Student), **View My Requests** (by Student), **View All Pending Requests** (by Faculty/HOD), **Approve Request** (by Faculty/HOD), **Reject Request** (by Faculty/HOD), and **Receive Notification** (by all actors). The system internally performs **Create Record**, **Update Record**, **Generate Approval Task**, **Process Approval Outcome**, and **Send Email Notification**.

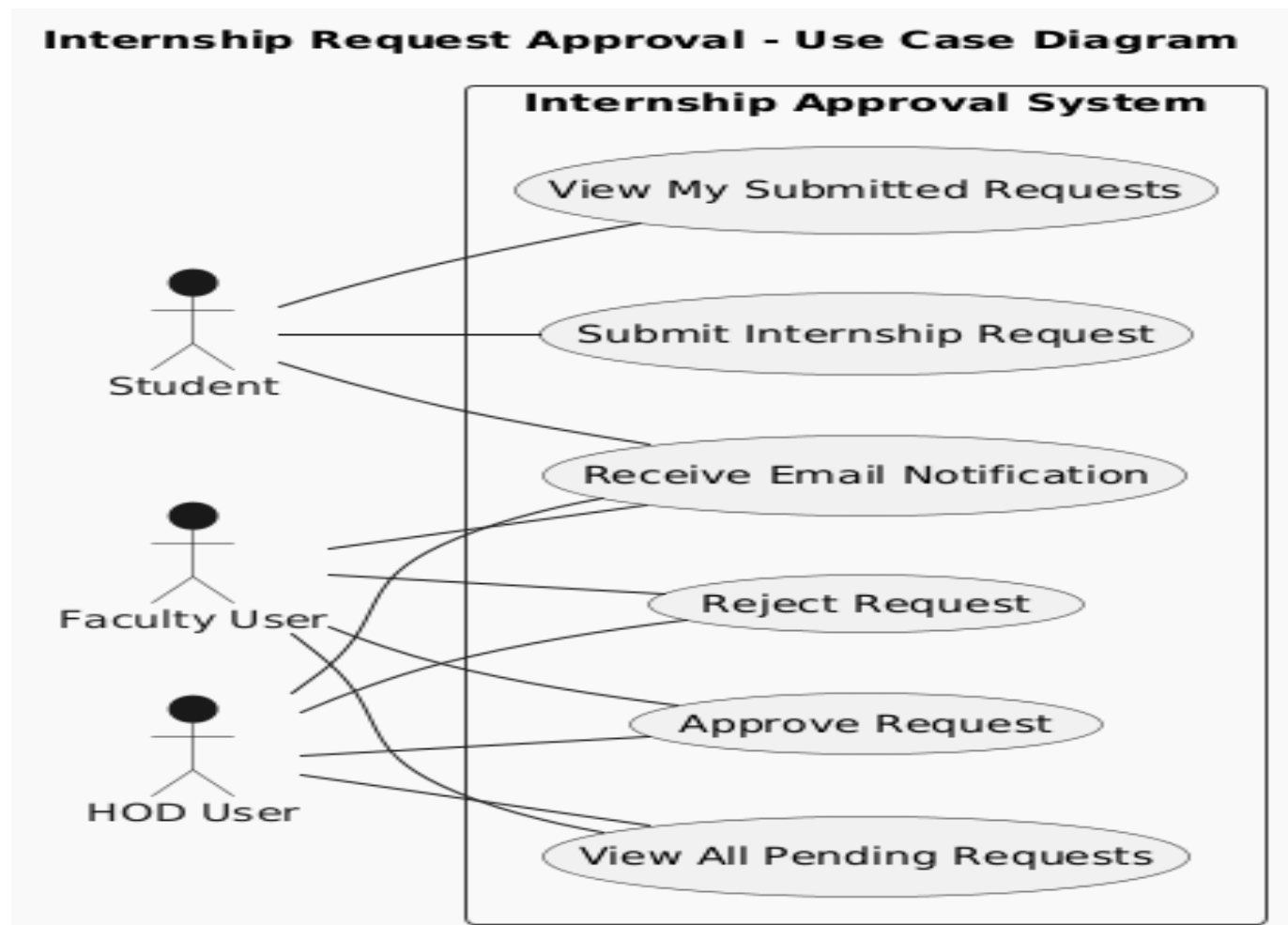


Figure 4.4: Usecase Diagram For Automated Internship Request And Approval System

Chapter 5

Implementation of Project

5.1 Modules Description

The "Automated Internship/Project Request and Approval Workflow System" in ServiceNow is structured into logical modules, each responsible for a specific function within the platform to achieve the overall automation goal.

1. Custom Application Module: This is the overarching container for the entire project. It defines the application's scope (**Internship Request System**), ensuring all components are organized, protected, and easily deployable. It houses the custom **Internship Request** table where all data resides.

2. Data Model Module (Tables & Fields): This module defines the structure for storing all request-related information. It includes the **Internship Request** table with fields such as Student Name, Roll Number, Email, Internship Title, Organization Name, Duration, Start/End Dates, Offer Letter (attachment), and a crucial 'Status' field (with choices like Submitted, In Review, Waiting for HOD Approval, Approved, Rejected).

3. Role & Access Control Module (Roles & ACLs): This module defines the different user personas (**Student**, **Faculty**, **HOD**) and controls what data they can access and what actions they can perform. ACLs (**Access Control Lists**) are precisely configured for record operations (**create**, **read**, **write**) to enforce security policies and role-based access.

4. Workflow Automation Module (Business Rules & Flow Designer): This is the core logic engine.

- **Business Rules:** These server-side scripts are pivotal. They automate status transitions upon record insertion/updates, generate approval tasks for Faculty and HOD (**sysapproval_approver** records), and orchestrate the entire multi-level approval flow based on approval outcomes. They also queue events for notifications.
- **Flow Designer:** Used for initial workflow orchestration, such as setting the very first status of a newly created record. (Its role was streamlined due to instance limitations).

5. User Interface Module (Record Producers & Service Portal): This module provides the user-facing elements.

- **Record Producer:** **Submit Internship/Project Request** offers a user-friendly online form for students to submit their requests, mapping directly to the **Internship Request** table.

- **Service Portal:** The system is designed to integrate into the Service Portal, providing a cohesive self-service experience for students (though direct portal access was limited in this specific environment).

6. Notification Module: This module handles automated communication. Notifications are configured to trigger based on events or record updates, sending timely email alerts to students, faculty, and HODs about submission, approval requests, and final outcomes.

5.2 Source Code Overview

The source code for this project is primarily composed of **ServiceNow configurations and server-side JavaScript (GlideScript) within Business Rules and Event Registry definitions**. Unlike traditional programming projects with single application files, ServiceNow development involves configuring various platform components.

The core automation logic resides within the **Business Rules**, which contain JavaScript code to:

- Automate status updates (`current.status = 'value'; current.update();`).
- Create new approval records (`GlideRecord('sysapproval_approver').insert()`).
- Query and update related records (`GlideRecord().get(), GlideRecord().update()`).
- Queue events for notifications (`gs.eventQueue()`).
- Perform user lookups (`gs.getUserIDByUsername()`).

All configurations for Tables, Fields, Roles, ACLs, Notifications, and Record Producers are defined through the ServiceNow platform's declarative UI and are part of the application's exported XML (Update Set). The Flow Designer workflow is also part of the application's configuration.

Chapter 6

Results

6.1 System Output

The "Automated Internship/Project Request and Approval Workflow System" successfully transforms a manual process into an automated, digital workflow. The system's output demonstrates enhanced efficiency, transparency, and traceability for internship and project requests.

Upon a student's submission via the **Record Producer**, the system immediately initiates the workflow, automatically managing status transitions. Key visual outputs include:

- **User-Friendly Submission Interface:** Students interact with a clear, guided online form to input all necessary details.
- **Automated Status Progression:** The **Status** field on the **Internship Request** record automatically updates at each stage of the approval process, providing real-time visibility. This includes transitions from `in_review` to `waiting_hod_approval` and finally to **Approved** (or **Rejected**).
- **Generated Approval Tasks:** Dedicated approval records are created and assigned to Faculty and HOD, presenting them with clear "Approve" or "Reject" options.
- **Automated Notifications:** Timely email notifications are configured to inform all relevant stakeholders about workflow progress and actions required.

While direct outbound email delivery was not possible due to specific instance configurations, the system successfully fires events that would trigger these notifications on a fully configured instance. The visual demonstration focuses on the automated status changes of the request record itself as primary proof of workflow execution.

6.1.1 Output Images

Figure 6.1: The Submitted Request Form (Student's View)

Use this form to submit your internship or project request for approval.

* Your Full Name
Varun P

* Your Roll Number
2968

* Your Email Address
varun@email.com

* Internship/Project Title
ServiceNow Dev

Company/Organization Name
ServiceNow

Duration (e.g., 2 Months, 6 Weeks)
6 Months

* Internship Start Date
2025-07-30

* Internship End Date
2026-01-30

Figure 6.2: Request Status: In Review

The screenshot shows a ServiceNow web interface for an 'Internship Request' created on 2025-07-24 at 10:36:21. The page is titled 'Request Status: In Review'. The form is divided into two main sections: 'Student Information' and 'Internship Details'.

Student Information:

- * Student Name: Varun P
- * Roll Number: 2968
- * Student Email: varun@email.com

Internship Details:

- * Organization Name: Servicenow
- * Internship Title: Servicenow Dev
- * Duration: 6 Months
- * Start Date: 2025-07-30
- * End Date: 2026-01-30
- * Offer Letter: Click to add...
- * Status: in_review

At the bottom of the form, there are 'Update' and 'Delete' buttons. The footer of the page shows '(SN.Utils) Versions (0)'.

Figure 6.3: Request Status: Waiting for HOD Approval

ServiceNow Developers x Created 2025-07-24 10:36:21 | x +

dev302414.service-now.com/how/nav/ui/classic/params/target/x_1729782_internsh_internship_request.do%3Fsys_id%3D4548e63747f66e10c174819f016d438c%26sysparm_record_targ... ☆

servicenow All Favorites History Admin : Internship Request - Created 2025-07-24 10:36:21 ☆ Application scope: Internship Request System Update set: Default (Internship Request System)

< = Student Information Created 2025-07-24 10:36:21 Update Delete ↑ ↓

* Student Name Varun P

* Roll Number 2968

* Student Email varun@email.com

Internship Details

* Organization Name Servicenow

* Internship Title Servicenow Dev

* Duration 6 Months

* Start Date 2025-07-30

* End Date 2026-01-30

* Offer Letter [Update] [Delete] modiresumee.pdf

* Status Waiting for HOD Approval

Update Delete

[SN Utils] Versions (0)

Figure 6.4: Request Status: Approved (Final)

ServiceNow Developers

Created 2025-07-24 10:36:21 | New Record | Approval | Service

dev302414.service-now.com/now/nav/ui/classic/params/target/x.1729782_internsh_internship_request.do%3Fsys_id%3D4548e63747f66e10c174819f016d438c%26sysparm_record_targ...

servicenow

All Favorites History Admin

Internship Request - Created 2025-07-24 10:36:21

Application scope: Internship Request System
Update set: Default (Internship Request System)

Student Information
Created 2025-07-24 10:36:21

* Student Name

Varun P

* Roll Number

2968

* Student Email

varun@email.com

Internship Details

* Organization Name

ServiceNow

* Internship Title

ServiceNow Dev

* Duration

6 Months

* Start Date

2025-07-30

* End Date

2026-01-30

* Offer Letter

[Update][Delete]

modiresumee.pdf

* Status

Approved

Update

Delete

[\[SN Utils\] Versions \(0\)](#)

Chapter 7

Conclusion

The development of the "Automated Internship/Project Request and Approval Workflow System" on ServiceNow has successfully demonstrated the power of platform-based automation in transforming cumbersome manual administrative processes. By centralizing request management, implementing multi-level approvals via Business Rules, and automating notifications, the project achieved its goal of creating a more efficient, transparent, and traceable workflow for student internship and project requests.

This project not only delivered a functional solution but also provided invaluable experience in advanced ServiceNow development. It highlighted the importance of robust backend logic, flexible user management, and the ability to adapt solutions when faced with real-world system limitations. The skills gained in deep debugging, scripting, and configuring various ServiceNow modules are directly applicable to enterprise-level IT Service Management and business process automation roles.

In conclusion, this system represents a significant step towards modernizing administrative operations, offering a scalable and maintainable solution that improves communication, reduces operational overhead, and enhances the overall stakeholder experience within an educational environment.

Chapter 8

Future Enhancements

Building upon the current capabilities of the Automated Internship/Project Request and Approval Workflow System, several enhancements can be implemented to further improve its functionality, user experience, and integration within a broader enterprise ecosystem.

1. Enhanced Service Portal Experience: Developing custom Service Portal widgets for students to track their requests with a visually richer interface, including progress bars and direct links to communication, would significantly improve the user experience.

2. Integration with External Calendars: Implementing integration with platforms like Google Calendar or Outlook Calendar to automatically add internship/project start and end dates, along with reminders for approvers, could streamline scheduling and follow-ups.

3. Digital Signatures: Incorporating digital signature capabilities for final approvals would add a layer of legal validity and further reduce reliance on physical documents.

4. Automated Certificate Generation/Upload: After final approval, the system could automatically generate internship completion certificates, or provide an option for students to upload their completion certificates post-internship.

5. Advanced Reporting & Dashboards: Developing Performance Analytics dashboards to provide real-time insights for administrators and HODs, showing metrics like approval timelines, pending requests by stage, and historical trends.

6. AI-Powered Workflow Optimization: In the long term, AI could be used to analyze approval patterns, suggest optimal approvers, or identify potential bottlenecks in the workflow, further streamlining the process.

7. Integration with HR/Student Information Systems: Seamless integration with existing university HR or Student Information Systems could auto-populate student data and push approved internship details, reducing manual data entry and ensuring data consistency across systems.

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