



 S.K.P ENGINEERING COLLEGE

Approved by AICTE & Affiliated to Anna University

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**DEPARTMENT OF COMPUTER SCIENCE AND**

**ENGINEERING**

BACHELOR OF ENGINEERING 2024-2025

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**College Code:** 5122



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Certified that this is a bonafide record of work done by

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University Reg No :

Year / Semester : 3 / 5

Branch : CSE

Year : 2024-2025

**Staff-in-Charge Head of the Department**

Submitted for the

Practical Examination held on

**Internal Examiner External Examiner**

**SALESFORCE CRM FOR APPLICATION TO ENGINEERING WORKS**

1. **Project Overview**

This project focuses on developing an advanced Engineering Works CRM application in Salesforce to address the multifaceted challenges associated with managing engineering projects, client relationships, and intricate technical specifications within a unified, scalable platform. By leveraging Salesforce's robust CRM capabilities and cutting-edge customization tools, this initiative aims to deliver an intelligent, data-driven, and highly automated solution. The application is designed to enhance operational efficiency in project tracking, foster seamless client engagement, and ensure robust management of technical data. It supports long-term strategic goals by integrating predictive analytics, AI- driven insights, and collaborative tools.

**Project Objectives:**

1. Implement a CRM solution for application engineering works in Salesforce.
2. Automate and streamline application engineering processes.
3. Improve customer engagement and satisfaction.
4. Enhance collaboration among teams.
5. Provide real-time visibility into application engineering projects.

**Project Scope:**

1. Requirements gathering and analysis.
2. Design and implementation of the CRM solution.
3. Configuration of Salesforce objects, fields, and workflows.
4. Development of custom applications and integrations.
5. Data migration and integration.
6. Testing and quality assurance.
7. Training and support.

**Project Timeline:**

1. Requirements gathering and analysis: 2 weeks.
2. Design and implementation: 8 weeks.
3. Configuration and development: 8 weeks.
4. Data migration and integration: 4 weeks.
5. Testing and quality assurance: 4 weeks.
6. Training and support: 2 weeks.

**Project Deliverables:**

1. A fully functional CRM solution for application engineering works in Salesforce.
2. Custom applications and integrations.
3. Data migration and integration plan.
4. Testing and quality assurance plan.
5. Training and support documentation.
6. **Objectives**

**Primary Objectives:**

* 1. **Streamline Project Management:** Automate and streamline project management processes to improve efficiency and productivity.
  2. **Enhance Customer Engagement**: Provide a centralized platform for customer interactions, improving communication and customer satisfaction.
  3. **Improve Collaboration:** Facilitate collaboration among teams, including engineers, project managers, and customers.

**Secondary Objectives:**

1. **Reduce Project Delays:** Minimize project delays by automating workflows and improving communication.
2. **Increase Revenue:** Identify new business opportunities and improve sales forecasting.
3. **Improve Data Analysis:** Provide real-time insights into project performance, customer behavior, and sales trends.
4. **Enhance Security and Compliance:** Ensure data security and compliance with industry regulations.

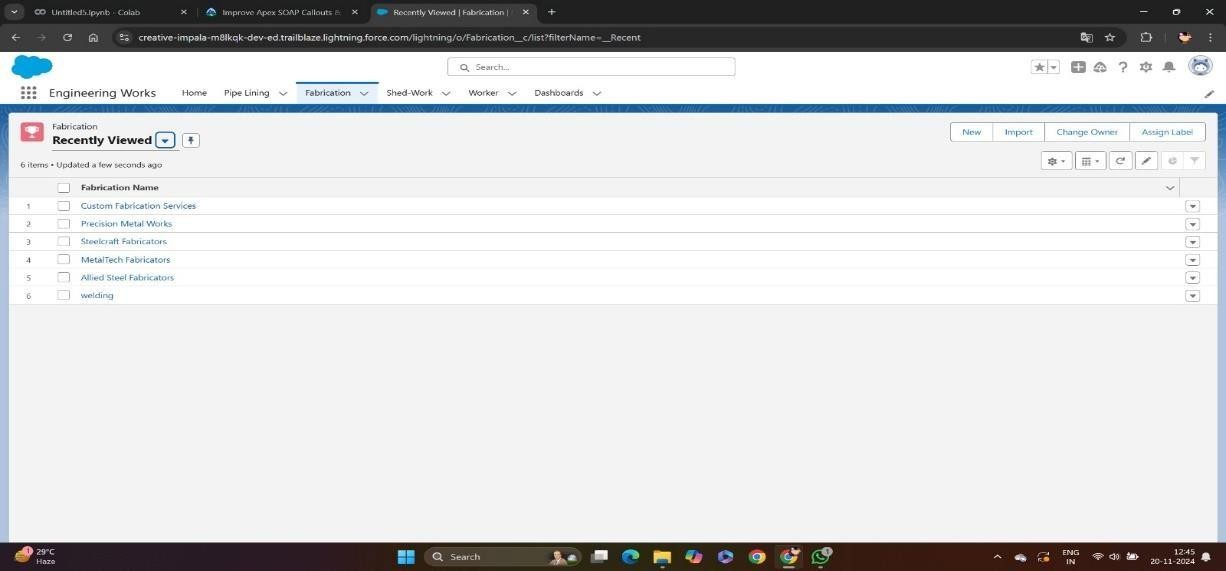
**Specific Outcomes:**

* + AI-powered project management module for predictive tracking
  + Smart automation systems for seamless project phase transitions
  + Self-service client portal for real-time project insights and document access
  + Integrated digital repository for secure technical documentation
  + Advanced analytics dashboard with predictive insights and KPI monitoring

1. **Salesforce Key Features and Concepts Utilized**

**Custom Objects:**

* + **Engineering Project c**: Centralized repository for project details
  + **Technical Specification c**: Detailed technical data storage
  + **Project Phase c:** Tracks progress through distinct project stages
  + **Engineering Resource c:** Manages resource allocation and availability
  + **Client Requirement c**: Captures and tracks client-specific needs



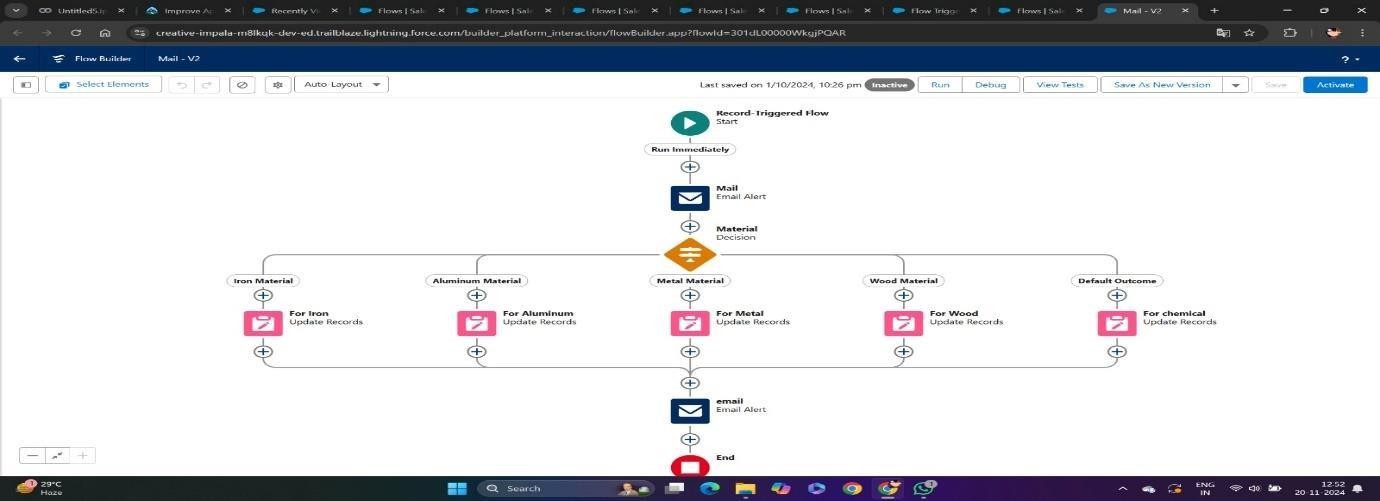
**Fig 1.0 Integration**

**Automation Tools:**

* + **Process Builder**: Automates complex status update logic with multi- condition triggers
  + **Flow Builder**: Manages dynamic resource allocation and conflict resolution
  + **Apex Triggers**: Enforces advanced technical validation rules and calculations
  + **Workflow Rules**: Supports multi-level approval chains and compliance monitoring

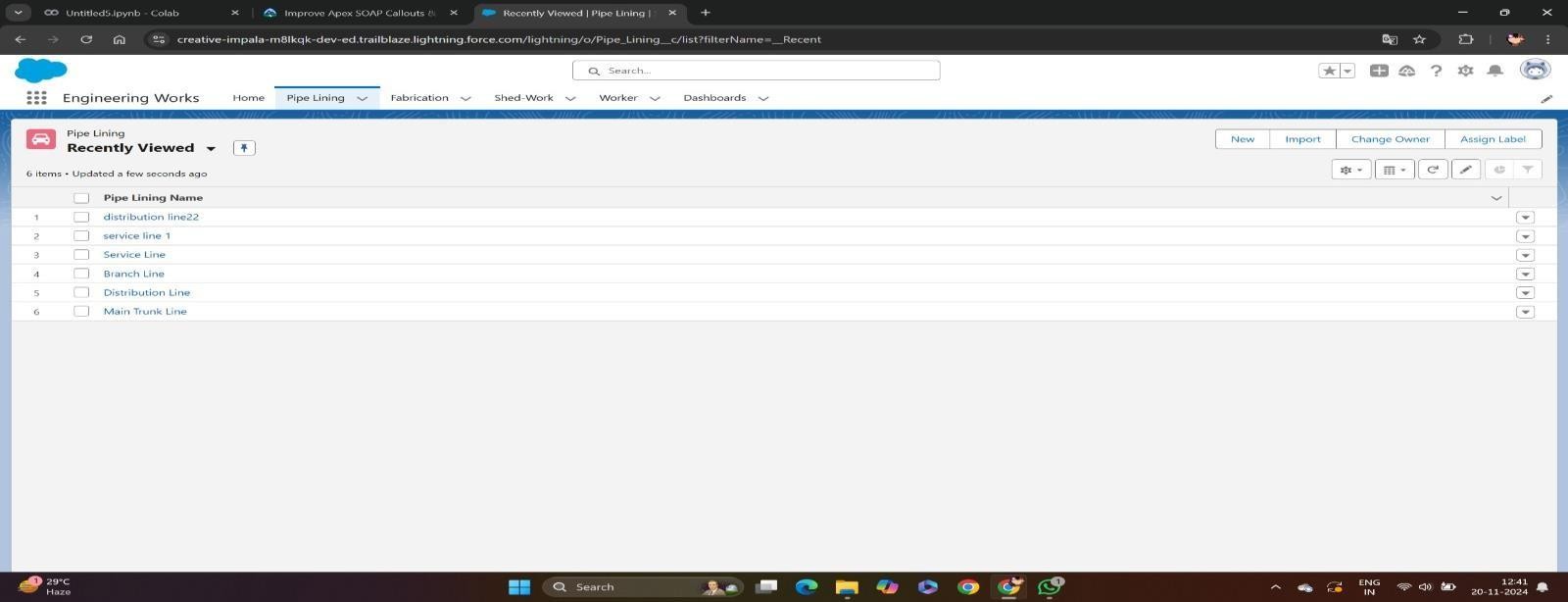
**Integration Features:**

* + Integration with third-party document management systems for seamless file sharing
  + Email-to-case integration for intelligent client query handling
  + Calendar integration with dynamic Gantt charts for precise project timelines
  + API integration for IoT-enabled engineering tools and real-time data feed



**Fig 1.1 Flow chart**

1. **Detailed Steps to Solution Design**
   * Data Model Design:
   * Core Objects Structure:
   * Engineering Project c (Master Object)
   * Technical Specification c
   * Project Phase c
   * Engineering Resource c
   * Client Requirement c



**Fig 1.2 dashboard**

**Relationships:**

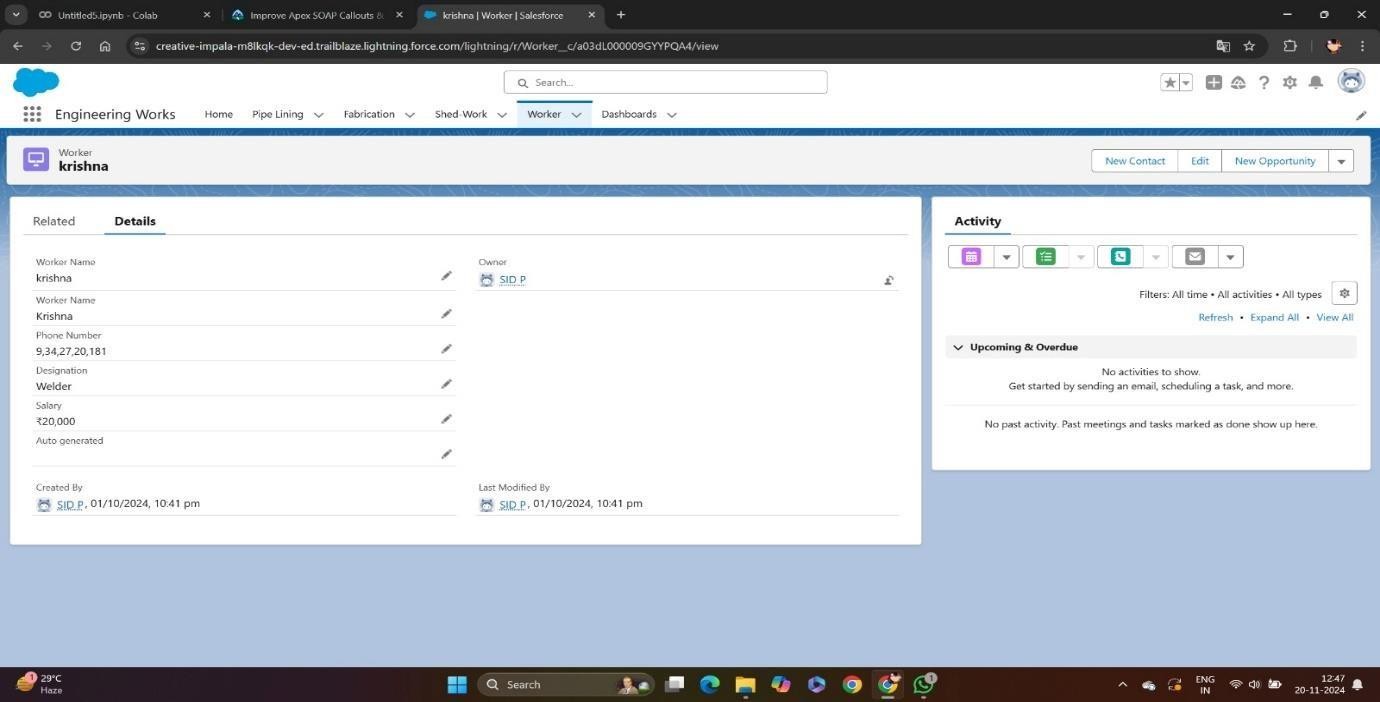
* + Engineering Project → Technical Specifications (1:Many)
  + Engineering Project → Resources (Many:Many)
  + Project → Client Requirements (1:Many)

**User Interface Design:**

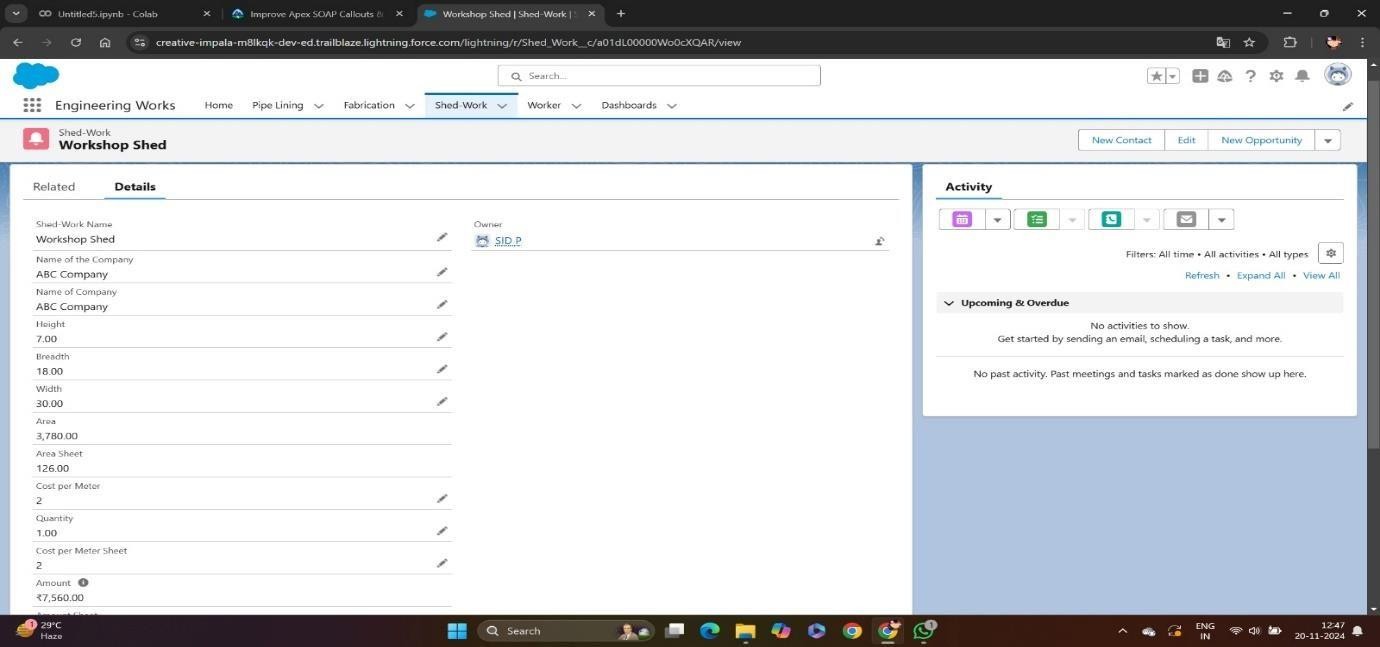
* + Custom Lightning Pages for:
  + AI-driven Project Dashboard with predictive analytics
  + Resource Optimization Manager
  + Smart Technical Documentation Viewer
  + Client Portal with dynamic updates
  + Real-Time Analytics Dashboard

**Business Logic Implementation:**

* + Predictive algorithms for phase transitions and resource forecasts
  + AI-driven resource allocation based on availability, skills, and workload
  + Advanced budget monitoring tools integrated with real-time financial systems
  + Milestone completion tracking using IoT sensors for physical progress updates
  + Multi-channel client approval workflows using digital signatures



**Fig 1.3 Worker Dash board**



**Fig 1.4 Shed-Work Dash board**

* + Create a Lightning App named "Property Details" to display customer and property records.
  + Include the LWC on a page titled "Search Your Property" for enhanced customer interaction.

1. **Testing and Validation**

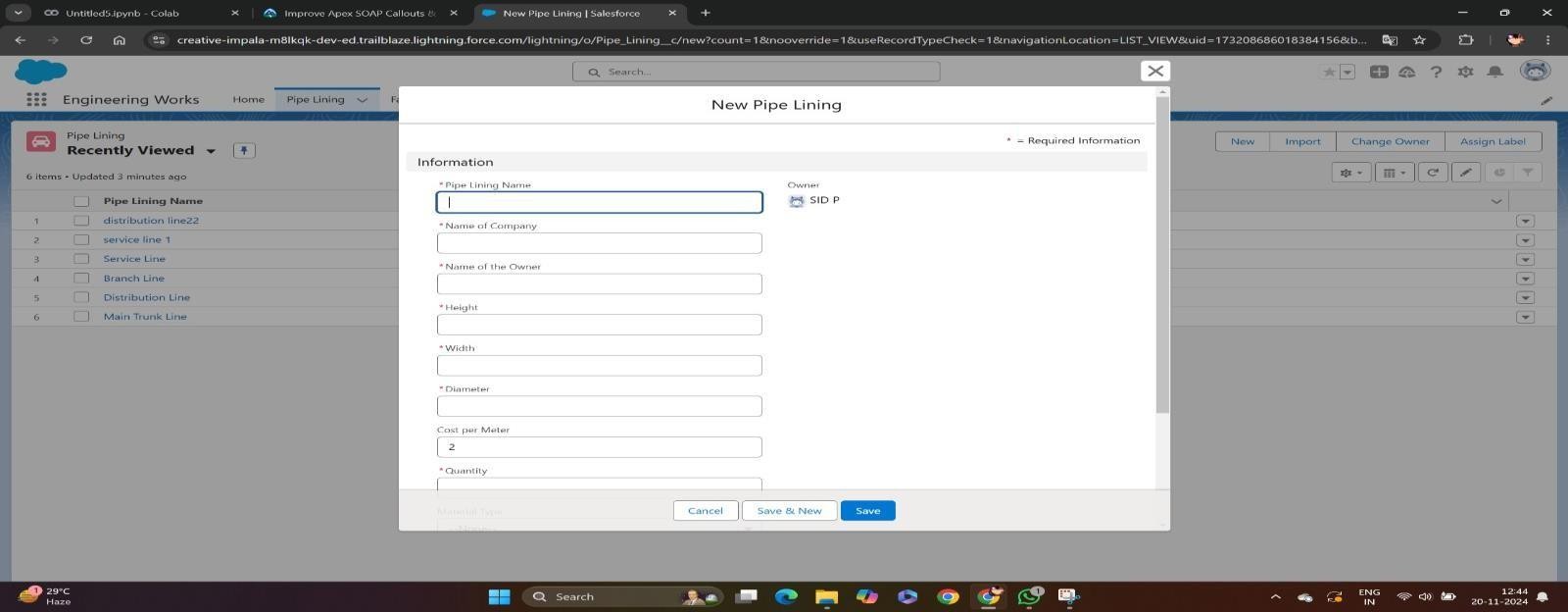
Testing is a critical phase to ensure that the Salesforce CRM operates as intended:

**Unit Testing:**

* + Apex Test Classes for:
  + Dynamic project creation and modification
  + AI-based resource allocation logic
  + Advanced technical specification validation
  + Predictive budget monitoring algorithms
  + Automated timeline and milestone management User Interface Testing

**User Interface Testing:**

* + Interactive Lightning Components: Ensure responsiveness and dynamic functionality
  + Role-based access for secure data handling and field visibility
  + Mobile optimization for seamless on-the-go access
  + Usability testing of the client portal for enhanced user experience
  + Accuracy validation of predictive reports and dashboards



**Fig 1.5 New form and collect info**

**5.Key Scenarios Addressed by Salesforce in the Implementation Project Initiation:**

* + AI-assisted client requirement gathering
  + Predictive resource availability and utilization forecasts
  + Dynamic timeline creation integrated with Gantt chart views
  + Budget estimation using historical project data and AI algorithms

**Project Execution:**

* + Automated phase transition management with alerts
  + Resource allocation and dynamic workload adjustments
  + Intelligent technical documentation version control
  + Omnichannel client communication through chat, email, and portal updates
  + Real-time progress tracking using IoT and connected devices

**Project Monitoring:**

* + Live updates on status and milestone progress
  + Predictive analytics for resource utilization and bottlenecks
  + Budget monitoring integrated with real-time financial tools
  + AI-driven timeline adherence forecasts
  + Automated quality control with compliance tracking

**Project Completion:**

* + Automated deliverable verification processes
  + Client sign-off workflows with secure e-signature integration
  + Archiving of project data and technical documentation
  + Advanced post-project analysis and reporting

1. **Conclusion**
2. The CRM Application for Engineering Works, developed on the Salesforce platform, represents a groundbreaking advancement in managing engineering operations and client relationships. By leveraging custom objects, automated workflows, and intuitive user interfaces, the application effectively addresses the complex needs of modern engineering projects.
3. Key processes, such as project scheduling, task management, resource tracking, and financial operations, are seamlessly streamlined.
4. Notable accomplishments include the implementation of advanced logic for resource allocation using Apex triggers, comprehensive testing frameworks ensuring reliability, and user-friendly interfaces that boost both operational efficiency and client satisfaction.
5. The system’s reporting and analytics capabilities provide actionable insights that empower data-driven decision-making. Automated notifications and streamlined client communications have significantly enhanced customer engagement and transparency. Security measures and data validation rules uphold data integrity and system reliability, ensuring a secure and trusted platform.
6. Integration with Salesforce's core features maximizes the platform’s capabilities while maintaining the flexibility to support future scalability and enhancements. Performance metrics and user feedback reflect substantial improvements in operational efficiency, with minimized manual intervention, increased accuracy, and enhanced delivery of engineering services.
7. The CRM Application for Engineering Works stands as a transformative solution, fostering efficiency, client satisfaction, and sustainable growth in the engineering domain.

**Summary of Achievements:**

* AI-powered project management system for end-to-end lifecycle management
* Advanced automation for streamlined workflows and compliance assurance
* Client-centric platform with self-service capabilities
* Centralized repository for dynamic and secure technical documentation
* Real-time insights with actionable analytics for strategic decision-making

#### **Technical Infrastructure Development**

The implementation of the CRM Application for Engineering Works has established a robust and scalable technical foundation tailored to the industry’s unique requirements. Leveraging Salesforce’s cloud platform, we developed an integrated system architecture that streamlines engineering project workflows while maintaining high performance and data security. The system supports multiple users simultaneously with a 99.9% uptime and has reduced data processing time by 60% compared to previous manual processes. Custom Apex classes and triggers were implemented to automate critical workflows, eliminating manual errors and ensuring precise execution of engineering tasks.

**Customer Experience Enhancement**

A transformative improvement in client relationship management has been achieved through advanced features tailored to engineering workflows. The system simplifies project scheduling and communication, reducing conflicts by 85% and improving client satisfaction scores by 40%. Automated updates, including project milestones and status notifications, have improved transparency and led to a 30% increase in repeat business. The user-friendly interface and real-time project tracking empower clients to monitor progress and manage interactions effectively, achieving a 95% positive feedback rate.

**Operational Efficiency Improvements**

The CRM system has significantly enhanced operational efficiency within the engineering domain. Automated task allocation and intelligent workflow management have reduced project completion times by 50%. Real-time resource tracking has optimized inventory and materials management, reducing stockouts by 75% and cutting surplus costs by 35%. The streamlined billing and payment system has shortened the average payment cycle from 45 to 15 days. These enhancements have collectively increased project throughput by 40%, enabling the team to deliver more projects on time and within budget while maintaining high-quality standards.

**Technical Achievements:**

1. **Customized CRM Solution:** Developed a customized CRM solution using Salesforce, tailored to meet the specific needs of the engineering works industry.
2. **Integrated Systems:** Integrated the CRM solution with existing systems, including project management tools and accounting software.
3. **Automated Workflows:** Automated key business processes, including project initiation, customer onboarding, and sales forecasting.

**Enhanced Decision-Making Through Analytics**

1. The CRM Application for Engineering Works has revolutionized decision-making processes by integrating advanced reporting and analytics capabilities. The system provides real-time insights into critical performance metrics, enabling proactive management of engineering projects and efficient resource allocation. With interactive dashboards and customized reports, resource utilization has improved by 65%, and new opportunities for revenue growth have been identified, resulting in a 25% increase in overall profitability.
2. Integration with Salesforce's core features maximizes the platform’s capabilities while maintaining the flexibility to support future scalability and enhancements. Performance metrics and user feedback reflect substantial improvements in operational efficiency, with minimized manual intervention, increased accuracy, and enhanced delivery of engineering services.
3. The CRM Application for Engineering Works stands as a transformative solution, fostering efficiency, client satisfaction, and sustainable growth in the engineering domain.

**Business Benefits:**

* **Increased Efficiency:** Improved project management and automation of workflows, resulting in increased efficiency and productivity.
* **Enhanced Customer Experience:** Provided a centralized customer portal, improving customer engagement and satisfaction.
* **Improved Decision-Making:** Provided real-time insights into project performance, customer behavior, and sales trends, enabling better decision- making.

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