# CRM Application for Jewel Management - Developer

**Project Title:** CRM Application for Jewel Management - Developer

**Date:** November 07, 2025

**Team ID:** NM2025TMID08373

**Maximum Marks:** 4 Marks

## Phase 5: Project Design Phase II - Solution Requirements

### Functional Requirements

| FR No. | Functional Requirement (Epic) | Sub Requirement (Story / Sub-Task) |
|---|---|---|
| FR-1 | Customer Registration & Profile Management | Customer registration through intuitive form; Social login integration (Google/Facebook); Comprehensive profile with contact details, personal preferences, jewelry sizing information, complete purchase history |
| FR-2 | Customer Portal | Secure multi-factor login capabilities; Comprehensive purchase history viewing; Real-time custom order tracking; Preference and profile updates; Convenient appointment scheduling; Receipt and certificate downloads |
| FR-3 | Inventory Item Management | Add jewelry items with unique SKU, detailed descriptions, complete specifications; Track metal type and purity standards, gemstone details (4Cs: Carat, Cut, Clarity, Color), precise weight calculations, certification numbers; Upload multiple high-resolution photos; Assign acquisition cost and retail pricing; Set comprehensive status indicators (available, reserved, sold, consignment, in-repair) |
| FR-4 | Inventory Tracking | Real-time stock level visibility across multiple store locations; Barcode and RFID scanning for efficient check-in/check-out operations; Location transfer tracking with audit trail; Automated intelligent reorder alerts; Advanced loss prevention tracking and reporting |
| FR-5 | Inventory Valuation | Automated valuation based on current market prices; Historical valuation tracking for trend analysis; Consignment inventory separately tracked and managed; Insurance valuation reports generation |
| FR-6 | Custom Order Management | Create custom orders with comprehensive design specifications; Customer approval workflows for design verification; Production milestone tracking and updates; Artisan assignment and workload management; Quality inspection checkpoints enforcement; Delivery scheduling coordination |
| FR-7 | Custom Order Communication | Automated milestone notifications at each stage; Customer portal for real-time progress viewing; Design modification request handling; Photo updates during production phases; Transparent communication channels |
| FR-8 | Sales Pipeline & Opportunities | Systematic lead capture from walk-ins and online inquiries; Opportunity tracking organized by defined pipeline stages; Intelligent lead scoring based on engagement metrics and budget indicators; Comprehensive win/loss analysis reporting |

| FR No. | Functional Requirement (Epic) | Sub Requirement (Story / Sub-Task) |
|---|---|---|
| FR-9 | Quote & Pricing | Dynamic quote generation with configurable pricing rules; Integrated flexible financing options; Trade-in valuation processing; Comprehensive discount management; Quote expiration and renewal tracking |
| FR-10 | Sales Order Processing | Seamless conversion of quotes to sales orders; Integrated payment processing capabilities; Detailed receipt generation with itemization; Automated tax calculation; Warranty and certificate generation |
| FR-11 | Marketing Automation | Automated birthday and anniversary reminder campaigns; Timely new collection announcements; Segment-based targeted promotional campaigns; Referral program tracking and management; VIP customer recognition programs |
| FR-12 | Customer Segmentation | Sophisticated segmentation by purchase history, preferences, budget tier; Behavioral segmentation based on purchase patterns; Automated inactive customer identification; High-value customer identification and prioritization |
| FR-13 | Data Protection & Business Rules | Prevent unauthorized deletion of customers with active orders; Prevent deletion of inventory in pending transactions; Prevent deletion of historical sales for compliance requirements; Comprehensive audit trail for all data modifications |
| FR-14 | Security & Access Control | Role-based permissions (sales staff, managers, owners, administrators); Multi-factor authentication for sensitive operations; Robust data encryption for customer and financial information; Advanced session management and automatic timeout protocols |
| FR-15 | Dashboards & Analytics | Sales performance visualization by time period, category, and staff; Inventory valuation and turnover analytics; Customer lifetime value calculations; Marketing campaign effectiveness metrics; Detailed profit margin analysis |
| FR-16 | Mobile Access | Mobile-optimized responsive interface; Comprehensive customer profile access on mobile; Real-time inventory availability checking; Mobile transaction processing; Customer photo and signature capture capabilities |
| FR-17 | Reporting | Customizable report generation; Scheduled automated report delivery; Export functionality to Excel and PDF formats; Tax compliance reporting capabilities; Insurance and customs documentation generation |

## Non-Functional Requirements

| NFR No. | Non-Functional Requirement | Description |
|---|---|---|
| NFR-1 | Usability | Intuitive interface specifically designed for non-technical jewelry retail staff. Mobile application must facilitate easy use during customer consultations. Comprehensive training materials and context-sensitive in-app help available. Maximum 2 hours training required for competent basic operations. Accessibility compliance for users with varying abilities. |
| NFR-2 | Security | All sensitive data (customer information, inventory valuations, financial transactions) encrypted at rest and in transit using industry-standard protocols. Multi-factor authentication mandated for administrative functions. Role-based access control strictly enforced with regular permission audits. Full PCI-DSS compliance for payment data handling. Annual comprehensive security audits and penetration testing. |

| NFR No. | Non-Functional Requirement | Description |
|---|---|---|
| NFR-3 | Reliability | Guaranteed 99.9% system uptime throughout operational year. Automated comprehensive backups executed every 4 hours. Sophisticated data validation rules preventing incorrect entries. Business rule enforcement ensuring complete data integrity. Zero tolerance policy for data loss in high-value transactions. Graceful error handling with clear user-friendly error messages. |
| NFR-4 | Performance | Page load times consistently maintained below 2 seconds for all standard operations. Inventory search results displaying in under 1 second for large datasets. Mobile application responsive performance across 3G network connections. Support for 50+ concurrent users without degradation. Database queries fully optimized for large inventory management (10,000+ items efficiently). |
| NFR-5 | Availability | Customer portal accessible 24/7/365 without interruption. Maintenance windows strategically scheduled during off-peak hours (midnight-3am local time). Disaster recovery capabilities with Recovery Time Objective (RTO) of less than 2 hours. Automated failover mechanisms for all critical services. Load balancing across multiple servers for optimal resource utilization. |
| NFR-6 | Scalability | Support deployment from single-location boutiques to 50+ store chains without architectural changes. Handle inventory growth from initial 100 items to 100,000+ comprehensive items. Scale seamlessly to manage millions of customer records. Accommodate seasonal traffic spikes during holiday periods. Cloud infrastructure auto-scaling for dynamic resource allocation. |
| NFR-7 | Maintainability | Modular system design enabling easy feature additions and modifications. Comprehensive technical documentation for system administrators and developers. Version control integration for all customizations and code changes. Automated testing framework for core business workflows. Streamlined upgrade path supporting Salesforce platform updates and patches. |
| NFR-8 | Compliance | Full PCI-DSS compliance certification for payment processing operations. Complete GDPR compliance for customer data collection, storage, and processing. Automated sales tax calculation accuracy across all applicable jurisdictions. Comprehensive audit trails for regulatory compliance and reporting requirements. Support for insurance and customs documentation generation. |
| NFR-9 | Compatibility | Full support for iOS and Android mobile platforms with optimized user experiences. Browser compatibility across Chrome, Firefox, Safari, and Edge. Seamless integration with common POS (Point of Sale) systems. Support for barcode scanners and RFID readers from major manufacturers. REST API integration with appraisal services and gemstone certification databases. |
| NFR-10 | Data Quality | Validation rules enforcing mandatory field completion. Format validation for SKUs, certification numbers, and identification codes. Automated duplicate detection for customer and inventory records. Data cleansing tools for bulk imports and migrations. Historical data retention for 7+ years supporting regulatory and business requirements. |
| NFR-11 | Disaster Recovery | Daily automated backups replicated to geographically distributed cloud locations. Backup retention policy maintaining data for minimum 1 year. Recovery Time Objective (RTO) guarantee of 2 hours maximum. Recovery Point Objective (RPO) of 4 hours maximum data loss acceptable window. Quarterly comprehensive disaster recovery testing and validation drills. |
| NFR-12 | Internationalization | Multi-currency support with automated real-time conversion rates. Multi-language interface supporting English, Spanish, Chinese, and Hindi. Regional tax and compliance rules specific to each market. Support for varying jewelry metal purity standards (karat vs. fineness notations). Cultural date and time format adaptations. |

**System Architecture & Technical Specifications**

**Technology Stack**

**Cloud Platform:** Salesforce Sales Cloud + Experience Cloud for comprehensive CRM and customer engagement capabilities

**Frontend:** Lightning Web Components (LWC) for responsive web interface; Native Salesforce Mobile App with offline capabilities

**Backend:** Salesforce Apex classes, REST APIs, and batch processing for complex operations

**Database:** Salesforce multi-tenant database with custom objects optimized for jewelry retail operations

**Automation:** Salesforce Flow Builder, Process Builder, Approval Processes, and scheduled actions

**Integration:** RESTful APIs for POS systems, payment gateways, appraisal services, and certification databases

**Security:** Salesforce Shield for advanced encryption, event monitoring, and field-level audit trails

**Mobile:** Salesforce Mobile SDK with offline synchronization capabilities for seamless mobile operations

**Data Model & Custom Objects**

**Customer:** Standard Contact object extended with jewelry-specific fields including preferences, precise sizing information, VIP status, communication preferences, jewelry allergies, metal sensitivities

**Jewelry_Item:** Comprehensive tracking including SKU, category classification, metal type and purity standards, primary and secondary stone specifications, precise weight, certification numbers, multiple high-resolution photos, acquisition cost, current retail pricing, detailed status tracking, store location, supplier information

**Custom_Order:** Customer reference, detailed design specifications and requirements, design approval status, production milestone tracking, assigned artisan and team, estimated completion date, actual completion status, cost tracking, delivery information

**Sales_Opportunity:** Standard Opportunity object enhanced with jewelry-specific fields including product category, budget confirmation, trade-in valuation, financing requirements, special requests

**Appraisal:** Item reference, qualified appraiser information, appraisal date, valuation amount, appraisal purpose (insurance/resale), certification documentation

**Marketing_Campaign:** Standard Campaign object with jewelry-specific segmentation criteria, personalization fields, response tracking for fine-tuned targeting

## Key Business Rules

| BR-ID | Business Rule Description |
|-------|--------------------------|
| BR-1 | Prevent deletion of customers with active orders or orders within the past 2 years to maintain historical data integrity |
| BR-2 | Prevent deletion of inventory items with pending transactions or items sold within the past 7 years for compliance and audit purposes |
| BR-3 | Require manager-level approval for all discounts exceeding 15% to maintain pricing controls |
| BR-4 | Automated alerts triggered when inventory item has not been scanned for 90+ days (advanced loss prevention mechanism) |
| BR-5 | Automated reorder alerts triggered when category stock levels fall below established minimum thresholds |
| BR-6 | Automated customer notification sent when custom order reaches each defined production milestone |
| BR-7 | Require certification number validation for all gemstones exceeding 0.5 carats |
| BR-8 | Comprehensive audit log maintained for all changes to inventory valuations and customer financial data |

## Acceptance Criteria

| Requirement Category | Specific Acceptance Criteria |
|----------------------|------------------------------|
| FR-1 to FR-2 | Customer registration and portal features fully functional with 100+ test customers; Portal accessible across web and mobile platforms; Login authentication working reliably |
| FR-3 to FR-5 | 500+ jewelry items successfully entered with complete specifications; Barcode scanning operational across all store locations; Real-time inventory valuation updating correctly |
| FR-6 to FR-7 | 50+ custom orders tracked through entire production workflow; Automated notifications sent at each milestone; Customer portal accurately displaying progress information |
| FR-8 to FR-10 | Sales pipeline populated with 100+ qualified opportunities; Quote generation functionality operational and tested; Payment processing integrated and secure |
| FR-11 to FR-12 | Automated campaigns successfully sent to segmented customer lists; Email open rates exceeding 25%; Click-through rates exceeding 5%; Campaign analytics tracking accurately |
| FR-13 to FR-14 | Business rules preventing 100% of unauthorized deletion attempts; Role-based permissions strictly enforced; Zero security breaches or unauthorized access incidents |
| FR-15 to FR-17 | Dashboards loading within 2 seconds; Mobile application fully functional on iOS and Android; Reports exportable to all required formats; No data integrity issues |
| NFR-1 to NFR-4 | 90% of staff trained to competency within 2 hours; 99.9% uptime achieved consistently; All pages loading within 2 seconds; Zero data loss incidents |
| NFR-5 to NFR-8 | System scales to 10 locations without performance degradation; PCI-DSS compliance certified by third party; Complete audit trails maintained for all transactions |
| NFR-9 to NFR-12 | Mobile app functional on iOS and Android; POS system integration successful; Multi-currency support operational; Backup and recovery systems tested and validated |

## Constraints & Dependencies

### Project Constraints

- **Budget Limitation:** Mid-market jewelry retailer budget parameters require cost-effective implementation

- **Development Timeline:** 46-day aggressive timeline for complete development and deployment

- **Team Composition:** 3 developers with varying levels of Salesforce platform expertise requiring knowledge sharing

- **Regulatory Compliance:** Mandatory compliance with PCI-DSS and GDPR regulations throughout implementation

- **Infrastructure:** Existing IT infrastructure and network bandwidth constraints

### Project Dependencies

- **Salesforce Platform:** Adherence to Salesforce API governor limits and service limits

- **Third-Party Integrations:** Availability and compatibility of POS systems, payment gateways, and appraisal service providers

- **Hardware Integration:** Availability and compatibility of barcode scanners and RFID readers from multiple manufacturers

- **User Adoption:** Critical success factor of staff training effectiveness and organizational change management

- **Data Migration:** Quality and completeness of legacy data from existing retail systems requiring cleansing

## Conclusion

This comprehensive phase establishes detailed functional and non-functional requirements specifications for the jewelry management CRM application. The 17 functional requirements and 12 non-functional requirements address the unique operational challenges inherent in jewelry retail operations including sophisticated inventory management, custom order workflows, personalized customer relationships, and stringent security and compliance needs. With clear acceptance criteria, detailed technical specifications, and identified constraints and dependencies, the development team has a precise roadmap for delivering a solution that measurably improves operational efficiency, significantly enhances customer satisfaction, and drives sustainable business growth for jewelry retailers of all sizes.