

Smart BioTech CRM – Lab Research & Genetic Testing Engagement System

Problem Statement

Biotech labs and genetic testing companies face thousands of requests daily from hospitals, clinics, and patients. Manual handling of leads, sample tracking, and reporting causes delays, inefficiency, and compliance issues. To solve this, a Salesforce-based CRM will be developed to automate lead management, genetic test catalog management, lab visit scheduling, deal closure, and advanced reporting while integrating AI, IoT, and blockchain for data security and transparency.

Phase 1: Problem Understanding & Industry Analysis

- Requirement Gathering: Genetic testing labs need systems to manage patient/hospital requests, schedule tests, and track payments.
- Stakeholder Analysis: Admin, Lab Manager, Doctors, Patients, Hospital Partners.
- Business Process Mapping: Lead → CRM log → Test Booking → Sample Collection → Report Generation → Deal Closure → Analytics Dashboard.
- Industry Use Case: Genetic labs like 23andMe use CRMs for test management; this project customizes for B2B and B2C healthcare.
- AppExchange Exploration: Explore Health Cloud accelerators.

Phase 2: Org Setup & Configuration

- Salesforce Edition: Enterprise/Health Cloud.
- Company Profile: Lab details, 24x7 operations.
- Users: Admin, Lab Manager, Doctors, Hospital Partners.
- Profiles & Roles: Patients limited access, Doctors moderate, Admin full access.
- OWD & Sharing: Test results private, patients can only see their records.
- Sandbox: Test automations before live.
- Deployment: Change Sets/VS Code for migration.

Phase 3: Data Modeling & Relationships

- Objects: Lead, Patient, Doctor, Genetic Test, Sample, Report, Hospital Partner.
- Fields: Test Type, Sample ID, Status, Cost, Turnaround Time, Insurance Status.
- Relationships: Patient → Test (1:M), Test ↔ Sample (1:1), Test ↔ Report (1:1).
- Record Types: Tests (Prenatal, Oncology, Rare Diseases).
- Schema Builder: Visual representation of all relationships.

Phase 4: Process Automation

- Validation Rules: Ensure sample ID is unique, test cost > 0.
- Workflows: Auto email confirmation for test bookings.
- Approval Process: Insurance approval before high-value tests.
- Flows: Auto-assign lab technicians, update report status.
- Custom Notifications: Urgent cases trigger alerts for doctors.

Phase 5: Apex Programming

- Triggers: Update Test/Report status when sample processed.
- SOQL: Fetch pending reports and high-priority patients.
- Batch Apex: Weekly lab workload summary.
- Queueable Apex: Handle bulk hospital requests.
- Scheduled Apex: Daily pending report status emails.
- Future Methods: Send SMS updates to patients.
- Test Classes: Ensure automation correctness.

Phase 6: User Interface Development

- Lightning App: BioTech CRM.

- Home Page: Show active tests, pending reports, upcoming appointments.
- Record Pages: Patient history, test catalog, hospital partnerships.
- Tabs: Patients, Doctors, Tests, Samples, Reports.
- LWC: Patient Dashboard, Test Tracker, Report Viewer.

Phase 7: Integration & External Access

- APIs: Integration with lab machines for real-time status.
- Insurance APIs: Auto verification of patient coverage.
- Platform Events: Notify doctors of urgent cases.
- Experience Cloud: Patient portal for test booking and results.
- OAuth: Secure patient/hospital logins.

Phase 8: Data Management & Deployment

- Data Import: Upload patient/test records.
- Data Loader: Bulk hospital request uploads.
- Duplicate Rules: Prevent duplicate patients.
- Data Export: Weekly encrypted backups.
- Deployment: Change Sets & SFDX for Apex/LWC.

Phase 9: Reporting, Dashboards & Security Review

- Reports: Tests by type, hospital referrals, revenue breakdown.
- Dashboards: Lab performance, doctor productivity, patient demand.
- Dynamic Dashboards: Different views for Admin, Doctors, Patients.
- Security: HIPAA/GDPR compliance, Audit Trail, field-level security.

Phase 10: Final Presentation & Demo Day

- Pitch: Smart BioTech CRM ensures efficiency, accuracy, and compliance.
- Demo Flow: Lead → Test Booking → Sample → Report → Deal Closure → Dashboard.
- Handoff: Setup docs & manuals.
- LinkedIn Showcase: Highlight as BioTech CRM innovation.