EDUCREDCHAIN – Salesforce Blockchain Credential & Scholarship Manager

Phase 1: Problem Understanding & Industry Analysis

1. Problem Understanding

a. Background

Educational institutions, employers, and government bodies face growing challenges in ensuring the authenticity and transparency of academic credentials. Traditionally, universities issue paper-based certificates or simple digital copies, which are often easy to forge or alter. Recruiters spend significant time and resources manually verifying degrees through calls, emails, and third-party verification agencies.

For students, the process of applying for scholarships or education loans involves long waiting times, excessive paperwork, and limited visibility into disbursement status. Financial institutions and universities struggle with milestone-based disbursement tracking, which leads to inefficiency, fraud, and student dissatisfaction.

In today's digital world, key stakeholders expect:

- Students: Instant access to credentials, visibility into scholarship disbursement, and security that their academic records cannot be altered.
- Recruiters/Employers: A trusted and tamper-proof verification process that is fast and reliable.
- Universities/Institutions: A way to issue credentials securely, prevent forgery, and reduce administrative workloads.
- Financial Institutions: Automated, milestone-based disbursements with transparency.

b. Core Problem Statement

How can we build a Salesforce + Blockchain-powered Credential Management System that:

- Digitizes credential issuance.
- Ensures tamper-proof verification.
- Automates scholarship disbursement via smart contracts.
- Provides transparent dashboards for institutions, students, and recruiters.

c. Key Pain Points to Solve

1. Fake or forged certificates → Reduce credibility of institutions.
2. Manual verification → Consumes time and resources for recruiters.
3. Scholarship delays → Lack of milestone-based automation.
4. Data fragmentation → Records scattered across systems.
5. Limited insights → Difficulty analyzing student and institutional performance.

2. Industry Analysis

a. Education Industry Overview

- Rising cases of credential fraud worldwide.
- A growing demand for secure, digital-first solutions in education.
- EdTech and blockchain adoption accelerating post-pandemic.

- Increasing reliance on cloud platforms for scalability and automation.

b. Industry Challenges
1. Credential authenticity → Counterfeit degrees are widespread.
2. Manual processes → Slow and resource-intensive.
3. Scholarship fraud → Misuse of funds without milestone tracking.
4. Lack of trust → Employers often doubt academic documents.
5. Limited interoperability → Data exists in silos across universities and systems.

c. Market Needs
- Self-service portals for students and recruiters.
- Blockchain-based verification for tamper-proof credentials.
- Smart contracts for scholarship/loan disbursement.
- Dashboards for transparent, real-time decision-making.
- Scalability across multiple universities and EdTech platforms.

d. Why Salesforce + Blockchain for Education?
- Customization: Salesforce can define Students, Courses, Credentials, Recruiters, and Scholarships as custom objects.
- Automation: Flows can automate credential issuance, verification, and disbursement.
- Blockchain Integration: Ensures immutability of certificates.
- Experience Cloud: Provides secure portals for students and recruiters.
- Analytics: Dashboards enable institutions to monitor credential issuance, verification requests, and scholarship payouts.
- Security: Robust role-based access controls protect sensitive student data.

e. Proposed Solution (Summary)
The EduCredentialBlockchain system will:
- Enable universities to issue blockchain-secured academic credentials.
- Allow recruiters to instantly verify authenticity.
- Automate scholarship disbursements via smart contracts.
- Provide dashboards to track credentials, scholarships, and verification trends.

Phase 2: Org Setup & Configuration

1. Salesforce Org Setup
a. Choosing the Org
- Use a Salesforce Developer Edition Org (free) or a Sandbox Org if working in a corporate environment.
- Ensure the org has standard features enabled: Reports, Dashboards, Email Templates, Automation (Flows), Experience Cloud.

b. Basic Configuration
1. Set Up Company Information
- Update company profile: Name, Address, Default Time Zone, Currency, Locale.
- Configure Fiscal Year if reports require milestone-based tracking.

2. User Management
- Create Profiles and Permission Sets:
  - Admin: Full access.
  - University Staff: Access to Students, Credentials, Scholarships.
  - Recruiter/Employer: Read-only access to Credentials and Verification Requests.
  - Student (Community User): Limited portal access.

2. Custom Objects & Fields
a. Objects to Create
1. Student__c: Name, Age, Contact Info, Email, Courses Enrolled, Academic History.
2. Course__c: Name, Description, Credits, Duration, Department.
3. Credential__c: Credential Name, Issue Date, Expiry Date, Student__c (Lookup), Course_c (Lookup), Blockchain Hash/ID.
4. Scholarship__c: Scholarship Name, Student__c (Lookup), Amount, Milestones, Status, Disbursement Dates.
5. Verification_Request__c: Request ID, Recruiter__c (Lookup), Credential__c (Lookup), Status, Verification Date.

b. Relationships
- Credential__c → Student__c (Lookup)
- Credential__c → Course__c (Lookup)
- Scholarship__c → Student__c (Lookup)
- Verification_Request__c → Credential__c (Lookup)
- Verification_Request__c → Recruiter__c (Lookup)

3. Page Layouts & Record Types
- Student Page Layout: Contact details, academic history, issued credentials, scholarships.
- Course Page Layout: Course details, enrolled students, issued credentials.
- Credential Page Layout: Student info, course info, blockchain verification status.

- Scholarship Page Layout: Student info, milestone status, disbursement history.
- Verification Request Layout: Credential info, requesting recruiter, verification status.

4. Automation & Flows
- Credential Issuance Flow: Triggered on course completion → Status = "Issued" → Blockchain hash recorded → Email to student.
- Scholarship Disbursement Flow: Triggered on milestone completion → Status updated, funds disbursed → Notification sent.
- Verification Request Flow: Triggered by recruiter request → Status updated → Email sent.

5. Reports & Dashboards
- Reports: Credentials per Course, Pending Verification Requests, Scholarship Milestones, Students with Multiple Credentials.
- Dashboard Components: Pie chart (Credentials by Course), Bar chart (Verification Requests by Status), Table (Pending Scholarships), Line chart (Credential Issuance Trends).

6. Security & Sharing
- Role hierarchy: Admin > University Staff > Recruiter > Student.
- Org-Wide Defaults (OWD): Student – Private, Credential – Controlled by Parent, Scholarship – Controlled by Parent, Verification Request – Private.
- Profiles & Permission Sets: University Staff (Read/Write Students/Credentials/Scholarships), Recruiters (Read-only Credentials & Verification), Students (Limited access via portal).

7. Email Templates & Notifications
- Credential Issuance Notification
- Scholarship Milestone Notification
- Verification Request Notification

Phase 3: Data Modeling & Relationships

1. Objective
Design a scalable Salesforce CRM data model reflecting Students, Courses, Credentials, Scholarships, and Recruiters, maintaining integrity, automation readiness, and reporting efficiency.

2. Custom Objects & Key Fields
- Student__c: Name, Age, Email, Contact, Academic History, Courses Enrolled.
- Course__c: Name, Description, Credits, Duration, Department.
- Credential__c: Name, Issue Date, Expiry Date, Student__c (Lookup), Course__c (Lookup), Blockchain Hash/ID.
- Scholarship_c: Name, Student_c (Lookup), Amount, Milestones, Status, Disbursement Dates.
- Recruiter__c: Name, Company, Email, Contact Number.
- Verification_Request__c: Request ID, Recruiter__c (Lookup), Credential__c (Lookup), Status, Verification Date.

3. Relationships Between Objects
- Student → Credentials (1:M)
- Course → Credentials (1:M)
- Student → Scholarships (1:M)
- Credential → Verification Requests (1:M)
- Recruiter → Verification Requests (1:M)

4. ER Diagram
Student__c (1) -- (M) Credential__c (M) -- (1) Course__c
    |
    +-- (M) Scholarship__c
    +-- (M) Verification_Request__c (M) -- (1) Recruiter__c

5. Benefits of Data Model
- Scalability for future objects.
- Data integrity: credentials & scholarships tied to valid students/courses.
- Automation readiness for flows.
- Reporting and dashboards for insights.
- Security: Role-based access for recruiters, students, and staff.

6. Salesforce Implementation Notes
- Objects & Fields: Setup → Object Manager → New Custom Object/Field.
- Relationships: Lookup or Master-Detail fields.
- Page Layouts: Display related lists.
- Validation Rules: Prevent creation of orphan records.
- Automation: Flows for credential issuance, scholarship milestones

Phase 4: Process Automation (Salesforce CRM)

1. Objective
Automate credential issuance, scholarship disbursement, verification, notifications, and data integrity checks to reduce manual work and improve efficiency.

2. Key Automations
a. Credential Issuance Flow
- Trigger: On Course completion.
- Logic: Set Credential_c.Status = "Issued", store Blockchain Hash, send email to student.
- Tool: Record-Triggered Flow.

b. Scholarship Disbursement Flow
- Trigger: Milestone completion.
- Logic: Update Scholarship__c.Status, release funds, send notification.
- Tool: Record-Triggered Flow.

c. Verification Request Flow
- Trigger: Recruiter submits request.
- Logic: Update Verification_Request__c.Status, send verification outcome email.
- Tool: Record-Triggered Flow.

3. Validation Rules
- Prevent Credential without Student & Course.
- Prevent Scholarship without Student.
- Verification Request must belong to a Credential and Recruiter.

4. Email Templates
- Credential Issuance Notification.
- Scholarship Milestone Notification.
- Verification Request Completion Notification.

5. Benefits of Process Automation
- Efficiency: Reduced manual scheduling, verification, and follow-ups.
- Data Accuracy: Ensures required relationships.
- Student Engagement: Timely notifications of credentials, scholarships, and verifications.
- Staff Productivity: Staff and recruiters spend less time on manual verification.
- Reporting: Accurate tracking of credential issuance, scholarship milestones, and verification status.