CS 1980 – Capstone Project Proposal

Lymphoma Coalition Database Solution

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Customer: Lymphoma Coalition (Lorna Warwick, CEO)

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1. Introduction

1.1 Background

Lymphoma Coalition (LC) is a global non-profit network comprising approximately 100 patient organizations from more than 55 countries. LC serves as a unifying body that supports its member organizations through educational programs, advocacy initiatives, research collaboration, and capacity building. Currently, LC tracks all member and stakeholder data using Microsoft Excel spreadsheets stored on OneDrive. While this approach has served the organization historically, it has become increasingly difficult to manage as the network has grown. The existing Excel files lack relational structure, do not support concurrent multi-user editing effectively, and make it challenging to track longitudinal engagement data or generate filtered reports.

LC has identified the need for a centralized database solution that can store detailed information about member organizations, individual contacts affiliated with those organizations, and external alliance and stakeholder partnerships. The database must support communication logging, activity participation tracking over time, tiered access control, and the ability to export filtered lists for use with their email dissemination platform, CONNECT (powered by ClaroVant Digital).

1.2 Expected Outcome

The expected outcome of this project is a fully functional, cloud-accessible CRM system that replaces LC's current Excel-based tracking. The system will feature three primary data sections: (1) Member Organizations, capturing demographics, services, disease focus areas, engagement history, and communication logs; (2) Individuals, tracking contacts linked to member organizations and/or alliances with their roles, activities, and communications; and (3) Alliances/Stakeholders, recording partnership details, strategic alignment, involvement levels,

and collaboration history. The system will support multi-select fields, free-text assessment notes with historical tracking, and the ability to record participation in LC activities (such as GPS, Global Summit, WLAD, and SIG groups) by year. Our primary platform for delivering this solution is Salesforce Nonprofit Cloud.

1.3 Expected Impact

LC staff (approximately 9 people based across multiple countries, with 3 regular database users) will use the system daily to manage member relationships, track engagement, and generate reports. The ability to pull filtered member lists and export them directly for upload to CONNECT will streamline newsletter and email dissemination. Board members may also receive read-only access for reporting purposes. The CEO, Lorna Warwick, has confirmed that tiered access control is desired. The system will integrate with LC's existing infrastructure, including their Microsoft/OneDrive ecosystem and their cloud backup provider, Omega Solutions.

2. Project Design

2.1 Project Architecture – Salesforce Nonprofit Cloud

The team has selected Salesforce Nonprofit Cloud as the primary platform for this project. Salesforce is a leading cloud-based CRM platform, and its Nonprofit Success Pack (NPSP) provides a data model and feature set specifically designed for organizations like LC. Through the Salesforce.org Power of Us program, eligible nonprofits receive 10 free Enterprise Edition licenses, which comfortably covers LC's 9 staff members with room for board-level read-only accounts.

The Salesforce architecture consists of several key components that align with LC's requirements. The Account and Contact objects will represent member organizations and individual contacts respectively, supporting the many-to-many relationships LC needs (e.g., one individual linked to both a member organization and an alliance). Custom objects will be created for Alliances, Communication Logs, and Activity Participation records. Salesforce's built-in Role Hierarchy and Permission Sets will provide tiered access control, allowing staff to have full read-write access while board members receive view-only permissions. The platform's native reporting engine and list view exports will enable LC to generate filtered member lists and export them as CSV files for direct upload to CONNECT.

The cloud-hosted nature of Salesforce means LC staff across multiple countries can access the system from any browser without the need for local installation, VPN, or server management. Salesforce also provides automatic backups, a robust API for future integrations, and a large ecosystem of documentation and support resources that will help LC maintain the system independently after project handoff.

2.2 Salesforce Data Model Design

The core data model within Salesforce will be structured as follows. The Account object will store member organizations and alliances, differentiated by a Record Type field (Member Organization vs. Alliance). Each Account record will include standard fields for name, country, address, phone, website, and email, as well as custom fields for organization name in local language, legal entity status, region of work, year joined, membership type (Full or Associate), disease areas (multi-select picklist), services provided (multi-select picklist), advocacy leadership level, engagement category, and social media links for nine platforms (Facebook, X/Threads/BlueSky, Instagram, YouTube, TikTok, LinkedIn, RedNote, Weibo, and Other).

The Contact object will store individuals, each linked to one or more Account records via standard Salesforce Account-Contact relationships and, where needed, custom junction objects to capture role-specific information (e.g., an individual's role at a member organization versus their role at an alliance). Contact records will include fields for profession, primary working languages, functional role, and disease area focus.

Two custom objects will round out the model. A Communication Log object (related to Accounts and Contacts via lookup relationships) will store date, type (email, meeting, call), topic, and follow-up status for each interaction. An Activity Participation object will record which LC activities (GPS, Global Summit, WLAD, HTA SIG, Policy SIG, CABs, Board, Committee, etc.) each member or individual participates in, with a year field to enable longitudinal tracking. Free-text assessment fields (organizational strengths, areas for development, key challenges) will be implemented using Salesforce's long text area fields, with historical snapshots maintained through field history tracking or a custom notes-style related list.

2.3 Alternative Frameworks Under Evaluation

While Salesforce is our primary choice, the team is also evaluating two alternative approaches as contingency options. If during Sprint 2 proof-of-concept work we identify significant limitations with Salesforce for LC's specific use case, we will pivot to one of these alternatives:

Alternative A: Custom Web Application on AWS. A custom solution using a Python/Django back end with a PostgreSQL database hosted on AWS (EC2 or RDS). This approach offers maximum flexibility and can be tailored precisely to LC's specifications. However, it requires significantly more development effort, ongoing server maintenance, and would be harder for LC to maintain independently after handoff. AWS free-tier resources could reduce initial hosting costs, but long-term costs would depend on usage.

Alternative B: Microsoft Power Apps with Dataverse. Since LC already operates within the Microsoft ecosystem (OneDrive, Office 365), Power Apps with Dataverse would provide native integration. The low-code platform reduces development time and may be easier for LC staff to modify after handoff. However, Power Apps licensing for nonprofits can be complex, and the

platform's reporting capabilities are less mature than Salesforce's. This option trades CRM depth for ecosystem familiarity.

2.4 Technologies the Team Needs to Learn

The team will need to develop expertise in several areas to successfully deliver this project. Salesforce administration and configuration is the primary learning requirement, including: the declarative customization tools (custom objects, fields, page layouts, validation rules), the Nonprofit Success Pack (NPSP) data model, permission set and role hierarchy configuration, report and dashboard building, and data import tools (Data Loader or Data Import Wizard) for migrating the existing Excel data. Team members will complete relevant modules on Salesforce's Trailhead learning platform during Sprints 1 and 2. Additionally, all team members will need to understand LC's domain—specifically the structure of global patient advocacy networks, the types of engagement activities tracked (GPS surveys, Global Summits, WLAD campaigns, SIG groups, CABs), and the membership classification system (Full vs. Associate members, advocacy leadership levels, and engagement categories).

2.5 Foreseen Issues

Several risks have been identified. First, data migration from the existing Excel spreadsheets will require careful cleaning and mapping, as the current files contain merged cells, region headers embedded as data rows, and inconsistent formatting across entries. The member list alone contains approximately 110 organizations across two categories (Full and Associate), and the stakeholder file tracks around 40 alliances with varying levels of data completeness. Second, LC staff are based across multiple countries and time zones, which may create scheduling challenges for requirements validation and user acceptance testing. Third, the communication log feature (described in LC's specs as a "customer interaction field where you can continually update but refer back to past comments") requires careful design within Salesforce to balance simplicity with historical record-keeping. Fourth, while Salesforce is powerful, its learning curve for both the development team and LC's end users is non-trivial; we will mitigate this through early Trailhead training and by creating tailored user documentation. Finally, ensuring the solution is maintainable by LC's non-technical staff after project handoff is a critical design constraint—we will prioritize declarative (clicks-not-code) customization wherever possible to keep future modifications accessible to LC administrators.

2.6 Team Strengths and Weaknesses

The team brings a mix of software development, database design, and project management skills. Our strengths include experience with relational database modeling, web application development, and cloud platforms. A potential weakness is limited prior hands-on experience with Salesforce administration and the Nonprofit Success Pack, which will require a learning ramp-up during the first two sprints. The team will mitigate this by leveraging Salesforce Trailhead modules, Salesforce's extensive documentation, and the nonprofit community forums.

Our familiarity with general CRM concepts and database design principles provides a strong foundation for quickly adapting to the Salesforce platform.

3. Expected Timeline

The project follows a Scrum methodology with two-week sprints. Below is the expected timeline with goals for each sprint and key deliverables:

Sprint	Dates (Approx.)	Goals and Deliverables
Sprint 1	Weeks 1–2	Requirements elicitation; Salesforce org setup (Power of Us application); Trailhead training; project proposal; walking skeleton
Sprint 2	Weeks 3–4	Build Salesforce framework: custom objects, fields, page layouts, and record types; proof-of-concept validation against LC specs; finalize platform decision
Sprint 3	Weeks 5–6	Project pitch presentation; data migration from Excel into Salesforce; populate CRM with member, individual, and alliance data; configure reports
Sprint 4	Weeks 7–8	Build reporting dashboards and export workflows; implement communication log and activity tracking; write user documentation and admin guide
Sprint 5	Weeks 9–10	Make system modular (configurable fields and picklist values); user acceptance testing with LC staff; final bug fixes; transition planning
Final	Week 11+	Final presentation; project deliverables submission; handoff documentation and admin training for LC staff

4. Communication

4.1 Communication with Sponsor

The primary point of contact at LC is Mikaela Illies, Digital Communications Specialist (marketing@lymphomacoalition.org). CEO Lorna Warwick is also available to join meetings as needed. The team will meet with LC representatives on Tuesdays from 5:00–6:00 PM EST. LC staff will not attend every meeting, but will participate during early sprints for requirements

validation and later sprints for user acceptance testing. Deliverables for sponsor meetings include: requirements confirmation documents, Salesforce prototype demonstrations, progress updates, and requests for feedback on interface design and data structure.

4.2 Communication Within Team

The team will hold stand-up check-ins three times per week (Monday, Wednesday, Friday) via a shared messaging platform (Discord or Microsoft Teams). Each stand-up covers: what was completed since last check-in, what is planned next, and any blockers. Sprint planning and retrospective sessions will occur every other Friday in class, as outlined in the course structure. The Scrum Master role will rotate each sprint so that all team members gain experience facilitating. Configuration work, documentation, and any custom code will be tracked through a private GitHub repository. Salesforce configuration changes will be documented in a shared changelog to ensure all team members are aware of schema and layout modifications.

5. Initial User Stories

The following user stories were elicited from LC's database specification document and the Q&A session with CEO Lorna Warwick. They are listed in priority order:

US-01: As a LC Staff Member, I want to add and edit member organization records (including organization name, country, contacts, address, email, website, social media, year joined, and membership type), so that I can maintain an accurate and up-to-date directory of all LC member organizations.

US-02: As a LC Staff Member, I want to add and edit individual contact records and link them to one or more member organizations and/or alliances, so that I can track who is associated with which organizations and in what capacity.

US-03: As a LC Staff Member, I want to add and edit alliance/stakeholder records (including involvement level, strategic priority, geographic scope, and alignment with LC strategy), so that I can manage LC's external partnerships and collaborations.

US-04: As a LC Staff Member, I want to log communications (date, type, topic, follow-up needed) against any member, individual, or alliance record and view the full communication history, so that I can maintain a chronological record of all interactions.

US-05: As a LC Staff Member, I want to record which LC activities (GPS, Global Summit, WLAD, SIG groups, CABs, etc.) each member or individual participates in, tracked by year, so that I can see engagement trends over time.

US-06: As a LC Staff Member, I want to filter and search member lists by criteria such as region, membership type, disease area, services provided, engagement level, and advocacy leadership category, so that I can quickly find relevant subsets of members for targeted outreach.

US-07: As a LC Staff Member, I want to export filtered member and contact lists to CSV or Excel format, so that I can upload them directly to the CONNECT email platform for newsletters and communications.

US-08: As a LC Administrator, I want to assign different access levels to users (e.g., read-only for Board members, read-write for staff), so that data integrity is maintained and unauthorized changes are prevented.

US-09: As a LC Staff Member, I want to use multi-select checkboxes for disease areas and services provided, with optional comment fields for subtypes and other categories, so that I can efficiently categorize members without free-text inconsistencies.

US-10: As a LC Staff Member, I want to view and update free-text assessment fields (organizational strengths, areas for development, key challenges) with historical tracking so past entries are preserved, so that I can see how an organization's profile has evolved over time.

US-11: As a LC CEO/Manager, I want to view summary reports and dashboards showing member counts by region, membership type, engagement level, and activity participation, so that I can assess the health and engagement of the global network at a glance.

US-12: As a LC Administrator, I want to add, rename, or remove custom fields and picklist values in Salesforce without developer assistance, so that the system can adapt as LC's tracking needs evolve over time.