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NETSANET: AI-Powered Digital Platform for Women's Support and Case Management

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1. Introduction

Violence, harassment, and discrimination against women continue to be deeply rooted social and legal challenges in Ethiopia.[1] Despite the presence of several governmental bodies, community initiatives, and non-governmental organizations working to protect survivors' rights, access to timely and effective support remains severely limited. The primary barriers are often not logistical but psychosocial; deeply embedded cultural norms, community stigma, and fear of retaliation create an environment of silence where violence is treated as a private matter, not a public crime.[2]

This context creates a critical "pre-reporting" gap, where survivors need a safe, trusted, and *confidential* space to understand their rights and build a case before engaging the formal system.

Simultaneously, Ethiopia's institutional response to Gender-Based Violence (GBV) is undergoing a historic transformation. In September 2025, the Ministry of Women and Social Affairs (MoWSA) officially launched the landmark **National GBV Case Management Guideline**.[4] This new national policy, developed with partners, creates a multi-sectoral framework to ensure a standardized, survivor-centered, and coordinated response.

This new policy, however, creates a critical **"implementation gap."** Frontline institutions like MoWSA and key partners such as the Ethiopian Women Lawyers Association (EWLA) are now mandated to follow these coordinated guidelines, but their digital infrastructure remains fragmented and reliant on manual, paper-based processes.[5] This leads to fragmented information, poor inter-agency coordination, and administrative bottlenecks that hinder a survivor's path to justice.[4]

Furthermore, any digital solution operating in this space must navigate a new legal landscape. The enactment of Ethiopia's first **Personal Data Protection Proclamation (No. 1321/2024)** [6] imposes strict legal obligations on how "sensitive personal data" such as a GBV report is collected, processed, and protected.

The proposed system, Netsanet, is a **B2B2C (Business-to-Business-to-Consumer) hybrid platform** designed to solve this multifaceted problem. It is an AI-powered digital ecosystem built on a "confidentiality-by-design" architecture.

- **For Survivors (B2C):** It serves as the secure, confidential "front door" to seek help, access AI-powered legal guidance, and build a legally verifiable case.
- **For Institutions (B2B):** It serves as the digital *backbone* for the 2025 National Guideline [4], providing a comprehensive Case Management Information System (CMIS) to automate intake, manage cases, and coordinate inter-agency referrals.

2. Statement of the Problem

Violence against women is a pervasive global violation of human rights, affecting millions of individuals regardless of geography or socioeconomic status. While international frameworks exist to combat these abuses, the translation of these rights into safety and justice for survivors remains a significant challenge worldwide. In Ethiopia, this crisis is acute, where statistics indicate that more than one in three women face physical, emotional, or sexual violence during their lifetime. Despite this high prevalence, only a small fraction of incidents are ever formally reported. This silence is often driven by deeply rooted cultural norms and community stigma that treat violence as a private family matter rather than a public crime, creating a psychosocial barrier that prevents women from seeking help.

Currently, the institutional response in Ethiopia is undergoing a transformation with the Ministry of Women and Social Affairs (MoWSA) launching the 2025 National GBV Case Management Guideline to standardize care. However, a critical gap remains between this policy and its practical implementation. The social service sector suffers from a "digital vacuum," relying heavily on fragmented, manual, and paper-based processes. Frontline institutions and NGOs, such as the Ethiopian Women Lawyers Association (EWLA), often lack the unified digital infrastructure required to efficiently manage intake, track cases, or coordinate referrals between agencies. Consequently, survivors face administrative bottlenecks and a lack of coordinated support, which can lead to re-victimization or the failure of cases due to lost evidence or poor tracking.

The proposed solution, "Netsanet," addresses these systemic failures by introducing a B2B2C hybrid platform that bridges the gap between the survivor and the institution. Unlike existing manual systems, this platform leverages technology to provide a secure, confidential entry point for survivors while simultaneously equipping institutions with a Case Management Information System (CMIS). Artificial Intelligence plays a pivotal role in solving the scalability and accessibility issues inherent in the current system. By utilizing AI for immediate triage and legal information retrieval, the platform can guide survivors through complex legal frameworks and route cases to the appropriate human experts without delay. This technological intervention ensures that the new national guidelines are not just policy on paper, but actionable, accessible, and efficient realities for Ethiopian women.

3. Objectives

3.1 General Objective

The general objective of this project is to develop a unified B2B2C digital platform that facilitates secure case reporting for survivors and streamlines case management and referral operations for institutional service providers in Ethiopia.

3.2 Specific Objectives

1. Conduct comprehensive requirement gathering from key stakeholders, including survivors, legal experts, and case managers, to define system needs.
2. Design and develop a secure platform architecture that ensures data privacy and compliance with the Personal Data Protection Proclamation.
3. Develop a secure evidence locker that allows users to upload and store digital evidence with cryptographic verification.
4. Train and integrate an AI-assisted triage model to analyze case descriptions and automatically route reports to the appropriate institutional departments.
5. Implement a Retrieval-Augmented Generation (RAG) system to provide users with accurate, context-aware legal information based on Ethiopian law.
6. Develop a comprehensive web-based dashboard (CMIS) for institutions to manage cases, track progress, and facilitate inter-agency referrals.
7. Enable secure, real-time communication channels between survivors and verified case managers or legal representatives.
8. Test and validate the platform's usability, security, and functionality through pilot testing with partner organizations.

4. Scope

The Netsanet project is **exclusively** designed to offer support and comprehensive case management services for **women aged 18 and older**. This specific focus is essential due to the distinct legal and ethical approaches to Gender-Based Violence (GBV) against adults versus the separate framework for Child Protection (CP) in Ethiopia.

For adult GBV survivors, the guiding principle, as outlined in the National GBV Guideline, is the absolute emphasis on the survivor's **consent and choice**. This means that the decision to

pursue any action, including reporting the violence to law enforcement or other official bodies, is **entirely** up to the individual woman. Her autonomy and self-determination are paramount.

In contrast, CP operates under a completely separate legal and ethical framework that requires **mandatory reporting** for any sexual violence against a child (a person under 18). Professionals who suspect or confirm child sexual abuse are legally obligated to report it to the appropriate authorities.

To ensure **full legal compliance** with both sets of regulations and to **ethically maintain the survivor-centered principle of consent** which is fundamental for adults, the Netsanet platform has been purpose-built as a secure, confidential, and consent-driven system specifically for adult women. By maintaining this clear separation, Netsanet guarantees that it can fully uphold the adult survivor's right to choose, without conflicting with mandatory reporting obligations required in CP cases.

The B2B2C Hybrid Platform Model

"Netsanet" is a two-sided marketplace ecosystem connecting survivors with institutional service providers.

1. Survivor Portal (B2C: Public-Facing)
This is the secure, confidential portal for survivors. Core features include:
- **Confidential Case Intake:** A user creates a private, encrypted account. Her identity is known *only* to the specific case manager she grants permission to, ensuring compliance with the 2024 Personal Data Protection Proclamation.[6]
- **Secure Evidence Locker with Blockchain Timestamping:** A survivor can upload evidence (photos, videos, audio, documents).
  1. **Storage:** The file itself is encrypted and stored in the platform's confidential database.
  2. **Proof:** The system instantly calculates the file's cryptographic hash (a unique, anonymous "fingerprint"). This hash—and *only* the hash—is anchored to a public blockchain using the OpenTimestamps protocol.[8]
  3. **Value:** This creates an *immutable, publicly verifiable, and tamper-proof timestamp*. It establishes a digital chain of custody, making the evidence legally admissible and defending it against claims of tampering.[8]
- **AI Legal Assistant (RAG):** An AI-powered chatbot that uses a Retrieval-Augmented

Generation (RAG) system.[9] It provides accurate, context-based legal guidance in Amharic and English by retrieving information *only* from a vector database loaded with Ethiopian legal documents (e.g., FDRE Constitution, Revised Criminal Code, etc.).[9]

- **Secure Chat:** A private, end-to-end encrypted chat feature for survivors to communicate *directly* with the verified case manager or lawyer assigned to their case.
- **Verified Service Directory:** Integrated maps help users locate the nearest vetted institutional partner (MoWSA offices, EWLA legal aid clinics [7], safe houses, and medical facilities).
- **Motivation Wall:** A fully *anonymous* community space, technically firewalled from the confidential case management system, where users can share stories of resilience.

2. Institutional Portal (B2B: Admin-Facing CMIS)

This is the secure backend dashboard for institutional partners (MoWSA, EWLA) to manage the 2025 Guideline.

- **AI-Assisted Triage Dashboard:** When a new case is submitted, this AI model analyzes the report, classifies the case type (e.g., "Physical Violence," "Workplace Harassment"), assesses risk, and automatically routes it to the correct case manager, streamlining intake.
- **Case Management Information System (CMIS):** A comprehensive dashboard for verified case managers to manage their assigned survivor cases, track progress, securely view timestamped evidence, and maintain case notes in a single, unified system.
- **Secure Inter-Agency Referral Portal:** Digitizes the "referral pathway" mandated by the MoWSA guideline.[4] A case manager can securely and confidentially refer a survivor to another partner service (e.g., from EWLA legal aid [7] to a medical facility) with a single click.
- **User Management & Security:** Tools for administrators to verify and manage the credentials of their case managers and volunteer lawyers, enforcing strict Role-Based Access Control (RBAC).
- **Anonymized Analytics:** Provides high-level, anonymized statistical reports and heatmaps on case types and locations to help institutional leadership allocate resources and identify trends, without exposing any survivor data.

Technical Stack

- **Frontend:** Next.js + Tailwind CSS
- **Backend:** Node.js + Express
- **Database:** Postgres (for encrypted case data), Vector database (for RAG legal corpus)
- **AI Integration:** Gemini 2.5 Pro, Hugging Face models, Custom ML Model (for AI Triage)
- **Blockchain Timestamping:** OpenTimestamps (Node.js client)
- **Real-Time Chat**
- **Maps:** Open-source APIs

5. Methodology

The development of the Netsanet platform will follow the **Agile software development methodology**. This approach is selected specifically because developing a solution for Gender-Based Violence (GBV) requires high adaptability and continuous feedback from sensitive user groups. Unlike traditional Waterfall models, Agile allows the development team to build the system in iterative sprints. This is crucial for this project because user requirements regarding safety, privacy, and legal compliance may evolve as prototypes are tested with survivors and case managers.

Furthermore, the Agile methodology supports the "Confidentiality-by-Design" approach mandated by the project's scope. By breaking development into smaller increments, the team can rigorously test security features—such as database encryption and access controls—at every stage rather than leaving them for the end. This iterative process ensures that the complex integrations of AI modules and blockchain timestamping are validated frequently, minimizing the risk of failure in a critical social service environment.

6. Plan of Activities

The project will be executed over six months, with the following phased activities:

The following table:

Activity	Timeline	Description
Requirement Gathering	Month 1	Conduct surveys and interviews with target users (survivors) and institutional stakeholders (MoWSA, EWLA).[4] Define B2C and B2B feature requirements.

UX/UI & System Design	Month 1	Develop prototypes and wireframes using Figma. Architect the 'Confidential-by-Design' system and database schema.[6]
Backend & Core Architecture	Month 2	Build the secure Node.js backend, Postgres database, and implement robust RBAC and encryption. Ensure compliance with the 2024 Data Proclamation.[6]
AI & Blockchain Integration	Month 3	Develop and integrate the two core AI modules (RAG Legal Advisor [9], AI Triage Engine). Integrate the OpenTimestamps module for the Secure Evidence Locker.[8]
Frontend Development	Month 4	Implement the user interface with Next.js for the Survivor Portal and the Institutional (CMIS) Portal, connecting them to the backend API.
Testing & QA	Month 5	Perform functional, usability, and security testing. Conduct pilot testing with a select user group from a partner institution.
Pilot Deployment & Feedback	Month 5	Launch a pilot version with a key institutional partner (e.g., EWLA [7]) to manage live cases. Collect and integrate feedback.
Final Launch & Documentation	Month 6	Deploy the platform publicly and produce user guides (for survivors and case managers) and technical documentation.

7. Budget Required

The estimated budget is **45,000 ETB**, broken down as follows:

The following table:

Category	Estimated Cost (ETB)	Cost-Saving Strategy
Development	30,000	Use open-source tools (Node.js, Postgres, Next.js). Utilize free, open-source libraries like OpenTimestamps for blockchain integration.[8]
UI/UX Design	5,000	Leverage Figma's free tier for prototyping.
Testing	3,000	Conduct peer-based testing to minimize costs.
Content & Resources	2,000	Source free legal materials [9] and curate content.
Marketing	2,000	Use university networks and B2B outreach to institutional partners (MoWSA, EWLA) for outreach.
Server & Hosting	3,000	Utilize free-tier cloud services where possible.
Total	**45,000**	

7.1 Justification for Budget Estimation

- **Development:** The largest portion covers the integration of complex features: the three distinct frontend portals, the secure multi-tenant backend, the real-time chat, and the two AI

- **Cost-Saving:** The use of open-source tools like OpenTimestamps for the blockchain component is critical, as it provides a legally robust feature for zero marginal cost.[3]
- **Testing:** Peer-based testing reduces costs while ensuring practical feedback.
- **Marketing:** Organic promotion and direct B2B partnership building is more effective and lower-cost than B2C ad campaigns.

8. Significance of the Study

"Netsanet" is a systemic solution with profound value for all stakeholders.

1. For Survivors (The B2C Value):

- **Empowerment:** Provides a single, secure, and confidential "front door" for a survivor to get help on her own terms.
- **Access to Justice:** The AI Legal Assistant democratizes access to legal information [9], helping survivors understand their rights under the Constitution and the Criminal Code.[9]
- **Stronger Cases:** The Secure Evidence Locker with blockchain timestamping transforms user-gathered data into *tamper-proof legal evidence*, directly addressing the "lack of evidence" problem [7] that causes cases to fail.[8]

2. For Institutions (The B2B Value):

- **Digital Implementation of National Policy:** This is the core value. Netsanet is the *digital backbone* for the **2025 National GBV Case Management Guideline**.[4] It provides MoWSA, EWLA, and other partners the tool they need to execute their new national mandate.
- **Solves Data Fragmentation:** It replaces inefficient, fragmented, and manual paper systems [5] with a unified CMIS, improving data quality and saving administrative time.[4]
- **Automates Bottlenecks:** The AI-Triage engine and digital referral system solve coordination and intake-management challenges, allowing case managers to focus on survivors, not paperwork.

3. For Ethiopia's Legal & Digital Ecosystem:

- **Sets a New Legal Standard:** Becomes one of the first platforms in Ethiopia built for full compliance with the **2024 Personal Data Protection Proclamation** [6], setting the standard for handling "sensitive personal data".[6]
- **Alignment with Global Goals:** The platform directly supports SDG 5 (Gender Equality), SDG 10 (Reduced Inequalities), and SDG 16 (Peace, Justice, and Strong Institutions).[1]

Conclusion

"Netsanet" is not just an app—it is the digital ecosystem for Ethiopia's new era of Gender-Based Violence response. It is the secure bridge *between* the survivor and the institution, ensuring *confidentiality* for the victim and *capability* for the case manager.

This B2B2C hybrid model transforms a simple idea into a systemic solution. It provides an immediate, confidential lifeline for survivors while simultaneously solving the critical data fragmentation and coordination-gap challenges faced by frontline institutions. By building the digital backbone for the 2025 National GBV Case Management Guideline [4], "Netsanet" turns national policy into a digital reality, empowering survivors to turn silence into legally-sound action.

Thank you for considering this proposal. "Netsanet" represents not only technical innovation but a profound step toward social justice in Ethiopia.

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