Virtual Incubator published – first version

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Version	Date	Author(s)
0.2	21.05.2025	ALTFACTOR, PSB

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Executive Summary

This deliverable presents the first published version of the ProCleanLakes Virtual Incubator and Accelerator, including its functional modules (account management, training, coaching, messaging, administration and support), the web-based user interface, and the underlying technical infrastructure. This version establishes the baseline platform for stakeholder engagement, trainers' content delivery and coaches' personalised support, ready for piloting and validation in WP5.

1 Introduction

Environmental entrepreneurs across Europe face a pressing challenge: acquiring the specialized knowledge and support necessary to transform innovative lake restoration ideas into sustainable ventures. The ProCleanLakes Virtual Incubator meets this need by combining structured e-learning modules grounded in Lean Start-Up and Design Thinking with personalized coaching workflows and real-time collaboration tools. Such an integrated approach is essential for enabling stakeholders - from community leaders to commercial founders - to navigate complex ecological and business landscapes with confidence.

1.1 Task 5.2

The objective of task 5.2 is to develop a virtual business incubator and accelerator module, exposed and used through the web knowledge hub, that will connect coach entities with the entrepreneurs wanting to develop different business models, for which lake cleaning and restoration processes are directly related to their activities.

The web business incubator module will allow the involved parties to establish direct connections between them, will help the entrepreneurs to have access to relevant lakes related data and it will act as software dispatcher handling the planning of the meetings between entrepreneurs and coaching stuff.

1.2 Objectives of the Work Reported in this Deliverable

One of the main objectives of the ProCleanLakes platform is to create a robust, modular, and scalable web application that serves as a ***Virtual Business Incubator & Accelerator (VBIA)*** to support environmental restoration and business development. The deliverable aims to provide a digital ecosystem where stakeholders, trainers, and coaches can interact effectively, access resources, manage training modules, coordinate coaching sessions, monitor progress, and contribute to environmental goals.

Specifically, the platform aims to:

- Facilitate account creation for different types of users (stakeholders, trainers, coaches)

- Provide structured training modules covering topics such as Lean Start-Up, Design Thinking and Value Proposition Design

- Support the entire coaching process, covering needs assessment, feedback

- Ensure transparency, engagement, and participation through notifications, feedback mechanisms, downloadable resources, and a public blog

- Promote digital accessibility and inclusivity by ensuring the platform is responsive, secure, and compliant with modern web standards

- Act as a catalyst for change by mobilizing the community towards environmental protection and business growth through education and collaboration

By achieving these objectives, the ProCleanLakes Virtual Incubator and Accelerator Website for Business Development not only digitizes the management and coordination of training and coaching but also empowers stakeholders with knowledge and tools for sustainable practices.

2. Outline of the Deliverable

The present report offers a realistic overview of the ProCleanLakes web application, designed as a Virtual Business Incubator and Accelerator to support environmental restoration and business growth. The platform is structured to serve different kinds of users, stakeholders, trainers, and coaches through a modular, scalable system, providing dedicated spaces for training, coaching, communication, and support. The implementation prioritizes user experience, system responsiveness, and integration of modern web technologies, while also reflecting certain gaps compared to the initial architectural blueprint.

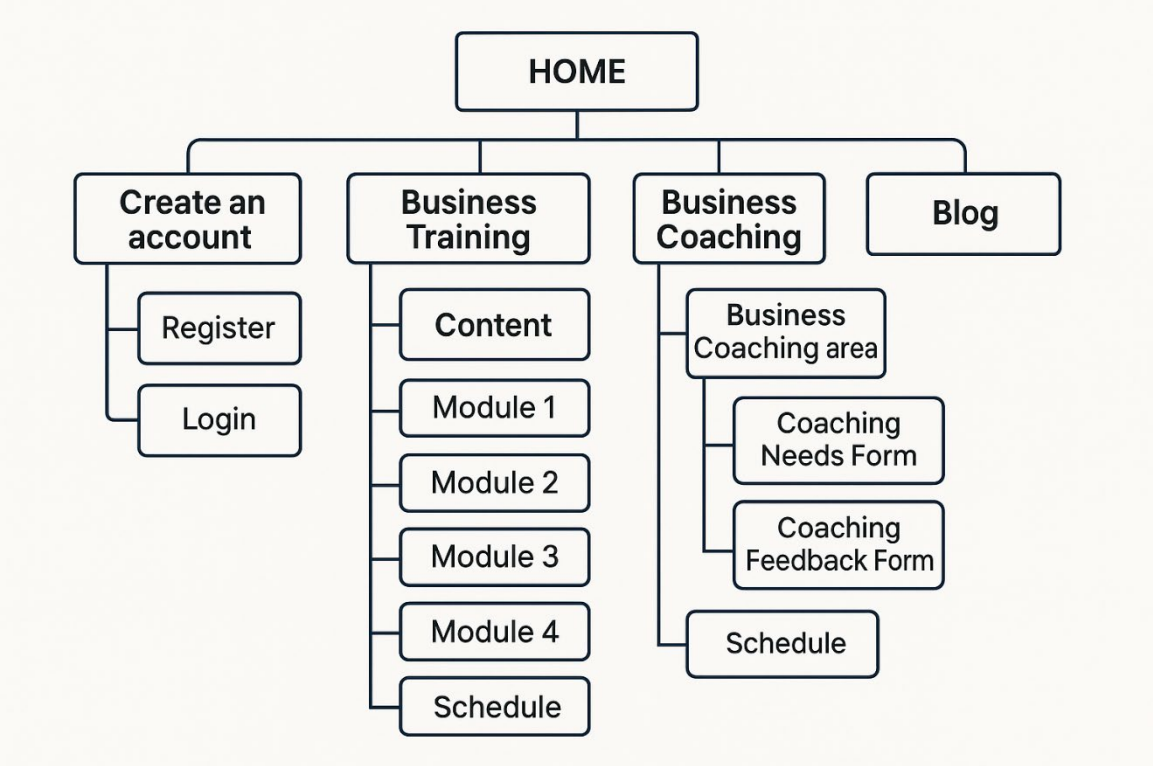

Figure 1 Architecture Schema

The business requirements are largely reflected in the current implementation. The platform provides secure account creation and login functionality for all user types—stakeholders, trainers, and coaches—using Passport.js with role-based guards and bcrypt-encrypted passwords. The system uses cookie-based sessions for identity management. Each role interacts with the system via customized interfaces: stakeholders access training and coaching modules, submit requests, track sessions, and provide feedback; trainers manage course content and scheduling; coaches receive requests, deliver plans, manage scheduling and monitor coaching engagements. The system supports notification mechanisms via email (Mailer).

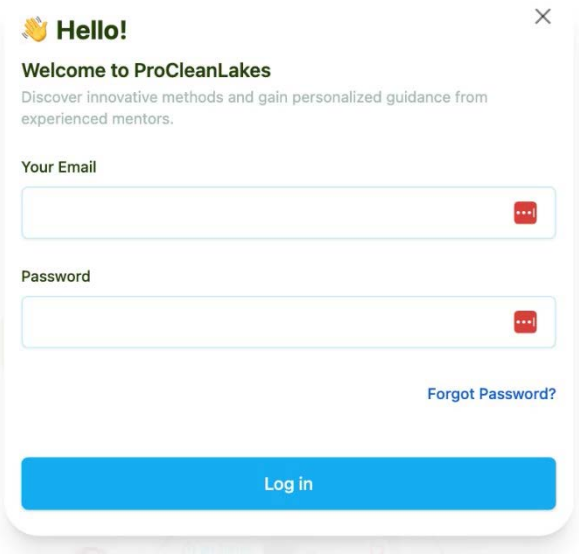

Figure 2 Login

On the technical side, the platform has a well-defined architecture based on React.js, Vite, TailwindCSS, Zustand, and other modern frontend tools, offering a responsive and modular user interface. The backend is developed using NestJS and Node.js, supported by Prisma for ORM and MySQL as the main structured data store. The application also supports real-time messaging using Socket.IO and handles email/SMS communications through Twilio and Mailer.

From a structural perspective, the application includes essential sections such as the Home page, user account registration, profile management, dashboard access, business training modules, coaching flows, a blog for trainers/coaches, and session feedback mechanisms. Training sessions include PDF and video content and are delivered via integrated video conferencing tools like Zoom. The coaching component follows a structured five-step process, from needs assessment to coach assignment, plan delivery, session execution, and evaluation. However, elements such as a dedicated help section (Help & Support module), dynamic FAQs, or system-wide announcements via an admin-controlled interface are still absent, limiting user assistance and transparency.

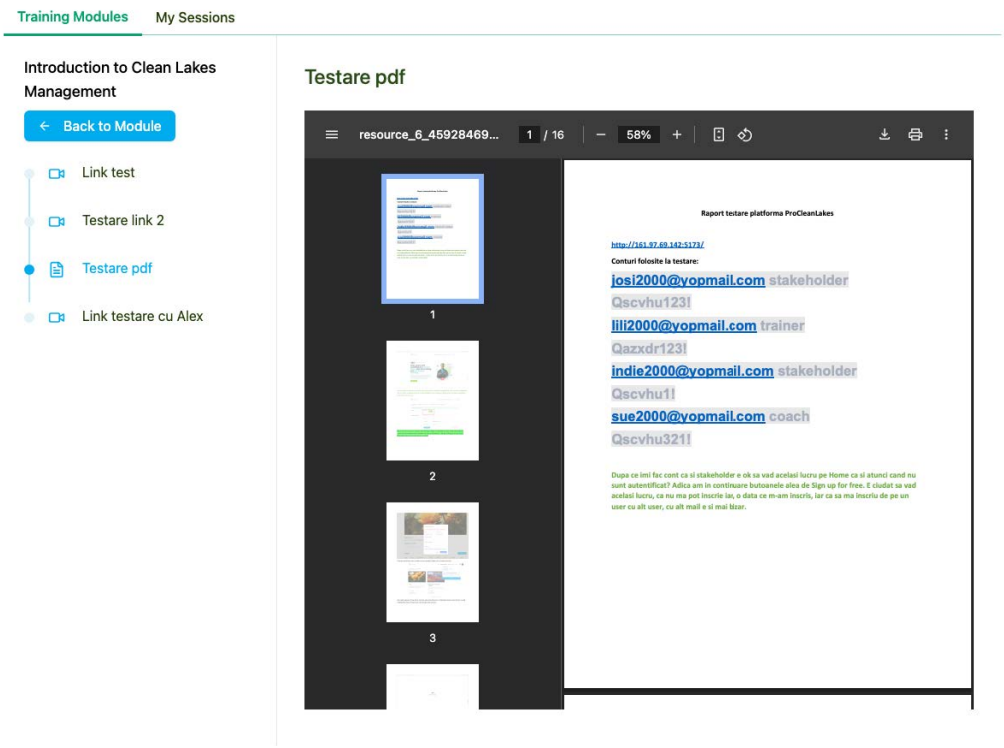

Figure 3 Training Module - Resource Page

Functionally, the platform operates as intended for most training and coaching flows. Users can track their session history, access materials, and interact with the platform in real time. However, key architectural features such as message queues, dashboards for admin monitoring. As such, while the core user experience aligns with the original goals, some advanced backend functionalities remain to be implemented to achieve full scalability and system robustness.

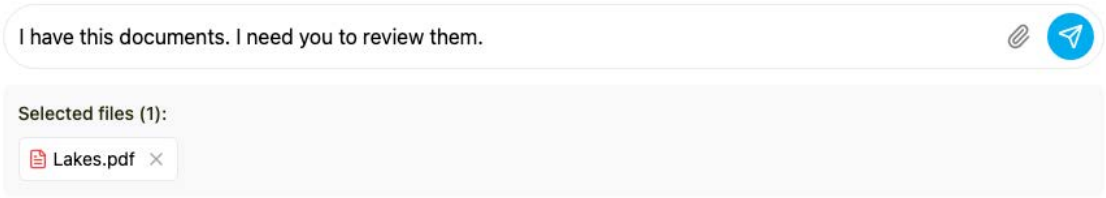

Figure 4 Coaching Module – Message

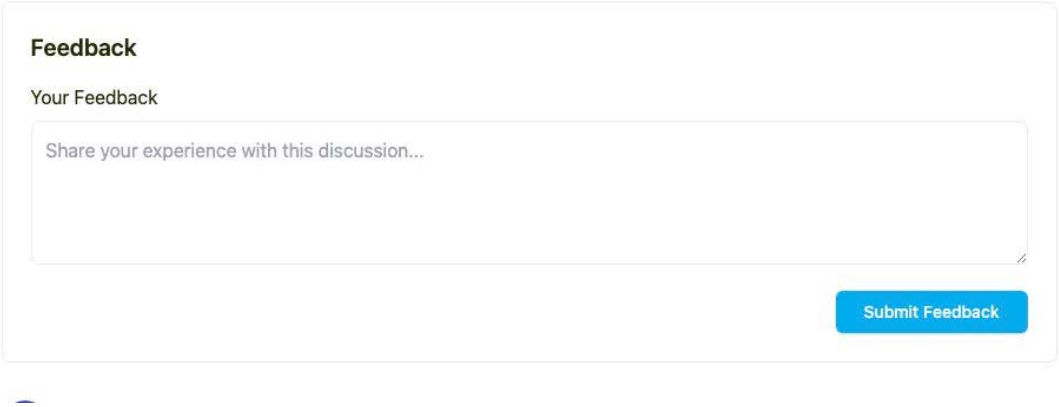

Figure 5 Coaching Module – Feedback

Regarding accessibility and compatibility, the frontend uses modern UI libraries and is responsive across devices and screen sizes. Yet, without formal accessibility testing or implementation of screen-reader support and keyboard navigation compliance, its inclusivity remains only partially validated.

In conclusion, the current state of the ProCleanLakes Virtual Incubator and Accelerator delivers the foundational functionalities needed for a digital incubator—account management, training, coaching, notifications, and messaging—but but there are still improvements to be done in key backend services, content management flexibility, and accessibility assurance. These gaps provide clear opportunities for refinement in future development phases to ensure full alignment with the platform's intended impact and operational sustainability.

3.The significance of a web presence

In the current context, web presence has become a fundamental element for any initiative seeking meaningful community and environmental impact.

The ProCleanLakes Virtual Incubator and Accelerator, dedicated to the management of training and coaching sessions for cleaning lakes, leverages a modern web application to facilitate access to information, transparency, and collaboration among diverse stakeholders.

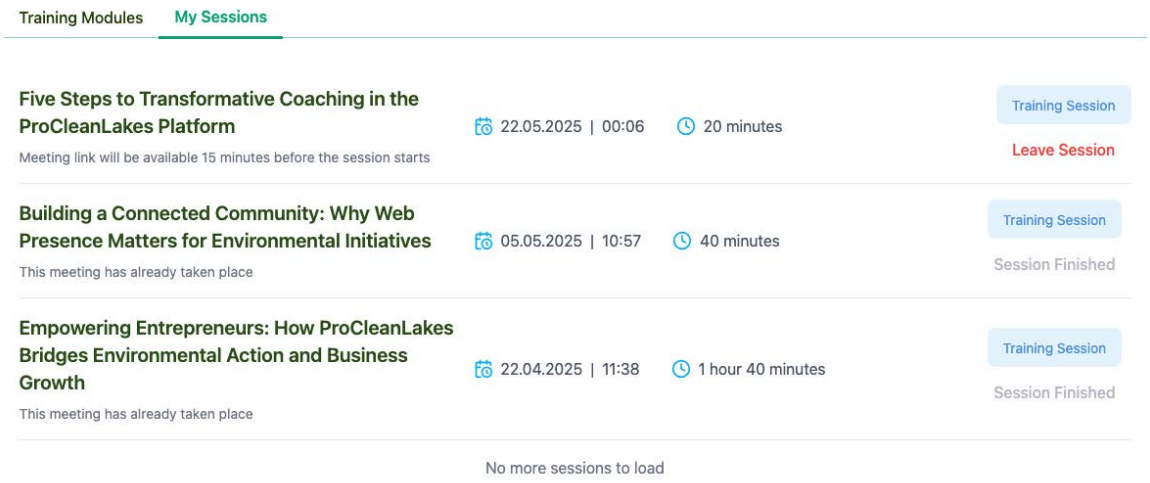

Figure 6 Training Module - Schedules

A web application allows users to quickly and easily access resources, regardless of location or device, eliminating geographical and temporal barriers that could limit participation in environmental protection activities. Through the platform, information about sessions, educational resources, and results is available in real-time, increasing public awareness and engagement.

Transparency is another major benefit of web presence. All activities, training sessions, feedback, and outcomes can be monitored and analyzed by users, administrators, and coaches. This openness builds trust in the project and allows for objective evaluation of progress while enabling rapid identification of potential issues or needs for adjustment.

Interaction between actors is also greatly improved via the web application. Users can communicate directly with coaches or trainers, request coaching sessions, participate in discussions and provide feedback—all contributing to the creation of an active, engaged community.

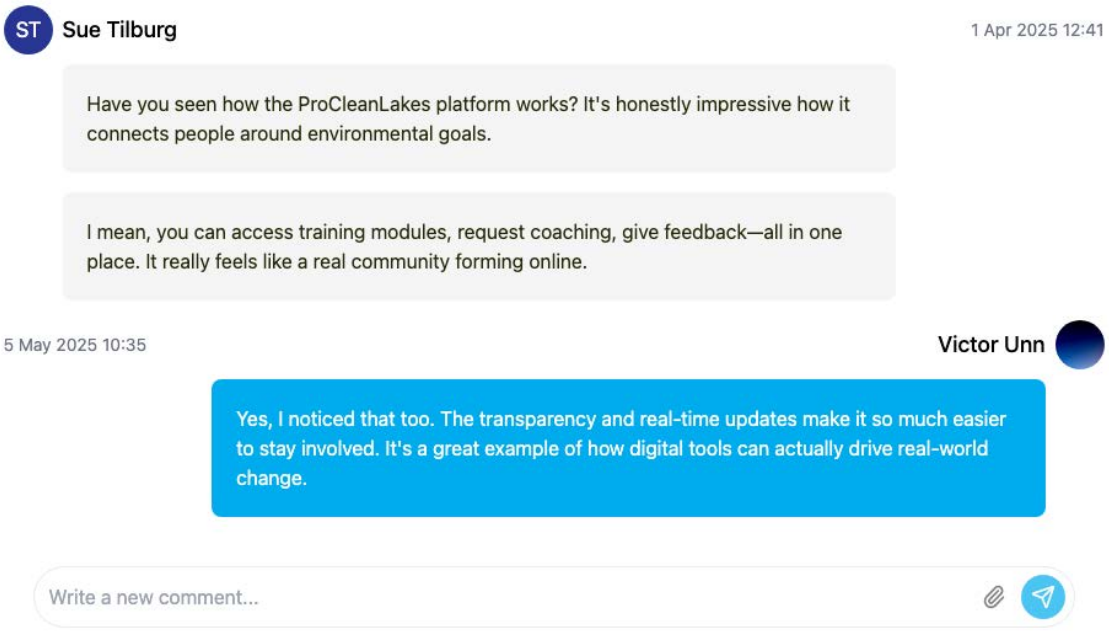

Figure 7 Coaching Module – Chat

Feedback collection is essential for continuous improvement of services offered. A modern web application allows the implementation of effective mechanisms for collecting and analyzing feedback—whether through forms, comments, or session evaluations. This process ensures constant adaptation of content and training methods to users' real needs, thereby increasing the project's efficiency and relevance.

The web platform also supports a structured five-step coaching process:

1. Submission of coaching needs via an online form
2. Notification of coach assignment via email
3. Delivery of a personalized coaching plan
4. Validation of the plan by the beneficiary
5. Evaluation through a coaching feedback form and a coaching report

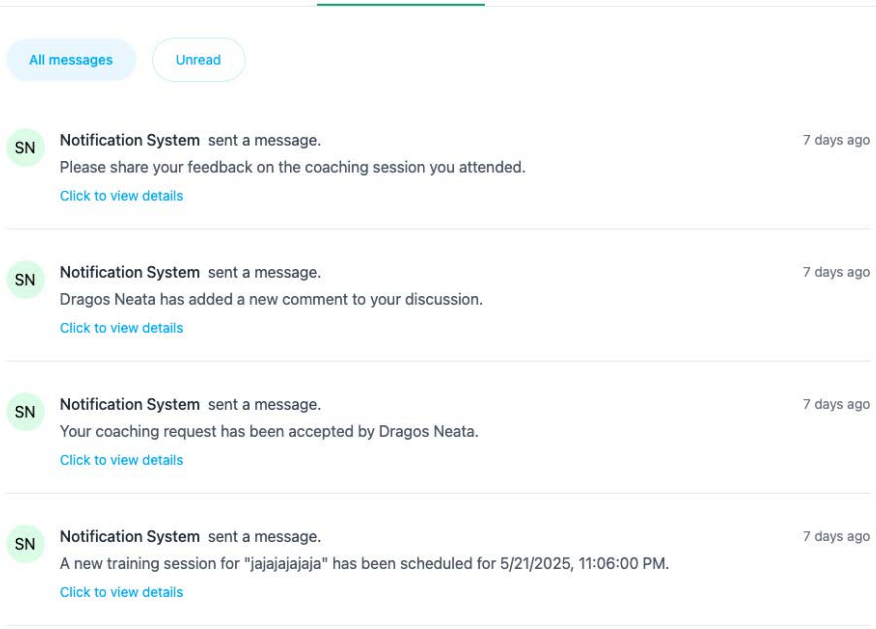

Figure 8 Notifications

Additionally, a public blog enables trainers and coaches to publish articles accessible even to non-registered visitors, expanding the platform's outreach.

In conclusion, ProCleanLakes' web presence is not just a technological tool—it is a strategic component ensuring visibility, efficiency, transparency, engagement, and sustainability for the project's mission.

4.Structure

The architecture of the ProCleanLakes Virtual Incubator and Accelerator Website for Business Development reflects modern software development principles, based on a clear separation between frontend and backend, each with specific roles and responsibilities.

Frontend (React, Vite)

Responsible for user interface and user experience:

- pages: main pages (Home, Profile, Dashboard, Blog, Training modules and Coaching discussions)

- components: reusable components (common, notifications, profile, auth, coaching, dashboards, UI)

- services: handling interaction logic with backend via REST APIs

- supporting directories: `layouts`, `routes`, `utils`, `providers`, `lib`, `constants`, `hooks`, `styles`, `types`, `assets`

Frontend configuration uses:

- `vite.config.js` for build and dev server

- `tailwind.config.js` for styling

- `tsconfig.json` for TypeScript type checking

- ESLint, Prettier, Docker configs

Backend (NestJS, Prisma, PostgreSQL)

Responsible for business logic, data persistence, external integration:

- Modular structure: `users`, `auth`, `training-modules`, `discussions`, `notifications`, `blog`, `files`, `twilio`

- Prisma ORM for database mapping, migrations, and validation

- MySQL for structured data, MongoDB for dynamic content (FAQs)

- Notification and messaging via MailTrap (email)

- Video conferencing integration with Zoom/Microsoft Teams

The platform uses micro services architecture with REST APIs for communication between components, ensuring scalability and interoperability.

5.Sections

The platform contains several core sections and functional areas:

Home introductory page presenting project objectives, benefits for stakeholders, access points to training and coaching

Figure 9 Home Page

Create an Account registration form collecting name, surname, email, stakeholder type (aspiring entrepreneur, business owner, other), username, password, creating a stakeholders database visible only to administrators, trainers, and coaches

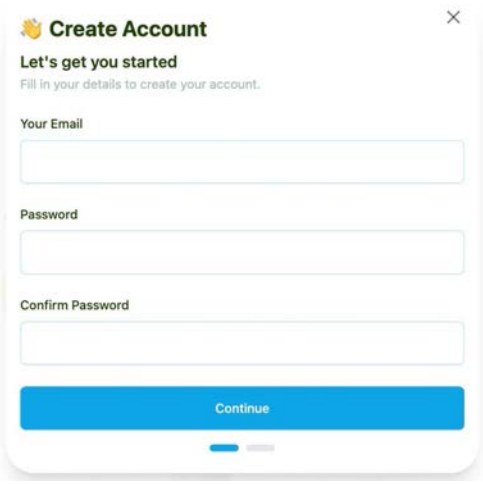

Figure 10 Register - Step 1

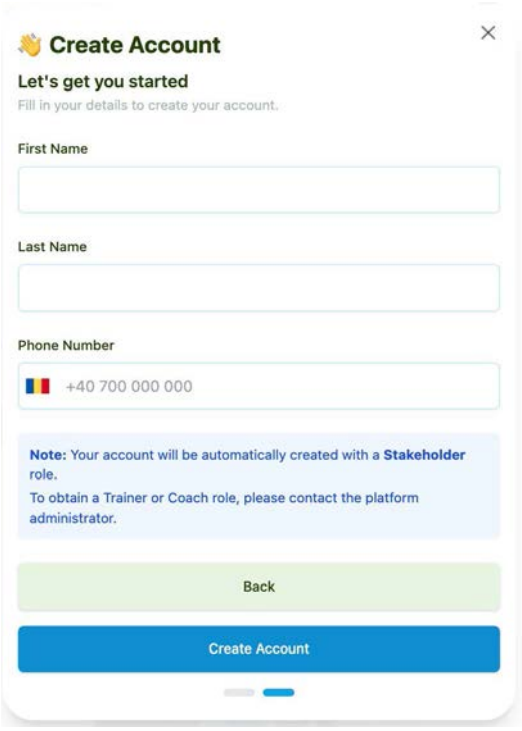

Figure 11 Register – Step 2

Business Training access to content modules covering Lean Start-Up, Design Thinking, Business Model Canvas, Value Proposition Design, with materials in PDF and video formats; Schedule page showing upcoming live sessions via video conferencing

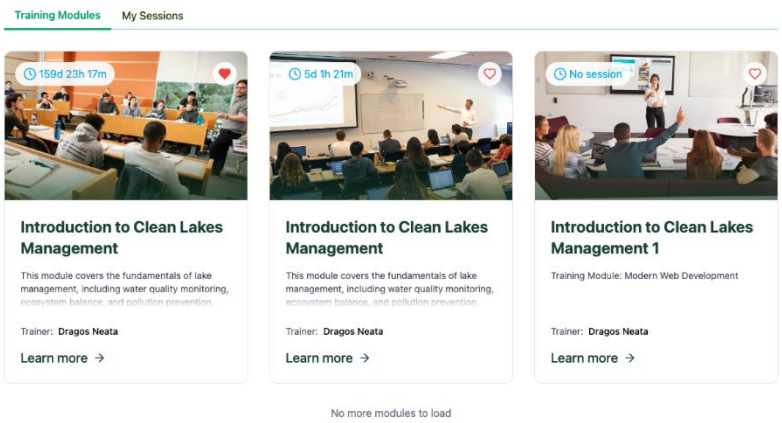

Figure 12 Training Module - List View

Business Coaching structured five-step process including coaching needs submission, notification of assignment, coaching plan delivery, validation, scheduling of three online coaching meetings, and post-session feedback form.

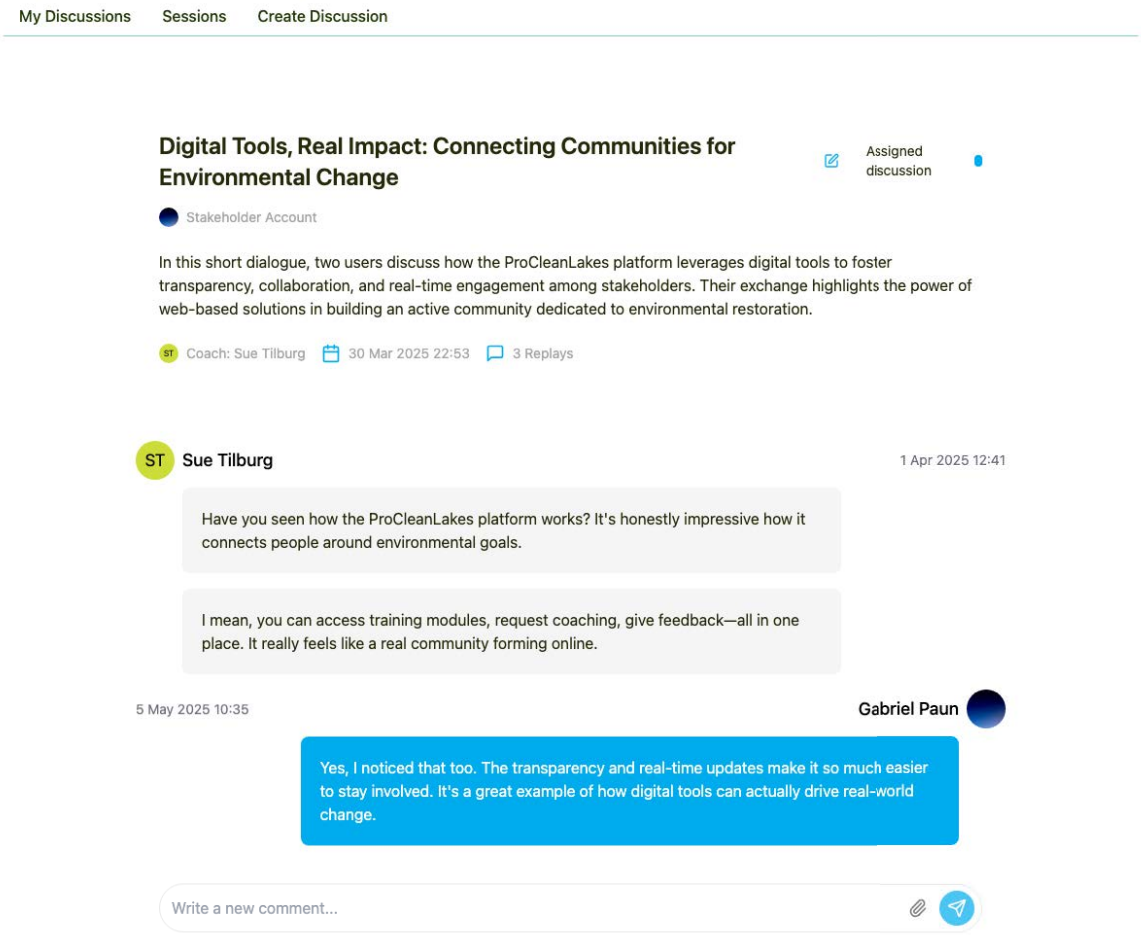

Figure 13 Coaching Module – Discussion between coach and stakeholder

Beneficiary Area dashboard showing coaching interactions, schedules, feedback.

Business Coach Area interface for coaches to receive requests, fill coaching plans, manage sessions, submit coaching reports.

Blog public articles posted by trainers/coaches, accessible without registration.

Figure 14 Blog - View List

Profile manage personal data, contact details, password, profile picture

Dashboard overview of training/coaching sessions, notifications, progress, access to materials

Coaching Needs Form, Coaching Plan, Coaching Feedback Form specific forms and templates integrated in the coaching workflow

Each section integrates tightly with backend logic and user roles, ensuring **role-based access** and **personalized user journeys**.

6.Browser Compatibility

The ProCleanLakes platform is optimized for modern browsers: Google Chrome, Mozilla Firefox, Microsoft Edge, Safari.

Technologies like React and Vite ensure high performance and compatibility with current web standards. The application supports responsive design, adapting to desktops, laptops, tablets, smartphones.

Accessibility features include:

- Keyboard navigation

- Screen reader support

- Clear visual elements

JavaScript must be enabled for full functionality since content updates dynamically without full page reloads.

No special configurations are needed except an up-to-date browser and stable internet connection. Developers can deploy locally or in virtualized environments (Docker).

Browser compatibility also ensures security compliance, as modern browsers provide protections against vulnerabilities and implement updated security protocols, safeguarding user data.

7.Areas for improvement (User experience focus)

1. **Onboarding Guidance:** While the interface is intuitive, new users might feel overwhelmed without an introductory video. A short guided-tour or welcome video could help users understand key features quickly.
2. **Help and Support Access:** Users currently have limited access to help if they get stuck. Adding a visible "Help" button or FAQ section would provide more value to users.
3. **Feedback Visibility:** While feedback collection is built into the coaching process, users would benefit from seeing how their input is used to improve the platform or content.

4. **Content Personalization:** Offering users recommendations for training modules or next steps based on their interests or completed sessions would make the experience feel more tailored and motivating.

These improvements will be addressed in the updated version of the software.