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PROCAREFUL

D.2.1.4 PROCAREFUL platform

WP2, Activity 2.1

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Technical references

Deliverable No.	**2.1.4**
Work Package	**WP2**
Deliverable responsible organization	**Britenet**

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1. Introduction

Document Purpose: The purpose of this document is to provide a description of the architecture, functional, technical, and legal requirements, as well as the implementation for the ICT platform that serve as the central component of the PROCAREFUL project.

Project Description: The project aims to develop an innovative hybrid care model that, through digital solutions, will provide more sustainable and proactive home care for older adults and individuals over 55 who are at risk of cognitive and physical decline.

This model and its digital platform are specifically designed for seniors who need varying levels of care and can still benefit from preventive solutions. The target audience also includes those showing early signs of cognitive or physical decline, or those who are living alone or feel lonely, especially during long absences of family members. The model aims to improve or at least maintain their mental, social, and physical wellness and autonomy by encouraging the development of healthy habits.

2. Functional Requirements

This chapter provides a detailed overview of the core functionalities of the PROCAREFUL platform, explaining what the system does, how its different components work, and how they serve the needs of various user groups. It serves as a blueprint for the platform's design and operation, ensuring it meets all project objectives, from proactive care to seamless user interaction.

2.1. General Platform Functionalities

- Proactive Care: The system enables the early detection of signs of health decline, allowing for the implementation of personalized interventions. This is achieved through a comprehensive assessment process conducted by a formal carer, which includes tests like the Montreal Cognitive Assessment (MoCA) for cognitive status, the International Physical Activity Questionnaire (IPAQ) for physical status, and the De Jong Gierveld Scale for loneliness. Based on the results, the platform recommends a tailored training plan. If a senior's performance falls below the expected level based on their initial assessment, the platform generates a "Performance Warning" notification for their assigned caregivers. This proactive approach ensures that caregivers can quickly identify and address potential issues.
- Cooperation is Central: The PROCAREFUL model is built on the idea of cooperation between formal caregivers, informal caregivers, and seniors to deliver comprehensive and personalized care.
- Training and Assessment: The system include tools for remote brain training, physical assessment, and exercise programs, supported by AI/ML.

2.2. User Interfaces

The platform's users have access to different interfaces depending on their role. These interfaces are a web-based administrative panel for caregivers and administrators, and a mobile Progressive Web Application (PWA) for seniors.

- Interface for End Users (Seniors):
    - Assessment and Rehabilitation Tools: This module provides seniors with various **cognitive games** and **physical exercises**. The cognitive games include classics like Tic Tac Toe, Sudoku, Wordle, and Memory, while the physical exercises are tailored to a person's abilities and include fall prevention, breathing exercises, and sitting exercises. These activities are accessed directly through the senior's mobile app.
    - Activity Log: The platform allows seniors to track their daily progress towards their goals on the dashboard of their mobile app. These goals are preset as part of the personalized care plan assigned by a formal carer based on the senior's initial assessment. Seniors can also reflect on and record their experiences in a personal diary feature.

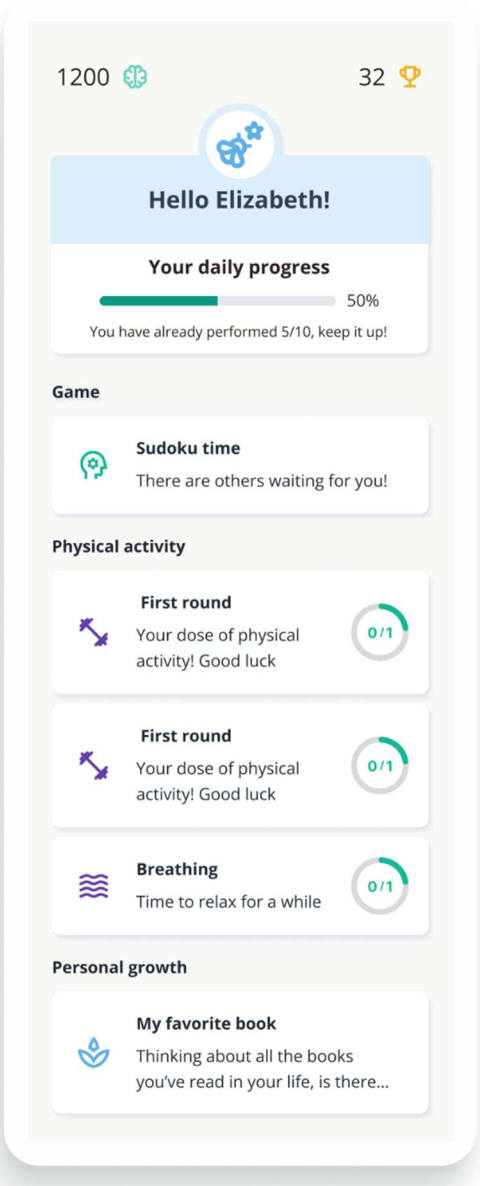

Figure 1 PROCAREFUL Mobile Application - Senior Dashboard. This image illustrates the main screen of the PROCAREFUL mobile application for seniors, showing daily progress, a recommended cognitive game (Sudoku), various physical activities, and a personal growth task.

- Interface for Informal Caregivers (Family Members):
    - Informal caregivers are typically family members or friends who provide unpaid care and support. They are a vital part of the PROCAREFUL model, providing assistance and ensuring seniors are engaged with the platform. They are linked to a senior's profile by a formal caregiver or administrator.
    - Data Access: Informal caregivers have view-only access to key information in the senior's profile. They can view the care plan, performance metrics, and supporting contacts. They

can also add and read notes and documents related to the senior. This access is provided through the web-based administrative panel.

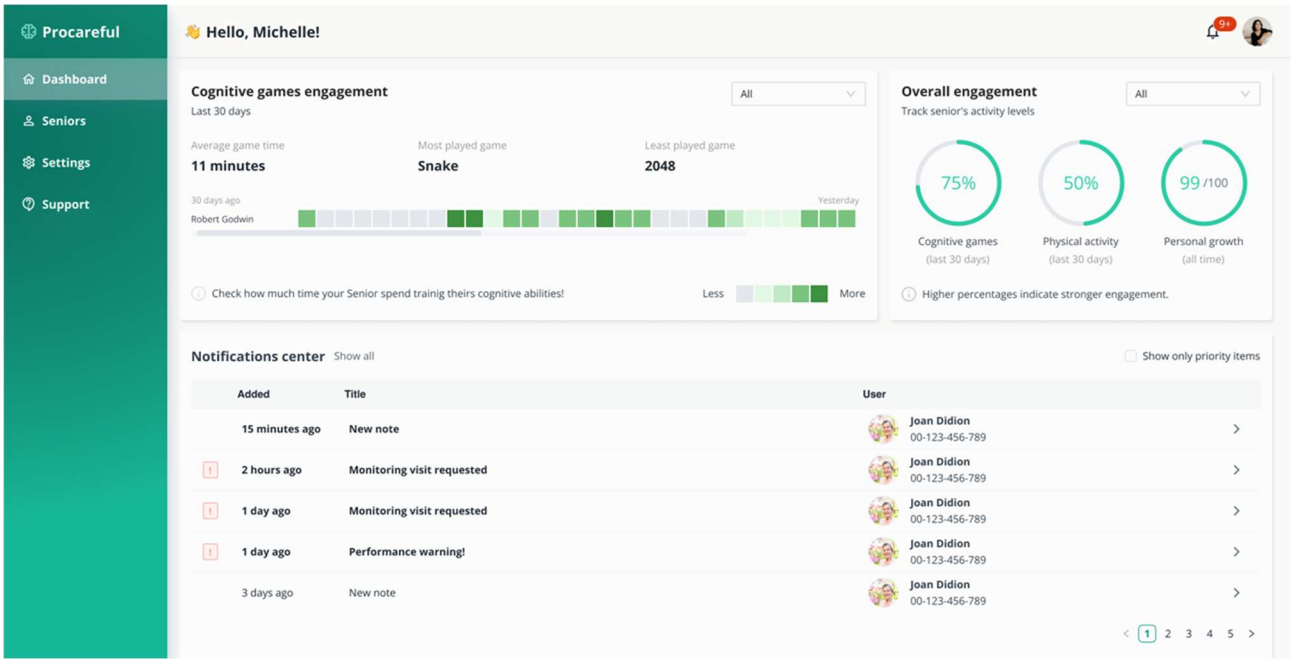

Figure 2 PROCAREFUL application dashboard for Informal Caregiver. It displays modules for monitoring a senior's activity, including cognitive game engagement, overall engagement (tracking cognitive games, physical activity, and personal growth), and a notifications center with recent alerts.

- Interface for Care Professionals (Doctors, Nurses, Therapists):
    - Management Panel: The management panel is a web-based dashboard that provides formal carers with a comprehensive overview of their assigned seniors. From the dashboard, they can monitor senior progress, manage user data, and plan interventions. They also have access to dedicated tabs for Notes, Documents, the Care Plan, Performance, and Senior Details, which are used to tailor and monitor care.
    - Data Analysis (AI/ML): Tools that support decision-making based on data analysis.
    - Reporting: The ability to generate reports on progress and the effectiveness of interventions.

3. Main features on the platform

This chapter provides a detailed overview of the platform's key features, including its role-based system, senior profile management, and the core workflows for assessments, activity assignments, and

communication. It explains how these functionalities are designed to work together to support the PROCAREFUL hybrid care model.

3.1. User Roles and How to Get Started

The platform operates on a hierarchical role-based system. This means that each type of user—Head Admin, Super Institution Admin, Institution Admin, Formal Caregiver, Informal Caregiver, and Senior—has a specific set of permissions and access rights tailored to their responsibilities. This structure ensures data security and a streamlined workflow.

- **Head Admins:** These are technical administrators who manage the platform at a country level. Their accounts must be created by the technical team and are responsible for onboarding institutions and managing Super Institution Admins.
- **Super Institution Admins/Institution Admins (SIA/IA):** These users manage accounts for their respective institutions. They can create accounts for Formal and Informal Carers and have the authority to manage all user assignments within their institution.
- **Formal Carers:** Formal Carers are professional care providers, such as nurses or social workers. They are at the heart of the operational workflow. They are responsible for creating senior accounts, conducting comprehensive assessments, assigning personalized care plans, and monitoring senior progress. The platform provides them with a user-friendly interface to perform these tasks efficiently, allowing them to focus on the human aspects of care while the platform handles the administrative and monitoring tasks.
- **Informal Carers:** Typically family members or close friends, their role is to support the senior. Their accounts are created by a Formal Carer or an administrator. They have access to the senior's data and can add notes, but they cannot create or edit care plans.
- **Seniors:** As the end-users of the mobile application, seniors engage with the activities assigned to them. While activities are pre-assigned by caregivers based on the initial assessment, seniors do have some degree of autonomy. They can choose to play additional games beyond the daily recommendation and can opt to skip personal growth challenges. Their satisfaction and performance are monitored through the platform's analytics, with caregivers receiving notifications about performance warnings or inactivity. Caregivers are expected to consult with seniors and adjust plans regularly based on this feedback and changes in the senior's condition.

Navigating Account Creation and Login:

The process begins with an administrator creating an account for a new user, who then receives a registration link via email. After clicking the link, the user sets up their password and logs into the platform. The mobile application for seniors is available for download at https://app.procareful.eu/download and functions as a Progressive Web Application (PWA), which works independently of the device's operating system.

For **seniors**, the login process is designed to be very user-friendly. This means it is simplified to minimize digital barriers, with large text, intuitive navigation, and clear instructions. The system offers two methods:

1. **With Assistance:** This method is ideal for seniors who are less comfortable with technology. The key advantage is that it eliminates the need for seniors to remember complex passwords or access emails. The caregiver simply provides a secure, six-digit code that is generated within the caregiver's administrative panel. This code is temporary and is required each time the senior needs to log in with assistance.

2. **Without Assistance:** This method is for seniors who are more digitally proficient. They receive a verification code directly via email, allowing them to log in independently.

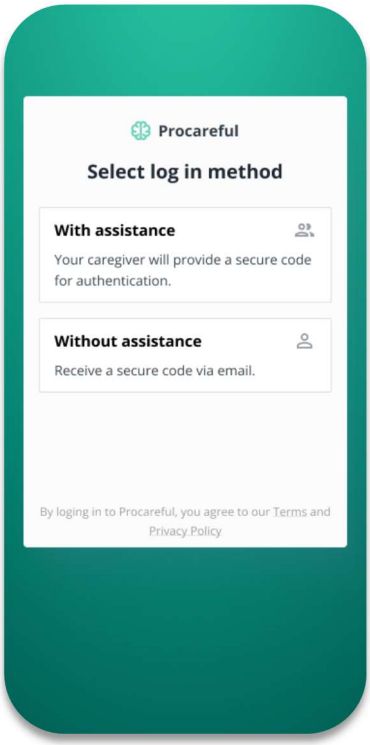

Figure 3 PROCAREFUL Mobile Application - Login Method Selection. This image displays the login screen of the PROCAREFUL mobile application, offering two authentication methods for seniors: "With assistance" (where a caregiver provides a secure code) and "Without assistance" (where a secure code is received via email).

3.2. The Senior Profile and Carer Workflows

The core of the platform's functionality is centered around the senior's profile, which serves as a central repository for all information related to their care. This information is crucial for providing holistic and proactive care, and its accessibility is strictly controlled by a hierarchical, role-based system. This ensures that each user has access only to the data relevant to their role, promoting security and data integrity.

Senior Statuses: The platform provides a clear overview of a senior's status, which is visible on the main dashboard for caregivers:

- **Created:** The senior's account has been created, but they have not yet logged in.
- **Active:** The senior has logged in and is using the platform.
- **No Assessment:** An account exists, but the condition assessment has not been performed.
- **No Activities:** The assessment is complete, but no activities have been assigned.
- **Performance:** A warning indicating that the senior is performing below their expected level.

Senior Profile Tabs: Once a caregiver selects a senior, they are directed to a detailed profile with multiple tabs. This profile is a central hub for all care-related functions. The user interface (UI) is designed for intuitive navigation, with tabs clearly labeled on the top of the profile screen. This structure allows

caregivers to efficiently find specific functions and information, such as notes, documents, and the care plan:

- **Notes:** A shared space for all assigned carers to add, read, and edit notes about the senior. This feature is intended for caregivers—both formal and informal—to share observations, updates, and reminders, ensuring coordinated care. This functionality is not available to seniors. It's a key tool for communication and documentation, creating a continuous log of a senior's care journey.
- **Documents:** A repository for uploading relevant documents, such as medical records. Access to this feature is guaranteed to formal caregivers and administrators, who are responsible for managing the senior's official documentation. It is not available for informal carers to ensure the security of sensitive medical information.
- **Care Plan:** Displays the senior's assigned activities. Only Formal Carers can edit the care plan.
- **Performance:** A crucial tab that shows a senior's progress and performance in their assigned activities.
- **Senior Details:** Contains the senior's personal and contact information.
- **Supporting Contacts:** This tab lists all informal carers, family doctors, and legal representatives assigned to the senior. These contacts are initially created by the formal caregiver during the senior onboarding process, but can be edited at any time to reflect changes in the senior's support network.
- **Formal Carers:** Shows all professional carers assigned to the senior.

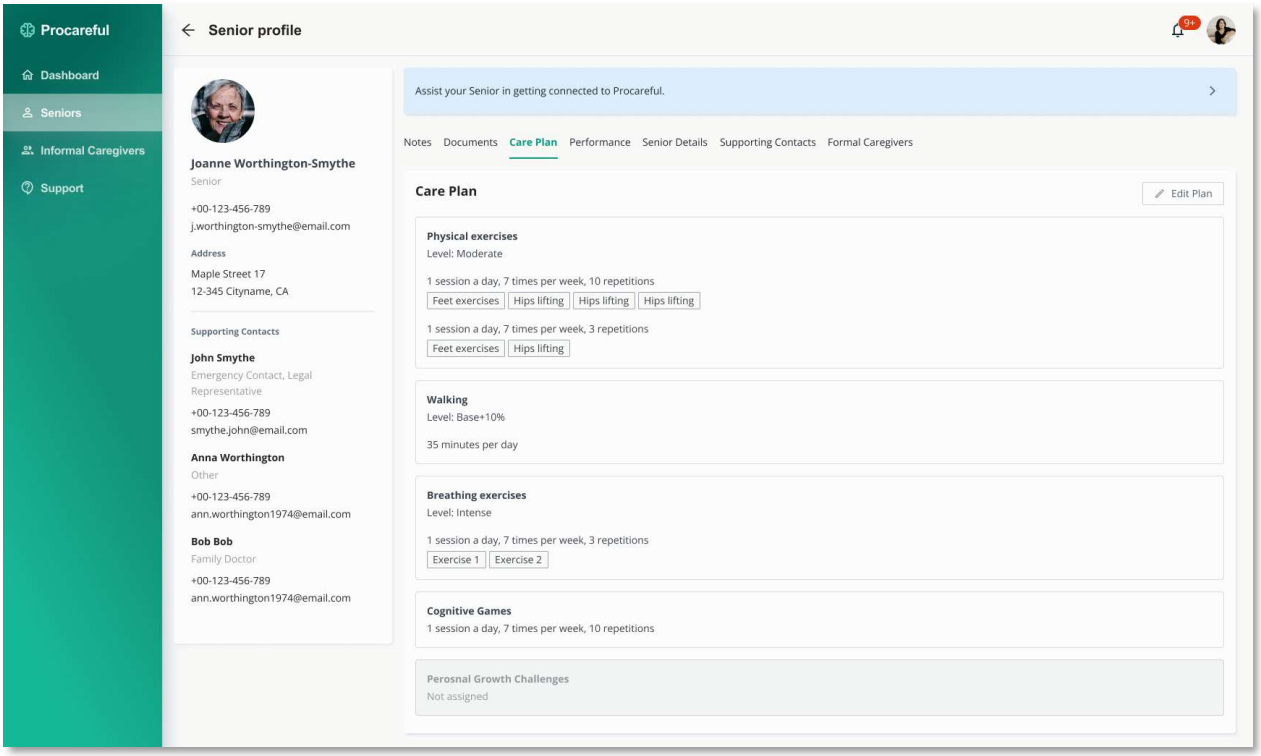

Figure 4 PROCAREFUL Administrative Panel - Senior Profile and Care Plan. This image shows the senior profile within the PROCAREFUL administrative panel, specifically highlighting the "Care Plan" tab. It displays assigned physical exercises, walking regimen, breathing exercises, cognitive games, and personal growth challenges.

The Caregiver Dashboard: The dashboard for Formal and Informal Carers provides a high-level overview of their responsibilities. It highlights key information, including:

- A list of all assigned seniors and their current status.
- A section showing seniors who require action, such as those with performance or inactivity warnings.
- A **Notifications Center** (accessible via a bell icon) that provides real-time alerts about important updates.

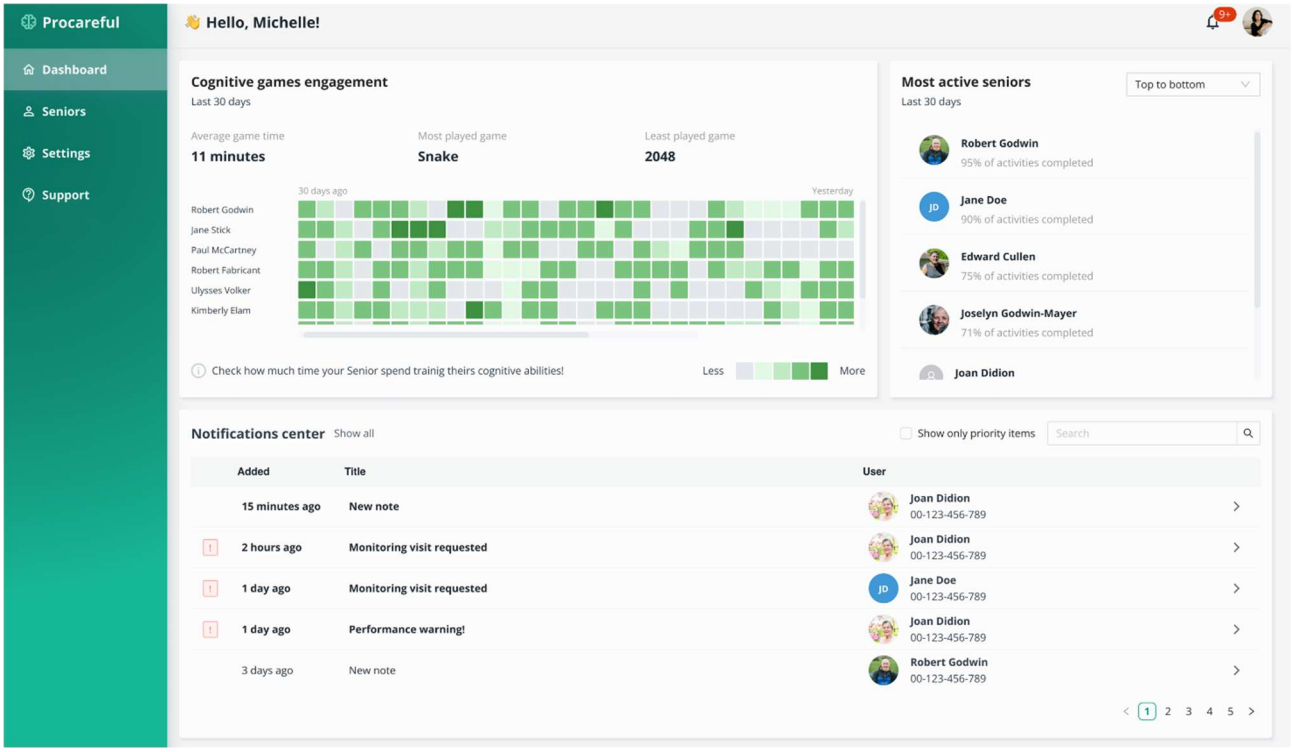

Figure 5 PROCAREFUL application's dashboard for Formal Caregiver. The main dashboard presenting modules for monitoring senior activity, including cognitive game engagement, a list of the most active seniors, and a notification center.

3.3. The Assessment and Care Plan Engine

The assessment process is a multi-step, structured evaluation that takes approximately 40 minutes to complete. It uses a combination of standardized, validated questionnaires to collect a holistic view of the senior's condition, covering cognitive, physical, and social domains, as well as sleep quality and overall well-being. This process is indispensable as it forms the basis for all personalized activity plans. For more detailed information on the specific methodologies and questionnaires used, please refer to the document "D.1.4.2. Document that presents the methodology for users and practitioners needs for local ICT adaptation".

3.3.1. The Assessment Process

The assessment process is a multi-step, structured evaluation that takes approximately 40 minutes to complete. It uses a combination of standardized, validated questionnaires to collect a holistic view of the senior's condition.

- **Cognitive Assessment:** The **MoCA (Montreal Cognitive Assessment)** test is administered outside the platform, and the final score is entered into the system. This score is a key parameter for the AI system that adjusts cognitive game difficulty.
- **Physical Assessment:** A two-part process that first screens for severe mobility issues and then uses the **IPAQ (International Physical Activity Questionnaire)** to measure the senior's physical activity levels.
- **Loneliness Assessment:** The **6-item De Jong Gierveld Scale** is used to assess the senior's subjective feeling of loneliness, distinguishing between emotional and social loneliness.
- **Quality of Life Assessment:** The **EQ-5D-5L** questionnaire measures health-related quality of life.
- **Sleep Quality Assessment:** The **Pittsburgh Sleep Quality Index (PSQI)** is used to assess sleep quality over the previous month, as poor sleep can have a significant negative impact on cognitive and physical health.

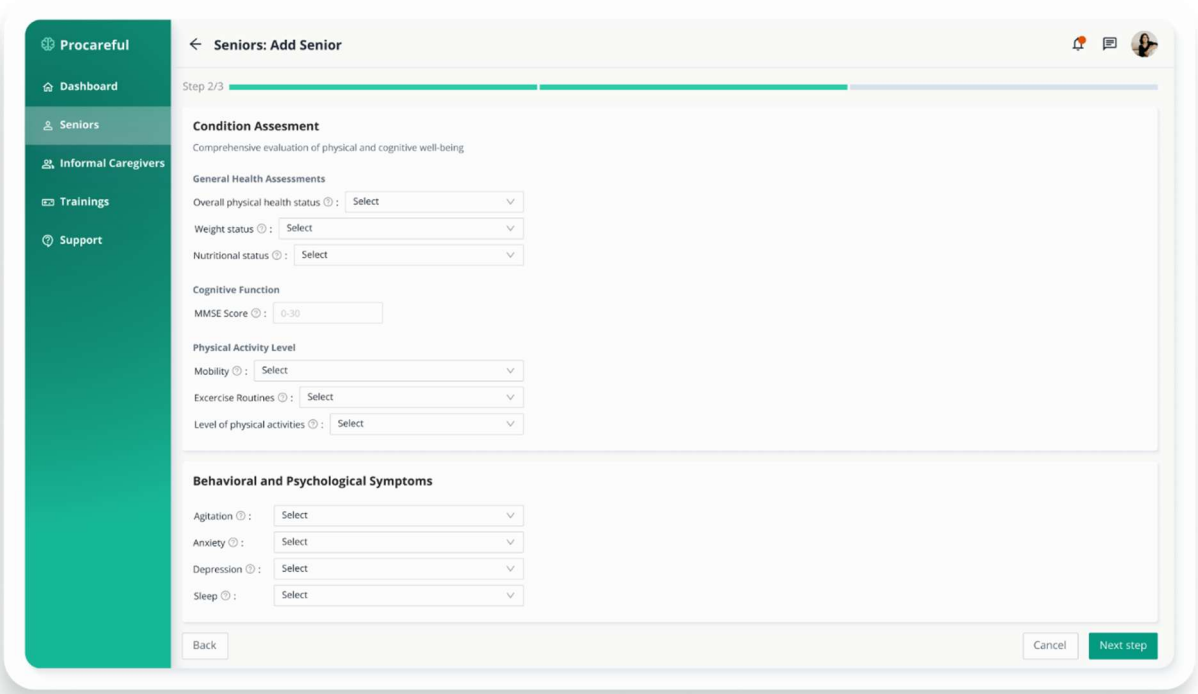

Figure 6 PROCAREFUL Administrative Panel - Senior Onboarding: Condition Assessment. This image displays the "Condition Assessment" step within the "Add Senior" workflow of the PROCAREFUL administrative panel. It shows various input fields for evaluating a senior's physical and cognitive well-being, including general health status, weight, nutrition, MMSE score, mobility, exercise routines, physical activity levels, and behavioral/psychological symptoms like agitation, anxiety, depression, and sleep.

The manual specifies that the assessment is performed three times during the pilot activities: an **initial assessment**, an **intermediate assessment** (after 3-4 months), and a **final assessment** (at the end of the pilot). This allows for tracking a senior's progress over time. After an assessment is completed, the Formal Carer can download a summary report.

3.3.2. Activity Assignment

Based on the assessment, the platform generates personalized activity plans. The Formal Carer has two options:

1. **Recommended Schedules:** The system proposes three pre-defined plans (**Light**, **Moderate**, and **Intense**), tailored to the senior's physical and cognitive abilities. For a senior with no physical limitations, a **Moderate** plan might include fall prevention exercises 5 times a week and a walking schedule that is 10% more intensive than their current activity level.
2. **Personalized Schedules:** The Formal Carer can build a custom plan by manually selecting specific exercises and setting their frequency and repetitions.

The platform provides an expert recommendation, but the final decision rests with the formal carer's expertise. These plans are not fixed and can be customized or changed at any point in the intervention, allowing for regular adjustments to reflect the senior's current situation. Seniors can view their assigned activities on their mobile app dashboard but cannot change the plan themselves.

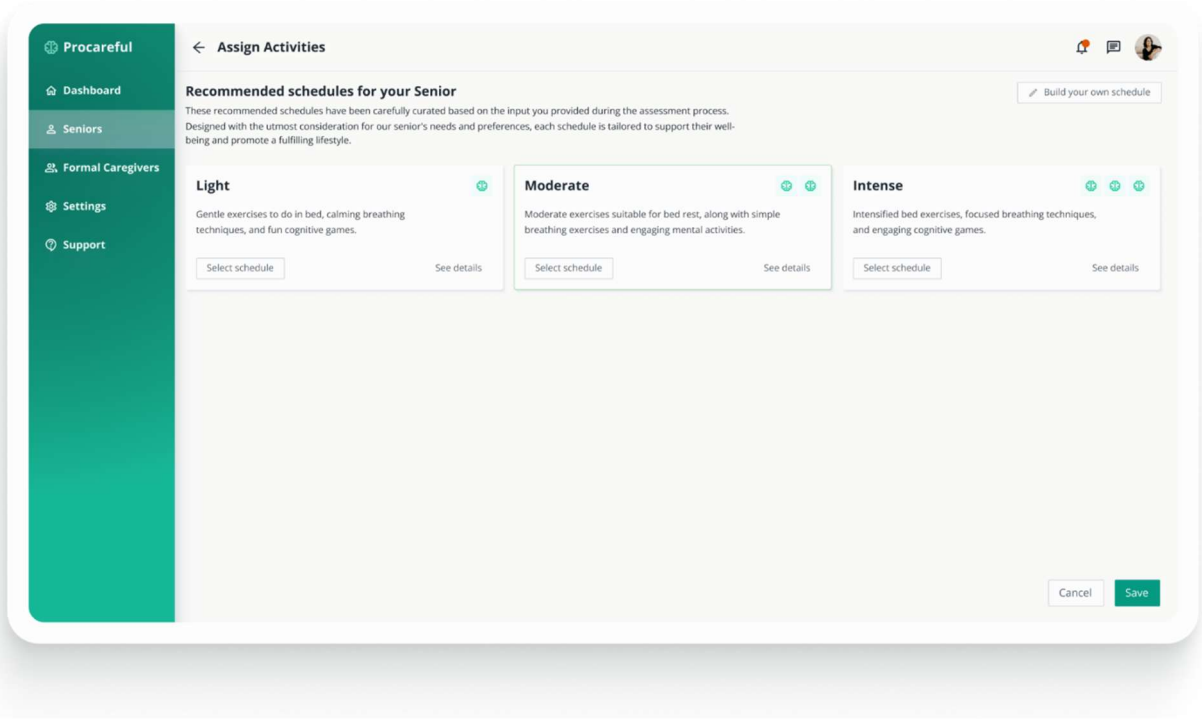

Figure 7 PROCAREFUL Administrative Panel - Activity Assignment: Recommended Schedules. This image shows the "Assign Activities" screen within the PROCAREFUL administrative panel. It presents three recommended activity schedules for seniors—Light, Moderate, and Intense—each with a brief description and options to "Select schedule" or "See details." There is also an option to "Build your own schedule.".

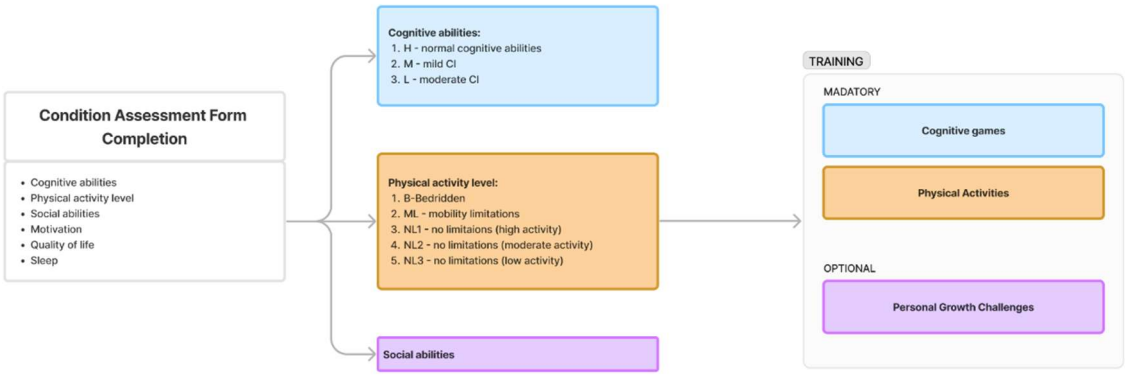

Figure 8 PROCAREFUL Condition Assessment to Training Assignment Workflow. This diagram illustrates the process from completing the "Condition Assessment Form" to assigning training activities. It shows how assessments of Cognitive abilities, Physical activity level, and Social abilities lead to mandatory "Cognitive games" and "Physical Activities," and optional "Personal Growth Challenges." The diagram details different levels for cognitive and physical abilities.

3.4. Detailed Breakdown of Activities

The senior's mobile application is the primary interface for engaging with the assigned activities. The interface is divided into three main sections: Game, Physical Activity, and Personal Growth.

3.4.1. Cognitive Games

The cognitive games are designed to stimulate the brain and enhance cognitive functioning. The principles behind this approach, such as leveraging brain plasticity and the importance of novelty and variability in tasks, are detailed in the PROCAREFUL training manual. The platform offers a variety of games, each with six different difficulty levels that are dynamically adjusted by an AI algorithm to ensure a continuous challenge. AI algorithms manage the difficulty levels to provide optimal cognitive stimulation. To address user preferences and abilities, the entry levels for games are not freely selectable by the senior; instead, they are determined by the AI based on the senior's performance during the initial six-week pilot phase. The platform's AI dynamically adjusts the difficulty level of each game based on performance metrics such as wins, losses, and hints used, ensuring the game is always challenging but achievable. The games include:

- **Word Guess:** A word-guessing game where the player selects letters to identify a hidden word.
- **Wordle:** A classic five-letter word-guessing game that provides feedback on the correctness and position of letters.
- **Tic Tac Toe:** The classic two-player game played on a 3×3 grid.
- **Sudoku:** A number puzzle game played on a 9×9 grid, requiring logical deduction.
- **Snake:** A game where the player controls a snake to collect numbers in a specific order while avoiding obstacles.
- **2048:** A sliding tile puzzle game where the objective is to combine tiles to reach the number 2048.
- **Memory:** A card-matching game where players must find pairs of matching cards.

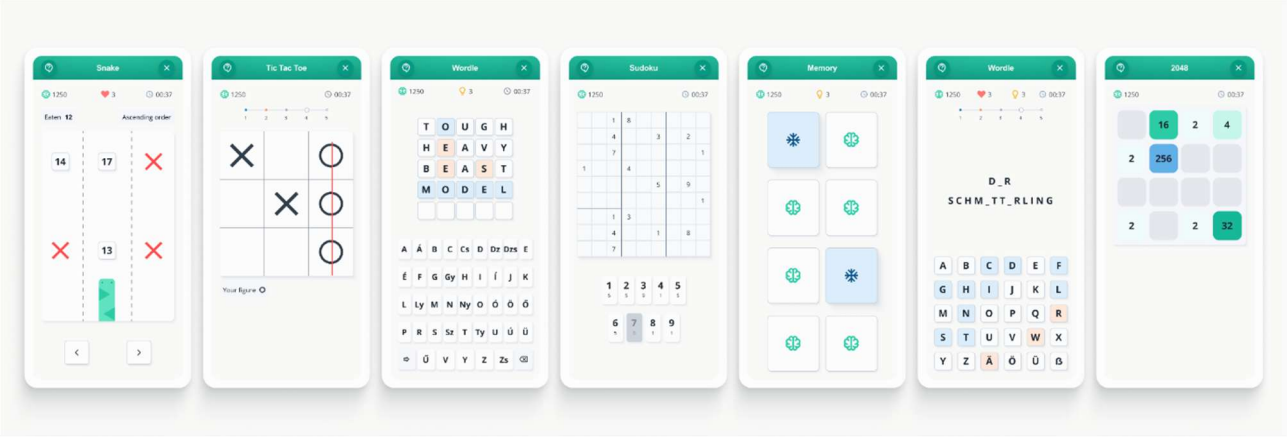

Figure 9 PROCAREFUL Mobile Application - Cognitive Games Overview. This image showcases a collection of cognitive games available within the PROCAREFUL mobile application. From left to right, it displays interfaces for "Snake", "Tic Tac Toe", "Wordle", "Sudoku", "Memory", "Word Guess" and "2048" demonstrating the variety and design of the brain-stimulating activities for seniors.

The manual emphasizes that for the first six weeks, exercises are assigned randomly to collect data for the AI algorithm. It reassures seniors that results are not as important as participation and that it is normal to make mistakes.

3.4.2. Physical Exercises

Physical exercises are crucial for maintaining the health and vitality of older adults. The platform provides a wide range of exercises tailored to different abilities, as outlined in the manual.

- **Walking:** The simplest and most effective form of exercise. The platform encourages seniors to walk for 30 minutes a day and aims to improve their performance by 10-20% or to maintain it.
- **Exercises to Prevent Falls/Balance Exercises:** These are slow, relaxed exercises performed with the support of a stable chair. They include Standing on your toes, Lifting the leg forwards, Lifting the leg backwards, and Leaning the body forward.
- **Sitting Exercises:** Designed for seniors with limited mobility, these exercises are performed in a chair and target the upper and lower body. Examples include Shoulder circles, Alternate step with toe or heel, and Sit-to-Stand with Arm Reach.
- **Breathing Exercises:** These can be performed while standing, sitting, or in bed. They are designed to improve lung function, reduce stress, and promote relaxation. The manual provides detailed instructions for several exercises, such as Breathing with the prefix and Blowing soap bubbles.
- **Exercises in Bed:** A set of exercises for bedridden individuals, crucial for maintaining mobility and muscle strength. They include exercises for feet, hips, and arms.

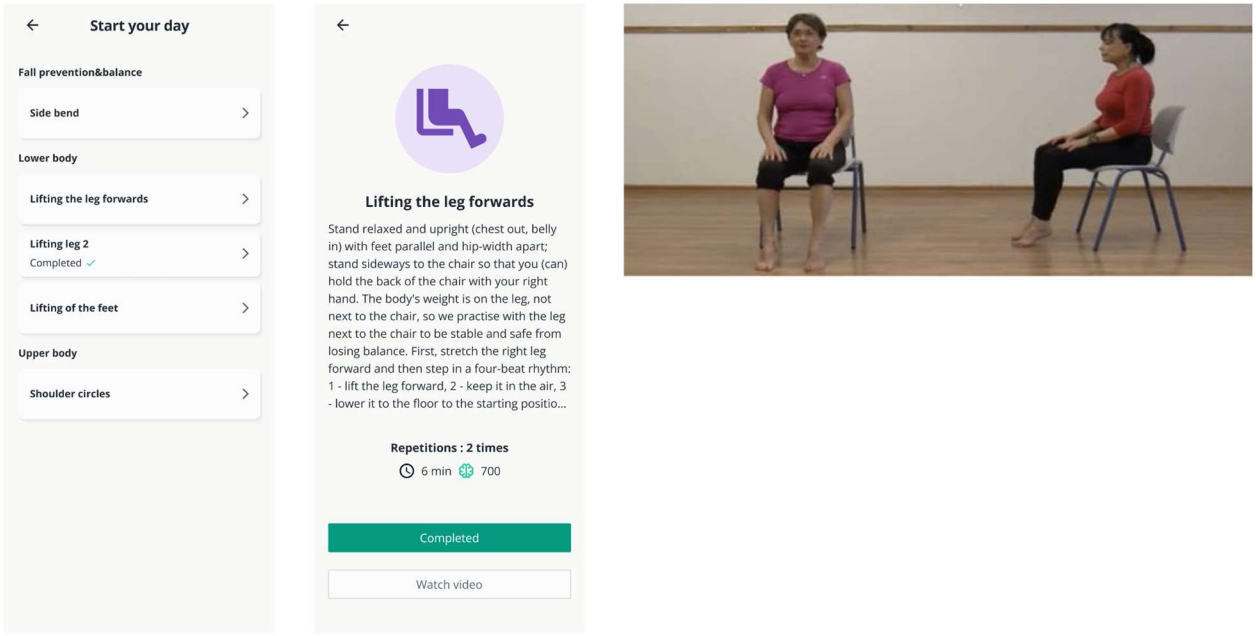

Figure 10 PROCAREFUL Mobile Application - Physical Activity Interface. This image displays the physical activity section of the PROCAREFUL mobile application. The left panel shows a list of exercises under "Fall prevention & balance" and "Lower body". The middle panel details the "Lifting the leg forwards" exercise, providing instructions, repetitions, duration, and a "Watch video" option. The right panel shows a video demonstration of the exercise being performed by two individuals.
**Some of the videos presented were developed by the PA4AGE project (source: PA4AGE Project)*

3.4.3. Social Activities

To combat loneliness and social isolation, the platform includes a **Personal Growth** section with weekly challenges. These are optional but are intended to foster meaningful social interactions. Examples of challenges include:

- **With a person your age or a bit younger:** A teacher I remember with happiness and pride or Let's walk together.
- **With a young person (grandson/granddaughter):** Let's share a small precious memory through photos or stories.

The senior can perform these challenges with a partner and then record their reflections in the app's diary.

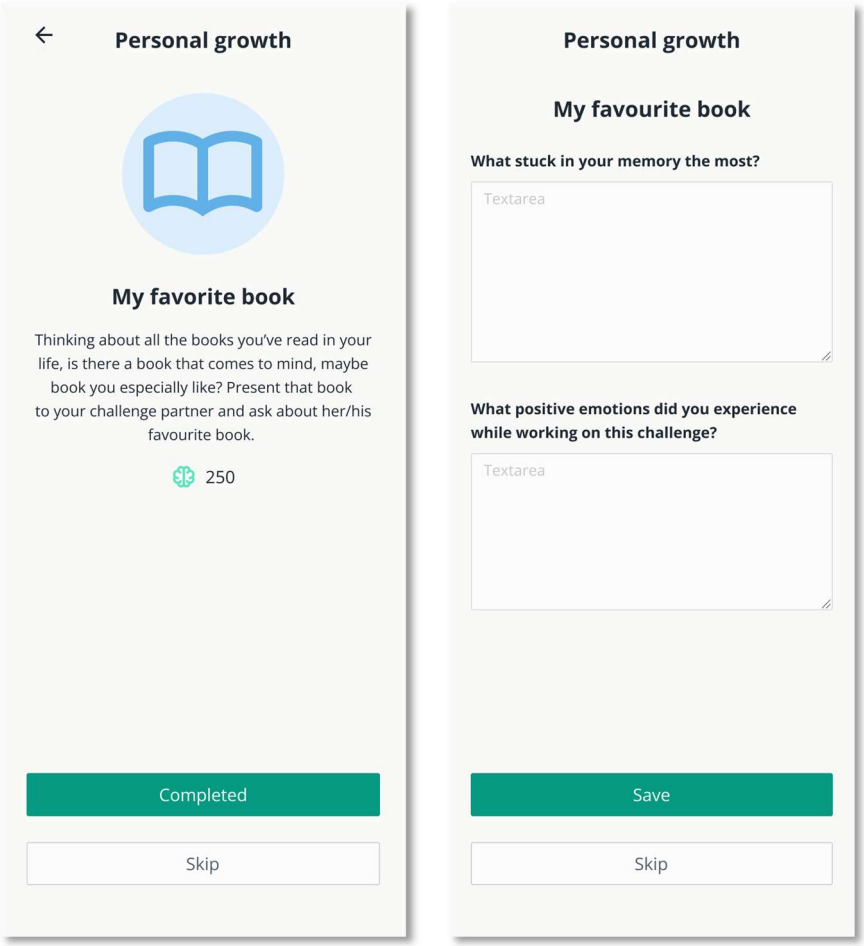

Figure 11 PROCAREFUL Mobile Application - Personal Growth Challenge. This image shows two screens from the "Personal growth" section of the PROCAREFUL mobile application. The left screen introduces the challenge "My favorite book", prompting the user to reflect on books they've read and discuss them. It offers "Completed" and "Skip" options. The right screen provides text fields for the user to answer questions like "What stuck in your memory the most?" and "What positive emotions did you experience while working on this challenge?", with "Save" and "Skip" options.

3.5. Warnings and Notifications

The platform includes a robust system of warnings and notifications to ensure that caregivers are always informed about crucial updates.

- **Performance Warning:** A red banner that appears on a senior's profile if their performance is lower than expected. It prompts caregivers to check in with the senior and consider a new assessment.
- **No Assessment Warning:** An alert that appears if a senior account has been created but no condition assessment has been performed. This indicates that the senior does not have any activities assigned.
- **No Activities Warning:** This warning indicates that the assessment is complete, but no activities have been assigned to the senior.
- **General Notifications:** The platform sends a variety of notifications to caregivers, including alerts for when a new carer is assigned, a new note or document is uploaded, a care plan is changed, or when a senior completes their daily activities. These notifications can be accessed from the dashboard or a dedicated **Notifications Center**.

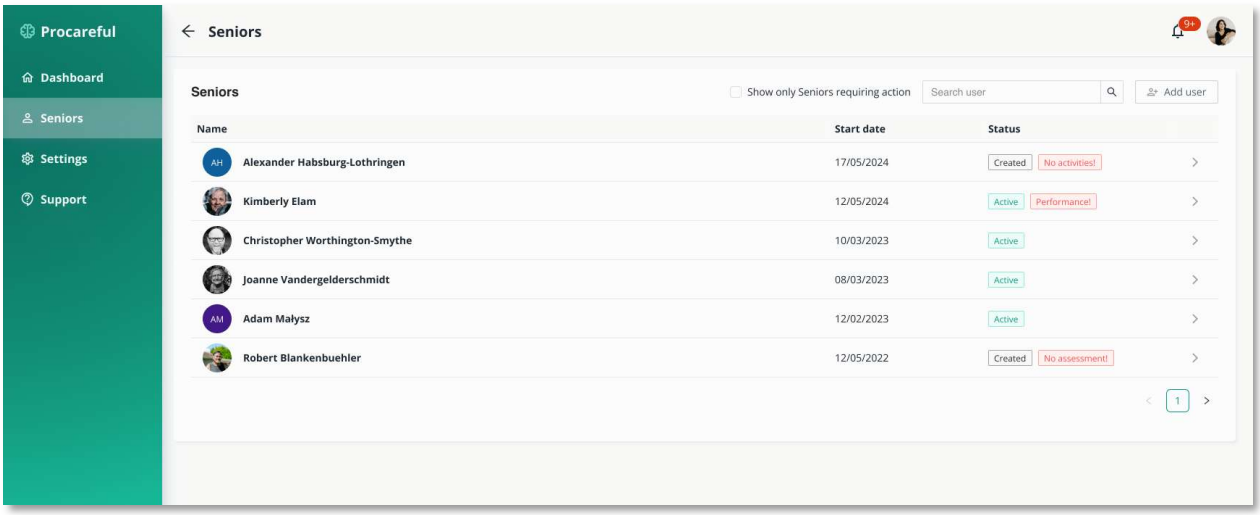

Figure 12 PROCAREFUL Administrative Panel - Seniors List. This image displays the "Seniors" section of the PROCAREFUL administrative panel, showing a list of registered seniors with their names, start dates, and status indicators. Statuses include "Created (No activities!)," "Active (Performance!)," and "Created (No assessment!)." The left sidebar provides navigation for Dashboard, Seniors, Settings, and Support.

4. Technical Requirements

This chapter outlines the technical specifications and requirements that ensure the platform's reliability, security, and performance.

4.1. System Architecture

- Cloud Environment: The platform is cloud-based, ensuring scalability, flexibility, and availability.
- AI/ML Technologies
- GDPR Compliance: The system is designed to be compliant with data protection principles.
- Open-Source Software: The platform is released as open-source software, making it freely available to all interested parties (https://github.com/Britenet-Global/Procareful).

4.2. Data Security

- Confidentiality:
    - Authentication: Implementation of authentication and authorization systems based on complex passwords and multi-factor authentication (MFA).
    - Encryption: All data transmissions occur through secure, encrypted connections.
        - Encryption Methods: The system uses TLS/SSL (Transport Layer Security/Secure Sockets Layer) to encrypt data transmitted over the network. Passwords and tokens

are securely stored using hashing and salting. Bcrypt is used as the hashing algorithm, which enhances security and resistance against brute-force attacks.

- Integrity:
    - Control Procedures: The platform implements internal systems and procedures to ensure processed data is not altered. An example of this is the platform's logging and auditing system, which records all user changes and actions. This provides a detailed trail of activity, allowing for human oversight to review any automated operations on personal data. This also enables administrators to track data modifications and ensure that all personal data is handled correctly..
- Availability:
    - Backups and Disaster Recovery: The platform implements backup and disaster recovery solutions to ensure continuity of access. This process is carried out by the technical administrator using the system's PostgreSQL relational database. The system backs up all user data, including profiles, activities, and results. Backups are performed regularly to minimize data loss. In the event of a system failure, these backups are used to restore the system to a previous state, ensuring minimal disruption.
- Data Retention and Anonymization:
    - Data Storage Period: The data retention system ensures compliance with legal regulations, processing data for no longer than 3 years, with a possible extension to a maximum of 5 years.
    - Right to Erasure (GDPR Article 13): The application provides mechanisms for users to exercise their data protection rights, including the ability to request the removal or anonymization of their personal data upon withdrawal of consent. Sensitive personal information, such as names, phone numbers, email addresses, and dates of birth, is subject to anonymization to ensure privacy.

5. Installation process

The following instructions have been prepared to facilitate the use of the code made available as open source on the GitHub platform and to support the installation of the application in the target environment. The detailed procedure for cloning the repository is included in the installation file on GitHub (https://github.com/Britenet-Global/Procareful).

5.1. How to run the backend application

5.1.1. System requirements

You need to have Docker Engine installed on your machine. For example Docker Desktop or Rancher Desktop or for linux just install docker engine from command line.

If you are using Windows, you also need to have WSL 2 (Windows Subsystem for Linux) installed.

5.1.2. Environment variables description

This section is relevant for developers and technical administrators who are responsible for setting up and maintaining the application. It provides crucial configuration data, such as API keys, database connection strings, and other settings. This data is not intended for end-users like seniors, caregivers, or even non-technical administrators. The use of a .env file ensures that sensitive configuration details are kept separate from the main codebase, enhancing security and allowing for easy deployment across different environments (e.g., development, testing, and production).

All variables should be included in the .env file, which must be located in the root folder of the application.

Variables should be defined in the following format:

variable_name=value

PRC_RESET_LINK_ID_TTL

Specifies in seconds how long the password reset link should be valid **(use default: 3600).**

PRC_REDIS_HOST

Specifies the Redis host used for caching data **(use default: redis).**

PRC_DOMAIN

Specifies the admin application domain.

PRC_SENIOR_DOMAIN

Specifies the user application domain.

PRC_SECURE_COOKIE

Enables the secure flag for cookies, ensuring they are only transmitted over HTTPS connections **(use default: true).**

NODE_ENV

Specifies the application running mode. Use **development** for testing and **production** for production.

PRC_MINIO_ENDPOINT

Specifies the bucket endpoint for storing data such as videos and images **(use default: http://minio:9000).**

PRC_MINIO_ACCESSKEY

Access key for MinIO storage.

PRC_MINIO_SECRETKEY

Secret key for MinIO storage.

PRC_MINIO_REGION

Specifies the data storage region **(use default: us-east-1).**

PRC_MINIO_BUCKET_NAME

Specifies the storage bucket name for user data such as images **(use default: bucket-prc).**

PRC_MINIO_BUCKET_NAME_NOTES

Specifies the storage bucket name for notes **(use default: bucket-prc-notes).**

PRC_MINIO_BUCKET_NAME_DOCUMENT

Specifies the storage bucket name for documents **(use default: bucket-prc-documents).**

PRC_MINIO_BUCKET_NAME_ASSESSMENT_REPORT

Specifies the storage bucket name for assessment reports **(use default: bucket-prc-assessment-report).**

PRC_MINIO_BUCKET_NAME_VIDEOS

Specifies the storage bucket name for videos **(use default: bucket-prc-videos).**

PRC_LANDING_PAGE_URL

Specifies the download link for the senior application **(e.g., your_domain/download).**

PRC_API_KEY

API key for communication with the machine learning service (generate and use your own key).

BE_HOSTNAME

Specifies the backend service host **(use default: http://backend:3000).**

PRC_ML_DOMAIN

Specifies the machine learning service host **(use default: http://ml:8000).**

PRC_REPORT_API_KEY

API key for secure report generation endpoint **(generate and use your own key).**

PRC_SYNCHRONIZE_SCHEMA

Enables or disables schema synchronization in the NestJS app **(use default: false).**

PRC_DB_USERNAME

PostgreSQL database username.

PRC_DB_PASSWORD

PostgreSQL database password.

PRC_DB_HOST

PostgreSQL database host **(use default: db).**

PRC_DB_PORT

PostgreSQL database port **(use default: 5432).**

PRC_DB_DATABASE

PostgreSQL database name.

PRC_EMAIL_SERVICE

Communication protocol for the mailer service **(use default: SMTP).**

PRC_EMAIL_HOST

Email host address.

PRC_EMAIL_PORT

Email port.

PRC_EMAIL_SECURE

Enables secure email connection **(true for SSL/TLS).**

PRC_EMAIL_USER

Email account username.

PRC_EMAIL_PASSWORD

Email account password.

PRC_EMAIL_FROM

Sender address for outgoing emails.

5.1.3. How to run application

Once Docker Engine is installed on your machine, navigate to the application's root folder and run the following command in a terminal (either your system terminal or your IDE's terminal). The application will start building and will launch automatically once the build is complete.

docker compose f docker-compose.yml up -d

5.1.4. Insert initial data into the database

The initial database dump file is included with this instruction as initial_data.dump.

The included exercise videos should be uploaded to the PRC_MINIO_BUCKET_NAME_VIDEOS bucket, which is defined in the environment variables.

If you are using the pgAdmin application, you need to configure the connection according to the environment variables and use the Restore option to insert the initial data, following this tutorial.

https://www.commandprompt.com/education/how-to-backup-and-restore-postgresql-databases-using-pgadmin

If you want to insert initial data via command line there is a link below how to do that:

https://www.postgresql.org/docs/current/backup-dump.html#BACKUP-DUMP-RESTORE

5.1.5. Create super admin

This process is relevant for the Head Admin. The Head Admin is the only role with the authority to create a Super Institution Admin account for an institution. This step is performed once per institution to establish the highest level of administrative control within that organization.

Once the application is running and the initial data has been inserted into the database, you need to create a super admin account. You can do this either by running the insert in the pgAdmin application connected to the database or in the terminal.

Country Ids:

1 - EN

2 - DE

3 - PL

4 - IT

5 - HU

6 - HR

7 - SI

insert into admins (first_name, last_name, phone_number, email_address, country_id, status_id, password) values ('admin_first_name', 'admin_last_name', 'admin_phone_number', 'admin_email', 1, 1, '$2a$10$0URI0A5xTpSc7GNis/BGT.cdzBrZfQgAMFwy.ChxVn/952YH0tswi');

insert into admins_roles_roles (admin_id, role_id) values (1, 1);

The default password is: 123456789B.

Important!

After that, remember to log in into the admin application and change the password.

5.1.6. Minimum system requirements

CPU: 4-8 threads

RAM: 8-16 GB

Free disk space: 20GB

5.1.7. Technology Stack

Backend service: Typescript, Nest.js

Database services: PostgreSQL

Machine learning services: Python

5.2. How to run the frontend application

5.2.1. System requirements

You need to have Docker Engine installed on your machine. For example Docker Desktop or Rancher Desktop or for linux just install docker engine from command line.

If you are using Windows, you also need to have WSL 2 (Windows Subsystem for Linux) installed.

5.2.2. Environment variables description

All variables should be included in the .env file, which must be located in the root folder of the application.

Variables should be defined in the following format:

VITE_VARIABLE_NAME=value

VITE_BASE_URL

Basic path for backend calls (endpoints), specified to let the browser know where the frontend should call to get/send data. Depends on url where the backend endpoints are deployed for example: https://procareful-deployed-backend.dev

VITE_ORVAL_BASE_URL

It's exactly the same url like described above (**VITE_BASE_URL**) but used to generate frontend hooks, using orval library to call backend and keep it type safety

VITE_CELLPHONES_PREFIXES

Specifies the phone prefixes used in app in forms where user is able to pick phone number prefix for example:
'+48, +49, +386, +36, +39, +44, +385'

VITE_NODE_ENV

Specifies the environment for app (**production/development**)

VITE_APP_VERSION

Specifies app version - used to let developers know which version app is deployed on environments

5.2.3. How to run application

Once Docker Engine is installed on your machine, navigate to the application's root folder, make sure the docker is running and run the following command in a terminal (either your system terminal or your IDE's terminal). The application will start building and will launch automatically once the build is complete.

docker compose -f docker-compose.yml up --build

- admin's app will run on localhost:8080

- senior's app will run on localhost:8081

6. Implementation and Evaluation Plans

- Deployment: The platform deployed as part of the pilot actions in five locations, following a needs analysis.
- Training: Britenet supported training sessions for care staff on using the platform.
- Evaluation: The evaluation of the PROCAREFUL model is a central component of the project. It is carried out by collecting quantitative measures on participants' cognitive, physical, and social conditions using the various assessment tools mentioned in this document. This is done three times: an initial assessment, an intermediate assessment after three to four months of training, and a final assessment at the end of the pilot activities. The purpose is to measure the model's effectiveness and track progress over time.

7. Long-Term Effects and Sustainability

- Maintenance: The software is available as open-source, allowing for its continued development and maintenance through innovation partnerships after the project concludes. The platform's open-source nature means its code will be publicly accessible, enabling a community of developers and organizations to contribute to its evolution, fix bugs, and add new features. This model ensures the long-term viability and sustainability of the solution without being dependent on a single commercial entity.
- Transferability: The documentation and open protocols enable other care providers to adopt and adapt the model, as well as use the platform freely

8. List of figures