



Deliverable 4.2

Repository of certified Smart Health applications

- Submission date: April 04, 2025
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Project SHIFT-HUB: D4.2 Repository of certified Smart Health applications

Project acronym	SHIFT-HUB
Project title	Smart Health Innovation & Future Technologies Hub
Name	Repository of certified Smart Health applications
Number	D4.2
Work package	WP4 - SHIFT-HUB platform and demonstration framework
Due Date	03/2024
Submission Date	04/04/2025
Lead Partner	BEIA
Contributing partners	COP, S2i
Author name(s)	Theodor Bratu, Maria Niculae, Carmen Mustață, Sandie Ogier, Alena Bubeck
Version	1.0
Status	Final Version
Type:	☐ R – Document, Report ☐ DMP – Data Management Plan ☒ DEC – Websites, patent filings, videos, etc
Dissemination level:	☒ PU - Public ☐ SEN - Sensitive

Document History			
Version	Date	Modified by	Comments
0.1	13/12/2024	Alena Bubeck	First release
0.2	10/01/2025	Theodor Bratu, Carmen Mustață	Added info in abstract, introduction and chapter 2
0.3	16/01/2025	Alena Bubeck	Review of section 2
0.4	21/01/2025	Maria Niculae	Updated the section 2.1 The search and selection process
0.5	27/02/2025	Sandie Ogier	Added info in abstract, introduction and chapter 3
0.6	08/02/2025	Paul Stefanut	Review of document
0.7	21/03/2025	Alena Bubeck	Added info in abstract, introduction, chapter 3 and conclusion
0.8	01/04/2025	Theodor Bratu, Alena Bubeck	Updated chapter 2 and 3
0.9	03/04/2025	Theodor Bratu	Final edits and review
1.0	04/04/2025	Alena Bubeck	Final review

Abstract

This document provides an in-depth account of the creation, integration, and value generation of the Smart Health Apps Repository, a cornerstone of the SHIFT-HUB service portfolio. It details the establishment of the repository, emphasising the rigorous selection process of smart health applications to ensure quality and reliability.

Additionally, the document highlights the strategy and collaborative efforts undertaken to align the repository with the broader goals of SHIFT-HUB, including fostering innovation, supporting healthcare organisations, and empowering patients and citizens. Through this initiative, the repository contributes to a secure, user-centric, and interoperable ecosystem, showcasing a portfolio of cutting-edge smart health solutions.

Furthermore, it elaborates on the seamless integration strategy of this repository with the Smart Health Data Space, leveraging its robust data management capabilities to enhance accessibility and usability for stakeholders. By aligning with SHIFT-HUB's mission, this repository strengthens the platform's role in creating a pan-European hub for smart health innovation, addressing key challenges in digital healthcare and driving the uptake of impactful solutions.

Keywords

SHIFT-HUB, Smart Health Data Space pilot (Cleyrop platform), Digital Health apps, repository, HealthTech, primary and secondary use of health data, dataset

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Abbreviations and Acronyms

Abbreviation/ Acronym	Description
app	Application
GDPR	General Data Protection Regulation
CBT	Cognitive Behavioural Therapy
CCS	Cascading Style Sheets
CE	Conformité Européenne (European Conformity)
CGM	Continuous Glucose Monitoring
CSV	Comma- Separated-Values
CTA	Call-to-action
DiGA	Digitale Gesundheitsanwendungen
EHR	Electronic health record
HTML	Hypertext Markup Language
MDR	Medical Device Regulation
SHIFT-HUB	Smart Health Innovation & Future Technologies Hub
TRL	Technology Readiness Level
WP	Work Package

1. Introduction

The Smart Health Apps Repository is a cornerstone of the Smart Health Innovation & Future Technologies Hub (SHIFT-HUB) service portfolio, designed to support the discovery, evaluation, and adoption of innovative digital health solutions. This curated repository connects users with certified smart health applications that meet stringent standards for security, efficacy, and usability, ensuring quality and reliability. By providing a centralised platform for accessing validated tools, the repository simplifies the process for healthcare stakeholders, including patients, providers, and developers, to find and utilise solutions tailored to their needs. Its rigorous selection and certification process ensures compliance with European health data regulations while driving the adoption of impactful digital tools. As a key component of SHIFT-HUB's mission to foster a pan-European smart health ecosystem, the repository not only facilitates access to cutting-edge applications but also promotes innovation and collaboration, ultimately enhancing healthcare delivery and outcomes across the region.

The linkage of Smart Health applications and repositories as a demonstration and experimental framework with the Smart Health Data Space, a platform hosted by Cleyrop, will facilitate the connection of application providers with the professional and private end-users (practitioners and citizens, respectively). The platform has the mission to offer a sandbox consisting of the adequate infrastructure and the associated tools to support the development of Smart Health products and services by facilitating the access to data as well as the interactions and solution co-development between the providers and users. Based on tailored scouting activities and a continuous onboarding strategy, relevant Smart Health applications providers and repositories are identified and invited to join the community to integrate their solutions in the Hub's portfolio. This way, the pilot of the Smart Health Data Space will progressively evolve into a Smart Health solutions marketplace. Therefore, by aligning with SHIFT-HUB's mission, this repository strengthens the platform's role as a pan-European hub for smart health innovation, addressing key challenges in digital healthcare and driving the uptake of impactful solutions.

2. Apps Repository

The SHIFT-HUB App Repository is designed as a centralised resource to facilitate the discovery and evaluation of cutting-edge health-related applications by external users. Its purpose is to serve as a comprehensive platform for stakeholders, including patients, healthcare professionals, researchers, and policymakers, enabling them to access apps offering solutions for the five categories of targeted pathologies, test (in particular in the scope of the living labs activities organised as a part of SHIFT-HUB), compare, and select digital tools that address key health challenges and help them to overcome the burdens they face in their daily personal and professional lives.



Figure 1. App repository landing page

By creating this repository, the SHIFT-HUB project aims to showcase the solutions developed by the best startups across Europe, that we strive to attract in the SHIFT-HUB Community and support, allowing to bridge the gap between technological innovation and practical healthcare needs. This initiative supports the discovery, the experimentation and hopefully the adoption of digital solutions in priority areas such as prevention, cardiovascular health, mental health, cancer care, and diabetes management that represent the five priorities defined in the scope of SHIFT-HUB. The repository aims to ensure transparency, usability, and accessibility, fostering a collaborative ecosystem where digital health innovations can thrive.

The repository empowers users with detailed information on app functionalities, compliance with privacy standards, and user accessibility. It represents a step toward integrating digital health technologies into everyday healthcare practices and improving outcomes across diverse populations.

The repository is available at <https://agile.ro/shift-hub-app-repository/> and promoted by the SHIFT-HUB project webpage under the 'Resources' section: <https://shift-hub.eu/resources/>. (Figure 1)

2.1 Uncovering Digital Solutions: A Systematic Scout for Medical Mobile Applications

The scouting process was structured into four distinct phases: identification, selection, assessment, and validation. This systematic approach ensured a comprehensive exploration and curation of applications suitable for the repository.

2.1.1 Identification

The identification phase focused on casting a wide net to gather potential applications addressing the following key healthcare domains: Prevention, Cardiovascular Health, Mental Health, Cancer, Diabetes.

This phase utilised various sources and tools:

- **App Stores:** Systematic searches were conducted on Google Play Store and Apple App Store.
- **Healthcare Databases:** Databases such as PubMed and WHO repositories were explored.
- **Academic Literature:** Relevant journals and conference proceedings were reviewed.
- **Industry Reports and Niche Repositories:** Insights were gathered from white papers, market research, and industry-specific platforms.
- **EU Strategies and Policies:** Guidance was derived from the European Health Data Space and the EU's digital transformation strategies for health and care.

Keywords and Search Strategies: To streamline the process, keywords such as “digital health apps,” “mental health tools,” “cardiovascular management,” and “diabetes monitoring” were employed during the desk research stage. Both mainstream platforms and niche sources were explored to ensure the inclusion of a diverse range of applications [1] [2].

2.1.2 Selection

The selection phase filtered the identified applications using stringent criteria:

- **Medical Device Compliance:** Applications needed to comply with Medical Device Regulation (MDR) (EU) 2017/745, particularly Class I devices that had undergone clinical trials [3].
- **Certification Standards:**
 - CE Marking for compliance with EU health, safety, and environmental regulations [3].
 - Country-specific certifications, such as DiGA (Germany), mHealth Pyramid (Belgium), and France's medical device standards [4].
- **Clinical Validation:**
 - Evidence-based content validated through clinical trials on statistically significant user groups [5].
 - Publications in peer-reviewed journals.

- **User Privacy:** Full compliance with GDPR and other relevant privacy frameworks [6].
- **Relevance and Functionality:**
 - Applications targeting one of the five health domains.
 - Core features e.g., monitoring tools, educational content, and reminders [7].
- **Accessibility:**
 - Support for multiple platforms (iOS, Android, Web).
 - User-friendly interfaces and language support for diverse demographics.

To ensure transparency, the selection criteria are summarised and displayed in the repository (Figure 2)

Our Selection Criteria

The apps featured in our repository are carefully chosen through a rigorous selection process to ensure they meet the highest standards of quality and reliability based on the following criteria:

- **Relevance:** Apps must address specific health and wellness needs, focusing on non-communicable diseases or preventative care.
- **Usability:** User-friendly design and ease of navigation are prioritized to ensure accessibility for all users.
- **Effectiveness:** Apps must demonstrate measurable benefits through features like tracking, reminders, or interactive tools, supported by evidence or positive user feedback.
- **Security and Privacy:** Apps are assessed for compliance with data protection standards to safeguard personal information.
- **Innovative Features:** We highlight apps that leverage the latest technology, such as AI, wearable integration, or gamification, to enhance user engagement and outcomes.

Figure 2. Summary of selection criteria displayed in the repository

2.1.3 Assessment methodology

The shortlisted applications underwent a detailed assessment, focusing on:

- **Technology Readiness Level (TRL):** Only applications with a minimum TRL 7 were considered.
- **Applicability Scoring:**
 - Agility: Ability to adapt to market changes and technological advancements.
 - Usability: Intuitiveness of the user interface.
 - Sustainability: Cost-effectiveness and long-term usability [8].
- **Integration Potential:** Applications were evaluated for their technical compatibility with the Clinical and Regulatory Validation [9].

2.1.4 Validation

The final phase involved rigorous validation to ensure the reliability and performance of selected applications:

- **Testing Across Platforms:** iOS, Android, and Web platforms.
- **Scalability:** Applications were assessed for their ability to handle increased usage and integrate into larger systems.
- **Long-term Relevance:** The suitability of applications for sustained use in the repository was evaluated.

The SHIFT-HUB repository showcases a wide range of mobile apps focused on cancer (19), diabetes (22), mental health (44), cardiovascular conditions (23), and general prevention (62). (Figure 3) Across all categories, common themes include self-management tools, data tracking, education, and community engagement. For example, cancer apps such as *Belong* and *LivingWith* offer peer support, while diabetes apps like *Dexcom G6* and *MySugr* integrate with devices for Continuous Glucose Monitoring (CGM). Mental health apps such as *Woebot* and *Calm* provide Cognitive Behavioural Therapy (CBT) and mindfulness features, whereas cardiovascular apps like *KardiaMobile* and *MyZio* support real-time heart monitoring. Prevention apps span fitness (e.g., *Fitbit*, *MyFitnessPal*) and telehealth (e.g., *Doctolib*, *Zocdoc*).

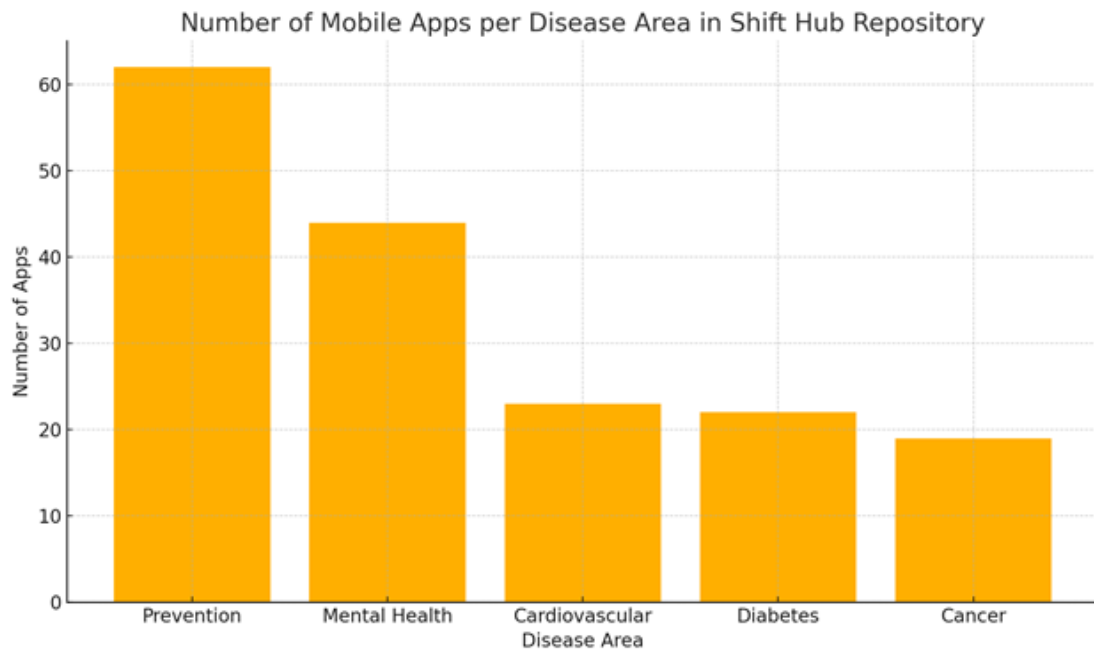


Figure 3. App distribution per category

The above summary, showing the number of mobile apps per disease area in the SHIFT-HUB repository, is characterized by the dominance of prevention and mental health mobile applications, while cancer and diabetes have fewer targeted apps in the repository.

Several **interconnected reasons** why *cancer* and diabetes may have fewer targeted mobile apps in the SHIFT-HUB repository compared to prevention or mental health are:

1. Complexity of Medical Management

- **Cancer** care is highly individualised (based on stage, type, treatment plan, comorbidities), making it harder to create one-size-fits-all apps.
- **Diabetes** management, especially Type 1, often requires device integration (CGMs, insulin pumps), which limits entry to developers who lack medical device partnerships.

2. High Barriers to Entry

- Medical-grade functionality requires CE marking or approval (especially for cancer diagnostics or insulin tracking), which is costly and time-consuming.
- Startups may focus on wellness or prevention apps first, as they avoid heavy regulation.

3. Market Prioritization

- Developers often go after larger, more accessible markets like fitness, mindfulness, or general wellness.
- Cancer and diabetes apps may appear less scalable or harder to monetize due to smaller user segments or more specialized use cases.

4. Data & Liability Concerns

- Cancer apps that offer clinical guidance carry legal risks if not reviewed or endorsed by medical professionals.
- Diabetes apps must handle real-time health data (e.g., blood glucose), increasing concerns over data privacy, security, and medical accountability.

5. Fragmented Ecosystems

- Many cancer and diabetes apps are linked to specific health systems, clinical trials, or national programs.
- This makes them less generalizable or eligible for inclusion in EU-wide repositories like SHIFT-HUB

6. Underrepresentation of Preventive and Holistic Approaches

- A large number of diabetes and cancer prevention strategies (like diet and exercise) are housed under “general wellness” apps, not explicitly branded for disease prevention.
- This leads to misclassification or underrepresentation when sorting apps by disease.

Also, **regulatory complexity** is linked to the **user accessibility** of Smart Health Apps as shown by multiple studies that explore the relationship between regulatory complexity and user accessibility across different mHealth app focus areas. [10-12] These sources analyse regulatory challenges, fragmented frameworks, and alternative assessment pathways, highlighting their impact on innovation, usability, and market adoption. (Figure 4, page 14)

Comparing regulatory complexity and user accessibility across app focus areas revealed:

- **Cancer apps** face the highest regulatory hurdles and lowest user accessibility, likely due to clinical requirements and the complexity of disease management.
- **Prevention & mental health apps** are the most accessible and least regulated, explaining their abundance in the app ecosystem.
- **Diabetes and cardiovascular apps** sit in the middle—regulated due to device use or clinical monitoring, but still reasonably accessible with proper tools.

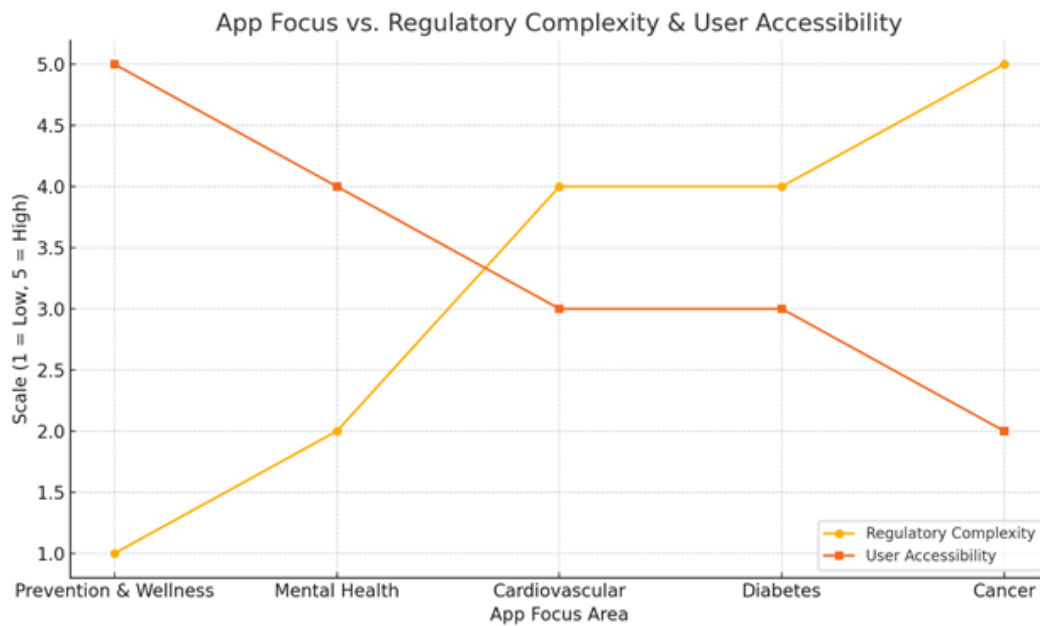


Figure 4. App focus vs. Regulatory Complexity & User Accessibility

The analysis also emphasises **key gaps** including a lack of Electronic health record (EHR) integration, limited support for rare conditions (e.g., sarcomas, gestational diabetes, congenital heart defects), and insufficient mental health features in non-mental health apps. Few apps offer holistic care, combining physical, mental, and behavioural support. Most focus on common diseases is driven by larger market potential and lower regulatory complexity. Rare disease support is minimal due to smaller user bases and high development costs.

Still **regional disparities** persist. Many apps are English-centric with poor localization, limiting reach across EU countries. Dietary guidance often lacks cultural relevance. Internet dependency and reliance on wearables restrict use in rural and low-income regions. Digital literacy and accessibility barriers further hinder adoption among elderly or underserved populations.

Also, **data privacy and compliance** vary. While apps like *Dexcom* and *Sleepio* follow GDPR or are CE /approved, smaller or free apps often lack robust security. Few countries beyond Germany (e.g., DiGA framework) offer formal app reimbursement or national endorsement.

App creators include a mix of startups (e.g., *Oncochain*, *MySugr*), medical device companies (*Dexcom*, *Abbott*), research institutions (*Stanford*, *Mayo Clinic*), and nonprofit/advocacy organizations. However, government involvement and health authority partnerships remain limited outside select cases (e.g., PTSD Coach by the US VA, MindDoc in Germany).

Final recommendations to improve the safety, accessibility, and adoption of Smart Health Apps:

- **Encourage public-private partnerships** to co-develop localized, integrated apps.
- **Prioritize underserved diseases and demographics** through EU-backed funding.
- **Expand multilingual support**, offline functionality, and simplified user interfaces.
- **Integrate apps into national health strategies**, with clear pathways for validation and reimbursement.

- Promote **holistic care models**, combining mental, physical, and behavioural health in single platforms.

2.2 Technical specifications of the repository

2.2.1 Hosting

The repository is hosted on BEIA servers, ensuring reliability, security, and optimal performance. BEIA's infrastructure provides a stable environment for the page, allowing it to handle dynamic updates and user interactions seamlessly.

By leveraging BEIA's servers, the project benefits from:

- **High Availability:** Ensuring the page remains accessible to users at all times.
- **Enhanced Security:** Protecting the repository's data and user interactions from potential threats.
- **Scalability:** The server setup can support future enhancements and an increased number of users or applications in the repository.

This hosting solution complements the page's low-maintenance design and supports its long-term usability goals.

The repository is also linked and promoted by the SHIFT-HUB project webpage under the 'Resources' section: <https://shift-hub.eu/resources/>.

2.2.2 Frontend

The frontend for the repository was developed following the design and usability guidelines provided for the SHIFT-HUB project. The guidelines ensured a clean, minimalist interface that prioritises ease of navigation and user experience.

The repository is structured as a simple yet functional repository of medical applications, targeting non-communicable diseases. The design ensures users can quickly locate relevant applications through intuitive filtering and browsing features.

Here is a breakdown of the page:

Header/Title: At the top of the page, there is a clear header that displays the repository title.

Filter Section/ Filter: Filtering options are applied directly on the frontend, allowing users to refine their search results based target disease. The filtering is presenting the options based on column named "Disease" in the dataset.

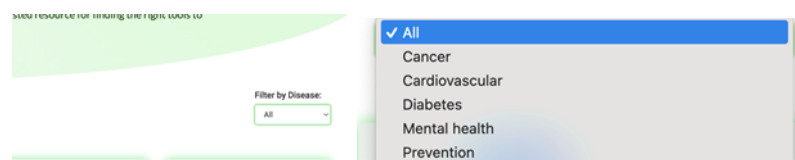


Figure 5. Filter Options

Application Cards: The core of the repository consists of dynamically generated application cards. Each card represents a medical application and includes the following:

- **Application Name:** Displayed prominently to catch the user's attention.
- **Short Description:** A brief summary of the app's functionality and purpose.
- **Logo:** The logo of the application.
- **Call-to-Action (CTA):** The design includes three CTA buttons. First one is the official website of the app, followed by two smaller buttons dedicated for each main mobile system: iOS and Android. The grey button indicates that the app is not supporting a specific CTA option.

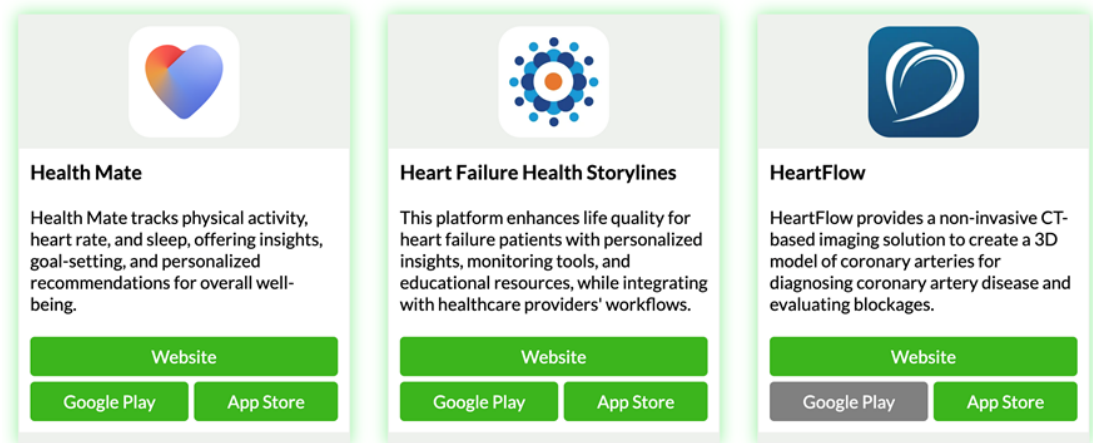


Figure 6. Application cards

The design of these cards is responsive, leveraging Bootstrap's grid system to ensure they display consistently across devices.

Styling and Design:

- The interface uses a clean, light colour palette, aligned with the guidelines for the SHIFT-HUB project.
- Fonts and typography are consistent with the project's branding, ensuring a unified and professional look.
- Hover effects are used subtly to improve interactivity, such as highlighting buttons or links when hovered over.

2.2.3 Technical details

The page is designed with a focus on long-term usability and low maintenance, ensuring its functionality and relevance over time. The content can be dynamically updated to maintain its effectiveness for an extended period.

- **Hypertext Markup Language (HTML) and Cascading Style Sheets (CSS):** Form the foundation for the page's structure and styling.
- **JavaScript and jQuery:** Power the dynamic functionalities, including search, filtering, and interactive features.
- **Bootstrap:** Ensures a responsive layout, making the page mobile-friendly and adaptable to various screen sizes.

2.2.4 Integration Readiness and Migration Plan

This repository was designed to support future integration with the Smart Health Data Space, a platform hosted by Cleyrop. Initially utilising a static Comma-Separated Values (CSV) file stored in GitHub for testing purposes, its structure facilitates seamless integration with Cleyrop's dynamic data source. Leveraging one of the first connectors provided by Cleyrop, the transition plan ensures compatibility while maintaining functionality, data integrity, and accessibility. Key steps managed by Smart Health Data Space include securing access, establishing permissions, migrating the data source, and efficient exposure and management.

Link for the Github repository: <https://github.com/andreidincaBeia/T4.2-Medical-Applications>

This app repository demonstrates both functionality and scalability, serving as a demo for the broader platform.

2.2.5 Repository Characteristics

The repository contains over 100 entries, providing a comprehensive overview of mobile medical apps. It highlights applications across diverse healthcare domains such as patient education, symptom tracking, and community support.

Key features include:

- **Platform Coverage:** Support for Web, Android, and iOS platforms.
- **Technology Readiness Levels (TRL):** Most apps are in advanced stages (TRL 7–9).
- **Accessibility:** Direct links to app stores and websites for easy exploration.
- **Detailed Metadata:** Each entry includes descriptions, icons, and focus areas, ensuring user-friendly navigation.

Columns:

- **Name of application:** The name of the medical app
- **Domains:** The focus areas or domains of the app
- **Website:** The app's official website
- **Where it works:** Supported platforms (e.g., Web, Android, iOS)
- **TRL level:** Indicating the app's development maturity
- **Disease:** The medical condition(s) targeted by the app
- **Link AppStore:** Link to the app on the Apple App Store
- **Link Google Play:** Link to the app on Google Play
- **Icon App Link:** URL of the app's icon or image
- **Description:** A brief overview of the app's purpose and functionality

3. Strategy to Link the Apps Repository to the SHIFT-HUB service portfolio

The app developers identified and listed in the Apps Repository are key users of the SHIFT-HUB service portfolio. From providing a platform for data sharing fostering the development of Smart Health Applications to offering opportunities to increase their visibility facilitating the uptake of their applications, the SHIFT-HUB services offer diverse support to fit the needs of app developers. Hereafter, we describe the strategies on linking the identified app developers in the Apps Repository to the SHIFT-HUB service portfolio.

3.1 Increasing visibility of Smart Health applications

Increasing the visibility is encouraged by engaging the app developers in SHIFT-HUB events such as the Demo Days and Living Labs, in which they are given the opportunities to showcase and co-create their apps together with end-users such as health care professionals and citizens, helping developers to tailor their solutions better to the end-users needs and enhance adoption.

Apps showcased in the Demo Days or Living Labs, that fulfil the requirements and selection criteria of the Apps Repository (see 2.1.2 Selection), will be added to the repository continuously. Although multiple apps and app developers have been engaged in SHIFT-HUB events so far, only three Smart Health Applications meet the criteria of the apps repository currently and are displayed and promoted in the Apps Repository. These are:

CardiOnline App

The app was presented on a [Demo Day in Bucharest](#), 15th October 2024, by Conf. Dr. Ștefan Bușnatu, MD-PhD, Vice-Rector of the University of Medicine and Pharmacy "Carol Davila" Bucharest and co-founder of CardioOnline, an online platform for the rehabilitation of patients with acute cardiovascular problems, designed to facilitate the recovery of patients by early identification of potential risk factors and to reduce the risk of mortality associated with these diseases. The application monitors patients and their interaction with the medical team. Activity levels, sleep quality, and vital signs (heart rate frequency and regularity, oxygen saturation) are tracked via a smartwatch.

MedRADAR App

The app was presented on a [Demo Day in Bucharest](#), 15th October 2024, by Cristian Rădulescu, CEO of MedRADAR, a free mobile application enabling patients to easily locate nearby pharmacies with the required medications in stock, ensuring prompt access to essential treatments.

MyInfoBand App

The app was presented on a [Demo Day in Bucharest](#), 15th October 2024, by Andrei Linu CEO Guardian Angel Invest with developed MyInfoBand. MyInfoBand is a portable, shareable medical wallet available as an annual subscription service, allowing uploading, storing, and quick access to personal and medical data in case of an emergency at a doctor's office or hospital.

Detailed information on these events are described in *Deliverable 3.1 – SHIFT-HUB Catalogue of Services*, as well as the SHIFT-HUB website.

3.2 Fostering the development of Smart Health applications

In order to promote the development of applications, linking the app developers identified in the Apps Repository to the Smart Health Data Space is a key feature for the SHIFT-HUB service portfolio. The Smart Health Data Space is the “container”, that includes data sets and added value functions for data processing, on top of which the apps from the SHIFT-HUB repository are offered the opportunity to experiment and improve the algorithmic performance. We describe hereafter the process established to allow the SHIFT-HUB community members (i.e. the app developers in particular) the possibility to exploit the resources made available through the SHIFT-HUB Smart Health Data Space, a pilot hub implemented on the platform developed and managed by Cleyrop. The Data Space is accessible via the [Cleyrop](#) webpage as well as the [SHIFT-HUB project website](#).

In order to effectively and continuously provide the community members with access to the Smart Health Data Space, monthly onboarding session moderated by Cleyrop are hosted and promoted via the Community Platform (e.g. [Your access to the SHIFT-HUB Smart Health Data Space: WHY and HOW to join](#)). This provides present as well as future community members with regular opportunities to explore functions of the Data Space. Additionally, the onboarding sessions are used by the consortium to gather direct and regular feedback from all end-user groups (i.e. app developers, data providers, app users and researchers) regularly in the interactive sessions. During these onboarding sessions, participants have the opportunity to:

- **gain insights** into the key features and benefits of the Smart Health Data Space.
- **learn** how to add and manage data sources and datasets quickly and securely.
- **explore** the available tools for data processing, application development, and user engagement.
- **understand** how the platform supports secure, industrial-grade data management and cost control.
- **receive guidance and support** from the consortium to access the free tools and effectively use the platform's functionalities.

Additionally, to motivate end-users to join the Data Space, targeted promotional material including invitation letters, personalised emails, social media and Community Platform posts are designed to highlight the Data Space's benefits for different end-user types and encourage them to register and use the platform.

Features highlighted for different end users:

➤ Application Developers

Application developers can easily browse and identify available data through a simple and efficient interface. This allows them to quickly access the necessary information for developing data-driven applications, without facing unnecessary complexity.

➤ **Data Providers**

Data providers can easily create data sources, organise their data into datasets, and manage access to them. The data space simplifies the addition of new data thanks to a comprehensive library of connectors and access points, allowing for efficient and scalable data collection. Additionally, the integrated storage infrastructure helps simplify data management and control costs associated with the data architecture, thanks to optimised solutions designed for industrial-scale operations.

➤ **Application Users and Researchers**

End-users of applications can seamlessly and efficiently access the data they need, without disruptions or complexity. The data space ensures a smooth and immediate user experience, allowing for simple and secure data consumption.

These promotional materials are disseminated via public channels, reaching a larger audience beyond SHIFT-HUB community members and the community network for more targeted and personalised interactions with its members.

Additionally, a systematic follow-up is established to provide a seamless onboarding to the Data Space. Participants will receive a follow-up email including (i) a user manual in pdf format (see Annex), (ii) a link to a feedback survey and (iii) reference to a direct contact for Data Space-related questions at Cleyrop via support@cleyrop.com. With this approach we ensure that end-users are provided with seamless support and customer management to continuously improve the quality of the SHIFT-HUB services.

Taken together, with the strategy described herein, we are facilitating the onboarding process of Smart Health app developers identified in the Apps repository to use the pilot of the SHIFT-HUB Smart Health Data Hub. These efforts will result in the creation of the SHIFT-HUB marketplace, which will be described in D4.3 - SHIFT-HUB Smart Health marketplace in month 30.

Conclusion

The SHIFT-HUB Apps Repository is a key initiative aimed at facilitating access to high-quality, validated digital health applications across five key health domains: prevention, cardiovascular health, mental health, cancer, and diabetes. Through a rigorous process of identification, evaluation, and validation, the repository ensures that only trustworthy and effective solutions are made available to healthcare professionals, patients, and researchers.

With its user-friendly interface and filtering functionalities, the repository supports easy discovery and adoption of relevant applications, enhancing both usability and accessibility for a wide range of stakeholders. By prioritising transparency and alignment with regulatory standards, it reinforces trust in digital health technologies and helps to bridge the gap between innovation and real-world healthcare needs.

Beyond app curation, the repository is strategically integrated into the broader SHIFT-HUB service portfolio. By engaging the listed apps and their developers in SHIFT-HUB events such as Demo Days and Living Labs, in which they can showcase and co-develop their applications with end-users, multiple opportunities to enhance the visibility of the Smart Health applications are provided. Furthermore, through a targeted onboarding process and ongoing engagement with developers, a strategy is proposed to effectively link app developers from the Apps Repository to the Smart Health Data Space pilot. This integration empowers developers to test, refine, and scale their applications in collaboration with end-users.

Together, these efforts establish the foundation for a sustainable and dynamic Smart Health marketplace, which will foster innovation, adoption, and impactful digital health solutions across Europe.

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Annex

User Manual for the Smart Health Data Space

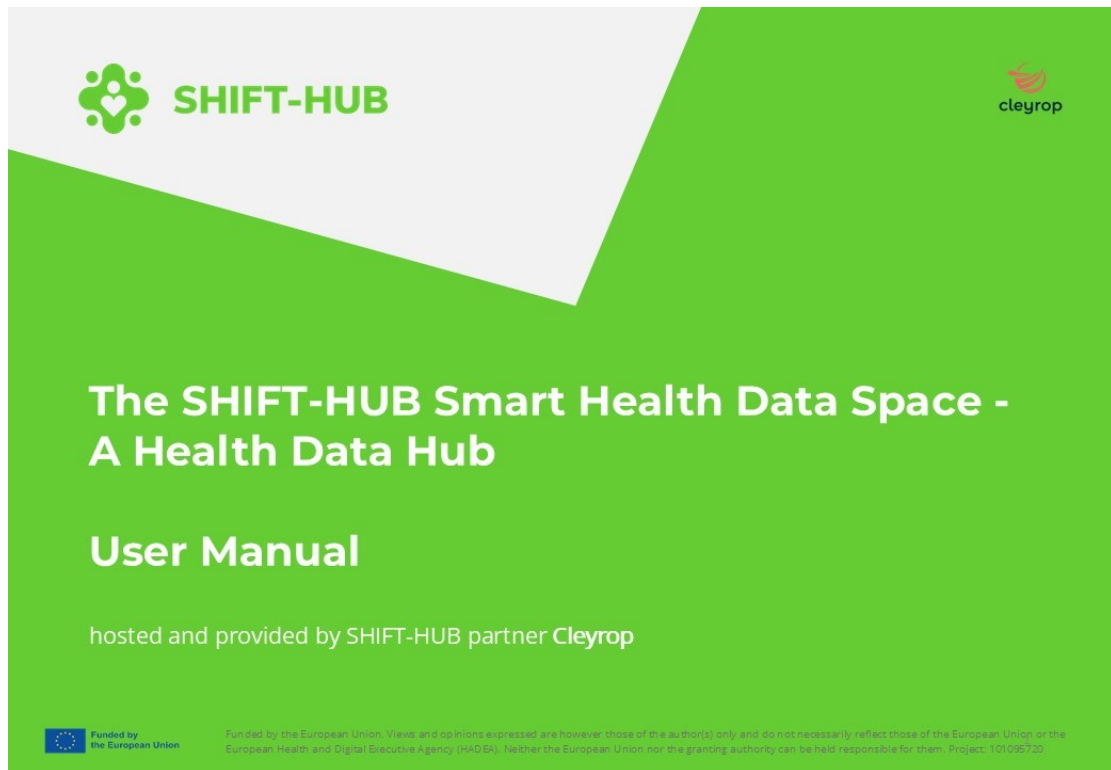
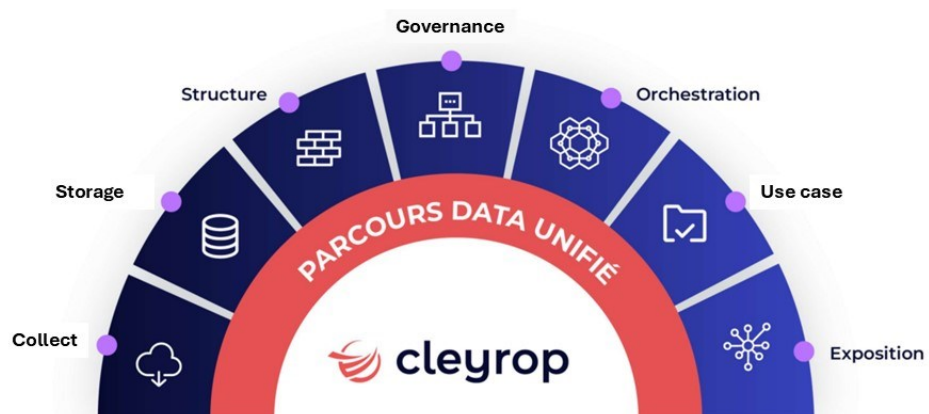


Figure 7. Slide 1 - User Manual



The **SHIFT-HUB Smart Health Data Space** is a **unified** and **sovereign** platform covering the entire **data lifecycle**.



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Figure 8. Slide 2 - User Manual

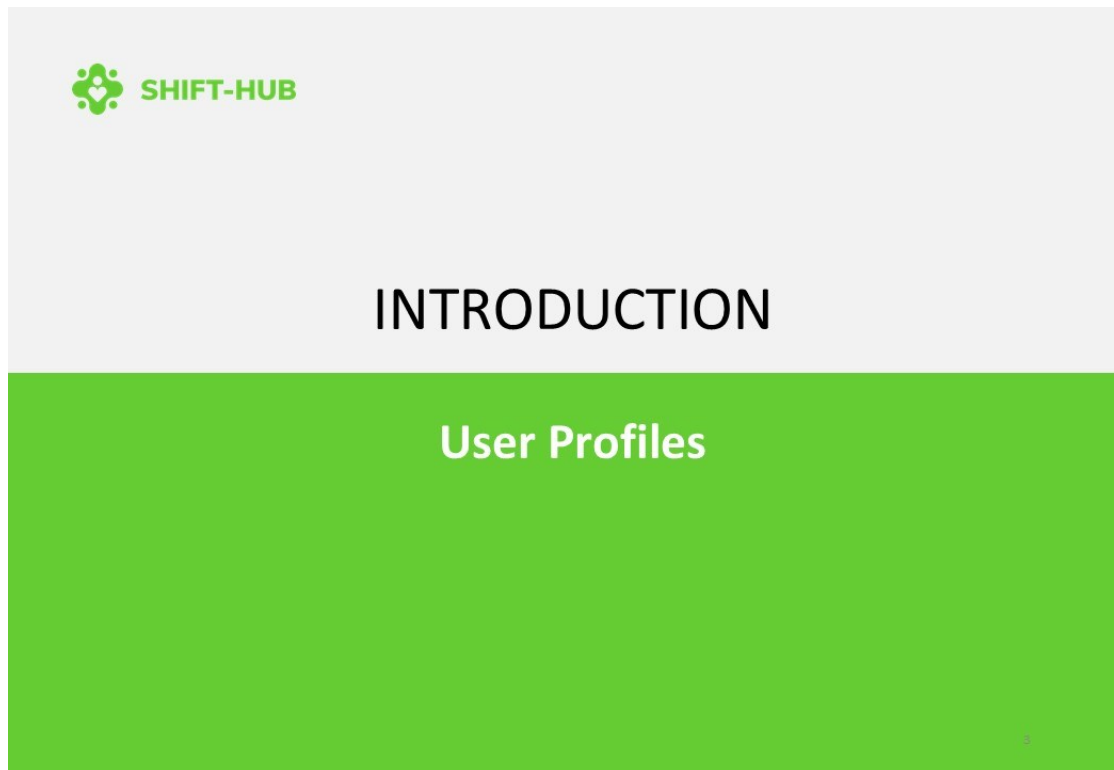


Figure 9. Slide 3 - User Manual

User profiles and access rights

Viewer	Business Analyst	Data Worker	Platform Manager
Data Visualisation ● Reading dashboards	Data Visualisation ● Reading dashboards ✎ Editing dashboards	Data Visualisation (● ✎) Data Catalog ● Visualization of datasets available in the catalog Data Project Member ● Creating a dataset ● Creating dataflow ● Accessing the Jupyter Notebook ● Data storage ● Orchestration ● Data visualization	Data Visualisation (● ✎) Data Catalog (● ✎) Data Project Member Configuration (● ✎) ● User Management ● Project Management ● Data-source management ● Governance Management

Figure 10. Slide 4 - User Manual

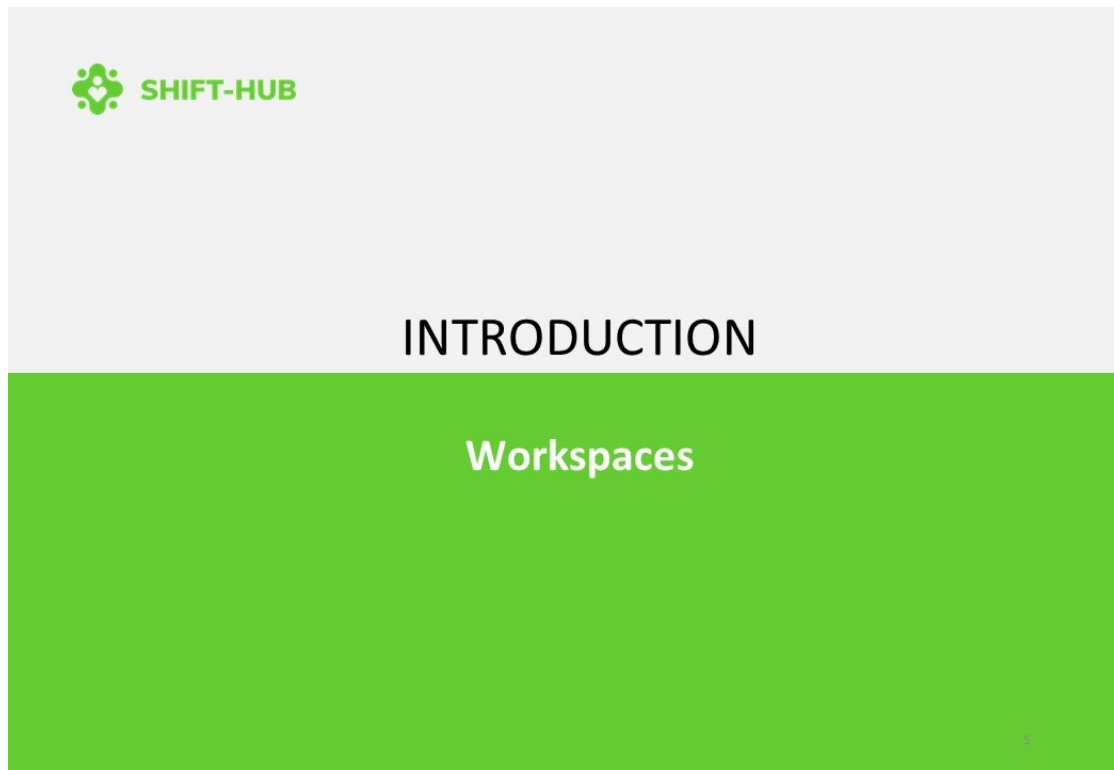


Figure 11. Slide 5 - User Manual



Workspaces: Introduction to "My Studio"

To work on data, you need to select a workspace, available in the « Projects » menu.

You can either use what's called « My Studio » or go to a « Project ».

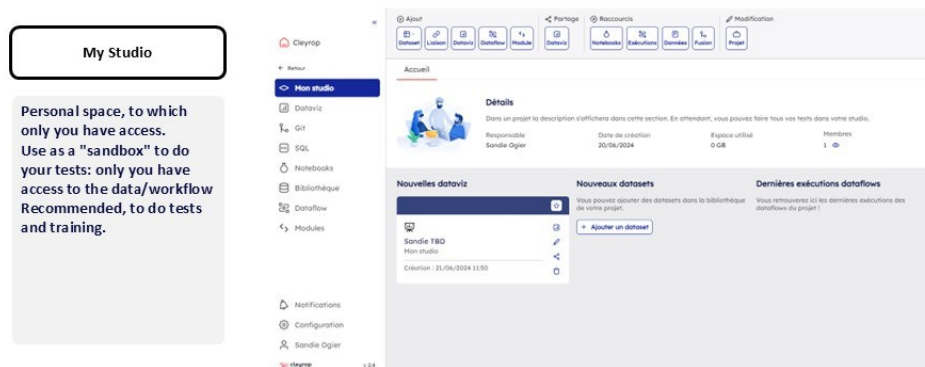


Figure 12. Slide 6 - User Manual

Workspaces: Introduction to the notion of "Projects"



To work collaboratively or industrially, you need to go to a workspace, available in the « Projects » menu.

Only the Platform Manager can create project spaces.

My projects

Collaborative space, accessible to all members of the project.
Recommended for working on data intended to be put into production, whether you are alone or several working on it.

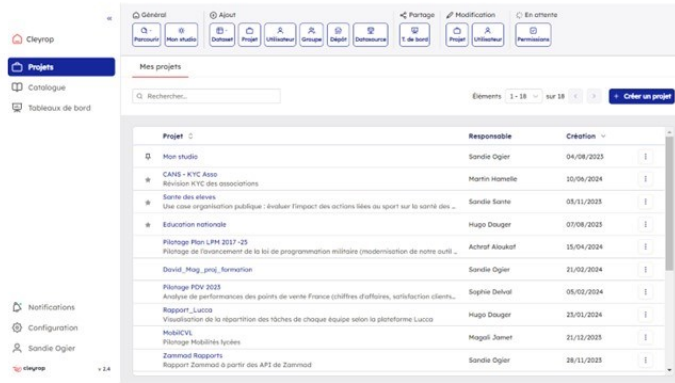


Figure 13. Slide 7 - User Manual

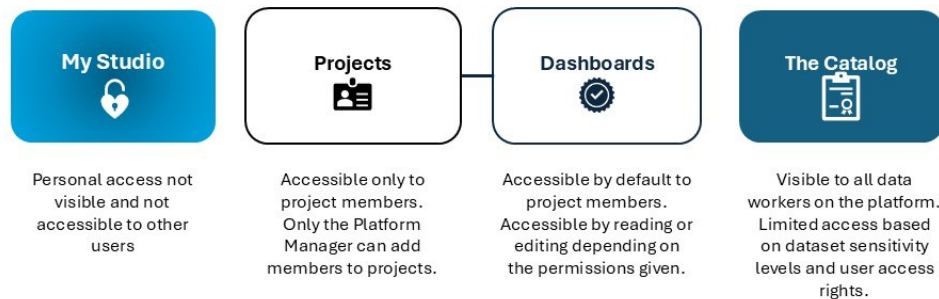


GOVERNANCE

Access rights

Figure 14. Slide 8 - User Manual

Access rights to DATASET & DATAFLOW

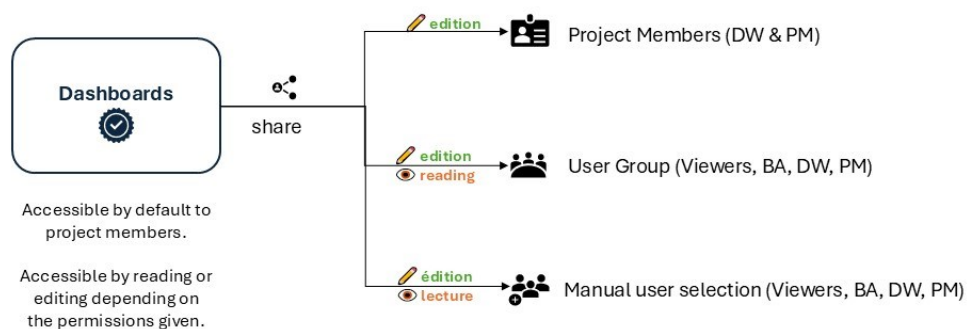


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Figure 15. Slide 9 - User Manual

Access rights to dashboards



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Figure 16. Slide 10 - User Manual

Access rights to Data Catalog

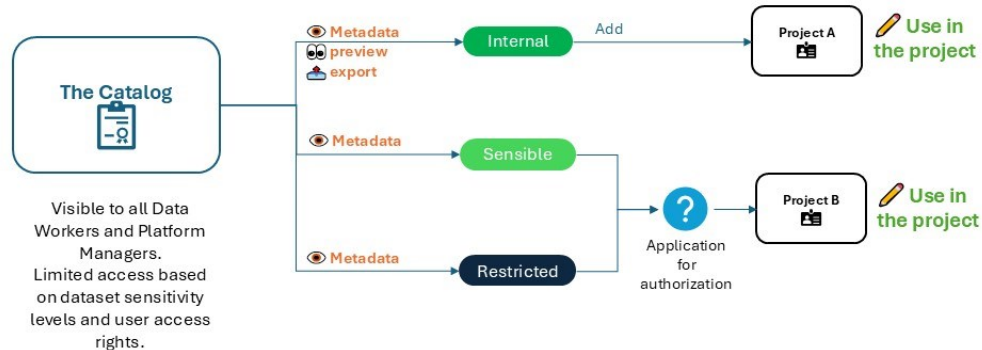


Figure 17. Slide 11 - User Manual

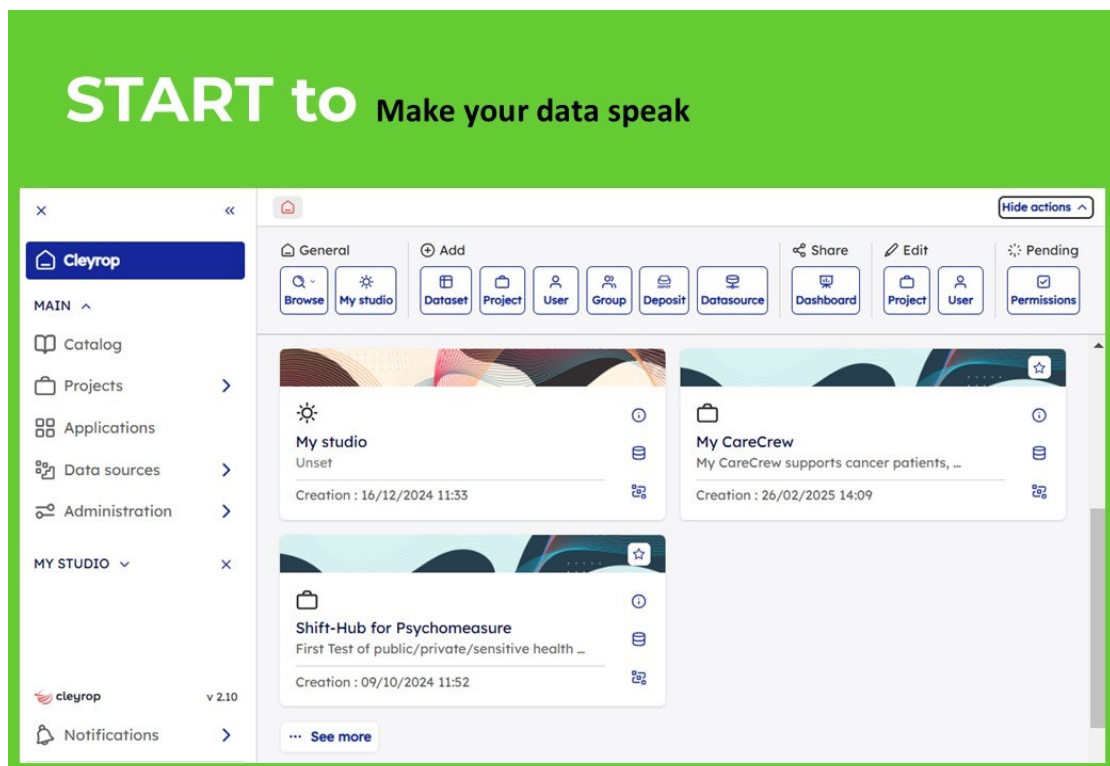


Figure 18. Slide 12 - User Manual

Collect data

Different functionalities are available to collect data :

1. Create a connector via a data source (*ask to a platform manager*)
2. Import local data
3. Get data by url with python transformation
4. Use existing data on the catalog



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Figure 19. Slide 13 - User Manual

Transform data

All data transformation are operating in a project space, where you can find a range of data tool processing.

1. Learn more about your data by exploring datasets in the library. On each dataset, you can create or check quality rules.
2. You can get quick statistics by using the SQL explorer or by using pandas library on the jupyter Notebook
3. You can clean, transform or create new dataset in the dataflows by using python/sql/low code transformations



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Figure 20. Slide 14 - User Manual

Visualize your data

To make your data speak and give it meaning, you can create thematic dashboards and share them within the community.

1. Create a dashboard in you project space
2. Connect your dataset to the dashboard
3. Use a large range of visualizations to empower your data
4. Schedule automatic refresh and publish your dashboard
5. Share your dashboard with the community



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Figure 21. Slide 15 - User Manual

Share your results

To increase the impact of your application, share your results within the platform with community members.

1. Share yours results by publishing datasets to the catalog
2. Share your dashboard with the community using ShiftHub group



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Figure 22. Slide 16 - User Manual

Make a try follow this training steps

1. Go to my studio
2. In the menu “Library”, add the dataset « Médecin Accrédités HAS » available in the catalog
3. Got to SQL menu and count the doctor with the following SQL query
 - `select count(` Num RPPS` ) from catalog.medecin_accredites_has`
4. Create a new dataflow called “Get Started”
5. Select as input dataset « Médecin Accrédités HAS »
6. Add a low code transformation and call the output « Doctor_BY_OA »
 - Group the column “OA” and aggregate the column “Num RPPS” by counting distinct values.
7. Save and run the dataflow
8. Go back to edition to deploy the dataflow
9. Preview the result by looking forward the output in your library
10. Create a new dashboard
11. Link the output dataset to the dashboard
12. Go back to the dashboard and displays the number of doctors by OA



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Figure 23. Slide 17 - User Manual



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Figure 24. Slide 18 - User Manual



Repository of certified Smart Health applications



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