CODECS platform and integrated components, final at M48

30 SEPTEMBER 2026

ANNA SELINI PETROPOULOU, MICHALIS ASIMOGLOU (AUA)

DOI: 10.5281/zenodo.23055625

Status: submitted draft not yet approved by the EC/approved by the EC

Funded by the European Union

CODECS has received funding from the European Union's Horizon Europe research and innovation Programme under Grant Agreement n. 101060179. Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.

CC BY

D7.5 CODECS PLATFORM AND INTEGRATED COMPONENTS, FINAL AT M48

Project name	Maximising the CO-benefits of agricultural Digitalisation through conducive digital ECoSystems
Project acronym	CODECS
Horizon Europe Topic ID	HORIZON-CL6-2021-GOVERNANCE-01-22
Project ID	101060179
Website	https://www.horizoncodecs.eu/
Document Type	Deliverable
File Name	DEL7.5_CODECSPlatformandIntegratedComponentsFinalM48_30102026.docx
Status	Final
Dissemination level	Public
Date of creation	30 September 2026
Keywords	Digital platform, application scenario, assessment tool, virtual tours, storybooks, digital technologies, data
Authors	Anna Selini Petropoulou, Michalis Asimoglou (AUA)
Reviewers	Tiziana Nadalutti (UNIPI)
Version n.	1.0
Following updates	-
Work package	WP7 – CODECS platform
Task number and title	T7.1 – CODECS platform
Work Package Leader	Agricultural University of Athens
Contributors	Tiziana Nadalutti
Project Coordinator	University of Pisa

Funded by the European Union

CODECS has received funding from the European Union's Horizon Europe research and innovation Programme under Grant Agreement n. 101060179. Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.

This license enables reusers to distribute, remix, adapt, and build upon the material in any medium or format, so long as attribution is given to the creator.

Contents

CONTENTS 1
EXECUTIVE SUMMARY 2
1 INTRODUCTION 3
2 USER-CENTERED DESIGN AND FINAL REQUIREMENTS 4
2.1 Consolidated functional requirements at M48 4
2.2 CODECS platform architecture 5
3 CODECS FINAL RELEASE COMPONENTS AND EVIDENCE 6
3.1 Homepage 7
3.2 Digital Technologies Inventory 7
3.3 Inventory of Datasets 9
3.4 Assessment Toolkit 9
3.5 Storybooks 11
3.6 Virtual Tours 12
3.7 CODECS Digital Methodological Handbook 14
4 CONCLUSIONS 14

TABLES

Table 1: Final user requirements 4
Table 2: Evolution of the CODECS Digital Platform 5

FIGURES

Figure 1: Objective of CODECS as presented on the Homepage of the CODECS Digital Platform. 6
Figure 2: User-role selection pop-up for identifying the profile of CODECS Digital Platform visitors 7
Figure 3: Digital Technologies Inventory. 8
Figure 4: List view and detailed view of entries in the Digital Technologies Inventory. 8
Figure 5: Published datasets under CODECS Inventory of Datasets 9
Figure 6: Listing of the CODECS assessment tools. 10
Figure 7: Landing pages of the ECC and TAT. 11
Figure 8: ECC calculator main user interface. 11
Figure 9: CODECS browsable Storybooks. 12
Figure 10: CODECS Virtual Tours. 13
Figure 11: CODECS Digital Methodological Handbook. 14

Funded by the European Union

CODECS has received funding from the European Union's Horizon Europe research and innovation Programme under Grant Agreement n. 101060179. Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them

Executive summary

Deliverable D7.5, “CODECS Platform and Integrated Components, Final at M48”, presents the final release and status of the CODECS Digital Platform at the end of the project. Building on the successive releases documented in D7.1–D7.4, the deliverable consolidates the development undertaken within WP7 and records the final implementation, integration and public availability of the platform’s principal components. The platform has evolved from its initial inventory-based architecture into an integrated knowledge and decision-support hub for sustainable agricultural digitalisation, providing a single access point for digital technologies, project-generated knowledge, assessment tools and practical demonstration resources for farmers, advisors, researchers, policy-makers and other agricultural stakeholders.

At M48, the platform brings together four main functional areas: (i) the **Digital Technologies Inventory**, integrating technologies from established external repositories and the CODECS Living Labs and organising them through thematic Application Scenarios; (ii) the **Inventory of Datasets**, providing structured access to CODECS-generated datasets, information and other project outputs; (iii) the **Assessment Toolkit**, bringing together the Environmental Footprint Calculator, Economic Cost Calculator, Technology Assessment Tool and Multi-Criteria Assessment Tool; and (iv) the **Digital Sustainability Demonstration** resources, comprising the 20 Living Lab Storybooks, five Virtual Tours and the interactive CODECS Methodological Handbook. These components combine structured information, assessment capabilities and real-world examples to support the discovery, evaluation and understanding of digital technologies across different agricultural contexts.

Final verification of the public platform was conducted at M48 as a point-in-time inspection of the implemented user-facing environment. The verification covered the availability and navigation of the principal platform components, search and filtering functionalities, metadata views, access to assessment interfaces, embedded Storybooks and Methodological Handbook, and links to externally hosted Virtual Tours. At the time of inspection, the Inventory of Datasets contained six publicly accessible records; the Storybooks interface provided access to all 20 Living Lab stories; five Virtual Tours were available; and the interactive Methodological Handbook was embedded within the platform. The M48 verification covered both the publicly accessible platform and the relevant administrative and content-management functionalities. This included checking user-facing navigation, search and filtering, metadata views, access to assessment tools and embedded resources, as well as back-office workflows for record submission, review, editing and publication through the administration panel.

The final platform has also been developed with maintainability and post-project sustainability in mind. Assessment tools were integrated, wherever technically feasible, as modular and independent components within the CODECS codebase, supporting future maintenance and updates and enabling hosting on CODECS-controlled infrastructure. Other digital resources follow integration approaches suited to their technical characteristics: Storybooks and the Methodological Handbook are embedded through Heyzine, while the Virtual Tours are maintained in dedicated external infrastructure operated by the James Hutton Institute and accessed through the CODECS platform. Together with the platform’s modular three-tier architecture, API-based integration of external repositories and common metadata structures, these arrangements support the continued accessibility, maintainability and potential updating of the CODECS Digital Platform and its resources beyond the project lifetime. The CODECS Digital Platform is developed and managed by the Agricultural University of Athens.

Funded by the European Union

CODECS has received funding from the European Union’s Horizon Europe research and innovation Programme under Grant Agreement n. 101060179. Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them

1 Introduction

Deliverable D7.5, “CODECS Platform and Integrated Components, Final at M48”, presents the final status of the CODECS Digital Platform and documents the developments completed within WP7 by the end of the project. The platform has been designed as a single, openly accessible knowledge and decision-support environment supporting sustainable digitalisation in agriculture. It brings together information on digital technologies, CODECS-generated data and outputs, assessment tools, and interactive resources illustrating the practical application and sustainability implications of digital technologies across the CODECS Living Labs.

The final platform comprises four principal components: (i) the **Digital Technologies Inventory**, which consolidates digital technologies from relevant European repositories and the CODECS Living Labs and organises them through thematic Application Scenarios; (ii) the **Inventory of Datasets**, providing structured access to CODECS-generated data, information and project outputs; (iii) the **Assessment Toolkit**, comprising the *Environmental Footprint Calculator*, *Economic Cost Calculator*, *Technology Assessment Tool* and *Multi-Criteria Assessment Tool*; and (iv) the **Digital Sustainability Demonstration resources**, including the Living Lab *Storybooks*, *Virtual Tours* and the *CODECS Digital Methodological Handbook*. Together, these components support the discovery, assessment and understanding of digital technologies and their application across different agricultural sectors and operational contexts.

Development of the platform followed a user-centred and iterative approach throughout the project. The initial release documented in D7.1 established the platform architecture, user needs and functional and non-functional requirements. Subsequent releases progressively enriched the Digital Technologies Inventory, harmonised metadata from external repositories and Living Labs, introduced new Application Scenarios, and integrated the assessment and demonstration components. By M48, the emphasis had shifted from establishing the core infrastructure to consolidating these components into a coherent environment and improving their usability, accessibility, clarity and relevance for the platform’s main stakeholder groups.

Beyond providing access to technologies and project outputs, the platform supports users in examining the potential environmental, economic and social implications of agricultural digitalisation and exploring how digital solutions are implemented under real-world conditions. In this way, it contributes to the broader CODECS objective of promoting sustainable agricultural digitalisation and strengthening stakeholders’ capacity to understand and maximise its benefits while accounting for associated costs and trade-offs. The main stakeholder groups and the value provided to them include:

- Researchers: centralised access to CODECS datasets, research outputs, digital technologies and Living Lab evidence, supporting data discovery and reuse, comparative analysis, methodological development and identification of research gaps and emerging trends.
- Policy-makers: access to evidence, assessment methods and Living Lab experiences that can inform the design, implementation and evaluation of digital agriculture policies across environmental, economic and social sustainability dimensions.
- Advisors: practical information, technology Application Scenarios, assessment tools and demonstration resources that can support evidence-based advisory services and communication of technology benefits, challenges and implementation considerations to farmers.
- Farmers and foresters: accessible information on digital solutions applied across different production systems, complemented by Storybooks, Virtual Tours and assessment tools that illustrate their practical implementation, performance, costs, benefits, challenges and sustainability implications, supporting more informed technology-adoption decisions.

Accordingly, D7.5 documents the final public release and verification of the CODECS Digital Platform. The M48 verification covered both public-facing functionalities and relevant administrative workflows, including navigation, search and filtering, metadata presentation, access to assessment tools and interactive resources, and the submission, review, editing and publication of platform content. The deliverable also documents the technical approaches adopted for integrating the different platform components and the arrangements supporting their maintenance, accessibility and sustainability beyond the project lifetime.

Funded by the European Union

CODECS has received funding from the European Union’s Horizon Europe research and innovation Programme under Grant Agreement n. 101060179. Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them

To support the long-term sustainability, transparency and further development of the CODECS Digital Platform, the platform source code will be made available through the project's GitHub repository: https://github.com/aua-sftg/Codecs-Platform. The repository will provide access to the relevant platform codebase and support future maintenance, adaptation and further development of the platform beyond the CODECS project lifetime.

2 User-centered design and final requirements

2.1 Consolidated functional requirements at M48

The definition of user requirements for the CODECS Digital Platform evolved progressively throughout the project, following the user-centred and agile approach established in D7.1. At the first release, user needs were systematically collected and translated into functional and non-functional requirements, including performance and security considerations, with particular attention to the needs of farmers, advisors, researchers and policymakers. The initial requirements focused on providing a centralised and accessible environment for discovering digital technologies, accessing project data, assessing sustainability-related costs and benefits, and exploring results through interactive demonstration formats.

Across the subsequent releases, these initial requirements were progressively operationalised, refined and expanded as the platform content and individual components matured. D7.2 focused on enriching the technology inventory and broadening its information base through additional repositories and Application Scenarios, while D7.3 placed greater emphasis on structured and comparable metadata, Living Lab technologies, assessment tools, Storybooks and Virtual Tours, thereby strengthening the relevance and usability of the platform in practical contexts. By the final development phase, the emphasis had shifted from defining core requirements to improving usability, clarity, accessibility, and stakeholder-oriented functionality, including clearer communication of the purpose and intended users of individual components and the integration of the platform's inventories, assessment tools, and demonstration resources into a coherent user environment.

The following matrix translates the original requirements and the added integrated components into a concise final-release baseline.

Table 1: Final user requirements

ID	Final requirement and user outcome	Evidence and public status
R01	Provide one understandable entry point and direct navigation to the principal resources without a public sign-in	Six primary navigation destinations are available; public pages open without sign-in
R02	Organise digital technologies by application scenario and expose source, description and keywords	Nine scenario routes, including Living Lab cases; entries show source, update date and keywords
R03	Support discovery of technologies and datasets through search or filters where provided	Dataset search and sector, format, creator and audience filters are available; technology categories and source filters are available
R04	Provide a curated dataset record with title, creator, date, description, tags, sector and format, with controlled publishing	Six public records and metadata views observed. Upload and editorial controls are documented in D7.1/D7.3 and retested

Funded by the European Union

CODECS has received funding from the European Union's Horizon Europe research and innovation Programme under Grant Agreement n. 101060179. Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them

ID	Final requirement and user outcome	Evidence and public status
R05	Provide assessment methods and usable interfaces with clear context and outputs	Environmental pre-calculated scenario exploration, economic ECC calculator, TAT criteria/rankings and MAT calculator are available
R06	Present Living Lab evidence through storybooks and virtual tours	20 storybook selectors with embedded flipbook viewing and five tour entries with outbound access links
R07	Provide the Methodological Handbook in an accessible, navigable format	A dedicated page embeds a Heyzine flipbook with contents, search, zoom and download controls
R08	Support authorised editorial work and differentiated access to management functions	Admin-panel management is shown in D7.1/D7.3. Public view shows profile entry, privileges and workflows were retested
R09	Make technology and project content understandable to the main stakeholder groups	Component descriptions and role selection are documented in D7.4 and available publicly
R10	Maintain clear source attribution, privacy information and project identity	Source labels, creator fields, privacy-policy link, EU funding acknowledgement and CC BY notice appear across public pages

2.2 CODECS platform architecture

The CODECS platform follows a three-tier architecture comprising the Data, Backend Services and Presentation tiers as described in D7.1. The Data Tier uses MongoDB to support flexible storage and management of heterogeneous platform data. The Backend Services Tier hosts the platform's business logic, APIs, microservices and crawlers used to retrieve relevant technologies from external repositories. The Presentation Tier provides the user-facing interface and an administration panel through which authorised users can manage, upload and edit platform content.

Table 2: Evolution of the CODECS Digital Platform

Release	Documented development	Evidence at M48
D7.1 M12 September 2023	First release: 37-response needs survey; MVP functional and non-functional requirements; data, backend and presentation tiers; initial inventories, data entry and profiles	The current platform retains the inventory-based information architecture and public navigation
D7.2 M24 September 2024	Second release documenting updates since its initial release (M12); highlights the efforts undertaken to expand the meta-inventory of digital technologies by integrating additional external open-access repositories	The current platform retains the inventory-based information architecture and public navigation.

Funded by the European Union

CODECS has received funding from the European Union's Horizon Europe research and innovation Programme under Grant Agreement n. 101060179. Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them

Release	Documented development	Evidence at M48
	from other EU-funded projects and programs; introduced new categories of Application Scenarios	
D7.3 M36, September 2025	28 Living Lab technologies from 18 of 20 Living Labs; a dedicated Living Lab application scenario; harmonised keywords; storybook flipbooks; initial virtual tour; environmental assessment page and plans for four tools	Living Lab listings, storybook selector, five virtual tour entries and assessment toolkit are visible
D7.4 M46, July 2026	Inventory copy refined; five tours integrated; storybooks under revision; TAT integrated; role selection and project-website links introduced; MAT, handbook and datasets identified as pending	The handbook is now embedded and six dataset records are visible. Economic calculator is directly accessible; MAT remains a public description page
D7.5 M48, September 2026	Final public release documented in this report	A point-in-time inventory of modules and direct screenshots appears in chapter 3

3 CODECS Final Release components and evidence

The CODECS Digital Platform has been designed and developed as a centralised hub for the collection, organisation and exploitation of digital technologies and project-generated knowledge in agriculture, supporting the broader vision of sustainable digitalisation.

The platform integrates four main components: (i) the Digital Technologies Inventory, which brings together a broad range of agricultural digital technologies and supports informed technology adoption and innovation through dedicated Application Scenarios; (ii) the Inventory of Datasets, which provides structured access to CODECS-generated data, information and project outputs; (iii) the Assessment Toolkit, comprising the Environmental Footprint Calculator, Economic Cost Calculators, Technology Assessment Tool and Multicriteria Assessment Tool, enabling users to assess different dimensions of the sustainability and performance of digital technologies; and (iv) the Sustainability Demonstration resources including the Storybooks, Virtual Tours and CODECS Digital Methodological Handbook, which communicate CODECS activities, results and methodological approaches through accessible and user-oriented formats. Together, these components provide an integrated environment for accessing information, evaluating digital technologies and supporting evidence-based decision-making on their adoption and use in agriculture.

Figure 1: Objective of CODECS as presented on the Homepage of the CODECS Digital Platform

Funded by the European Union

CODECS has received funding from the European Union's Horizon Europe research and innovation Programme under Grant Agreement n. 101060179. Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them

3.1 Homepage

The CODECS Digital Platform Homepage serves as the main entry point to the platform and provides users with an overview of its purpose and principal resources. It introduces the CODECS vision of sustainable digitalisation Figure 1 and provides direct navigation to the main platform components, including the Digital Technologies Inventory, Inventory of Datasets, Assessment Toolkit, Storybooks, Virtual Tours and the Methodological Handbook. Dedicated sections briefly describe the scope and intended use of the available resources and provide direct "Explore" links to the corresponding platform areas.

The homepage also provides access to the official CODECS project website (https://www.horizoncodecs.eu) and incorporates the user-role identification feature, through which visitors can indicate whether they are researchers, advisors, policymakers, farmers or other users. Overall, the homepage functions as a central navigation layer, providing a consistent and user-oriented access point to the different tools, repositories and knowledge resources developed within CODECS.

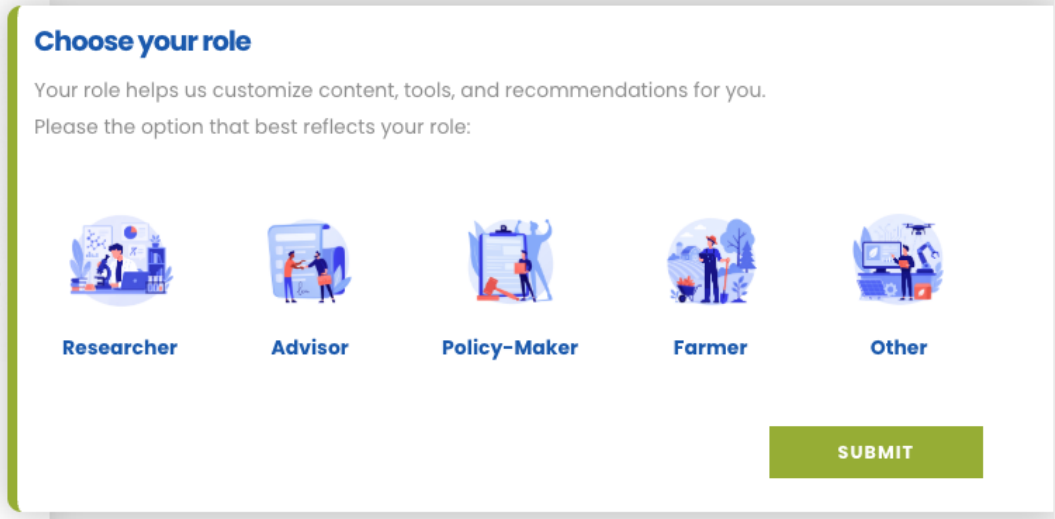

Figure 2: User-role selection pop-up for identifying the profile of CODECS Digital Platform visitors

3.2 Digital Technologies Inventory

The inventory is presented through eight thematic application scenarios plus a Living Lab category as shown in Figure 3 (left).

Thematically organised entry points include livestock, nutrient management, integrated systems, local marketing, pest management and spraying efficiency, water management, vocational training and advisory services, and biodiversity.

As stated on the homepage, more than 2,000 technologies can be discovered Figure 3 (right). All records contain a list of mandatory metadata, including a title, provenance, update date, concise description, and keywords, enabling users to follow from a scenario to an individual solution Figure 4 (left)).

Funded by the European Union

CODECS has received funding from the European Union's Horizon Europe research and innovation Programme under Grant Agreement n. 101060179. Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them

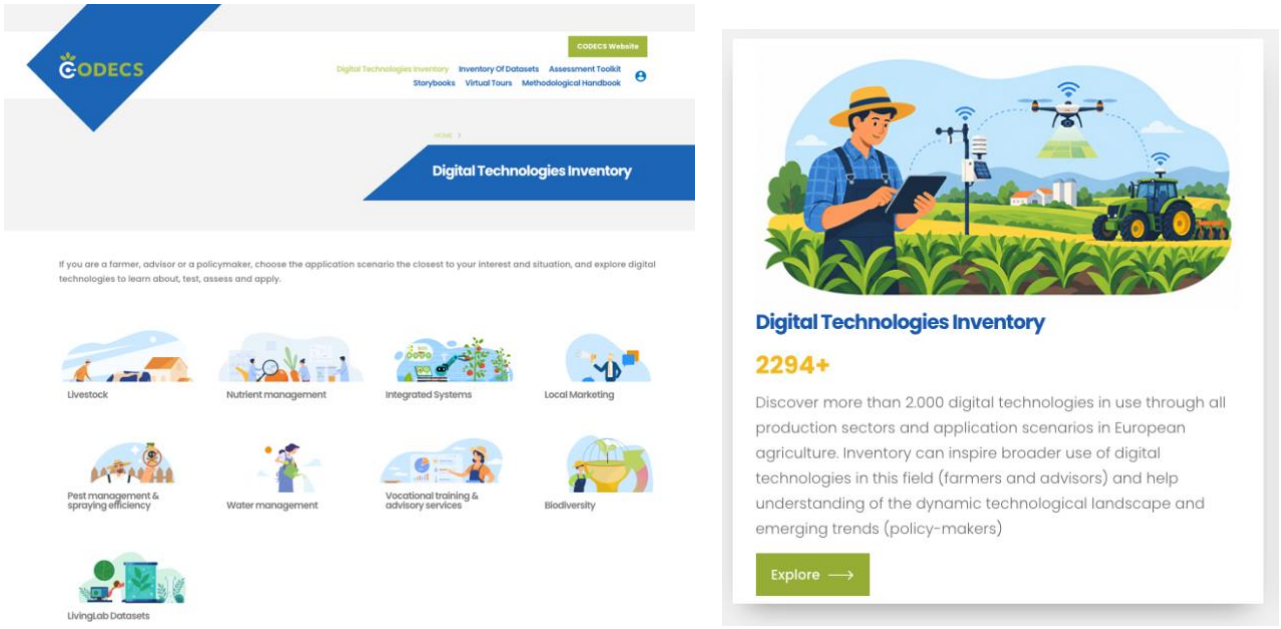

Figure 3: Digital Technologies Inventory

The platform provides a comprehensive inventory of digital technologies, building on established resources such as FAIRshare, DESIRA, Smart-AKIS, IPMworks, and NUTRI-CHECK NET. Users can filter entries by source inventory and country, browse matching results in a list view, and open a dedicated page for each technology to examine its metadata and supporting information in greater detail, as shown in (Figure 4 (right).

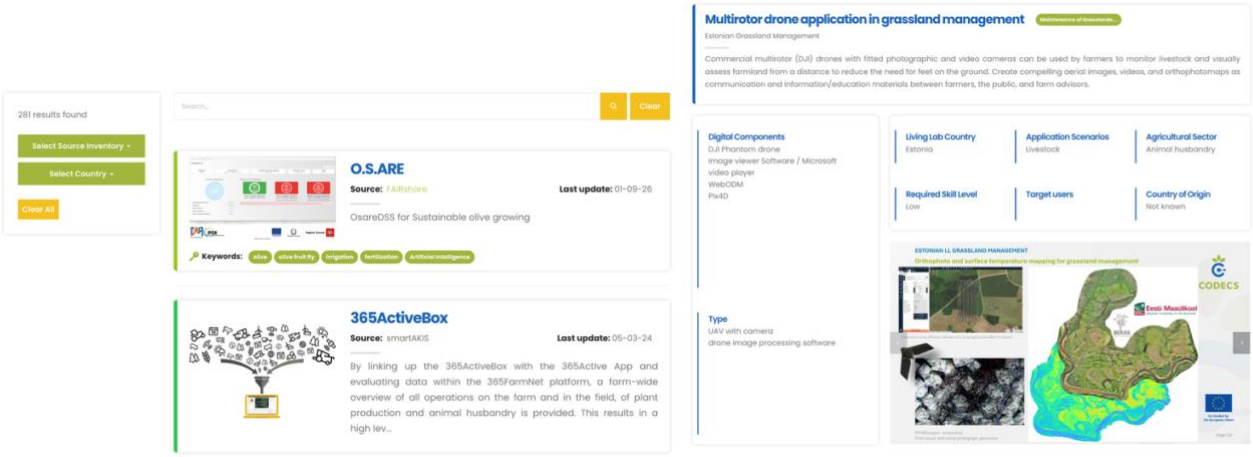

Figure 4: List view and detailed view of entries in the Digital Technologies Inventory

Data from external repositories were integrated into the CODECS meta-inventory through REST Application Programming Interfaces (APIs), enabling the platform to incorporate newly published technologies during periodic updates. AUA and BIOS mapped the repositories' metadata to a common CODECS structure, aligning fields and terminology so that records from different sources are displayed consistently. The integration also preserves source attribution, allowing users to identify the repository from which each technology originated.

Funded by the European Union

CODECS has received funding from the European Union's Horizon Europe research and innovation Programme under Grant Agreement n. 101060179. Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them

The mandatory and optional metadata fields for technologies sourced from external repositories and for technologies contributed by the CODECS Living Labs, are specified in earlier deliverables D7.2 and D7.3.

3.3 Inventory of Datasets

At the M48 inspection, the public **Inventory of Datasets** contained six CODECS records. Users can search the inventory by keyword, apply filters based on sector, data format, creator, and intended audience, and access a dedicated metadata page for each record. As the available entries cover different types of project outputs, the term “dataset” is used as a broad repository category rather than referring exclusively to conventional data files.

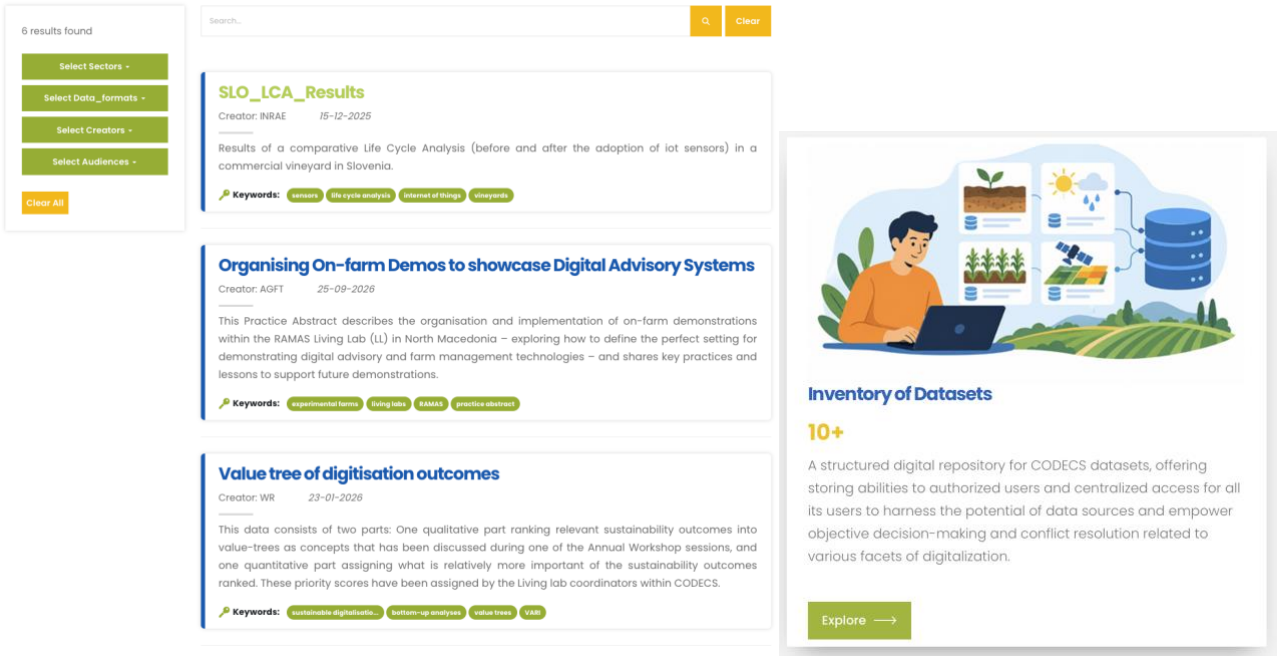

Figure 5: Published datasets under CODECS Inventory of Datasets

Records are submitted by project partners through their individual user profiles and are subsequently reviewed by AUA and other authorised users via the CODECS administration panel prior to publication as described in D7.1. Each submission must include a minimum set of mandatory metadata, while additional optional fields are completed where relevant information is available. The inventory will continue to be populated as further project outputs are provided by partners, with anonymisation and other data-protection measures applied where necessary before publication. The total number of datasets at the M48 inspection, uploaded on the platform, is also shown on the Homepage as shown in Figure 5 (right).

3.4 Assessment Toolkit

The CODECS Assessment Toolkit brings together four complementary tools supporting the evaluation of digital technologies in agriculture from environmental, economic, technological and broader sustainability perspectives. It includes the Environmental Footprint Calculator(EFC) (UL/INRAE) presenting LCA comparisons for Living Lab cases and variations across pre-calculated scenarios; the Economic Cost Calculator (ECC) (UL/ELGO-Dimitra) providing an Net Present Value (NPV) form for investment period, initial and annual costs, savings and discount rate, Technology Assessment Tool (TAT) (AG FUTURA) offering expert evaluation or needs-based exploration through six criterion groups, and Multi-criteria Assessment Tool (MAT), enabling users to explore impacts, compare

Funded by the European Union

CODECS has received funding from the European Union's Horizon Europe research and innovation Programme under Grant Agreement n. 101060179. Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them

alternatives and assess the suitability and sustainability performance of digital solutions across different agricultural contexts.

Figure 6: Listing of the CODECS assessment tools.

The assessment tools were integrated into the CODECS platform following a **modular integration approach**. Wherever technically feasible, each tool was incorporated directly into the CODECS codebase as an independent component with its own build and entry point, such as an index.html file or equivalent application interface. Through this approach, each relevant tool is launched directly from its corresponding button within the platform while maintaining functional separation from the core platform components. The approach supports easier maintenance, future updates, and scalability, while also enabling the tools to be hosted on CODECS-controlled infrastructure, thereby strengthening their long-term sustainability and reducing dependency on external hosting services.

Each calculator is supported by a dedicated landing page that presents the methodological approach underpinning its development, including its scope, assessment logic, and key calculation principles. The landing page also includes and provides a step-by-step instructional video, available through YouTube, demonstrating how to use the tool, drawing on practical examples from the CODECS Living Labs Figure 7. From these pages, dedicated access buttons direct users to the corresponding calculator interface, where they can interact with the tool, enter the required information, and generate assessment results as shown in Figure 8.

Funded by the European Union

CODECS has received funding from the European Union's Horizon Europe research and innovation Programme under Grant Agreement n. 101060179. Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them

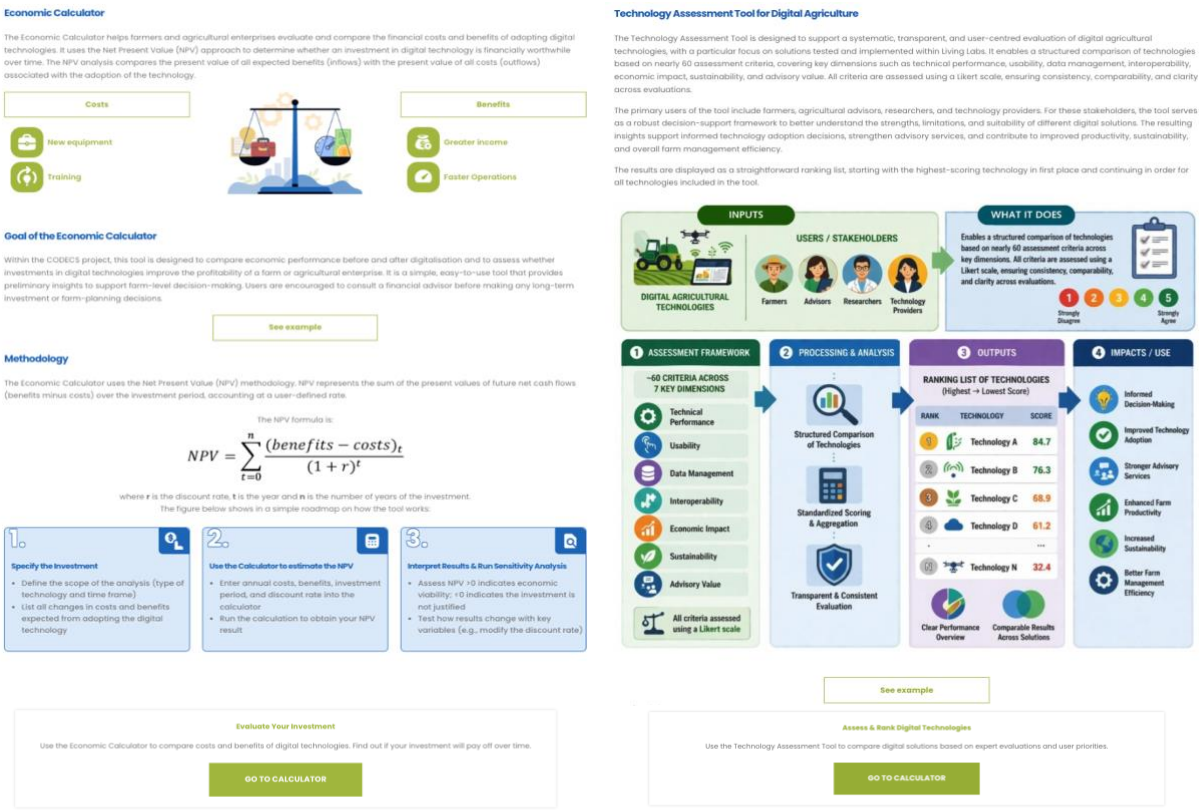

Figure 7: Landing pages of the ECC and TAT

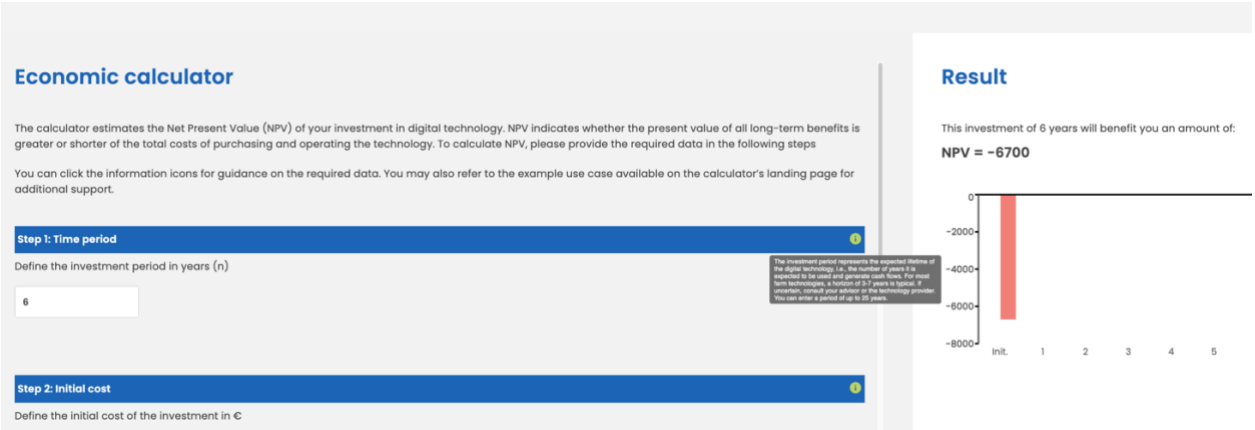

Figure 8: ECC calculator main user interface

3.5 Storybooks

The Storybooks provide an engaging and accessible format for presenting the experiences, digitalisation pathways and key outcomes of the 20 CODECS Living Labs. The stories were designed using Canva, combining concise narrative content with photographs, illustrations and other visual elements, and subsequently implemented as

Funded by the European Union

CODECS has received funding from the European Union's Horizon Europe research and innovation Programme under Grant Agreement n. 101060179. Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them

interactive digital flipbooks using Heyzine. The Heyzine publication was then embedded directly within the corresponding CODECS webpage through an iframe, allowing users to access and navigate the Storybooks without leaving the platform. This approach preserves the interactive functionality of the flipbooks, including page-turning controls, multimedia elements and internal navigation, while maintaining a consistent user experience within the CODECS environment. It also enables updates to be managed efficiently at the publication level without requiring major changes to the core platform code.

This implementation operationalises the demonstration approach introduced in D7.3 and subsequently refined in D7.4, including the addition of dedicated content on the challenges encountered alongside the identified benefits (environmental, social and economic) of digitalisation. In this way, the Storybooks complement the more technical platform components by translating Living Lab experiences and project results into an accessible, visually oriented format suitable for a broad range of stakeholders. The M48 public inspection confirmed the functioning Storybooks interface, Living Lab selector and embedded Heyzine flipbook functionality; it should, however, be considered a verification of the implemented platform functionality rather than a detailed content audit of every page across all 20 Storybooks.

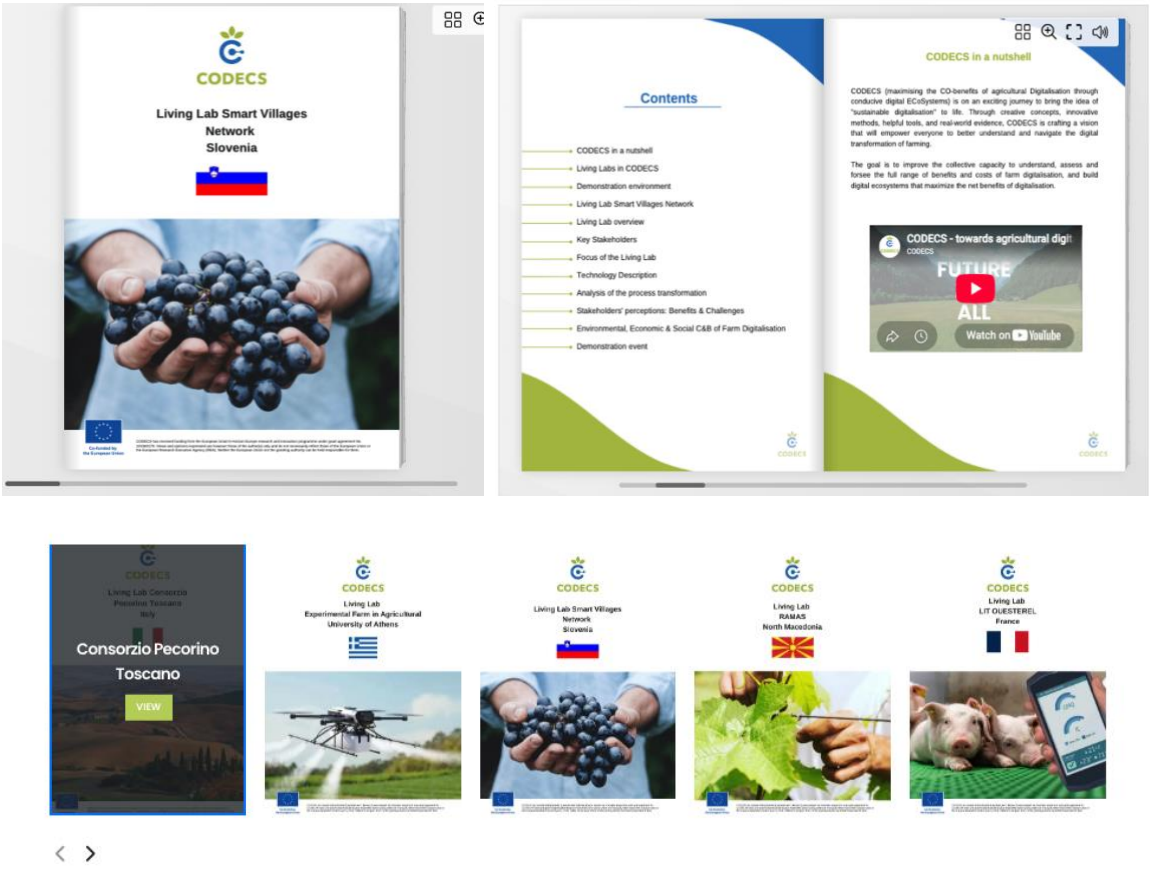

Figure 9: CODECS browsable Storybooks

3.6 Virtual Tours

The Virtual Tours provide an interactive means of presenting selected CODECS Living Labs and demonstration farms, allowing users to explore real-world agricultural settings and the digital technologies applied within them. The platform provides access to five virtual tours covering demonstration sites in Scotland with the Elchies Farm, Belgium

Funded by the European Union

CODECS has received funding from the European Union's Horizon Europe research and innovation Programme under Grant Agreement n. 101060179. Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them

with the ILVO Farm, the Czech Republic with the Bromil Farm, Germany with the AgDiBI Farm, and the Baltic region with the Bekas Nature Farm (Figure 10). Each entry includes a short contextual description of the farm or Living Lab and the digital solutions being demonstrated, together with a dedicated link to launch the corresponding interactive tour.

The tours complement the Storybooks by offering a more immersive, spatially oriented representation of the demonstration activities, enabling users to explore farm environments, technologies and use cases in a format that resembles an on-site visit. Examples include digital tools for livestock monitoring, weather observation, biodiversity management, fertilisation, documentation, data transmission and precision application. The virtual tours are hosted through a dedicated external environment operated by the James Hutton Institute infrastructure. This approach allows the CODECS platform to serve as the central access point for the tours while the more resource-intensive immersive content is hosted and maintained separately. It also facilitates the independent management and updating of the virtual-tour content without requiring modifications to the core CODECS platform.

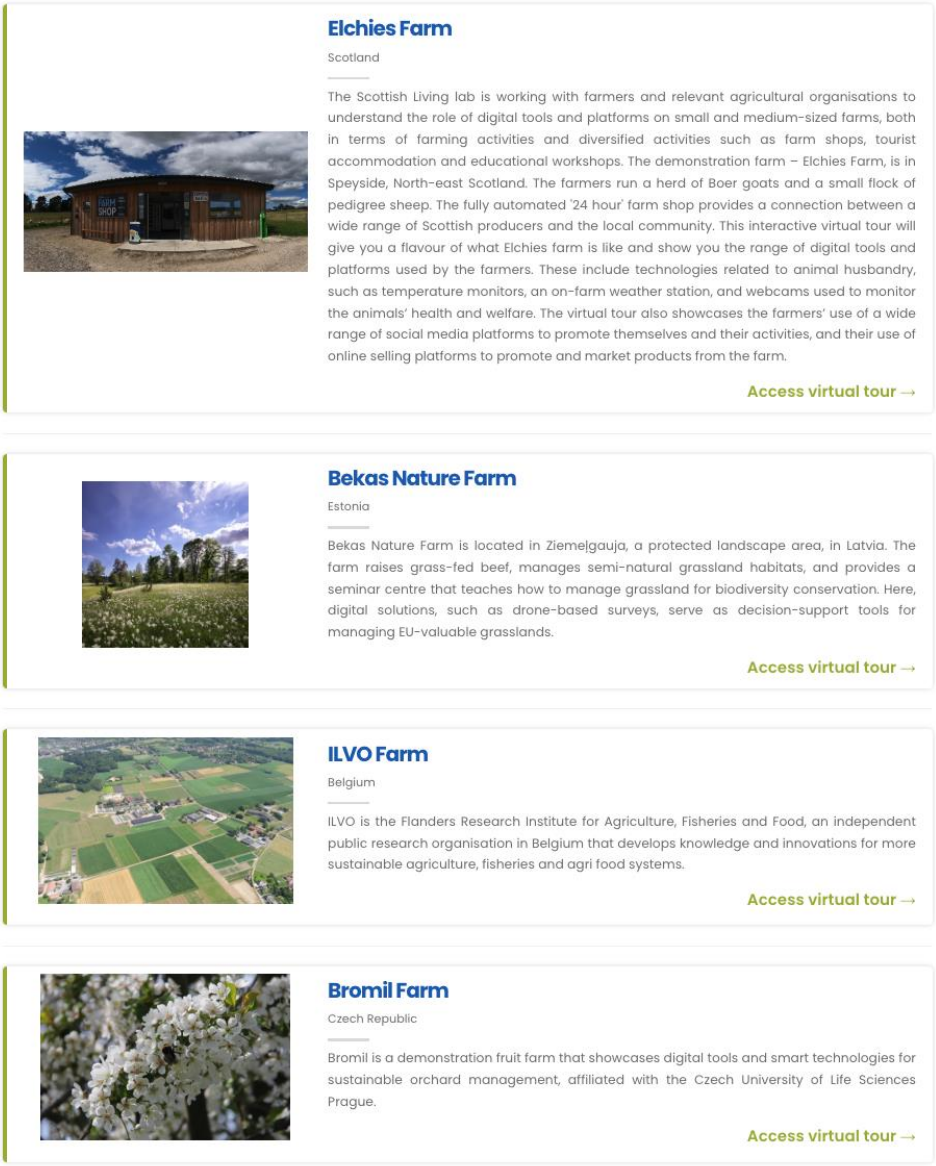

Figure 10: CODECS Virtual Tours

Funded by the European Union

CODECS has received funding from the European Union's Horizon Europe research and innovation Programme under Grant Agreement n. 101060179. Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them

3.7 CODECS Digital Methodological Handbook

The CODECS Methodological Handbook provides practical guidance for applying the project's methodological approach to sustainable digitalisation in agriculture. It consolidates key concepts, methods, practical instructions and lessons emerging from the CODECS activities to support researchers, advisors, innovators and other AKIS actors in assessing and promoting digitalisation pathways that generate sustainable outcomes. This reflects the objective of CODECS WP2 to translate the project methodology into practical guidance that can support future innovation activities.

Following an approach similar to that adopted for the Storybooks, the Handbook was designed and visually structured using Canva and subsequently converted into an interactive digital publication using Heyzine. The resulting flipbook is embedded directly within the CODECS Digital Platform through an iframe and provides a range of interactive navigation features. Users can access embedded links and audiovisual material, search the publication using the integrated search function, create personal bookmarks, and navigate directly to sections of interest through interactive buttons and the table of contents. These functionalities facilitate faster and more intuitive access to relevant content and enhance the overall usability of the Handbook as a practical reference resource.

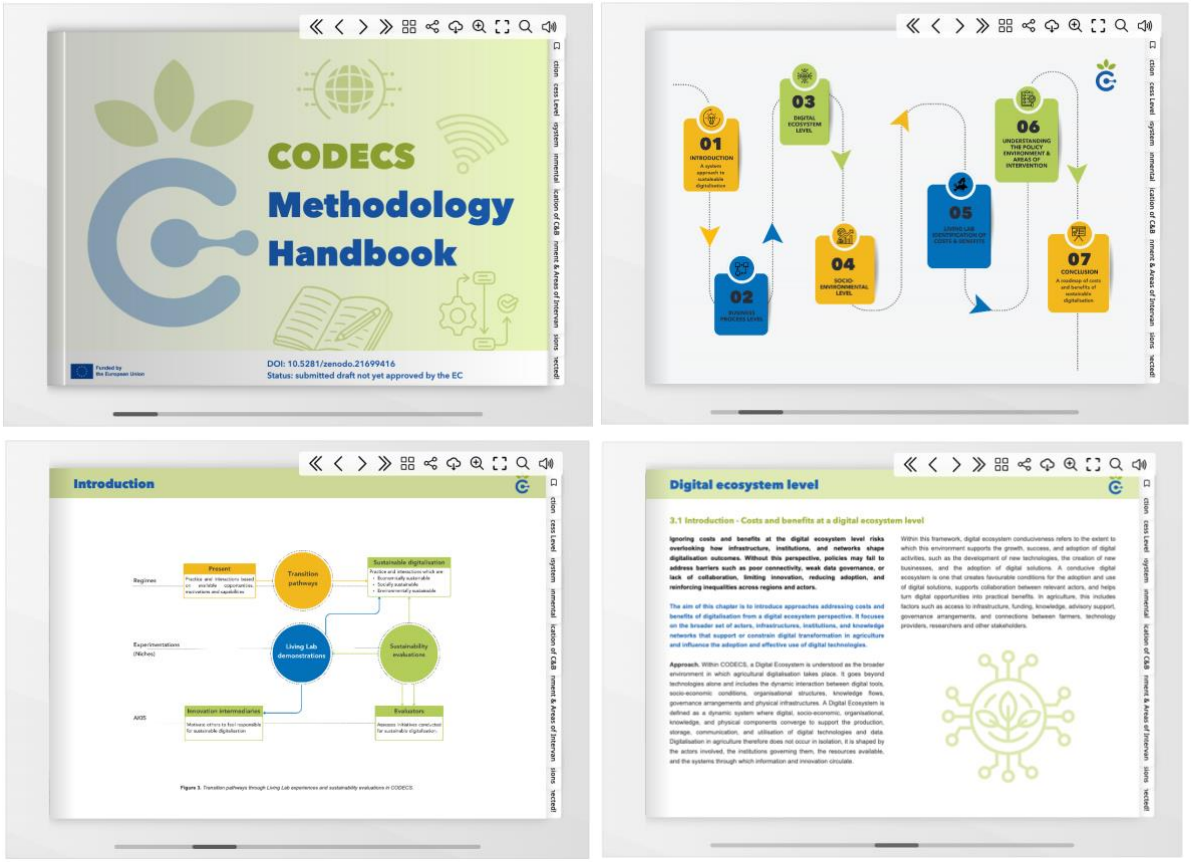

Figure 11: CODECS Digital Methodological Handbook

4 Conclusions

Deliverable D7.5 documents the final release of the CODECS Digital Platform at M48, consolidating the developments implemented progressively throughout the project. The platform now provides an integrated and

CODECS has received funding from the European Union's Horizon Europe research and innovation Programme under Grant Agreement n. 101060179. Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them

Funded by the European Union

openly accessible environment combining the Digital Technologies Inventory, Inventory of Datasets, Assessment Toolkit, Storybooks, Virtual Tours and the CODECS Digital Methodological Handbook. Together, these components support stakeholders in discovering digital technologies, accessing project-generated knowledge, assessing sustainability-related performance, and exploring practical experiences from the CODECS Living Labs.

The final M48 verification confirmed the availability and operation of the principal platform components through direct inspection of the live environment. The verification covered both public-facing functionalities, such as navigation, search and filtering, metadata views, assessment interfaces and interactive resources, and relevant administrative functions, including record submission, review, editing and publication. Screenshots and functional checks were used to document the status of the platform at the time of inspection.

Overall, the final release fulfils the objective of establishing a central knowledge and decision-support hub that makes CODECS results accessible, usable and relevant to farmers, advisors, researchers, policy-makers and other actors involved in agricultural digitalisation. The modular architecture, API-based integration, harmonised metadata structures and combination of internally hosted, embedded and externally hosted resources also provide a basis for the continued maintenance and exploitation of the platform beyond the project lifetime.

Funded by the European Union

CODECS has received funding from the European Union's Horizon Europe research and innovation Programme under Grant Agreement n. 101060179. Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them