D1.1 Project Web Pages Update

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POLIRURAL plus

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Abbreviations

App	Application
CMS	Content Management System
CSW	Catalog Service for the Web
DIH	Digital Innovation Hub
GIS	Geographic Information System
ICT	Information and Communication Technologies
INSPIRE	Infrastructure for Spatial Information in the European Community
RAP	Regional Action Plan
WFS	Web Feature Service
WMS	Web Map Service
QField	Professional mobile app for QGIS
QGIS	Geographic Information System (GIS) software

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Executive Summary

The PoliRuralPlus project, as an advancement of the successful PoliRural H2020 initiative, aims to enhance the sustainable and inclusive development across Europe's urban and rural landscapes. By leveraging the experiences and insights gained from PoliRural, PoliRuralPlus integrates foresight planning with digital tool utilization for informed decision-making and policy development. A key focus is on improving the quality of life, fostering rural-urban partnerships, and establishing sustainable financing mechanisms for long-term development.

A critical component of PoliRuralPlus's outreach and impact strategy is the development of a comprehensive and user-friendly website. Recognizing the limitations of having separate Knowledge Hubs and Web Pages, which previously reduced visibility and impact, PoliRuralPlus aims to unify these elements into a single, cohesive online platform. This platform is not just a repository of information but serves as a dynamic social space for community building, knowledge sharing, and collaborative development.

The website, developed on the Wagtail CMS for its efficiency, flexibility, and user-centric design, will initially focus on foundational functionalities. It will gradually incorporate the full spectrum of Hub4Everybody features, including map management, learning platforms, and innovative AI tools like large language models. This phased approach allows for iterative enhancements and aligns with the project's goal to support sustainable urban-rural development.

The Hub4Everybody framework, which has significantly benefited from PoliRural's contributions, now serves as the foundation for a variety of solutions from simple web pages to commercial platforms. This transformation into a generic framework is a strategic move to enhance the digital landscape for rural development initiatives, ensuring the platform remains state-of-the-art through continuous updates and technological advancements.

In summary, PoliRuralPlus represents a pivotal evolution from its predecessor, aiming to create a unified, dynamic, and inclusive platform that leverages digital innovation for sustainable rural-urban development. Through strategic integration of web functionalities and the adoption of the Hub4Everybody framework, PoliRuralPlus is set to significantly enhance community engagement, knowledge sharing, and collaborative innovation across Europe [1], [2].

1 Introduction

1.1 Overview of the Project

In response to the complex and interconnected challenges facing rural and urban areas, the PoliRuralPlus project emerges as a pivotal continuation of the successful PoliRural H2020 initiative. Building upon the foundation laid by its predecessor, which developed an Action-orientated Foresight Process & ICT Tool Box validated by 12 Regional Action Plans (RAP), PoliRuralPlus is poised to foster sustainable and inclusive development across Europe's diverse landscapes.

PoliRuralPlus encompasses two primary focus areas: foresight, planning, and implementation of integrated urban-rural strategies, and the utilisation of digital tools and data for informed decision-making and policy formulation. The project endeavours to enhance the quality of life for both urban and rural residents by fostering collaborative development within regions. It aims to fortify rural-urban partnerships, increase resilience, and pave the way for sustainable financing mechanisms vital for long-term partnership development.

As we embark on the journey of PoliRuralPlus, it's crucial to recognize that effective communication and dissemination of our endeavours are paramount. While our project's core objectives revolve around fostering integrated urban-rural development, we understand the pivotal role that technology plays in amplifying our impact and reaching wider audiences.

In this digital age, a functional and user-friendly website serves as the cornerstone of our outreach efforts. It will serve as a hub for stakeholders to access valuable resources, stay updated on project progress, and engage in meaningful dialogue. Through the website, we aim to provide a seamless platform for knowledge sharing, collaboration, and empowerment.

1.2 Web Pages as Knowledge Hub or Social Space

Based on the valuable experience gained from the PoliRural project, we recognised that having separate Knowledge Hub and Web Pages decreased the project's visibility and communication impact.

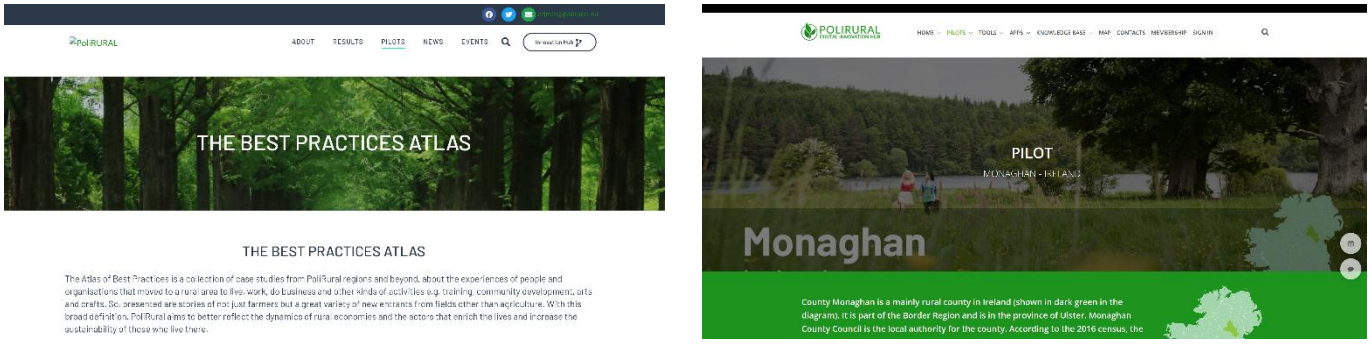


Figure 1 PoliRural Web Pages and Knowledge Hub [3], [4]

Creating a dynamic website for the PoliRuralPlus project entails more than just aesthetics; it's about ensuring accessibility, usability, and relevance to diverse audiences. Our website will serve as a gateway to explore the innovative tools, methodologies, and insights generated through the project. It will cater to policymakers, researchers, practitioners, and citizens alike, facilitating informed decision-making and fostering a sense of community around our shared vision for integrated rural-urban development.

With a robust website at our disposal, we will not only showcase the progress and outcomes of PoliRuralPlus but also facilitate active participation and feedback from stakeholders across Europe. Whether accessing research findings, engaging in discussions, or exploring best practices, our website will serve as a dynamic platform for collaboration and co-creation.

Based on the valuable experience gained from the PoliRural project, it became evident that segregating of communication channels and knowledge repositories into multiple web pages and a separate Knowledge Hub was not as effective as anticipated. This fragmentation led to underutilization and dilution of the impact these platforms were intended to deliver. Consequently, in the evolution to PoliRuralPlus, we have strategically decided to amalgamate the disparate elements into a singular, cohesive online platform.

This integrated approach ensures that the website transcends its conventional role as a mere conduit for information dissemination. Instead, it transforms into a comprehensive hub for data management, publishing, promoting, and training - all centralized in one accessible location.

This strategic integration aims to augment the visibility of the PoliRuralPlus project significantly. By serving as both a communicative material and a social space, the website is poised to attract a broader spectrum of users, thereby

facilitating the construction of a more vibrant and engaged community. It stands as a testament to our commitment to not only connecting communities within all pilot regions but also extending our reach across the entirety of Europe.

Our website will therefore embody more than just a static repository of information; it will evolve into an interactive social space. This space will be dedicated to bridging communities, fostering dialogue, and facilitating the exchange of ideas and best practices. Through this platform, we aim to create a rich tapestry of collaboration, bringing together diverse stakeholders to contribute to and benefit from the PoliRuralPlus project.

In the ensuing sections, we will expound upon the methodologies and strategies underpinning the design and development of our website. This will include considerations related to user experience design, content curation, and the technical intricacies of website implementation. Our goal is to ensure that the website not only aligns with the overarching objectives of PoliRuralPlus but also acts as a lever for positive change, driving towards a more inclusive and integrated development across the rural and urban landscapes of Europe.

The reflection on the original PoliRural project underscores the importance of this strategic shift. The decision to unify the web presence into a single, comprehensive platform was informed by the recognition of the limitations faced by the fragmented approach previously employed. This evolution represents a critical step forward in optimizing the impact and reach of the PoliRuralPlus initiative, ensuring that it serves as a cornerstone for community engagement, knowledge sharing, and collaborative innovation in rural development.

From the standpoint of project visibility, having two separate solutions, Web Pages and Knowledge Hub, proved not to be effective. It created confusion among users and diminished the project's visibility and communication impact. Based on extensive experience in developing the concept of Social Space for Spatial Data, we explored various Content Management Systems (CMS). Initially starting with our own development (using our own CMS SimpleCMS), we moved to testing WordPress, which, despite its ease of use, presented security challenges [5],[6], [7]. Subsequently, we evaluated Liferay, a stable and powerful solution, yet found it complex for both users to add new content and for maintenance. Through this journey, we opted for Wagtail, combining the security and robustness of systems like Liferay, the ease of publishing content akin to WordPress, and the flexibility to develop new modules easily. This informed our decision to consolidate our online presence into a single, cohesive platform, utilizing Wagtail to ensure an efficient, secure, and user-friendly website [10].

Our goal is to ensure that the website not only aligns with the overarching objectives of PoliRuralPlus but also acts as a lever for positive change, driving towards a more inclusive and integrated development across the rural and urban landscapes of Europe.

The reflection on the original PoliRural project underscores the importance of this strategic shift[8], [9]. The decision to unify the web presence into a single, comprehensive platform was informed by the recognition of the limitations faced by the fragmented approach previously employed. This evolution signifies a critical step forward in optimizing the impact and reach of the PoliRuralPlus initiative, ensuring that it serves as a cornerstone for community engagement, knowledge sharing, and collaborative innovation in rural development. Furthermore, the integrated website and hub will be subject to continuous updates and enhancements, ensuring its dynamic evolution in line with technological advancements and user feedback. This commitment to adaptability means that new functionalities will be introduced over time, reflecting the cutting-edge technological development. Such an approach guarantees that the platform remains a state-of-the-art resource for all stakeholders, ensuring it continues to meet the needs of its users effectively and efficiently. This strategy underscores our dedication to fostering an environment that not only keeps pace with but anticipates the future demands of rural development,

thereby facilitating a proactive rather than reactive engagement with the challenges and opportunities that lie ahead.

This decision led us to adopt the concept of Hub4Everybody, a generic framework easily modifiable to our needs, to which PoliRural significantly contributed. Initially, we will utilize its Web page functionality, but throughout the project, we plan to integrate all Map management functionality, learning platforms, and new AI and other modules developed directly in PoliRuralPlus. The next two chapters describe the current status of the selected framework Hub4Everybody as it is now.

2 From PoliRural Hub to Hub4Everybody

The PoliRural Hub[4] exemplified a forward-thinking approach in the development of Digital Innovation Hubs (DIH) aimed at enhancing rural development. Designed to serve as a comprehensive public interface, the Hub introduces and disseminates the innovations stemming from the PoliRural project, fostering a vibrant ecosystem of stakeholders through its online platform.

Crafted upon a robust architecture, the PoliRural Hub integrated technology, datasets, and libraries into a seamless infrastructure. This infrastructure not only supports a sophisticated user-oriented web portal but also facilitates a blend of content management and social interaction. The Hub is structured to accommodate various sections dedicated to fostering interaction, learning, experimentation, and development, catering to a broad audience including both internal and external users.

Central to the PoliRural Hub's utility is its function as a dynamic social space, where communities of practice can thrive.

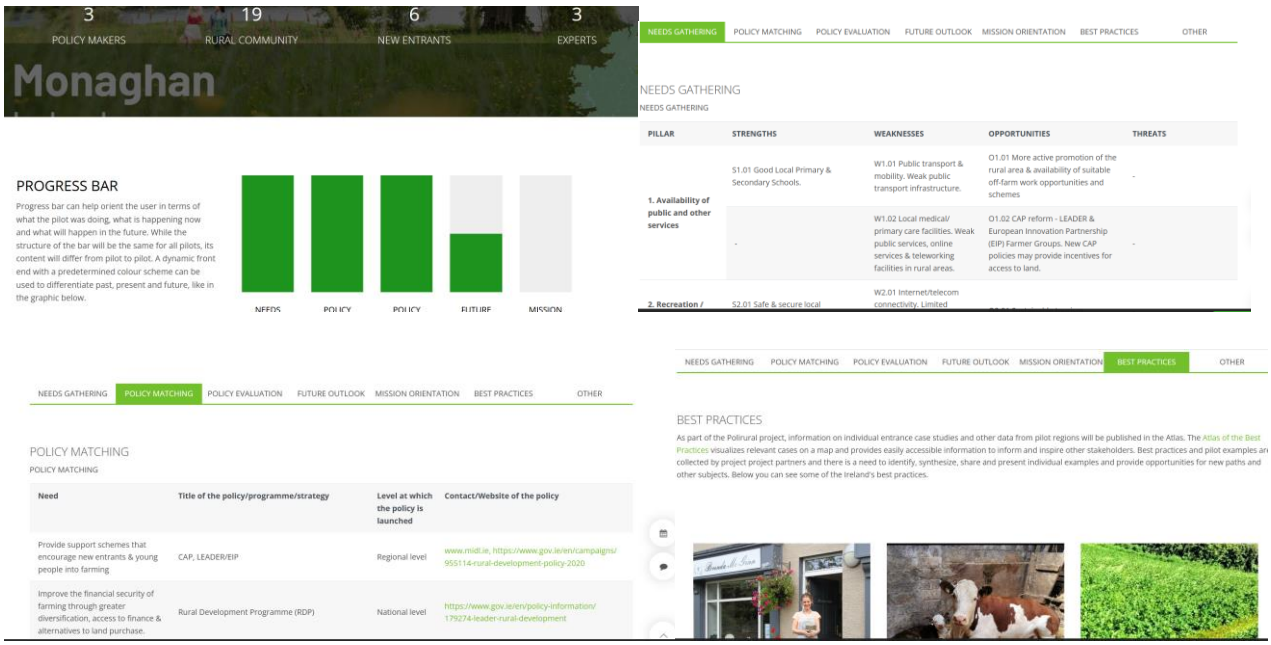


Figure 2 Driving of Community of Practice on PoliRural Hub

It offers access to essential digital technologies and competencies, along with the infrastructure for testing digital innovations ("test before invest"). The Hub serves as a nurturing ground for map-based projects, providing educational resources for training and skill development. It also assists in sourcing finance for digital transformations and nurtures networking between digital innovation users and suppliers.

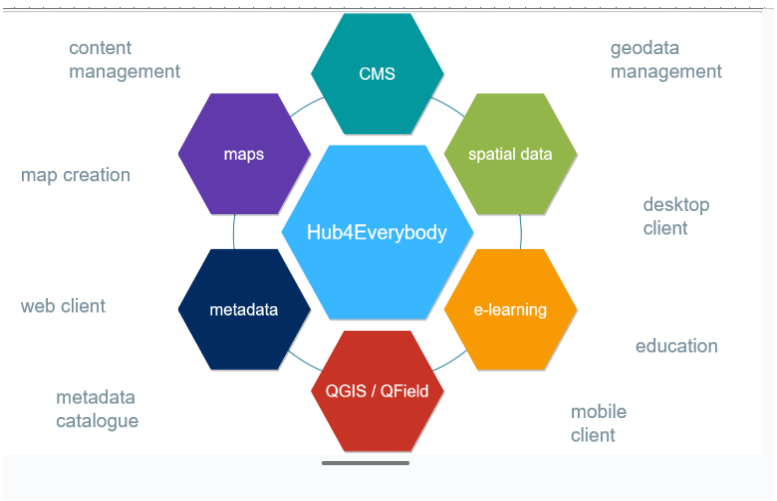
The prototype of the DIH, initially conceptualized on a cloud solution framework, saw a significant shift during the project's progression. The initial user portal framework powered by Liferay was transitioned to Wagtail CMS, a decision made to harness Wagtail's user-friendly content management capabilities. This change aimed to address and improve the ease of content creation and management, significantly enhancing the platform's accessibility and user engagement. Wagtail's integration into the PoliRural Hub marks a strategic enhancement, reflecting a commitment to leveraging advanced tools for optimal user experience.

Furthermore, the PoliRural Hub incorporates an array of functionalities including a geoportal, tools for social communication, storyboard creation, data management, and legislative support, alongside mobile compatibility. This comprehensive suite of tools underlines the Hub's dedication to promoting rural development through digital innovation, establishing it as a pivotal resource for community engagement and collaborative projects in the rural sector.

Building on its foundation as a pioneering Digital Innovation Hub (DIH) for rural development, the PoliRural Hub has evolved to support the construction of sophisticated solutions that transcend traditional digital innovation. This evolution encompasses not only advanced geographical and spatial data management tools but also extends to the creation of websites and e-learning platforms. This multifaceted capability positions the PoliRural Hub as a versatile tool in the digital landscape, catering to a broad spectrum of needs from data publishing to educational outreach.

The integration of Wagtail CMS into the PoliRural Hub has been a transformative development, significantly enhancing the platform's flexibility and user-friendliness. Wagtail's powerful content management system enables users to effortlessly create and manage web content, facilitating the development of engaging and informative websites. This feature is particularly beneficial for projects seeking to disseminate research findings, promote rural development initiatives, or engage with broader communities online.

Furthermore, the PoliRural Hub's commitment to advancing knowledge and skill dissemination is evident in its support for e-learning platforms. By leveraging its digital infrastructure, the Hub provides an accessible environment for the creation and hosting of educational content. This empowers stakeholders in rural development—ranging from policymakers and researchers to practitioners and local communities—to access and participate in continuous learning opportunities. Through interactive courses, workshops, and training materials, the Hub facilitates the sharing of innovative tools, methodologies, and best practices, contributing to informed decision-making and capacity building across rural areas.



The PoliRural Hub's expanded capabilities underscore its role as a dynamic and inclusive platform. By supporting the creation of sophisticated digital solutions, websites, and e-learning platforms, the Hub fosters a conducive environment for collaboration, innovation, and knowledge exchange. This holistic approach enhances the visibility and impact of rural development projects, ensuring that the benefits of digital innovation are widely accessible and effectively utilized to drive sustainable growth and development in rural communities.

Figure 3 Concept of Hub4Everybody

The PoliRural Hub has evolved to become part of the more generic framework, Hub4Everybody, which is now the base for many new solutions ranging from Web pages to commercial platforms. This integration signifies the Hub's transition into a versatile and comprehensive online ecosystem, designed to accommodate a broad spectrum of functionalities including, but not limited to, web page management, map management, and the incorporation of AI and other innovative modules developed in PoliRuralPlus. Initially, the focus will be on leveraging its web pages functionality, but as the project progresses, we aim to fully integrate all aspects of map management, and learning platforms, and introduce new AI modules and other advancements crafted within PoliRuralPlus. This strategic enhancement reflects our commitment to creating a more connected, accessible, and impactful digital landscape for rural development initiatives.

3 Description of components of Hub4Everybody

3.1 Wagtail CMS

Wagtail stands as the foundational Content Management System (CMS) for the PoliRuralPlus project's web pages and the overarching Hub. Emphasizing efficiency, flexibility, and user-centric design, Wagtail offers an intuitive interface for content creation and management, making it an ideal choice for the diverse needs of the PoliRuralPlus project. This sophisticated CMS is detailed further on its official website at https://wagtail.org, highlighting its core attributes and functionalities. Designed from the ground up to cater to modern web development demands, Wagtail provides a robust and scalable platform for creating rich, engaging web experiences. Its streamlined content management process allows users to focus on the quality and impact of their content without being hindered by the complexities of the underlying technology. The features that Wagtail offers, such as its powerful editing interface, comprehensive image management tools, and flexible content structuring capabilities, empower the PoliRuralPlus team to effortlessly curate and disseminate information across their digital ecosystem.

The adoption of Wagtail as the CMS for the PoliRuralPlus web pages and Hub signifies a commitment to providing a seamless and dynamic online experience. The platform's built-in responsiveness ensures that content is accessible and optimized across all devices, from desktops to smartphones, thereby enhancing the reach and engagement of the project's digital assets. Furthermore, Wagtail's extensive customization options allow for the development of unique and tailored web solutions that align with the specific objectives and branding of the PoliRuralPlus project. Specific templates for pages will be developed, visuals aligned with the message of PoliruralPlus. Wagtail's emphasis on user experience is reflected in its sleek and modern administrative interface, which simplifies content management tasks for editors and administrators. This user-friendly approach ensures that stakeholders can efficiently update and maintain web content, keeping it fresh and relevant for their audience. This will be on Web pages supported by blog and also pilot demo side, which will be edited directly by users. Additionally, Wagtail's strong support for SEO best practices helps in maximizing the visibility of the PoliRuralPlus web presence, ensuring that the project's initiatives and achievements are prominently featured in search engine results. In conclusion, Wagtail serves as the backbone for the PoliRuralPlus project's web pages and Hub, offering a sophisticated, flexible, and user-friendly CMS solution. Its comprehensive suite of features enables the project to create compelling and accessible web experiences, facilitating effective communication and engagement with its target audiences. Through Wagtail, the PoliRuralPlus project leverages the latest in web technology to advance its mission of promoting rural development and fostering community collaboration.

Wagtail's snippet feature is a powerful tool designed to manage reusable content pieces that can be included in multiple places on your website. Snippets are ideal for content that you need to access and update from a single location, ensuring consistency across your site. Examples of content well-suited for snippets include contact

information, reusable form components, or any piece of content that appears in more than one place but doesn't necessitate a full page by itself. The Snippets Menu in Wagtail provides a centralized interface for creating, managing, and using these snippets throughout your site. Accessing and managing snippets is straightforward, made possible through the intuitive Wagtail admin interface. Users can navigate to the Snippets menu from the Wagtail sidebar to view a list of available snippet types, which have been defined by developers to cater to the specific needs of the site. Creating a new snippet involves selecting the appropriate snippet type and filling in the required content in the form that appears. Once saved, these snippets can be easily inserted into page content or templates as needed, and any updates made to a snippet are automatically reflected wherever the snippet is used. This functionality ensures that content remains up-to-date site-wide with minimal effort. For developers, defining a new snippet type involves creating a Python model that specifies the fields and behavior of the snippet. This model is then registered with Wagtail's Snippets framework, making it available for use within the admin interface. The flexibility and ease of defining snippets make it an invaluable feature for developers looking to enhance content management capabilities on a Wagtail-based site. In summary, Wagtail's snippet feature is a testament to the CMS's commitment to providing flexible and efficient content management tools. By leveraging snippets, site administrators and content creators can ensure content consistency, streamline content updates, and improve the overall content management workflow. The Snippets Menu serves as the gateway to utilizing this powerful feature, encapsulating Wagtail's user-friendly approach to complex content management tasks. Snippets are also used for creation of navigation bars and footers of the website.

Implementing a robust workflow feature within the Wagtail CMS for the PoliRural Plus project is an innovative solution to the challenge of maintaining high-quality content while accommodating contributions from a diverse group of stakeholders. The workflow feature is designed to facilitate quality control and peer-review processes for all types of publications, including news, articles, blogs, or events.

Wagtail’s workflow feature allows for the creation of a streamlined process where all new content submissions undergo a thorough review before publication. This system is pivotal for managing quality control, ensuring that every piece of content published on the PoliRural Plus platform meets the project’s standards for accuracy, relevance, and integrity.

To effectively manage this process, roles within the Wagtail CMS are clearly defined:

- **Editors**: Assigned as partners of the consortium, editors hold the responsibility of approving content for publication. They act as gatekeepers, ensuring that all content aligns with the project's objectives and quality standards.
- **Approved Authors**: These contributors have earned the right to publish information directly on the platform. Despite this privilege, their contributions initially bear a 'non-approved' label until an editor reviews and officially approves the content for public visibility.
- **New Contributors**: Submissions from new contributors remain invisible to the public until an editor has reviewed and approved the content. This tiered approach allows for gradual integration of new voices into the platform while maintaining content quality.

The workflow feature in Wagtail supports a multi-stage review process. Here's a simplified overview:

1. **Submission**: Contributors submit their content, which is automatically labeled based on their contributor status (e.g., non-approved for approved authors, invisible for new contributors).
2. **Review**: Editors review the submissions, checking for quality, relevance, and adherence to guidelines. This process may involve feedback loops where contributors are asked to revise their submissions.

3. **Approval**: Once content meets all requirements, editors approve the submission, changing its status to approved, which then becomes visible to the public.

The system allows for dynamic shifts among groups, depending on the decisions of the chief editor. Contributors who consistently produce high-quality content can be promoted to approved authors, facilitating a more direct publishing process for them. Conversely, those who fail to meet the standards may be reverted to a status requiring more stringent reviews. This dynamic role management ensures a flexible yet controlled environment for content creation and publication.

Wagtail's features have been further extended by a custom interactive map widget which empowers content editors to seamlessly integrate dynamic maps into any section of their web content. With this widget, editors have the flexibility to define the map's content and configure available map tools for each of the widget instances, offering a tailored experience for their audience.

Key features of the interactive map widget include:

- Insertion Flexibility: Content editors can effortlessly add interactive maps to any location within their web pages, enabling them to enrich content with location-based information.
- Customizable Map Content: Editors have the ability to define the content displayed on the map, such as map layers or geodata from different sources, providing context and relevant information to website visitors.
- Configurable Map Tools: The widget offers configuration options for various map tools, including basic map controls, map layers, search functionality, legends, printing, and more, allowing editors to tailor the map's functionality to suit their specific needs.
- Multiple Map Support: Content editors can insert more than one map into a single web page, facilitating the presentation of diverse geographical information or multiple points of interest.

This interactive map widget enhances the Wagtail CMS platform by providing a user-friendly solution for incorporating dynamic maps into web content. Its versatility and ease of use empower website administrators to create engaging and informative experiences for their audience, driving enhanced engagement and interaction with the content. The map content can be composed from existing sources or combined with data gathered throughout the project. The tools that allow to collect and publish such data are further described in next chapters.

3.2 Map management

Incorporating specific components like Micka, HSLayers NG, and Layman within the Hub4Everybody platform can significantly enhance its capabilities for geospatial data management and visualization. These components are integral to offering a versatile and comprehensive service to users. Here's how they fit into the Hub4Everybody ecosystem:

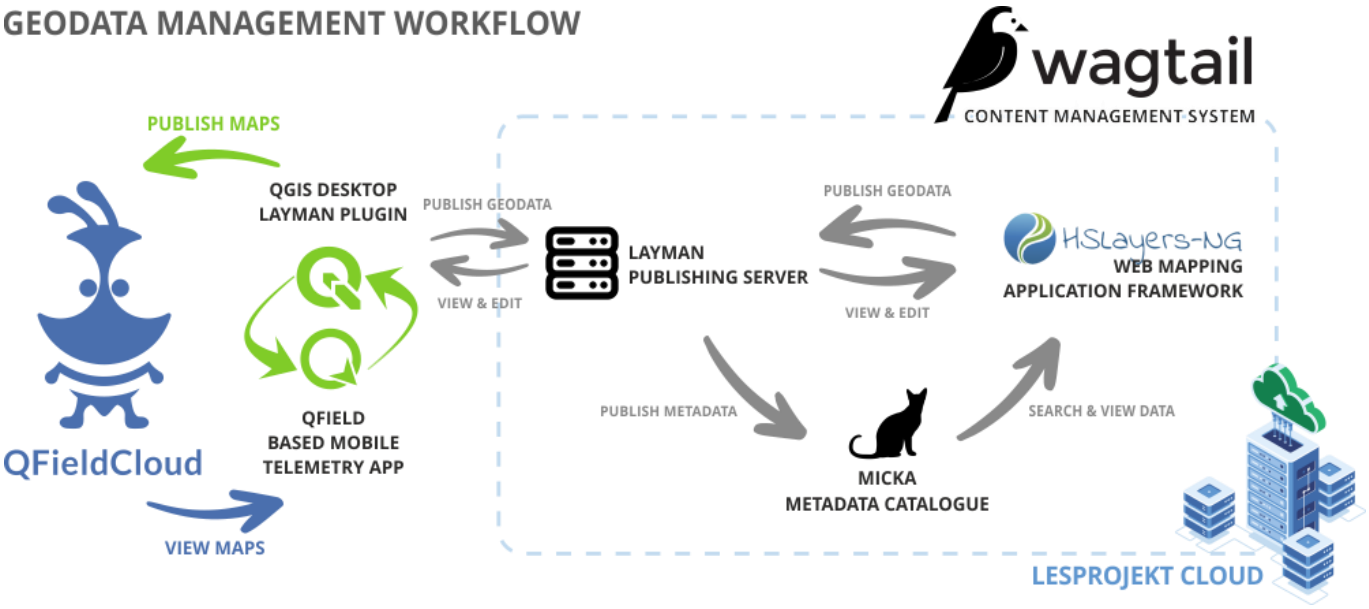


Figure 4 Map Management Basic Scheme

Micka - Metadata Catalogue and Search Engine

Micka is a powerful metadata catalogue and search engine that facilitates the organization, discovery, and sharing of geospatial resources. By integrating Micka into Hub4Everybody, users gain access to an extensive repository of geospatial datasets and services. Micka's capabilities include:

- **Metadata Management**: Allows users to create, edit, and manage metadata for various geospatial data and services, ensuring compliance with international standards like INSPIRE.
- **Advanced Search**: Offers sophisticated search functionalities, making it easy to find and access relevant geospatial resources within the platform.
- **Interoperability**: Supports a wide range of metadata standards, enhancing the platform's ability to integrate with external geospatial data sources and services.
- **Harvesting:** Micka can be configured to harvest spatial data from any compatible portals and sources that offer standardized ways of data sharing (CSW, WMS, …).

Micka enhances Hub4Everybody by providing a robust framework for metadata management, significantly improving data discoverability and interoperability. Micka

HSLayers NG - Map Composition and Visualization

HSLayers NG is a framework for creating web-based geographic information systems (GIS) applications, offering tools for map composition, visualization, and analysis. Its integration into Hub4Everybody brings several benefits:

- **Interactive Map Compositions**: Users can create dynamic and interactive maps that combine various data sources, including WMS, WFS, and vector data.
- **User-Friendly Interface**: HSLayers NG is designed with a focus on usability, making it accessible to both GIS professionals and casual users.
- **Customization and Extension**: The modular architecture allows for customization and the addition of new functionalities tailored to specific project needs.

By leveraging HSLayers NG, Hub4Everybody provides an enhanced mapping experience, enabling users to visualize and interact with geospatial data in more meaningful ways. HSLayers NG

Layman - Layer Management and Publishing

Layman is an open-source tool designed to simplify the publication and sharing of geospatial data layers among a wide audience. Its integration with Hub4Everybody facilitates:

- **Easy Publishing**: Users can publish geospatial data layers directly from their desktop GIS software or through the web interface.
- **Access Control**: Layman offers mechanisms for managing access permissions to published layers, ensuring data security and privacy.
- **Standards Compliance**: Supports key OGC standards like WMS and WFS, ensuring that published layers are easily accessible and usable within other GIS applications.

Layman complements the Hub4Everybody platform by streamlining the process of data layer publication and sharing, making it easier for users to disseminate their geospatial data and collaborate with others. Layman

The integration of Micka, HSLayers NG, and Layman into the Hub4Everybody platform significantly enhances its capabilities for geospatial data management, visualization, and collaboration. These components work synergistically to provide a comprehensive ecosystem for users to engage with geospatial data in innovative and effective ways.

3.3 External tools

The integration of external tools like QGIS and QField into the Hub4Everybody ecosystem greatly enhances its capabilities for geospatial data creation, editing, analysis, and field data collection. These tools provide advanced GIS functionalities that complement the online platform, offering a seamless workflow from desktop to field data collection. Here's how each tool contributes to the Hub4Everybody ecosystem:

QGIS - A Comprehensive GIS Software

QGIS is an open-source Geographic Information System (GIS) software that offers a wide range of capabilities for managing, analyzing, and visualizing geospatial data. It's highly extensible, supporting various plugins that expand its functionality further. Integrating QGIS with Hub4Everybody allows users to:

- **Create and Edit Geospatial Data**: Utilize QGIS for detailed geospatial data creation and editing, leveraging its comprehensive toolset for vector and raster data manipulation.
- **Advanced Spatial Analysis**: Perform complex spatial analyses using QGIS's rich set of analytical tools, helping users derive meaningful insights from their data.
- **Seamless Data Integration**: Easily import and export geospatial data between QGIS and Hub4Everybody, facilitating a smooth workflow for data management and sharing.

QGIS serves as a powerful desktop GIS component within the Hub4Everybody platform, enabling users to perform intricate GIS tasks that complement the online functionalities of Hub4Everybody. Integrating the QGIS Layman plugin into the Hub4Everybody ecosystem significantly enhances the platform's capabilities for geospatial data management and sharing. The Layman plugin for QGIS is specifically designed to streamline the process of

publishing and managing geospatial data directly from QGIS to the Layman server, which is a key component of Hub4Everybody.

Key Features of the QGIS Layman Plugin:

- **Simplified Publishing Process**: The plugin enables users to easily publish QGIS layers, including vector and raster data, to the Layman server with just a few clicks. This process facilitates the sharing of geospatial data among a broader audience, enhancing collaboration.
- **Synchronization**: It allows for the synchronization of layers between QGIS and the Layman server. Any updates or modifications made to the layers in QGIS can be directly pushed to the server, ensuring that the most current data is always available.
- **Access Control**: Through the plugin, users can manage access permissions for their published layers, controlling who can view or edit the data. This feature is crucial for maintaining data security and privacy.
- **Support for Metadata**: The plugin supports the management of metadata for published layers, making it easier for users to document and describe their geospatial data, thereby improving its discoverability and usability.
- **Integration with Hub4Everybody**: By using the Layman plugin, QGIS becomes an integral part of the Hub4Everybody workflow. This integration ensures a seamless transition between desktop GIS analysis and online data sharing and collaboration.

The QGIS Layman plugin effectively bridges the gap between powerful desktop GIS functionalities provided by QGIS and the collaborative, web-based geospatial data management capabilities of Hub4Everybody. By facilitating easy publishing and synchronization of geospatial data, the plugin enhances the platform's utility for a wide range of applications, from environmental monitoring to urban planning and beyond.

This integration exemplifies how desktop and web-based GIS technologies can work together to provide comprehensive solutions for geospatial data management, making it easier for professionals and communities to collaborate on geospatial projects. QGIS Layman plugin

QField - Mobile GIS and Data Collection App

QField is designed to bring your QGIS projects to the field. It's a mobile GIS app that allows for efficient data collection and geospatial project management directly on Android devices. Integration of QField with Hub4Everybody enhances field data collection and mobile GIS capabilities:

- **Field Data Collection**: Use QField for on-site data collection, enabling users to gather geospatial data using mobile devices efficiently.
- **Offline Capability**: Collect data in remote areas without an internet connection, with changes synchronized with the Hub4Everybody platform once connectivity is restored.
- **QGIS Integration**: Seamlessly transfer QGIS projects to QField, ensuring that users have access to the same maps, layers, and data both in the office and in the field.

QField extends the functionalities of the Hub4Everybody platform into the field, bridging the gap between desktop GIS analysis and on-site data collection. This integration ensures that field data is accurately captured and easily integrated into the Hub4Everybody ecosystem for further analysis and sharing. QField

Together, QGIS and QField provide a comprehensive GIS solution that spans desktop and mobile environments, enhancing the Hub4Everybody platform's capabilities for geospatial data management, analysis, and field data

collection. These integrations offer users a flexible and powerful suite of tools for tackling a wide range of geospatial projects.

4 Structure of the first release of Web pages

The current deliverable, D1.1 Project Web Pages Update, is focused on detailing the systematic approach and methodologies employed in the initial development phase of the PoliRuralPlus website. This phase of development primarily emphasizes the foundational web page functionality, serving as the initial step in a broader, phased rollout plan of the comprehensive capabilities of the Hub4Everybody framework within the PoliRuralPlus ecosystem.

At this juncture, our focus has been to establish a robust and navigable online presence that accurately reflects the core objectives and the initial suite of resources offered by the PoliRuralPlus project. The decision to commence with a subset of the Hub's total functionalities was strategic, allowing for a streamlined development process and the opportunity for iterative enhancements based on user feedback and evolving project requirements.

As the project progresses, subsequent releases will significantly expand the website's functionality. These enhancements will not only encompass the full spectrum of features currently available within the Hub4Everybody framework but will also include the integration of innovative AI tools, including large language models. This expansion is anticipated to dramatically increase the website's utility, enabling sophisticated data analysis, personalized content delivery, and interactive user engagements.

The integration of AI tools, particularly large language models, represents a pivotal evolution in how the project engages with its stakeholders, offering unprecedented levels of interactivity and accessibility to complex data sets and analytical insights. These tools will facilitate a more dynamic exchange of information, enabling the website to offer tailored content recommendations, generate detailed project reports, and support real-time, data-driven decision-making processes.

Future updates will detail the specific methodologies, development frameworks, and technological stacks employed to incorporate these advanced functionalities into the PoliRuralPlus website. Furthermore, these updates will outline the user testing and feedback mechanisms that will guide the prioritization and refinement of the website's features throughout the project duration.

In summary, while the current deliverable marks the initial step towards establishing the PoliRuralPlus project's online footprint, it lays the groundwork for a series of planned enhancements that will transform the website into a comprehensive digital platform. This platform will not only encapsulate the full capabilities of the Hub4Everybody framework but will also leverage the power of AI to foster a more engaged, informed, and collaborative community around the PoliRuralPlus initiative.

Currently, the project website is the central point for all advertisements, dissemination and online communication. The website will be maintained in English and will be the main source of information on project activities and results and will be regularly updated with project documents, news and events. The layout was designed with regard to the maximum use of graphic elements and respecting the visual identity of the project. The website will become fully operational in M4 (April 2024) at the following web address: https://www.poliruralplus.eu/.

The proposed web-page structure and the primary content (version 0) is outlined in the below table 1:

Table 1: Proposed web-page structure

Main heading	Subheading
About	Main aim
	Objectives
	Work packages
	Consortium
Rural Pilots	Map
	Rural pilot 1, Ireland
	Rural pilot 2, Slovakia
	Rural pilot 3, Greece
	Rural pilot 4, Italy
	Rural pilot 5, Finland
	Rural pilot 6, Czechia
	Rural pilot 7, Spain
	Rural pilot 8, Latvia
	Rural pilot 9, Malta
Technical Pilots	Technical pilot 1:
	Technical pilot 2:
	Technical pilot 3;
	Technical pilot n;
Rural Experiments	Results of the open calls
News/events	Official statements of the project
Open third party calls	Guideline to calls
Results	Project deliverables
	Technical innovation results
	Social innovation results
	Capacity building results

	Communication and networking results
Blogs	Contribution of partners, third parties, participants on Hackathons
Digital promotion material	Poster, roll-up and flyer

At the start of work on the project website, the Google Analytics service will be set up and linked to the website administration portal. This will allow us to track the amount of visitors and traffic our website receives and will also show some valuable information regarding the types of users accessing the website.

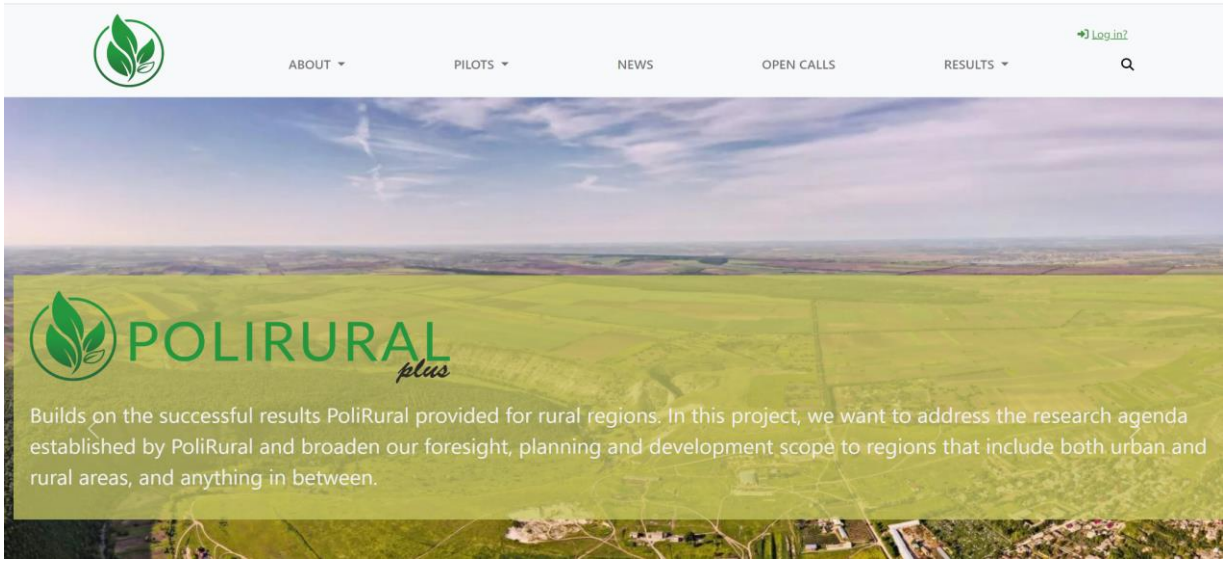


Figure 5 PoliRuralPlus Website Homepage

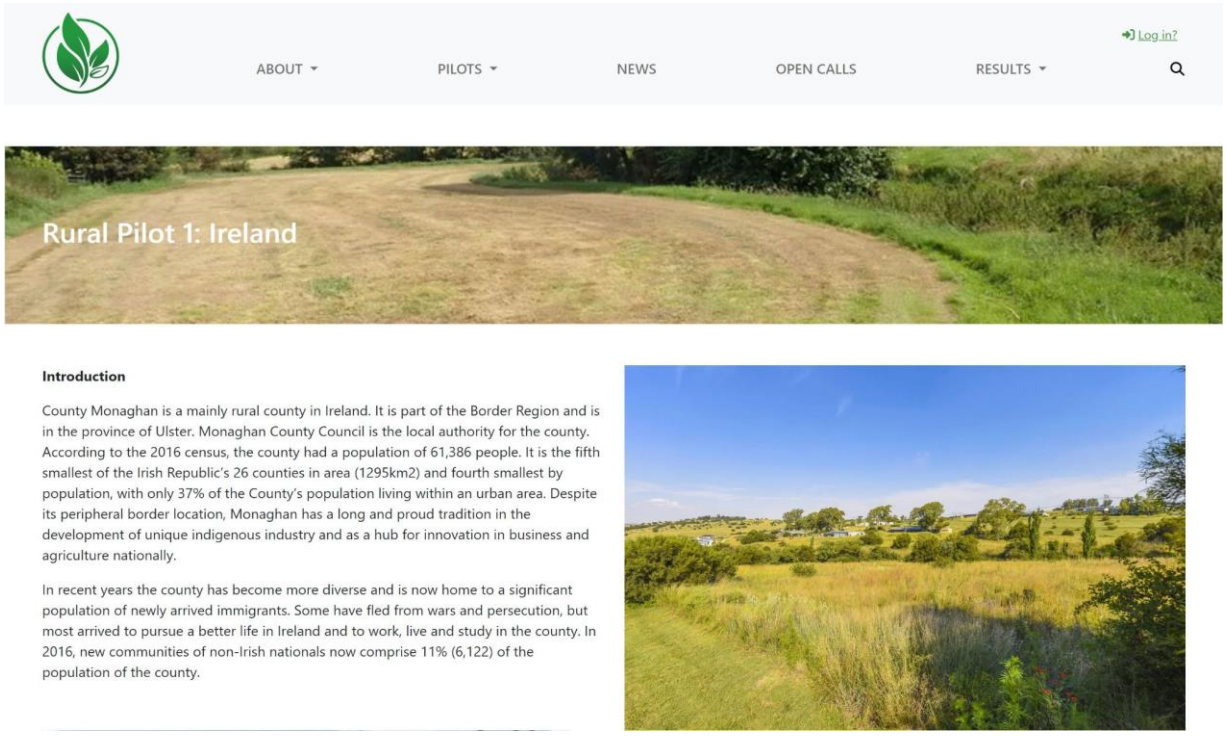


Figure 6 PoliRuralPlus Pilot - Example

PoliRuralPlus Main aim

PoliRural Plus extends and enriches the achievements of its predecessor, the PoliRural, by delving deeper into the complexities of rural and urban interconnectivity. It deploys a sophisticated suite of digital tools, including Artificial Intelligence, Geographic Information Systems, Internet of Things, and advanced data analytics. The project's core mission is to tackle prevalent issues such as administrative fragmentation, inequality, and inefficiencies in public service coordination, fostering an environment of enhanced cooperation and equal opportunities across rural and urban divides. Central to PoliRural Plus are 9 pilot projects that serve as proving grounds for an EU-wide integrated approach to territorial planning and action foresight. PoliRural Plus ambitiously expands its scope to include the urban dimension, thus embracing a broader perspective on development.

PoliRuralPlus Objectives

To develop and implement a foresight-based framework for **interregional cooperation and coordination**, aimed at overcoming policy barriers and improving governance arrangements to foster integrated and smart rural-urban development strategies

To develop and implement integrated strategies and action plans that enhance the **availability of business and innovation** opportunities in rural areas, while promoting a more proximate, circular, and green economy and revitalising rural places through better connectivity, improved valorization of cultural and natural heritage, and stronger innovation ecosystems.

To enhance mutual **access to services and social connectivity between rural and urban areas**, as well as build resilience and capacity for innovation through the implementation of regional action plans and pilot initiatives.

Contribute to the implementation of the European Green Deal, with a specific focus on the **farm-to-fork and biodiversity strategies**, the organic action plan, the common agricultural policy (CAP), the long-term **vision for the EU's rural areas**, the flagship initiative "Research and innovation for rural communities," and the EU territorial agenda for 2030.

To enhance **cross-disciplinary collaboration** and leverage the full potential of European Research Infrastructures, EOSC, EU Data spaces, INSPIRE, Copernicus, DIAS, Eurostat, FAO, and other relevant data sources for integrated rural-urban development.

To facilitate mission-oriented experimentation and innovation by leveraging **data-driven decision-making, collaborative analysis, and system dynamics** to advance the development of a well-being economy based on proximity, circularity, green economy/society, services, culture, landscape and heritage, and mobility.

To create **synergies with the New European Bauhaus (NEB) and other EU-funded projects**, facilitating ideas flows from urban to rural settings and vice versa.

Funded by the European Union

Figure 7 PoliRuralPlus Website Main aim, Objectives and Consortium

News

PoliRuralPlus project kick-off at Czech Technical University in Prague

The PoliRuralPlus project marked a significant milestone with a successful kick-off meeting held in Prague on 25–26 January 2024. This event symbolized the strong cooperation among the 20 European partners involved, setting a positive tone for the project's ambitious goals. The meeting underscored the project's commitment to using advanced technologies for sustainable regional development, leveraging the expertise and collaboration of all parties to drive forward the innovative use of AI and spatial data for strategic planning and development.

Figure 8 PoliRuralPlus News

With the launch of the project website, most of the components are deployed, but additional sections and more communication content will come at a later stage of the project. The website will thus be continuously updated as new content related to key project activities is created. After the launch of the related social networks of the PoliRuralPlus project, these channels will also be linked to the project website. Another interesting part of the website is the blog. Blogs will be regularly updated with new content and serve to publish ideas, offer solutions to problems, and can actively connect contributors to its users. Important attention will also be paid to the Open calls section, as this section will be attractive for acquiring additional active users and new stakeholders.

5 Conclusion

The PoliRuralPlus project is a significant evolution from its predecessor, designed to enhance integrated urban-rural development through digital innovation. This project aims to create a unified, cohesive online platform that goes beyond the traditional roles of mere information dissemination. Instead, it transforms into a comprehensive hub for data management, publishing, promoting, and training, all centralized in one easily accessible location. This strategic integration is poised to significantly augment the visibility of the PoliRuralPlus project, attracting a broader spectrum of users and facilitating the construction of a vibrant and engaged community. It stands as a testament to our commitment to not only connecting communities within all pilot regions but also extending our reach across the entirety of Europe, thereby fostering dialogue and facilitating the exchange of ideas and best practices.

At the current stage, the PoliRuralPlus platform is fully operational, primarily focused on web page functionalities, leveraging the user-friendly capabilities of Wagtail CMS. This initial focus ensures immediate impact and engagement with our target audience, providing them with valuable information and resources. However, it's crucial to note that this represents only a portion of the platform's full capabilities. As the project progresses, we anticipate rolling out additional features and functionalities, including the integration of new project results and the expansion of the platform's comprehensive suite of tools.

One of the most critical aspects of this evolution is the management of local and global data, which plays a key role in the impact these platforms are intended to deliver. By fostering an environment that anticipates the future demands of rural development, PoliRuralPlus commits to evolving in line with technological advancements and user feedback. This adaptability ensures that the platform remains a state-of-the-art resource, effectively meeting the needs of its users.

The integration of Wagtail CMS into the PoliRuralPlus platform is a transformative development, significantly enhancing the platform's flexibility and user-friendliness. This allows for the effortless creation and management of web content, facilitating the development of engaging and informative websites. This feature is particularly beneficial for projects aiming to disseminate research findings, promote integrated urban-rural development initiatives, or engage with broader communities online.

Moreover, the PoliRuralPlus platform's commitment to advancing knowledge and skill dissemination is evident in its support for e-learning platforms. By leveraging its digital infrastructure, the platform provides an accessible environment for the creation and hosting of educational content, empowering stakeholders in rural development to access and participate in continuous learning opportunities.

In essence, the PoliRuralPlus project represents a dynamic and inclusive platform that fosters a conducive environment for collaboration, innovation, and knowledge exchange. As the project continues to evolve, it promises to play a pivotal role in empowering communities, researchers, and professionals to harness the power of digital innovation for sustainable development and beyond. This evolution signifies a critical step forward in optimizing

community engagement, knowledge sharing, and collaborative innovation in rural development, ensuring that the benefits of digital innovation are widely accessible and effectively utilized to drive sustainable growth and development in rural communities. Additionally, key components and valuable content from the original PoliRural web and Hub will be made available on the new platform, ensuring continuity and access to important resources and tools that have been developed over the course of the project.

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