



**Enhancing Competitiveness, Resilience and Sustainability  
of Remote Farming, Forestry and Rural Areas through  
Holistic Assessment of Smart XG, Last-mile and Edge  
Solutions' Gains**

**D6.5: Practice abstracts batch 1**

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**Funded by  
the European Union**

Grant Agreement No.	101060294		
Project Acronym	XGain		
Project Title	Enhancing Competitiveness, Resilience and Sustainability of Remote Farming, Forestry and Rural Areas through Holistic Assessment of Smart XG, Last-mile and Edge Solutions' Gains		
Type of action	HORIZON Research and Innovation Actions		
Call Topic	HORIZON-CL6-2021-COMMUNITIES-01-03		
Project Start Date	September 1 <sup>st</sup> , 2022	Project End Date	August 31 <sup>st</sup> , 2025
Project URL	xgain-project.eu		
Work Package	WP6   Impact Maximisation and Outreach		
WP Lead Beneficiary	RAINNO (RAIN)		
Deliverable type <sup>1</sup>   Dissemination level <sup>2</sup>	R   PU		
Contractual due date	31 December 2023	Actual Submission date	22 December 2023
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**Revision history (including peer reviewing & quality control)**

Version	Issue Date	% Complete	Changes	Contributor(s)
V0.1	23/11/2023	10	Initial Deliverable Structure	Vasilis Kotsikoris, Damianos Michailidis, Eleni Stogiannou (RAINNO)
V0.4	28/11/2023	40	Practice Abstract 1	Damianos Michailidis, Eleni Stogiannou (RAINNO)
V0.8	05/12/2023	80	Practice Abstract Updates/Changes 2,	Vasilis Kotsikoris, Damianos Michailidis, Ourania Ntinou (RAINNO)
V0.85	08/12/2023	85	Internal Peer Review	Justė Vežikauskaitė (ART21)
V0.9	09/12/2023	90	Internal Peer Review	Eirini Liotou (ICCS)
V0.95	11/12/2023	95	Comments Review	Vasilis Kotsikoris, Damianos Michailidis, Eleni Stogiannou (RAINNO)
V0.97	12/12/2023	97	QA review	Panayiotis Klitou (eBOS)
V1.0	13/12/23	100	Final Version	Vasilis Kotsikoris, Damianos Michailidis, Eleni Stogiannou, Ourania Dinou (RAINNO)

XGain Consortium			
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3	CAFA TECH OU	CAFA	EE
4	IKE KAPTEN KOOUTS	CAPT	EL
5	EBOS TECHNOLOGIES LIMITED	eBOS	CY
6	EIGEN VERMOGEN VAN HET INSTITUUT VOOR LANDBOUW - EN VISSERIJONDERZOEK	EVILVO	BE
7	FUNDACIO PRIVADA I2CAT, INTERNET I INNOVACIO DIGITAL A CATALUNYA	I2CAT	ES
8	INCITES CONSULTING SA	INC	LU
9	INTRACOM SA TELECOM SOLUTIONS	ICOM	EL
10	RAINNO IDIOTIKI KEFALAIOUCHIKI ETAIREIA	RAIN	EL
11	REGIONAL DEVELOPMENT FUND OF CENTRAL MACEDONIA	RDFCM	EL
12	STICHTING WAGENINGEN RESEARCH	WR	NL
13	UAB ART21	ART	LT
14	ZENTRUM FUR SOZIALE INNOVATION GMBH	ZSI	AT
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## Glossary of terms and abbreviations used

Abbreviation / Term	Description
KFT	Knowledge Facilitation Tool
RFID	Radio Frequency Identification

## 1 Executive Summary

This deliverable provides two practice abstracts for the XGain project. The goal of these practice abstracts is to offer concise summaries or overviews for particular aspects of the project and will be used in the dissemination and communication activities for XGain<sup>1</sup>.

The first abstract focuses on the development of the Knowledge Facilitation Tool (KFT). This software tool is being designed in such a way that it can identify suitable and inclusive infrastructure deployments based on state-of-the-art information and communication technologies for relevant sectors in remote areas.

The second abstract focuses on the six different project's use cases, that try to build an ecosystem of technological solutions for connectivity and edge processing in rural areas. XGain is aiming to demonstrate the developed Knowledge Facilitation Tool and the different technological solutions in a series of heterogeneous use cases in terms of location, connectivity needs, local needs, edge and connectivity potential solutions and operational business models.

Some key benefits that practice abstracts can offer are:

1. **Clarity and Conciseness:** A practice abstract can distill the essential elements of a project into a concise format. This clarity is valuable for team members, stakeholders, or anyone interested in understanding the project quickly.
2. **Efficient Communication:** Abstracts help in communicating the project's purpose, goals, and key methods efficiently. This is particularly important in situations where time is limited, or when individuals need to quickly grasp the project's significance.
3. **Decision Support:** When stakeholders, funders, or team members need to make decisions about the project, an abstract provides a quick overview. This aids decision-makers in understanding the project's potential impact and aligning it with broader goals.
4. **Dissemination and Communication:** Abstracts can be useful for promoting the project to a broader audience. They serve as effective tools for reporting project outcomes, achievements, and milestones, helping to showcase success and garner interest.
5. **Time Savings:** Busy professionals often appreciate the time-saving aspect of abstracts. They can quickly review the key elements of a project without delving into lengthy documents.

## 2 Introduction

The resulting innovative knowledge from this project is going to be effectively summarized in the form of a number of summaries ("practice abstracts"). This first batch contains 2 practice abstracts, while the 2<sup>nd</sup> one (D6.6, M36) will contain 3 more.

### 2.1 Mapping XGain Outputs

Purpose of this section is to map XGain Grant Agreement commitments, both within the formal Deliverable and Task description, against the project's respective outputs and work performed.

Table 1: Adherence to XGain GA Deliverable & Tasks Descriptions

XGain GA Component Title	XGain GA Component Outline	Respective Document Chapter(s)	Justification
<b>DELIVERABLE</b>			
<b>D6.5 Practice abstracts batch 1</b>			
This deliverable contains 2 practice abstracts			
<b>TASKS</b>			
<b>T6.1.</b> Dissemination, Communication and Capacity Building	Practice Abstracts	Chapters 3& 4	Short summaries of High-Speed Connectivity solutions for end-user understanding and utilisation

### 2.2 Deliverable Overview and Report Structure

The document is outlined in 5 chapters, structured to appropriately present XGain's Practice Abstracts, that will be used as components for the efficient and effective implementation of dissemination and communication of the project.

This document is comprised of the following 7 chapters:

**Chapter 1** provides a summary of the project, the document scope and its overall structure.

**Chapter 2** provides an overview of the XGain project, including its objectives, methodology and scientific phases.

**Chapter 3** presents Practice Abstracts 1.

**Chapter 4** presents Abstract 2.

**Chapter 5** provides the conclusions.



### 3 Practice Abstract 1: Knowledge Facilitation Tool – enabling connectivity in rural communities, farmers, foresters, policy makers and more.

The European XGain project seeks to breathe new life into almost all human-related sectors such as Agriculture, Aquaculture, Health, Education etc. by embracing modern technologies like 5G and edge computing. Imagine the many different scenarios where these cutting-edge tools can find their way into the heart of remote areas, adding a touch of innovation and speeding up economic growth.

In many rural areas with basic connectivity infrastructure and sparse populations, there's a lingering issue – the digital gap. There, the deployment of advanced communication technologies often takes a backseat. It's not due to a lack of potential but stems from concerns about the costs outweighing the benefits for mainstream service providers.

To bridge this gap, XGain introduces the "Knowledge Facilitation Tool" (KFT). This online platform is a simple yet insightful tool designed for citizens and organisations in rural areas. It's like a user-friendly guide, where even those unfamiliar with tech terminology can input their connectivity needs and location specifics using a modern, easy-to-navigate dashboard.

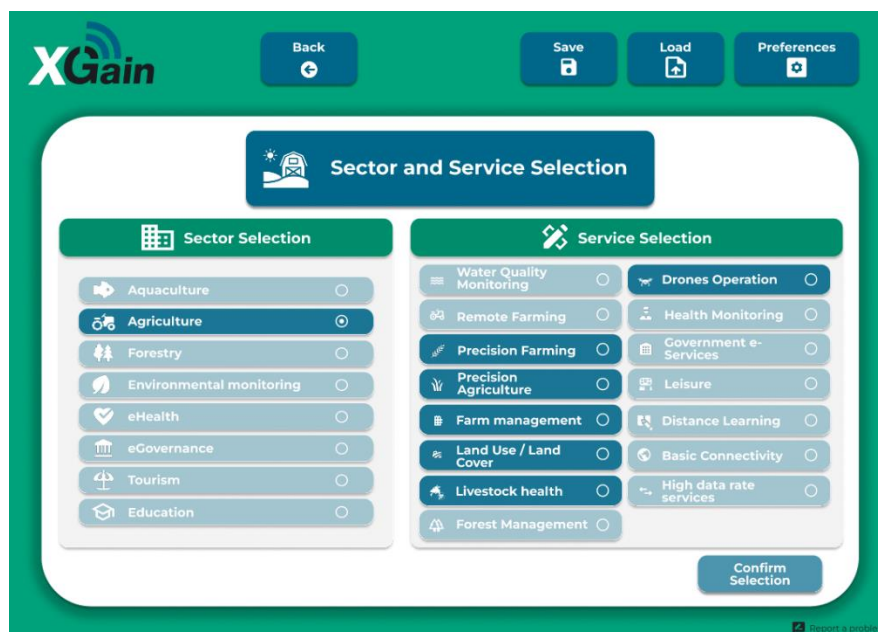


Figure 1: Mock-Up of XGain's Knowledge Facilitation Tool

The KFT is a tool that can analyse user connectivity preferences and to suggest suitable infrastructure deployments. This includes for example proposing a certain type of connectivity in a certain area and determining the required computation capabilities if the service/business relies on any type of software. In addition, the tool evaluates the proposed deployments and provides a series of important indicators, such as the environmental and climatic impact of the deployment, its degree of sustainability, and whether there are possible synergies with other services or infrastructures deployed in the area.

This isn't just a theoretical exercise. The KFT undergoes real-life testing in various European countries through the set-up and implementation of real-life digital connectivity use cases. These use cases represent sectors like aquaculture, agriculture, forestry, and more. It's not about grand promises; it's about practical solutions for real challenges faced by rural communities.

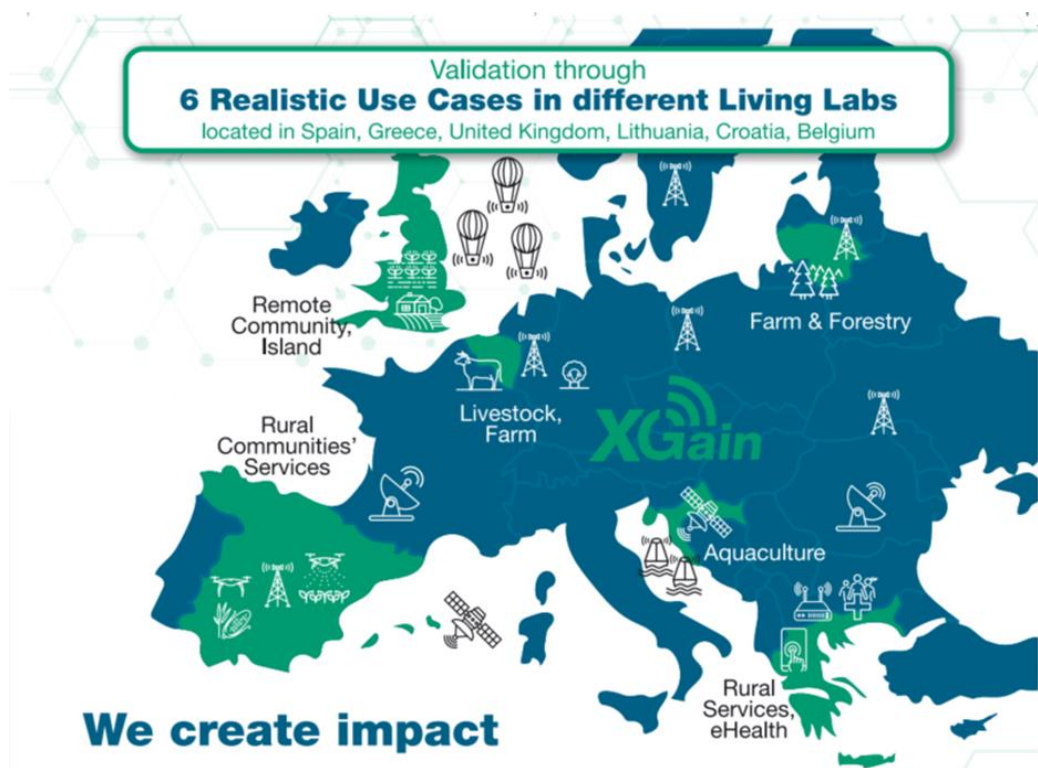


Figure 2: XGain use cases across Europe

The end goal? It's simple yet profound – to enhance the competitiveness of rural areas sustainably. XGain envisions a future where the digital divide between rural and urban areas is no longer a barrier. As this project unfolds, imagine the ripple effect it could have. Beyond just connectivity, it has the potential to redefine the narrative of rural life, opening doors to new opportunities, creating sustainable growth, and fostering a sense of inclusivity in the digital era.

By utilising all available means in its arsenal, the XGain project aims to transform rural landscapes into hubs of innovation and resilience. Join us on this journey where progress meets simplicity, and rural life meets the digital age.

## 4 Practice Abstract 2: Implementing last mile connectivity solutions for rural communities.

Witness the unfolding transformation spurred by innovations like teleworking and e-commerce, catalysed further by the imperative for increased digital integration across sectors. These trends, while propelling the demand for digital tools in health, education, transportation, agriculture, and more, also lay bare the persistent digital disparities, supply-chain disruptions, and economic shortcomings afflicting rural communities. In this dynamic landscape, the resilience and prosperity of these areas hinge on addressing these challenges.

The backbones of this transformation are accessibility and connectivity. However, devising a universal solution to empower rural communities with enhanced access to services, opportunities, and innovative ecosystems poses a formidable challenge. The XGain project, funded by the European Union seeks to cultivate a sustainable, balanced and inclusive development paradigm for rural, coastal, and urban areas by providing stakeholders, including municipalities, policymakers, farmers, foresters, and their associations, with a comprehensive inventory of connectivity solution like last-mile connectivity and edge computing solutions.



Figure 3: Use of drone for precision agriculture example (Image by Sarah Clarry from Pixabay)

The XGain project aims to propose an ecosystem of technological solutions for connectivity and edge processing in parallel with innovative business models. The project will focus on the execution and implementation of 6 unique real-life use cases, targeting different geographical locations, level of assessments and sectors:

- **Greece: eHealth-regional level** - An eHealth robot is going to act as a virtual caregiver to monitor and give advice to older adults. It comes with some interventions that enhance well-being which is focused on cognitive exercise, nutritional guidance, physical exercise and social recommendations.
- **Spain: services-community level** - The Spanish pilot aims to deliver a drone centre in a rural environment that can be used for real-time crop monitoring across wide areas, ad-hoc pest-detection, automated area surveillance and more.
- **Lithuania: forestry-farm/community level** - The main aim of this use case is to provide forest monitoring and evaluation of certain properties (e.g., fire risk, pest infestation, drought affected areas, etc.) by using a multirotor drone equipped with high-end hyperspectral camera.

- **Croatia: aquaculture-farm/community level** - This use case will demonstrate how an extended network infrastructure developed using LoRaWAN and satellite communication can transmit data from offshore sensors to the central monitoring system thus enhancing the digitisation and automation of the oyster farming sector.
- **UK: agriculture-island** - A series of sensors will be deployed in a farm, forming the input data sources for a digital twin that can be used for the optimisation of production such as optimised water management, and monitoring of the production quality.
- **Belgium: livestock-farm/community level** - A digital shepherd will support the farmers' daily operation (e.g., livestock monitoring). Through the installation of cameras and other IoT sensors such as flow sensors and RFID antennas on the drinking bin, for instance, the farmers will be able to observe their animals remotely.



Figure 4: The picture of a raft used for implementing a water analysis system in Croatia

These use cases are demonstrations of XGain's capabilities, business models, and the Knowledge Facilitation Tool. The project places an emphasis on the involvement of citizen associations and local authorities to assess the social acceptance of the recommended solutions, considering technological, environmental, and business model aspects. XGain is not just a project; it's a journey towards a digitally inclusive, resilient future for rural communities. Join us in shaping this transformative narrative where technology meets the unique needs of every locale, bringing everyone up to speed.

## 5 Conclusions

The practice abstracts present the XGain project and its different aspects in a concise, informative and easy to read way. With this first batch presented in this deliverable the XGain team explain the main use of the KFT tool and present the different use cases currently taking place across Europe, showcasing the different ways connectivity development and technological solutions can drastically impact rural life. Their main use of the abstracts is for all stakeholders to easily understand what the project is all about, attract attention and help jump start the rural connectivity revolution.