



Increasing Resilience of Smallholders with Multi-Platforms Linking Localized Resource Sharing

Deliverable D4.7

*Perspectives for long-term exploitation of project's
results*

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EXECUTIVE SUMMARY

This Deliverable D4.7 presents the perspectives for long-term exploitation based on the already achieved objectives and technological innovations.

TABLE OF CONTENTS

1. Introduction	5
2. Summary of main results	6
3. Socio-economic impact of the project	7
4. Some perspectives for long-term exploitation	7
4.1. Fast development and deployment of resource-sharing digital platforms	7
4.2. Capacity-building and local technology appropriation	8
4.3. AI-assisted development of new applications	8
4.4. Development of partnerships following the Orange Guinea model	8
4.5. Adaptation to other application domains and shorter value chains	9

1. INTRODUCTION

RESILINK addresses local innovation capacity and facilitates technology appropriation by developing the digital intelligent resource management platform in open-source with an extensive public API to maximize re-utilisation and facilitate the integration of new platforms.

In a [presentation](#) given at the First Symposium of InovFarmer.MED, organized by INOVFARMER in collaboration with MED-LINKS, FAIRCHAIN and RESILINK at INRAE in Avignon, France, the importance of an open API was highlighted as illustrated by the following 2 slides.



No "one app fits all"



- Each digital platform will create its community
- Sharing between communities is usually not proposed in traditional platforms → competition, isolation








LinkedIn Facebook AirBnB Instagram WhatsApp YouTube

- Enabling a platform-of-platforms approach will promote a much wider and appealing ecosystem
- Platform-of-platforms approach will allow
 - Specialized platforms to better manage specific agricultural sectors
 - Discover resources/services from other platforms → no isolation

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13

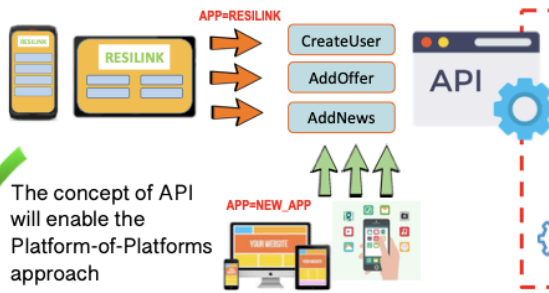
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API: key to large adoption!



- API: **Application Programming Interface**
- Digital platforms > Applications thanks to API-oriented design
- All functionalities/actions are accessible through an API call

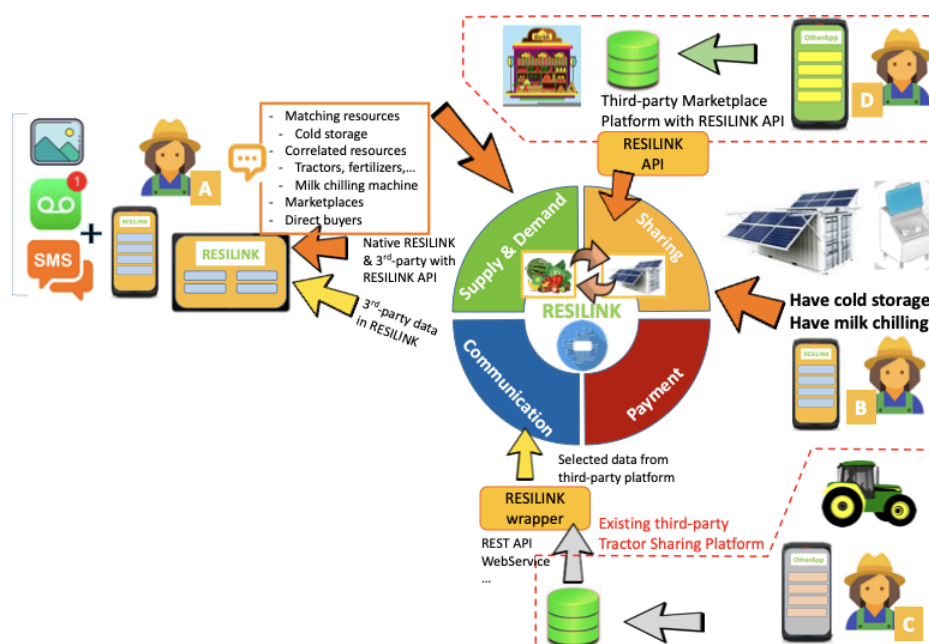




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14

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This open API will maximize re-utilisation and facilitate the integration of new platforms as illustrated by the following diagram where third-party applications can be developed using the RESILINK open API, thus enabling their resources to be discovered by other applications of the RESILINK ecosystem.



2. SUMMARY OF MAIN RESULTS

The **RESILINK Digital Platform** that consists in the RESILINK backend server and the RESILINK frontend mobile application are fully functional. The RESILINK server implements the “platform-of-platforms” approach which is one of the main contributions of the RESILINK project: (i) the server is very lightweight and can be deployed out-of-the-box on laptops or even single board computers such as a Raspberry Pi, (ii) deployment of several lightweight RESILINK servers is made possible where each server could have a geographical scope to efficiently manage crisis in a very local manner, (iii) incremental deployment of servers can then provide a very high level of flexibility, (iv) and finally, the full platform-of-platforms approach is enabled with the RESILINK open API allowing fast development and deployment of third-party platforms based on RESILINK.

The **RESILINK mobile application** is available on the Google Play Store for download and immediate testing. The development of the mobile application went through several phases and versions that were continuously improved for the Evaluation Program and the Living Lab Program.

The **Living Lab Program** ran for 12 months from January 2025 to January 2026. Prior to the Living Lab Program, several interviews and survey sessions, that were followed by a large scale Evaluation Program, have been conducted to raise awareness, test & validate the proposed functionalities and collect feedback from farmers in order to maximize technology adoption.

In order to validate the **open API and the platform-of-platforms approach**, Orange developed the LockItSolar demonstration application showcasing how to leverage the RESILINK API for building a solar product marketplace. Orange Guinea also expressed interest in the RESILINK application concept to create a “Marketplace” application. The RESILINK approach and service will therefore be adapted for Orange Guinea.

3. SOCIO-ECONOMIC IMPACT OF THE PROJECT

The RESILINK project has generated socio-economic impacts beyond the development of its digital platform and mobile application, particularly in terms of digital ecosystem development, technology adoption by smallholders, and new research and innovation perspectives.

A significant achievement is the validation of the RESILINK open API and platform-of-platforms approach. The functional LockItSolar demonstrator has shown how the API can be reused to develop applications for other domains, while the interest expressed by Orange Guinea in adapting the RESILINK approach to an agricultural marketplace provides a concrete perspective for further exploitation. These results support the development of a more open ecosystem of digital platforms, reducing isolation between platforms, facilitating interoperability and encouraging the reuse and sharing of digital services and functionalities rather than the development of isolated and competing solutions.

The project has also provided clear evidence that appropriately adapted digital solutions can be adopted and used by smallholder farmers. The interviews, surveys, Evaluation Program and Living Lab activities enabled continuous interaction with farmers and local partners and ensured that the solution was progressively adapted to their needs and practices.

Several scientific publications resulting from the project have opened new research and innovation perspectives, particularly concerning participatory approaches to the design and adoption of digital agricultural services. RESILINK has also contributed to an interdisciplinary approach, bringing advanced ICT concepts such as distributed platforms, open APIs and digital resource management into interaction with agricultural and socio-economic research.

Although the initially planned commercial partnerships and mentoring activities were not implemented, the project has established a strong foundation for further exploitation. Further actions will nevertheless be necessary to increase the visibility and adoption of the RESILINK mobile application and achieve genuine large-scale deployment, including continued dissemination, stakeholder engagement and the identification of appropriate exploitation and business models.

4. SOME PERSPECTIVES FOR LONG-TERM EXPLOITATION

The RESILINK project has established a technological foundation that extends beyond the initial agricultural use case. The combination of a lightweight and distributable back-end server, an open API, a mobile application and the platform-of-platforms approach creates opportunities for the long-term reuse, adaptation and extension of the project's results. The following perspectives have been identified as particularly relevant for sustaining the impact of RESILINK beyond the project lifetime.

4.1. Fast development and deployment of resource-sharing digital platforms

One of the main exploitation perspectives is to use the RESILINK server and open API as a technological foundation for the rapid development and deployment of new resource-sharing

platforms. The RESILINK architecture is designed to be lightweight and can be deployed incrementally, including on resource-constrained computers such as single-board computers. This makes it possible to establish a local platform for a specific geographical area or community without requiring a complex infrastructure. The open API further reduces the development effort by providing reusable building blocks for managing users, resources, offers, searches and interactions between platforms. The project has demonstrated this potential through the development of the LockItSolar demonstrator, which uses the RESILINK API to implement a resource-sharing and rental service for solar-powered agricultural equipment.

4.2. Capacity-building and local technology appropriation

The open-source availability of the RESILINK software and its documentation provides an important basis for capacity-building. Universities, research organisations, local developers, start-ups and other innovation stakeholders can use the RESILINK code and architecture as a starting point for training and for developing adapted applications. Rather than requiring developers to build a complete digital platform from scratch, RESILINK provides a reusable framework that can be studied, modified and extended according to local requirements. This approach can contribute to strengthening local digital innovation capacity, particularly in regions where access to advanced software development resources remains limited. The project has already promoted this approach through technical dissemination and training activities and through the publication of its software repositories.

4.3. AI-assisted development of new applications

The availability of an open API and reusable source code also creates new opportunities for **AI-assisted software development**. The project has already explored this perspective through a webinar on application development using GitHub Copilot, where participants experimented with the rapid development of applications based on the RESILINK API, including the LockItSolar demonstrator.

In the longer term, generative AI tools can significantly reduce the technical barrier to building new applications on top of RESILINK. Developers could use natural-language specifications, API documentation and existing source-code examples to generate application components, interfaces and integration code. Combined with the RESILINK open API and the resources made available through GitHub, this could transform the platform into a reusable development foundation for rapidly prototyping and deploying new resource-sharing services. Such an approach is particularly promising for local innovation ecosystems where specialised applications may be required but development resources are limited.

4.4. Development of partnerships following the Orange Guinea model

The interest expressed by Orange Guinea provides a concrete example of how the RESILINK approach can create opportunities for partnerships beyond the original project scope. Following discussions with Orange Guinea, the RESILINK application concept and look-and-feel attracted interest for the development of a marketplace application adapted to

the local context. The RESILINK approach can therefore serve as a basis for future partnerships with telecommunications operators, agricultural organisations, cooperatives, public institutions, start-ups and technology companies seeking to develop digital services without having to implement an entire resource-management platform independently.

Such partnerships could combine the RESILINK technological foundation with the local knowledge, user communities, infrastructure and business capabilities of established organisations. This model could facilitate the emergence of new services while preserving the interoperability and collaborative principles of the platform-of-platforms approach.

4.5. Adaptation to other application domains and shorter value chains

Finally, the RESILINK architecture is not intrinsically limited to agricultural resource sharing. Its fundamental concepts—local resource discovery, publication of offers and demands, sharing between platforms, interoperability and distributed deployment—can be adapted to other application domains where local resources need to be efficiently connected.

Within the agro-food sector itself, promising applications include **shorter value chains, local marketplaces, agricultural equipment rental and sharing, logistics, storage and post-harvest services, and connections between producers and local buyers**. More broadly, the same approach could support resource-sharing ecosystems in other sectors where geographical proximity, local communities and distributed resources are important.

This perspective is consistent with the project's platform-of-platforms vision: rather than creating another isolated digital platform, RESILINK provides an open technological foundation on which multiple specialised platforms can be developed and interconnected. The long-term objective is therefore to move from a single project demonstrator towards an **open and reusable ecosystem of interoperable digital platforms**, reducing isolation between platforms and enabling collaboration, reuse and the emergence of new locally adapted digital services.

ACRONYMS LIST

Acronym	Explanation
API	Application Programming Interface
ODEP	Orange Decentralized Exchange Place

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