



The Fraunhofer Institute is testing a holistic approach to the digitisation of rural services in several pilot villages in [Germany](#). Through the creation of a common digital platform, they are developing new solutions for the supply of local goods, communication, mobility and e-government. The platform enables the creation of shared services and common rules, and the incorporation of basic tools such as payments, login, data usage controls and partner networks. Local residents are working with interdisciplinary teams to create a range of user-friendly apps.

## Introduction

Germany's villages and rural areas are feeling the effects of demographic change and rural depopulation. This trend raises some important questions for the future: what will villages look like as the population ages? Will young people and families still move to rural villages? Will villages be able to maintain their infrastructure (transport, shops, healthcare, etc.). Will there still be businesses in rural areas? What concepts will help to revive villages and rural areas and keep them attractive for residents, young and old?

The project, "Digital Villages" shows how digitisation opens up new opportunities for rural areas.

Based on the definition provided by the EU<sup>(1)</sup>, approximately 66% of the German population live in sparsely populated areas and intermediate density areas, which is around 56 million people. The project "Digital Villages", coordinated by the Fraunhofer Institute for Experimental Software Engineering (IESE), seeks to identify digital solutions for people living in these areas, focusing primarily on sparsely populated areas.

In cities, where many people live together in relatively small spaces, different issues need to be tackled than in rural areas. Here, the challenge is primarily to bridge the distances among small numbers of people. As a result, digitisation in rural areas requires different concepts, solutions, and business models.

## Digital Villages in Germany

The "Digital Villages" project was initiated by the Ministry of Internal Affairs and Sports Rhineland-Palatinate and the IESE in the summer of 2015 (running until 2019), and has a total budget of around € 4.5 million.

Through an open innovation competition, associations of municipalities were invited to submit project ideas to improve the quality of life in their area by the means of digital services.

Figure 1. Illustration of a Smart Rural Area



### Main objectives of the project

- 1. Innovation within a smart rural ecosystem** (see page 4): Digital Villages aims to add value to the rural ecosystem by means of digital solutions and services (see figure below). The main components of the ecosystem are the community, domain specific services (e.g. mobility, health, etc.), a technical platform, the basis infrastructure, and the organisation of all these layers.
- 2. Develop cross-sectoral solutions:** To maintain and operate digital solutions in rural areas, cross-sectoral solutions are necessary.
- 3. Create a culture of collaboration between residents, local authorities and local industry:** Using the living lab approach to enable collaboration between all stakeholders to create innovative solutions.
- 4. Build solutions that are sustainable.**
- 5. Develop digital solutions that are affordable.**

1 [http://ec.europa.eu/regional\\_policy/sources/docgener/work/2014\\_01\\_new\\_urban.pdf](http://ec.europa.eu/regional_policy/sources/docgener/work/2014_01_new_urban.pdf)

Subsequently, an independent jury of experts from politicians, society and research selected the associations of communities of Eisenberg, Göllheim and Betzdorf-Gebhardshain as winners.

All three applications focused on improving local commerce and combining it with new concepts of digital volunteer work as a cross-cutting issue. In total, this means that 33 municipalities, covering an area of 216.73 km<sup>2</sup> (including some LEADER areas) are participating in the 'Digital Villages' project. Key stakeholders include local residents and businesses, the administrations of the municipal associations, researchers from Fraunhofer IESE and other project partners. The project is also assisted by the Development Agency of Rhineland-Palatinate, which focuses on supporting community and civil society participation. A project similar to Digital Villages is also being implemented in [Bavaria](#), by a consortium including Fraunhofer IESE, Fraunhofer IIS and Technische Hochschule Deggendorf.

*“The project aims to show in practice, how intelligent interconnection of different domains can support young and old residents in rural areas by creating an attractive living environment, within the context of demographic change.”*

**Roger Lewentz,**

Home Secretary, Rhineland Palatinate, Germany.

Another linked project is [StuDi](#), which focuses on health monitoring.

### Bringing Digital Services to Rural Areas

To implement the Digital Villages project in Germany, the 'living lab approach' (see figure living lab) was used – this theoretical framework is based on the work of existing living labs (e.g., FormIT, ilab.o, Helsinki Living Labs und Catalan Living Labs). During the first phase “concepts” and concrete solutions were discussed with the residents and other stakeholders. Following this, prototypes were developed, which were further elaborated with stakeholders until the concrete solutions had been digitalised, mostly in the form of mobile apps or digital web services.

Key target domains for digital services were local products and services, voluntary work and communication.

The scenario of local products and services is based on a local online marketplace (**BestellBar**), where local vendors can sell their products online. Participating vendors include local bakeries, organic farms, vegetable farmer, regular supermarkets, but also non food vendors, such as sports stores, drugstores, pharmacies, laundries, book stores and libraries to name just a few. Once an order is registered, the system generates deliveries, which volunteers can help with using a mobile app (**LieferBar**). The idea is, that people traveling on the required route could deliver a parcel to their neighbour.

To motivate voluntary deliveries, those participating can earn so called DigiTaler (a virtual currency) that they can spend on other parts of the system to get benefits. The ecosystem is supplemented by parcel terminals, where residents can also collect purchased items.

**BestellBar** and **LieferBar** were the first apps to be used, in 2016. After the first three months there were:

- 35 local vendors,
- 1 200+ available products
- 700+ registered residents
- 800+ items purchased
- 200+ voluntary deliveries

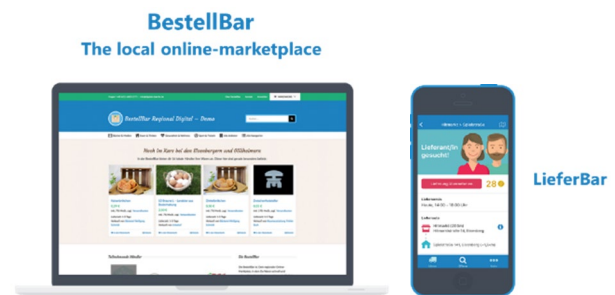
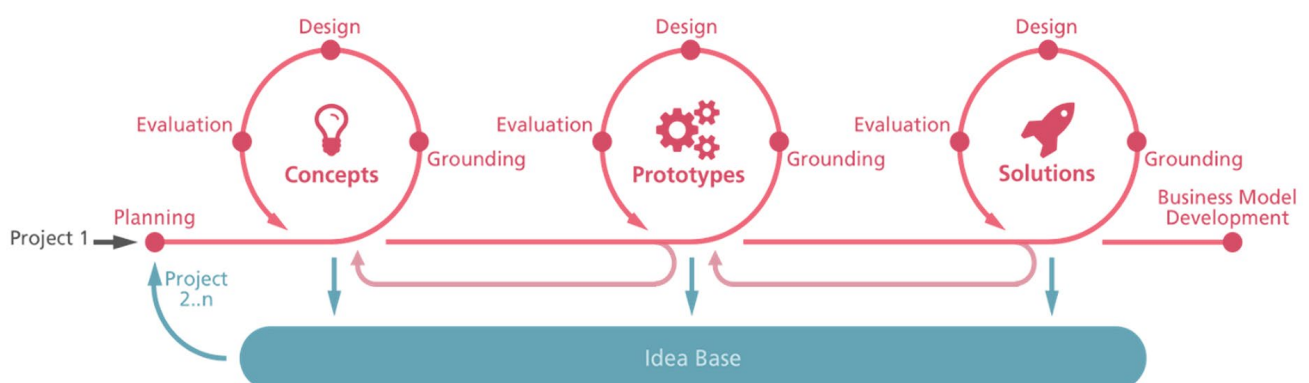


Figure 2. Living lab approach



Semi-professional suppliers are also involved, as most local farmers already had some kind of delivery service.

They can now share excess capacities and work in a more efficient way by using another mobile app, which enables a smart distribution of the deliveries using different vehicles.

“The Digital Villages project provides an important opportunity to use digital services and resident engagement to showcase the positive aspects of life in the rural area around Betzdorf-Gebhardshain.”

**Bernd Brato,**  
Mayor of Betzdorf-Gebhardshain.



The second area of application was communication, which is a very broad area. Services developed so far include **DorfNews**, a local news portal, enabling the municipalities to inform residents quickly about local news and events. It is also accessible to local reporters, clubs and organisations, and automatically integrates existing news sources from web and social media.

The **DorfFunk** app has extended this news system to a “my village in the pocket” solution, which makes it possible to have all the news for the area available in one place. DorfFunk is the main point of access to the digital villages, where users can find information on local events, organise car pooling, offer their services to the community and much more.

The Digital Villages project doesn't just revolutionise communication between residents but also between residents and the local administration.

There have been 200-400 users per week per municipality on average, and news articles with more than 1 000 visits.

Residents can contribute to the community more easily – for example, by making suggestions that are passed directly to the responsible administration. Digital services thereby increase the appeal of rural areas, helping to boost economic development.

**Figure 3.** Illustration of the communication scenario



All of this is made possible by a uniform platform that intelligently connects villages and communities. The digital platform is embedded as part of the Digital Villages Ecosystem, which is vibrant, growing and always expandable with new services. The Digital Villages Ecosystem is a unique ecosystem in which digital services are developed involving all parts of the society within living labs in different rural regions.

“The Digital Villages Platform creates the basis for significantly improving the supply of digital services in rural areas. As a result, the attractiveness of the areas and the quality of life of residents is improved.”

**Steffen Hess,**  
Research Programme Manager, Smart Rural Areas, Fraunhofer IESE

Other applications under development include:

- **DorfFunk**, which will start 2018 and will have municipality features included;
- **Mobility Solutions**, to be launched in 2018. The first prototypes were tested in 2017, but usage numbers have been low so far.



## Project Lessons

Digital Villages is a lighthouse project in Germany with respect to digital services with social impact in rural areas.

To undertake a project that deals with digitisation, and digital services in particular, it is essential to build up an innovation infrastructure. Inter disciplinary teams are needed, as are people with a strong background in digitisation, but also people with a socio-economic background and local people from the rural area concerned. Unleashing creativity in order to come up with good ideas is essential. To do this, it is first necessary to research existing initiatives and projects in order to get some inspiration.

To come up with sustainable solutions, several ideas may need to be transformed and combined to create a novel and innovative concept that works for a given rural area. With regard to project implementation, a plan, budget, timeline and motivation team are all essential.

This may sound simple, but most projects fail because they miss one of these elements.

A key lesson of the Digital Villages project is the importance of working with early prototypes. This works well where residents can discuss practical solutions to a specific issue, expressing their likes and dislikes. Within these living lab sessions, a key success factor is the identification of residents' needs, which are often at the root of problems identified.

Involving local influencers, as well as providing flexible participation models for residents, are essential. For local municipalities, the establishment of a digital council has provided promising results and should be considered, even in rural areas. Once projects are up and running, the communication of results and successes to the residents is also important. The Digital Villages project demonstrated the potential of digital services to improve the overall situation of rural areas in Germany.

Figure 4. Technical view on the complete Digital Villages Ecosystem

