

Interreg



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Alpine Space

SmartCommUnity

DELIVERABLE 3.3.1 | **DATA** **COLLECTION THROUGH** **GAMIFICATION**



**The INTERREG Alpine Space SmartCommUnity project|
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Abstract

This Deliverable 3.3.1 demonstrates how our platform can use collaborative approaches to address some of the most important rural challenges for our Test Areas (TAs), with a novel focus on incorporating gamification techniques to improve engagement and participation. For us, it is important to collect data at this stage, as we will use it later for several important tasks that will allow us to have a much more realistic understanding of the TAs and enable stakeholders to take better action in facing these rural challenges.

Introduction

There has been a growing interest in developing civic engagement solutions that encourage active participation within local communities in recent years. Although numerous platforms and tools exist to facilitate civic engagement, their implementation and impact in rural areas remain significantly understudied and underutilized.

Our research and field experience indicate that these tools hold substantial potential to promote collaborative efforts in rural regions, enabling communities to collectively face pressing issues such as depopulation, reduced access to public services, and the decline of local economies. The idea is that rural communities can engage in more inclusive decision-making processes, improve communication between residents, and create tailored solutions that reflect their unique needs and challenges. This could contribute to more sustainable rural development and stronger social cohesion in these often-overlooked areas.

Although civic engagement platforms have been rising recently, only a few studies have examined their effects on rural areas. What seems clear is that such platforms should facilitate stronger connections between residents and their communities, providing a voice and encouraging discussions on matters that impact their lives. Additionally, they should enable residents to navigate persistent challenges in rural regions and actively participate in discussions regarding the future of their communities.



Below, we show how our platform has the potential to facilitate collaborative approaches to solving many rural issues. In particular, we focus on the concept of Gamification.

Why use gamification to engage communities?

Incorporating gamification improves engagement by transforming otherwise complex or monotonous tasks into interactive experiences. Gamification taps into people's intrinsic motivations, such as competition, achievement, and social connection, making participation in community projects more appealing and sustained.

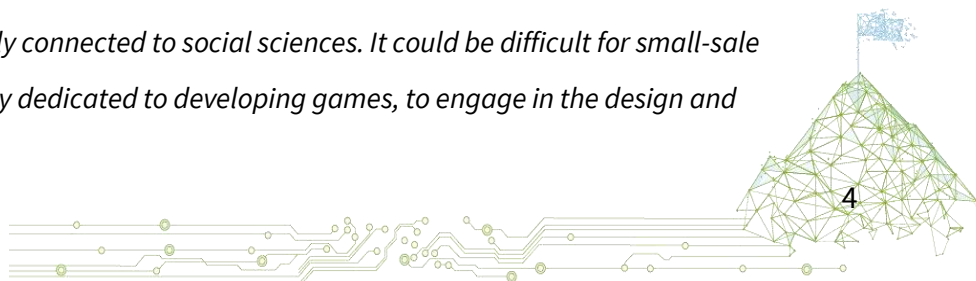
The “[Handbook : Gamification and civic engagement tools](#)” (Deliverable 3.1.1.) presented the potential contribution of gamification to increase engagement within smart communities. In conclusion, the handbook put forward the significant aspect that to develop the full potential of gamification, the entire project would have to be dedicated to a gamified approach and the development of a completely new game. However, this conclusion does not preclude the introduction of several gamified elements on the platform, in addition to the work of the partners in the test areas and to engage the various communities.



The gamified approach seems well suited for the purpose of the civic engagement tool with gamified approach within SmartCommUnity project and with the objectives followed by rural actors:

- *Creating common culture of smart communities challenges*
- *Co-designing viable solutions to face depopulation, lack of services, the brain drain...*
- *Facilitating local actors and every stakeholder to engage the process of building a Smart village*
- *Enabling cooperation between local smart communities and transnational smartcommunities*
- *Fostering Youth participation to the development of solutions that match their expectations and vision for a desirable future within rural areas*

[...] The field of gamification is deeply connected to social sciences. It could be difficult for small-scale projects, or projects that are not fully dedicated to developing games, to engage in the design and



development of a full new game. The only way to use the gamification approach within civic engagement tools would be whether to rely on some dedicated and specialized companies, or to adopt realistic, feasible and time-money efficient projects to realize one or two gamified elements within an existing platform.

Extract of Deliverable 3.1.1. “Handbook : Gamification and civic engagement tools” (April 2023)

The Handbook also clarifies what should be the key aspects as regards the gamified elements on the *smartalps.eu* platform and one of them concerns the “data collection”.

Why collect data to engage communities?

Data can help local stakeholders to better manage their actions, make informed decisions and achieve concrete and measurable objectives. To achieve these goals, gamification is a useful method, as it uses a playful process and avoids the need for tedious processes that often lead to abandonment due to lack of motivation.

Why invest in tools for effectively managing community engagement?

Investing in community management tools is usually a good idea for effective engagement because these tools help create a structured, interactive environment that facilitates communication and collaboration. They enable the community to easily share feedback, exchange ideas, and participate in collective decisions.

What role does our platform play in engaging communities?

Our platform plays a central role in engaging communities with the idea of offering a space where local stakeholders can actively participate and collaborate on common objectives. It serves as a hub for communication, enabling the sharing of ideas, feedback, and data in a transparent and accessible way. Through the integration of gamified elements, the platform encourages sustained engagement by making participation more attractive and rewarding, motivating users to contribute consistently.



Our gamification approach

With the idea of incentivizing meaningful actions, we aim to strengthen community engagement, propose innovative solutions, and promote collective efforts to address persistent issues in our rural areas. Below, we describe the key aspects of our gamification approach.

Key aspects of gamification

In order to support the test areas better understand the concept of gamification and to help them to embrace it and use gamified elements in their policies and actions, we have presented [some guidelines](#) setting out the elements that need to be respected. Figure 1 shows us these elements.



Figure 1. Key principles to respect



The different scenarios of gamification within the platform

The different functionalities of the platform have been presented in the [Deliverable 3.2.1. “Report on the expansion of the Smart Villages platform”](#). We have chosen different levels to include gamification elements at different levels of the platform. We made this choice to reach several objectives and targets:

Level 1: Enable engagement via the platform through fun features and exchanges

The first level concerns gamification adapted to the use of the platform. Thanks to the Wordpress "Gamipress" plugin, platform users and communities will be able to collect points (karma) for every use of the platform's functionalities. Collecting these points will enable them to unlock different levels adapted to their profile (from new community member to local hero). Users can collect points through a list of actions on the website :

- Send friendship request
- Login
- Comment a post
- Write a post
- Join a group

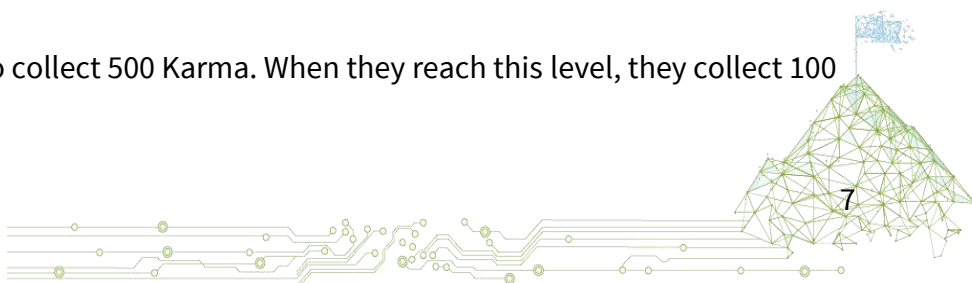
For each action, users can collect between 50 to 2,000 karma points based on the complexity and significance of the functionality used. More impactful actions, such as creating content, leading community discussions, or providing substantial feedback, yield higher points. The system rewards active and meaningful contributions to encourage greater participation

Level 1 - New member of the community

To reach this level, users need to collect 150 Karma. When they reach this level, they collect 100 Karma more.

Level 2 - Observer

To reach this level, users need to collect 500 Karma. When they reach this level, they collect 100 Karma more.



Level 3 - Contributor

To reach this level, users need to collect 1000 Karma. When they reach this level, they collect 100 Karma more.

Level 4 - Super contributor

To reach this level, users need to collect 2500 Karma. When they reach this level, they collect 100 Karma more.

Level 5 - Local hero

To reach this level, users need to collect 1000 Karma. When they reach this level, they collect 100 Karma more.

Level 2: Implement a smart approach by following a multi-stage pathway

The aim of this second application of gamification is to enable the various users of the platform and TAs to follow a path to develop and advance their smart community. The aim of this pathway is to :

- gamify the various stages that lead communities to become smart
- provide a step-by-step guide to the key actions to be taken, also flexible non-linear approach is available
- get to know the concepts and important approaches in community-driven change
- show which tools from the platform to use at which times, to focus on learning how to use all the tools in a contextual way
- give TAs tools to experiment with, so that they can use gamification with their communities too.

The users would have to follow seven different steps with tasks and when they completed a task, they can go to the next one, with karma points and achievement reward. Different levels of karma points are delegated for distinct steps, ranging from 300 karma for reading a simple content and inputting the areas of interests, to 1000-2000 karma points range for using the smart tools or performing important actions within their community or network.

The different steps are as follows:

- Stage 1 - Get to know and unite the community
 - Step 1 : Communicate the initiative



- Step 2 : Identify resources and local heroes
- Step 3 : Analyze needs of the community
- Stage 2 - Define our needs and capabilities
 - Step 4 : Make a diagnosis
 - Step 5 : Smartness assessment
 - Step 6 : Test Area Analyzer
- Stage 3 : Inspire me
 - Step 7 : Read resources on Smart Transition
 - Step 8 : Check out best practices
 - Step 9 : Talk to AI knowledge base
- Stage 4 : Involve and evaluate
 - Step 10 : Iterative upgrades in your community
 - Step 11 : Get in touch with the other pilot areas
 - Step 12 : Join the SmartAlps Network and follow EUSALP

In the instructional introductory page to the Interactive course the steps are presented as shown in Figure 2.

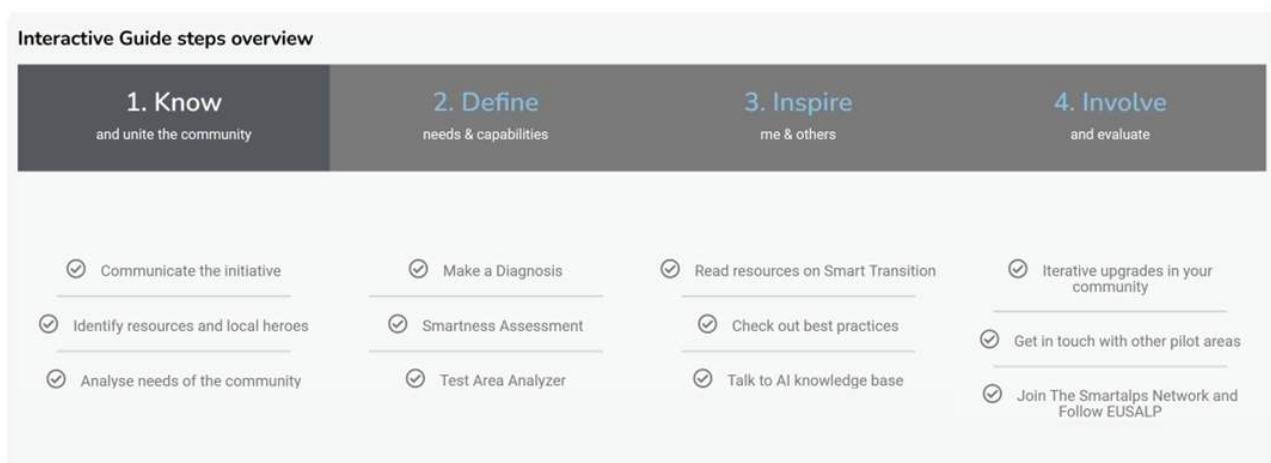
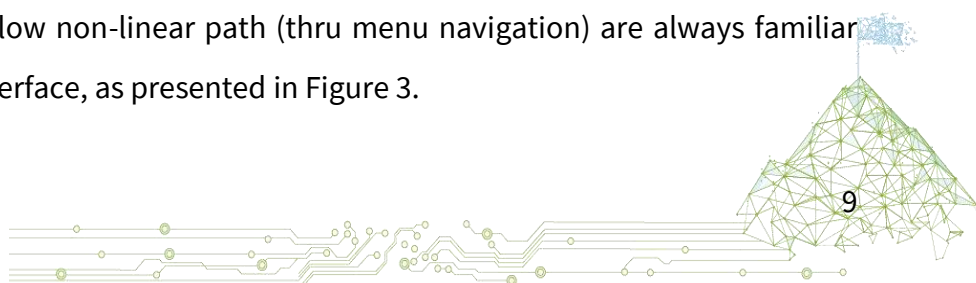


Figure 2. Interactive guide steps overview

In further steps the layout approach is generalist and entails important sections in the same formation, so the users that follow non-linear path (thru menu navigation) are always familiar with the mechanisms of user interface, as presented in Figure 3.





Header bar, includes

1. Interactive guide navigation menu
2. Karma points collected with completing the steps for logged-in users
3. Percentage of current step viewed
4. Expand Interactive Guide overview description

Main content, can include

1. Learning content: Textual descriptions and images
2. Instructional videos will be available later in the project progress
3. Link to outside tools (TA analyzer, DEP, Smart Assessments ...)
4. Page embedded tools (Chatbot)

Step completion, can include

1. Input summary as a proof of understanding
2. Structured survey (what have you done, what is your need, etc.)
3. Upon Next step click, submission and karma points and achievements collection
4. Visual stimulation on step completion

Figure 3. Interactive guide

Level 3: To enable pilot regions to use gamification to implement their own actions

On the platform, pilot regions will be able to find [guidelines](#) on how to use gamified elements in the implementation of their actions and collect data at local level. Guidelines Gamification for communities of test areas is additional publication to disseminate this approach within test areas' communities and partner networks

After considering how gamification is being used on the platform, the second part will allow us to see which components are being used to collect data at each level.

List of the different components for the data collection

Our platform is thoughtfully designed to boost user engagement while gathering valuable data. The idea of combining various interactive and gamified elements, is to ensure that the process of data collection is seamless and enjoyable. Here is how each part of our strategy comes together:

Gamification with GamiPress

Using the GamiPress plugin allows us to motivate users to participate more actively by rewarding them with points, achievements, and ranks as they interact with the platform. This approach not only encourages involvement but also allows us to track user activities (Figure 4), providing us with important information on how users engage with different aspects of the community.

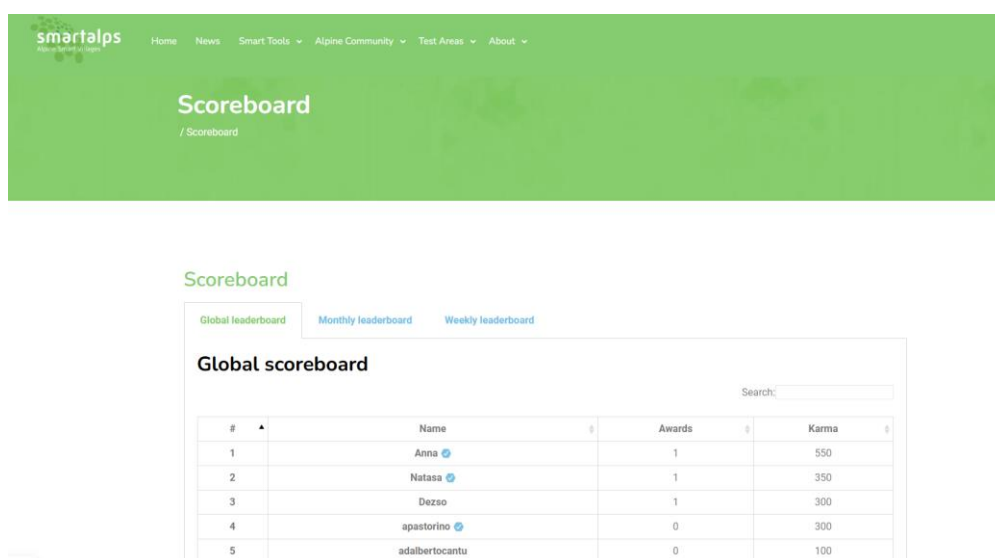
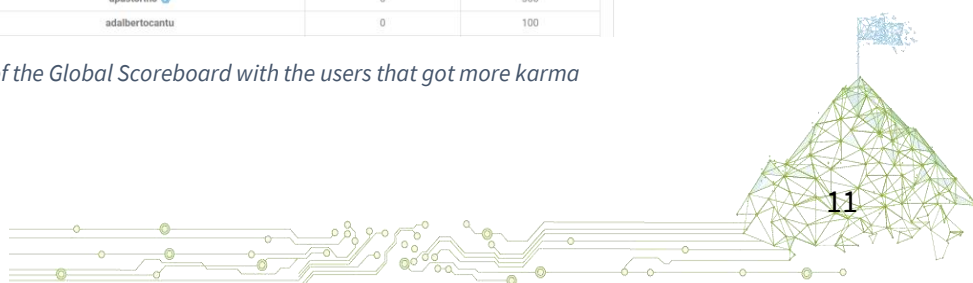


Figure 4. View of the Global Scoreboard with the users that got more karma



Interactive Content with H5P

H5P allows us to create content that is both engaging and informative. Each interaction gives us a clearer picture of user preferences and how they interact with our content. This helps us refine our content and make it more appealing and relevant to our audience. The H5P content can provide great learning and interface, though the content creator is limited by the somewhat standardized forms and layouts provided by the H5P content creation provider, such as *lumi.education* portal. The use of H5P requires more effort with multilingual materials (no automatic translations).

Community Interaction through Forums

The forums on our platform (Figure 5) act as a gathering place for users to discuss and share ideas. The conversations and exchanges here give us a better understanding of what topics are most relevant and important to our community. The idea behind monitoring these interactions is to identify key areas of interest and focus our efforts on what matters most to our users.

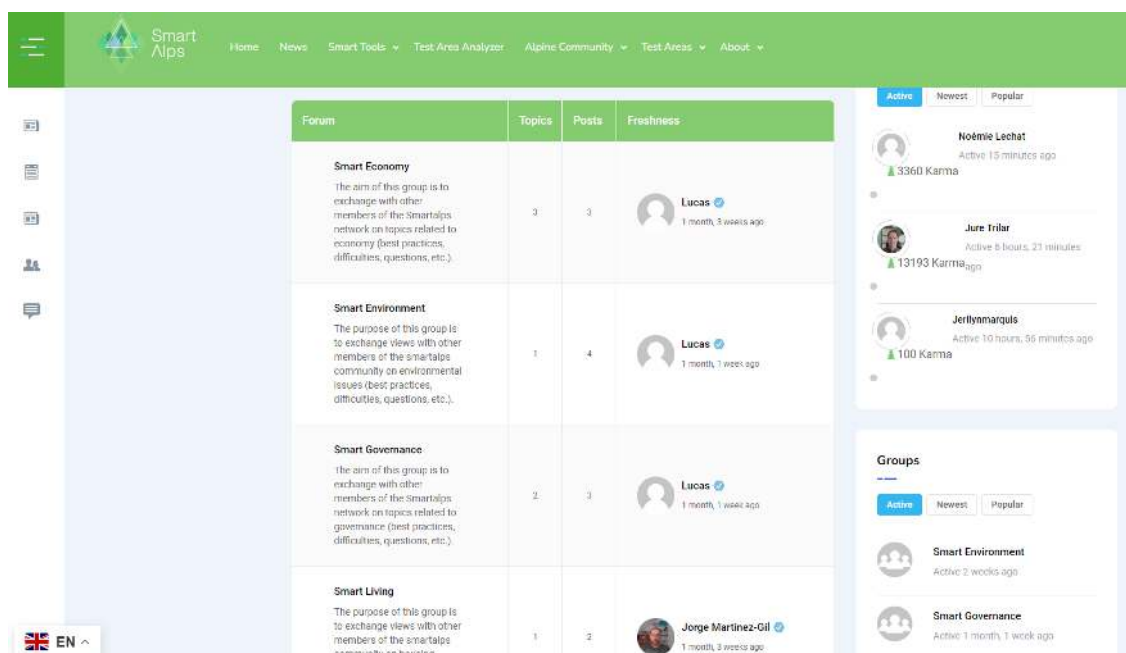


Figure 5. View of the forums from our Smart Platform



Real-Time Assistance with Chatbot

Our chatbot (Figure 6) is always available to help users with their questions and guide them to the information they need. The interactions with the chatbot provide us with data on common questions where users may need more support, helping us improve the user experience and address any gaps in the information provided. Moreover, it has been trained with our local data (Figure 7), so it is specifically customized to serve the stakeholders of our project.

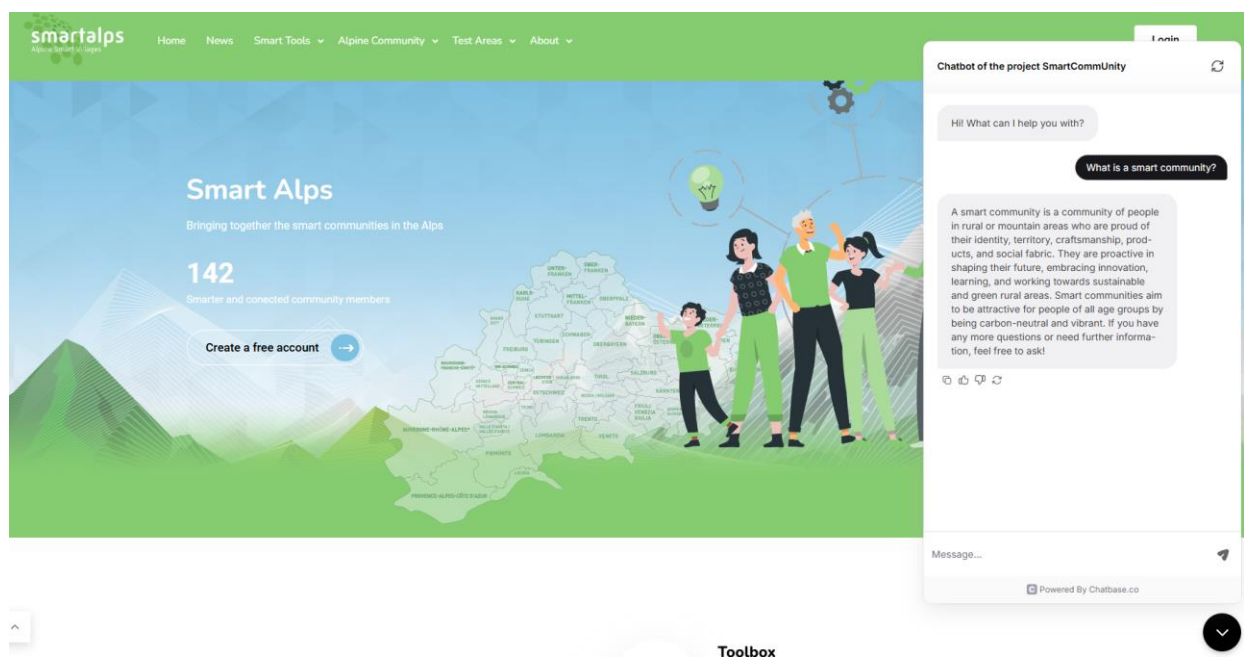


Figure 6. Landing page of our Smart Platform with the chatbot in the lower right corner

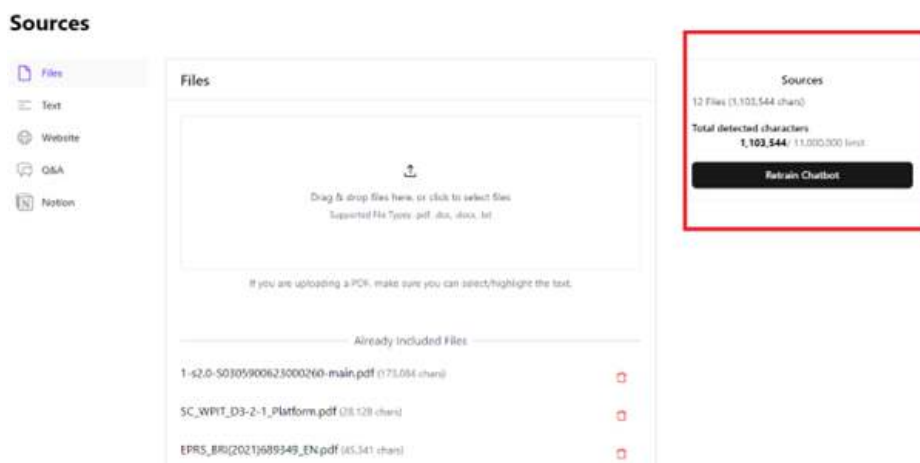


Figure 7. View of the personalized training of our SmartCommUnity chatbot

5 most frequently asked questions (FAQs)

Understanding the most frequently asked questions to a chatbot is crucial because it helps us identify common user issues, improve the accuracy of responses, and improve user satisfaction. The idea is to discover valuable insights into the behavior of our user base and feedback, enabling further improvements of our smart platform and more user-centric innovations and functionality. The 5 most repeated FAQs during periods 3 and 4 have been the following:

1. **What is a smart village?**

This question appears multiple times with users asking about the definition and concept of a smart village.

2. **What is a smart community?**

Users frequently inquire about the concept and details of smart communities.

3. **What are the key dimensions of smartness?**

Users are interested in understanding the dimensions or aspects that define smartness in villages and communities.

4. **How to set up a smart village?**

Questions on how to practically implement and develop a smart village are common.

5. **Information about specific projects or programs like the Alpine Space program or SmartCommUnity?**

Users ask for details about various projects, their objectives, participants, and challenges faced.

Statistics regarding the use of our chatbot

We present the statistics on the use of our chatbot within our smart platform in Figure 8. To date, 51 users have used it with a total of 77 messages. Obviously, we are in the early stages of its deployment and expect much more intensive use as the platform is promoted.

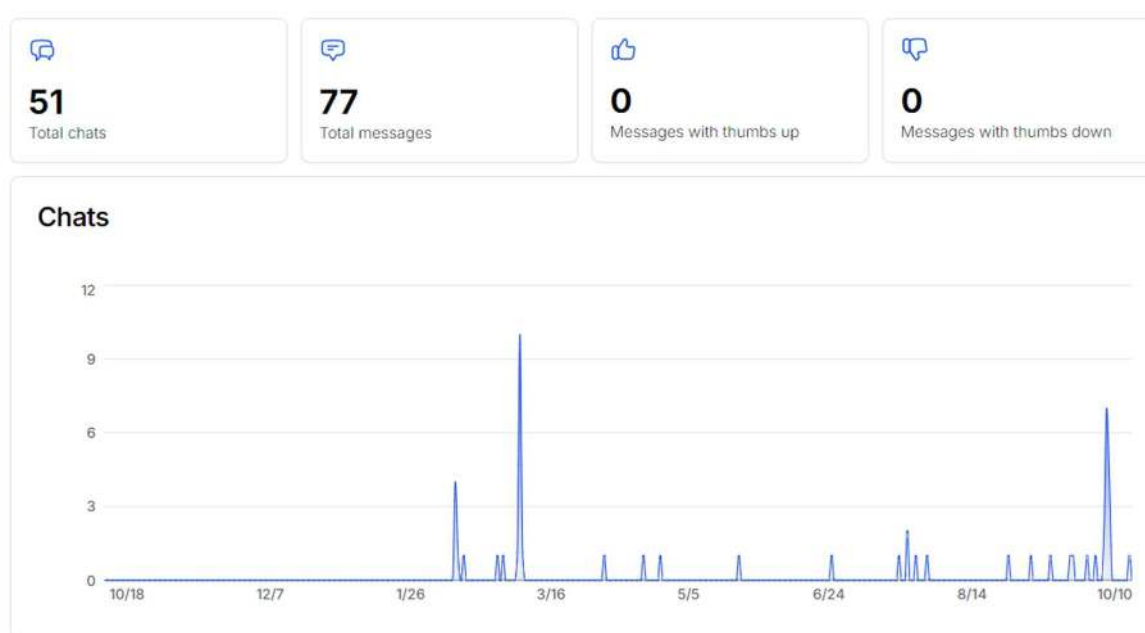
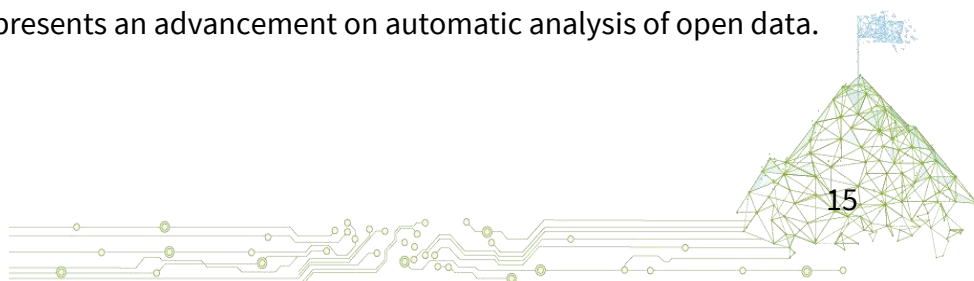


Figure 8. View of the statistics regarding the use of our chatbot

Test Area Analyzer

The Test Area Analyzer (Figure 9 and Figure 10) is a valuable tool for tracking how well different initiatives are working. We collect data from specific test areas to assess the effectiveness of the ongoing digitization projects and suggest stakeholders' necessary adjustments to ensure they are meeting the community's needs. Moreover, the artificial model that support our chatbot is also able to suggest advice to improve (Figure 11) regarding rural smartness. This information is automatically generated and represents an advancement on automatic analysis of open data.



Smart CommUnity - TA Analyzer

Choose a Test Area:

FTA-Communauté de communes du Guillestrois-Queyras, France

Enter the latitude of the area:

44.66

Enter the longitude of the area:

6.65

Default SmartEconomy SmartGovernance SmartMobility SmartEnvironment SmartPeople SmartLiving

Select Amenity Type:

all

Show Amenities

Figure 9. Input parameters for the TA Analyzer

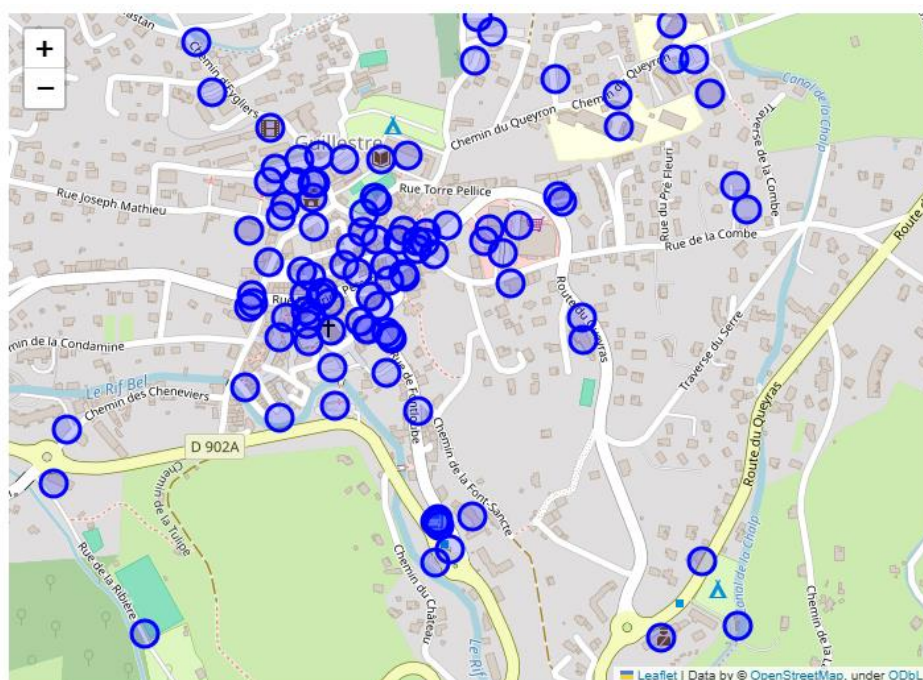


Figure 10. Entities automatically detected in FTA-Communauté de communes du Guillestrois-Queyras, France



AI Assistant

Analysis

Response: I'm here to assist you with your inquiry. Based on the facilities you've listed for the village, it seems to have a decent infrastructure in place. To assess the degree of digitalization, smartness, or rural development of the village, I would need more specific information or indicators related to those aspects.

To improve the village's digitalization, smartness, or rural development, here are some general suggestions based on the information provided:

1. **Enhance Connectivity:** Ensure reliable internet access and improve network coverage to support digital services and communication.
2. **Implement Smart Solutions:** Introduce smart technologies for efficient waste management, energy conservation, and public services.
3. **Promote Sustainability:** Encourage eco-friendly practices such as recycling, renewable energy adoption, and green infrastructure development.
4. **Community Engagement:** Foster community involvement in decision-making processes and encourage participation in local development initiatives.

For more tailored suggestions or a detailed assessment, specific data related to digitalization, smartness, or rural development indicators would be necessary. If you have any specific metrics or goals in mind, feel free to share them for a more targeted recommendation.

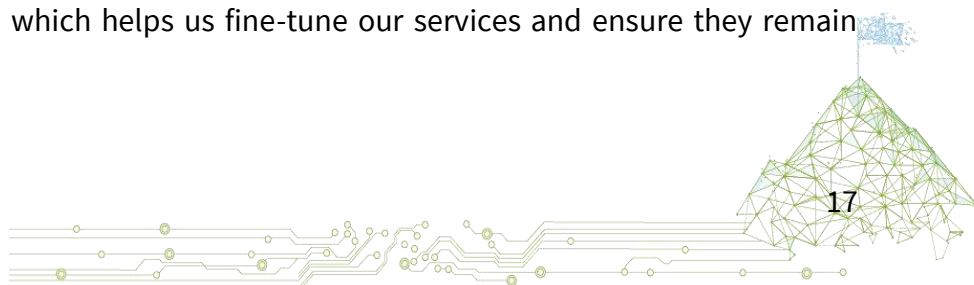
Remember, continuous improvement and adaptation to the evolving needs of the community are key to enhancing the village's overall quality of life and development. If you have any other questions or need further assistance, feel free to ask!

Download Analysis as PDF

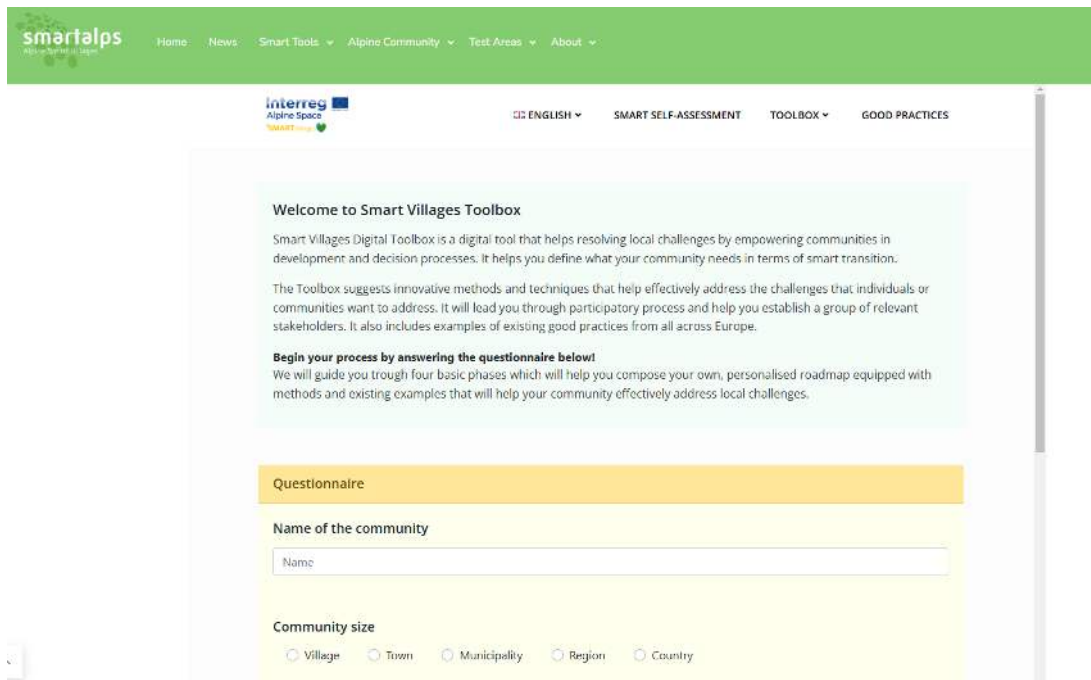
Figure 11. Exemplary report for the FTA-Communauté de communes du Guillestrois-Queyras, France

Digital Exchange Platform and Toolbox

The Digital Exchange Platform (DEP) and Toolbox (Figure 12) offer additional ways for users to interact with the platform. As users engage with these tools, we gather further information on their preferences and behavior, which helps us fine-tune our services and ensure they remain useful.



Therefore, we have created an integrated strategy for collecting user data. Each part of our platform contributes to a better understanding of user behavior and needs. This approach helps us continuously improve the platform, making it more valuable for the different communities.



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ENGLISH SMART SELF-ASSESSMENT TOOLBOX GOOD PRACTICES

Welcome to Smart Villages Toolbox

Smart Villages Digital Toolbox is a digital tool that helps resolving local challenges by empowering communities in development and decision processes. It helps you define what your community needs in terms of smart transition.

The Toolbox suggests innovative methods and techniques that help effectively address the challenges that individuals or communities want to address. It will lead you through participatory process and help you establish a group of relevant stakeholders. It also includes examples of existing good practices from all across Europe.

Begin your process by answering the questionnaire below!

We will guide you through four basic phases which will help you compose your own, personalised roadmap equipped with methods and existing examples that will help your community effectively address local challenges.

Questionnaire

Name of the community

Name

Community size

☐ Village
 ☐ Town
 ☐ Municipality
 ☐ Region
 ☐ Country

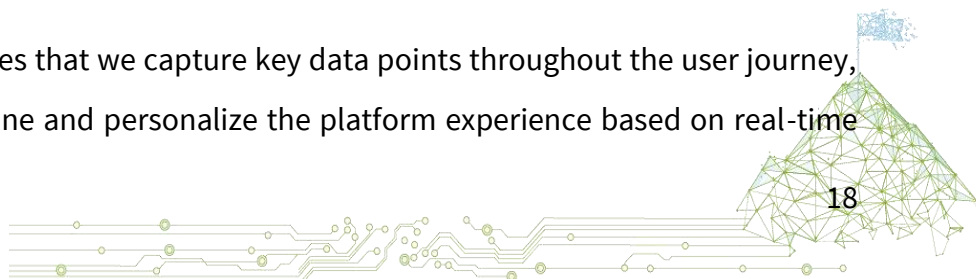
Figure 12. View of the integration of the already developed Toolbox into our Smart Platform

Data collection points via Gamification

Our approach to data collection is streamlined using a structured gamification model. The formula **3 Levels of Gamification × 2 Strategies per Level = 6 Data Collection Points** outlines how we gather data at different stages of user interaction

- **3 Levels of Gamification:** These levels represent progressively advanced stages of user engagement, with each tier providing deeper insights into user behavior.
- **2 Strategies per Level:** At each level, we implement two strategies to encourage user participation while collecting valuable data on their activities and preferences.

This systematic approach ensures that we capture key data points throughout the user journey, enabling us to continuously refine and personalize the platform experience based on real-time



insights. The Figure 13 shows three colors (one per Degree of Gamification): Green: Very High Degree of Gamification, Yellow: Medium Degree of Gamification, Red: Low Degree of Gamification.

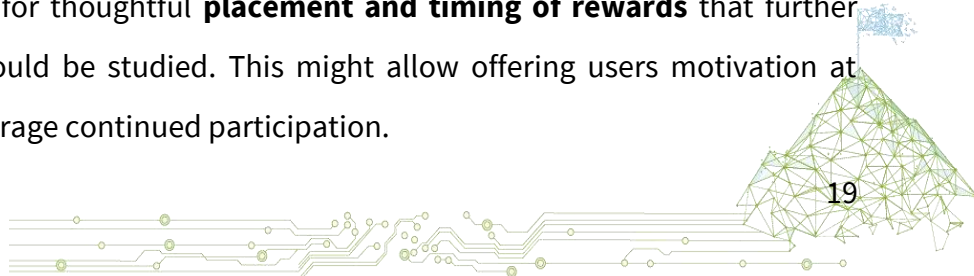
<ul style="list-style-type: none"> • Gamification with GamiPress: Using the GamiPress plugin allows us to motivate users to participate more actively by rewarding them with points, achievements, and ranks. • Interactive Content with H5P: H5P allows us to create content that is both engaging and informative.
<ul style="list-style-type: none"> • Real-Time Assistance with Chatbot: Our chatbot is always available to help users with their questions and guide them to the information they need. • Community Interaction through Forums: The forums on our platform act as a gathering place for users to discuss and share ideas.
<ul style="list-style-type: none"> • Test Area Analyzer: The Test Area Analyzer is a valuable tool for tracking how well different initiatives are working. • DEP and Toolbox: The Digital Exchange Platform (DEP) and Toolbox offer additional ways for users to interact with the platform

Figure 13. View of our 6 data collection points using 3 levels de gamification

This allows you to track how users engage with the platform at different stages and with different incentives. These data points help assess which strategies are most effective and provide insight into user behavior patterns.

Green Level (High Degree of Gamification)

Some aspects that can be implemented with this kind of data are: **Recognizing the platform's most active users and local heroes** that might facilitate a sense of community and motivates others to engage more actively. These individuals can serve as role models, encouraging more involvement through their leadership and contributions. Similarly, it could be possible **to identify the most helpful and tools for residents** to improve user experience. Tools that streamline communication, simplify task management, or provide easy access to information are especially valuable for keeping residents engaged. Additionally, it could be interesting **understanding the most engaging types of content** that might help tailor the platform's offerings to maintain user interest and involvement. Finally, some strategies for thoughtful **placement and timing of rewards** that further enhance engagement could be studied. This might allow offering users motivation at strategic points to encourage continued participation.



Yellow Level (Medium Degree of Gamification)

Some important aspects that could be identified are the **Most Frequently Asked Questions** from residents, or similarly, **hot topics residents** are most worried or interested in. It could be also possible to assess the **physical places with higher participation rates** in local events and discussions tend to be community centers, parks, schools, libraries, and town halls. Last, but not least, it could be possible to perform **sentiment analysis** of these discussions in forums that might reveal interesting aspects such frustration over insufficient resources, hope for positive change, and satisfaction with current community projects, with many residents expressing concern for long-term sustainability and equity.

Red Level (Low Degree of Gamification)

The **Evolution of the Degree of Smartness** might help to analyze the development of various villages based on technological and infrastructural advancements. The idea of examining different volunteer-generated OpenStreetMap (OSM) data layers could bring us a **Volunteer Level Analysis** that might provide an in-depth understanding of community contributions and digital mapping efforts. This might help in identifying villages that share similarities in terms of geographical features, infrastructure, and socio-economic indicators, leading to the concept of **Most Similar Villages to a Given One**. Additionally, the study identifies the **Most Advanced Villages in Relation to Some Factors**, focusing on metrics like connectivity, access to public services, digital penetration, and other factors that define a smart and sustainable village ecosystem. An analysis of this kind might help in creating models that can inform local development strategies and foster the exchange of best practices among communities.



Conclusion

Through the elements outlined above, we have emphasized our approach and the rationale behind our choices regarding the integration of gamification into the platform. This includes a detailed examination of the various components utilized to collect data, which are essential for assessing the platform's performance.

The data collected will provide us with critical insights into the platform's user base, enabling us to define and analyze user behavior, engagement patterns, and demographic information. The idea of closely examining how our developed strategies have influenced user commitment and participation within smart communities, we can assess the overall effectiveness of our gamification efforts.

Furthermore, this analysis will inform future optimizations and platform improvements, ensuring that the ecosystem continues to foster increased user interaction. The resulting data visualizations and comprehensive findings will be thoroughly documented in upcoming deliverables, where we will also propose new directions for enhancing user engagement and community-building efforts across smart communities.

In conclusion, these efforts not only validate the initial design choices but also lay the groundwork for continuous iterative improvements, making our platform more adaptive to the evolving needs and preferences of the community.

