

UP-STAIRS Digital Platform replication and scaling strategy

Deliverable 4.6 – WP4

Date of document

30/11/2023

Deliverable Version:	D4.6, V1.0
Dissemination Level:	PU
Authors:	Henrik Schapp, GCN Tassilo Ludwig, netatack GmbH
Contributors:	Lorena Sánchez Relaño, IERC Padraig Lyons, IERC

Table of Contents

Table of Contents	2
List of Acronyms	3
1. Introduction	4
2. Definitions of scaling	5
2.1. Technical scaling of web-platforms	5
2.2. Geographical scaling across countries and the EU	6
2.3. OSS-specific scaling and adaptation	7
2.4. Evaluation of results of scaling definitions	9
3. Modular layout of the UP-STAIRS platform	9
3.1. Modules of the Digital Platform	10
3.2. Users of the Digital Platform	14
4. How to drive scale of the UP-STAIRS OSS framework	14
4.1. Marketing driven scaling	15
4.2. Legal framework per EU country	19
4.3. Other potential collective activities across the EU that can make use of the UP-STAIRS DP	21
5. Anticipation of scaling- and replication-sizes	22
6. Technical & OSS specific requirements of Digital Platform adoption	25
7. Implementation efforts based on scaling-sizes and current layout of the DP	27
8. Implementation and final remarks	29

List of Acronyms

CEC- Citizen Energy Communities

DP- Digital Platform

EE-Energy Efficiency

EU- European Union

ICs- Implementation Champions

OSS- One-Stop-Shop

RE- Renewable Energies

REC- Renewable Energy Communities

SMEs- Small and Medium Enterprises

URL- Uniform Resource Locator

1. Introduction

The overarching aim of the UP-STAIRS project is to accelerate the creation of energy communities. To achieve that target, it has developed flexible and iterative business model frameworks for One-Stop-Shops for local collective actions. One-Stop-Shops (OSS) for energy communities have been set-up in 5 pilot regions in Austria, Bulgaria, Ireland and Spain.

To help facilitate the organization and coordination of collective action, the UP-STAIRS Digital Platform has been developed. It will help to bring citizens, municipalities, Small and medium enterprises (SMEs), Implementation Champions (ICs) and local and regional authorities together by addressing energy needs at the local and regional level.

One of the main objectives of the projects is to stimulate the replication of the developed OSS frameworks in other regions throughout the EU, amongst others based on the design and delivery of the digital version of the UP-STAIRS Energy Service model framework and a collective energy community mobile application to put together people willing to do a specific collective action.

The UP-STAIRS digital platform addresses three main user groups:

- UP-STAIRS Authorities:
Regional or local authorities. The authority may be a city or county council, a department dedicated to energy communities or a regional or national energy agency. They will set up and administer the OSS, conduct training, and install and support the IC.
- UP-STAIRS Implementation Champions (IC):
The initiators and driving forces behind the collective action, which could be energy consultants or other energy experts trained to deliver the service. The IC could provide legal, technical and/or financial advice for collective action.
- End users (citizens, municipalities, possibly also SMEs):
Individuals, community groups or municipalities who want to learn more about collective action in the energy field, existing Citizen Energy Communities (CECs), Renewable Energy Communities (RECs) and/or Renewable Energy (RE) projects and/or Energy Efficiency (EE) measures. The specific end user profile depends on each pilot region.

This deliverable, D4.6, provides a scaling and replication strategy for the UP-STAIRS Digital Platform (DP). The strategy is not only based on technological considerations of the DP itself. The scaling and replication strategy for the UP-STAIRS DP is based on the existing modules of the platform, the different user groups of the platform, the notable application scenarios of the platform and possible scaling strategies through the support and usage of marketing activities, the existence of legal frameworks within the EU member states as well as the anticipation of average OSS sizes with regards to the platform technologies to be made available.

2. Definitions of scaling

The scaling strategy for the UP-STAIRS DP is not based, as mentioned before, on technical specifications and requirements, but also on the geographical and content-related characteristics of the OSS platforms to be replicated. For this reason, this section highlights the scaling requirements and how the existing results of the project and its project partners influence or support them.

2.1. Technical scaling of web-platforms

Replicating a website with similar functionalities multiple times requires careful planning and consideration. The following key points should be kept in mind before starting the replication and scaling of the UP-STAIRS DP:

- Planning and Architecture:
 - A detailed plan needs to be outlined holding the structure of the website, including the registration/login system, communication tools, document sharing, milestones-planning, etc.
 - Decision on the architecture that allows for easy replication. A modular approach needs to be considered to separate components that can be reused across instances of the DP.
- Database Design:
 - Design a robust database schema that supports multiple instances of the website. Ensure that the database structure is scalable and can handle increased data as more instances are created.
- Security Measures:
 - Implement strong security measures for user authentication and data privacy. Each instance of the website should have its own secure user accounts and data isolation to prevent cross-site issues.
- Scalability and Performance:
 - Consider scalability from the beginning. Optimize the website's performance to handle increased traffic and user interactions across multiple instances.
 - Use caching mechanisms, optimize code, and choose scalable hosting solutions to accommodate growth.
- Configuration and Customization:
 - Develop a configuration management system that allows for easy customization of each instance. This could involve settings for branding, specific features, and configurations unique to each instance.
- Testing and Quality Assurance:
 - Implement a thorough testing process to ensure that each replicated instance functions properly without any issues. Test for both functionality and security across different environments.
- Deployment and Management:
 - Automate deployment processes to streamline the creation of new instances. Consider using tools or scripts for easy replication.

- Implement a management system to monitor and maintain multiple instances efficiently. This might include updates, backups, and issue resolution.
- Legal and Compliance Considerations:
 - Ensure compliance with data protection regulations (such as GDPR) and any legal considerations regarding user data and privacy in each replicated instance.
- Documentation and Support:
 - Create comprehensive documentation detailing the setup, configuration, and maintenance procedures for each instance. Provide adequate support resources for users of each replicated website.
- Cost Estimation:
 - Estimate the costs involved in replicating and maintaining multiple instances. Consider expenses related to hosting, development, maintenance, and support.
- Version Control and Updates:
 - Implement version control to manage changes and updates across multiple instances effectively. Ensure a strategy for rolling out updates or new features uniformly across all replicated sites.

By considering these factors before starting the project, a robust framework can be created that facilitates the efficient replication of the UP-STAIRS DP while ensuring scalability, security, and ease of management for each instance.

Depending on scaling/replication size (see section 5), the related efforts and costs are dealt with.

2.2. Geographical scaling across countries and the EU

The concepts, tools and processes, developed as part of the UP-STAIRS project, were piloted in 5 pilot sites across 4 member states:

- ESV in Upper Austria
- Asenovgrad and Rhodope Region in Bulgaria
- Municipality of Barcelona in Spain
- Cork City Council in Ireland

The fact that the project has been financed by the EU a replication of the UP-STAIRS DP towards all member states of the European Union is possible. If the replication of the UP-STAIRS programme shall be solely based on the exact same contents - renewable energy communities and citizen energy communities as well as collective action in energy efficiency and renovation - the potential to scale the platform is of course also dependent from the current and future development of legislations supporting the setup of energy communities in each jurisdiction. The principal legal frameworks in the EU around energy communities are the Clean Energy for all Europeans Package, the 2030 climate & energy framework and the European Green Deal.

These European legislative frameworks have multiple sub-frameworks and have been, are or will be transposed into national legislation. Bavaria for example as a federal state in Germany has 121 local

subsidy programmes to support environmental activities:

<https://www.umweltpakt.bayern.de/werkzeuge/foerderfibel/programme/>.

Transposing European law into national legislation supports communities and citizens to use and adapt environmental activities and to facilitate their implementation.

The entire European Union with all member states can be considered as potential geographies for leveraging from the findings of this report and users of the scaling strategy for the UP-STAIRS DP.

2.3. OSS-specific scaling and adaptation

Before evaluating the technical and geographical scaling of the Digital Platform, the content of the topics raised by individual OSSs placed on the platform should also be defined. Here it helps to take a look at the development of the OSS modules during the UP-STAIRS project and the requirements deriving from that.

The general setup was to define a common and standardized baseline for the implementation of One-Stop-Shops (OSS) to support collective actions on sustainable energy and facilitate its replication across other European countries.

The Standardized Energy Service OSS Framework and related processes for collective actions in Sustainable Energy Communities and a flexible set of Business and Financial Models for collective actions has been studied and described to find the ideal solution for the UP-STAIRS OSSs. In addition, different profiles of end-users were studied in relation to the specific value proposition for them.

The main features of the framework have been:

- The geographical outreach of the service
- The profiles of targeted citizens
- The capabilities of the pilot local authorities
- The stakeholder-network to put the service in place
- The need of front offices or online platforms
- The creation of synergies with existing services
- The resources available within the delivery organisation
- The activities organised by the OSS

On top of that, 3 different phases for the deployment of the UPSTAIRS OSS have been structured:

1. PRE-SERVICE PHASE

- To prepare and adapt the OSS business model to the regional or local context, in specific it defines the scope of end-users targeted and the services to be provided by the OSS.

- To define resources like the budgets, infrastructure needs, and other services provided by third parties.
- To define staff capacities based on the services to be provided to the citizens and their training needs.
- To promote the OSS service (for this step in the Pre-Service Phase, the existence and rough scope of the Digital Platform already needs to be considered and e.g. the URL known).

2. SERVICE PHASE

To offer the different types of services to end-users, including:

- Organizational advice and support (support materials and advice to set up a legal entity to carry out the collective).
- Support/intermediation for putting non-organized citizens in contact.
- Aggregation of similar individual projects.
- Interlocution with providers for negotiating collective prices/tariffs.
- Legal advice and support.
- Financial advice and support.
- Information and technical advice.

To date, not all fields of services are included into the Digital Platform, whether as content in the pre-registration part of the DP or as service or tool in the post-registration part of the DP.

3. POST-SERVICE PHASE

Even after collective actions have been put in place, OSS services can be offered, like:

- Technical maintenance of the installations.
- Mediation or arbitration.
- Certification of energy savings.
- Others.

Some parts of these post-service phase activities could be supported by the existence of the DP, namely ongoing communication amongst different involved parties and the storage and exchange of documents. To develop a strategy for rolling out/scaling the DP, also the potential duration of operation needs to be considered.

To continue with post-service phase related tasks, the following topics have been considered:

- Ongoing qualification and continuous training/upskilling of advisory staff.
- Promotion of the offered services/OSS.
- Control and monitoring of quality of results.

- Supporting the end-user journey, specifically engaging end-users from start to end of the UP-STAIRS scope.

All of these activities could also be included in the ongoing operation of the UP-STAIRS DP.

2.4. Evaluation of results of scaling definitions

In the context of the UP-STAIRS project, little or no consideration was given to technical and geographical issues in the planning; as described in section 2.3, the focus was on the development of the UP-STAIRS service framework. The design of the 5 pilot OSSs in the 4 countries has shown that the interpretation of the UP-STAIRS Service Model framework on the one hand and the local or regional requirements and priorities on the other hand led to OSSs with different service focuses serving different target groups. This means that the requirements for the DP are also very different. During the UPSTAIRS project phase, the content differentiation was largely covered by the description of the services offered in the so-called pre-registration area. This must be pointed out accordingly in the scaling strategy and the content area must be expanded or changed based on new page templates.

3. Modular layout of the UP-STAIRS platform

The UP-STAIRS DP, consisting of a web-based application and a mobile application, was setup to support user groups in the 4 pilot regions to collectively engage in Energy Efficiency and Energy Conservation measures or setting up Citizen Energy Communities (CEC) or Renewable Energy Communities (RECs). Therefore, the platform shall provide different kinds of information as well as services. These two major parts were planned to be delivered in modules, which will be described in the next section.

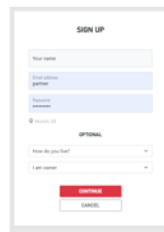
From a high-level view, the entire UP-STAIRS DP can be divided in two main parts – the pre-Registration and the post-registration part. In between these two parts, there is a sign-up process to register end-users of the DP based on their E-Mail address and additional information relevant to the services offered by the respective OSS:

The digital platform is structured in two parts: The **Pre-registration** and **Post-registration** part



Pre-Registration part

General information about OSS and services offered



Sign Up



Post-Registration part

Project based communication- & collaboration-tools and additional content & services

3.1. Modules of the Digital Platform

The modules of the Digital platform can be best described when looking at the use cases they deliver. The following list gives an overview of the use cases targeted for the Digital Platform and will describe how users perform core tasks on the digital platform. Use cases outline, from a user's point of view, a system's behaviour as it responds to a request.

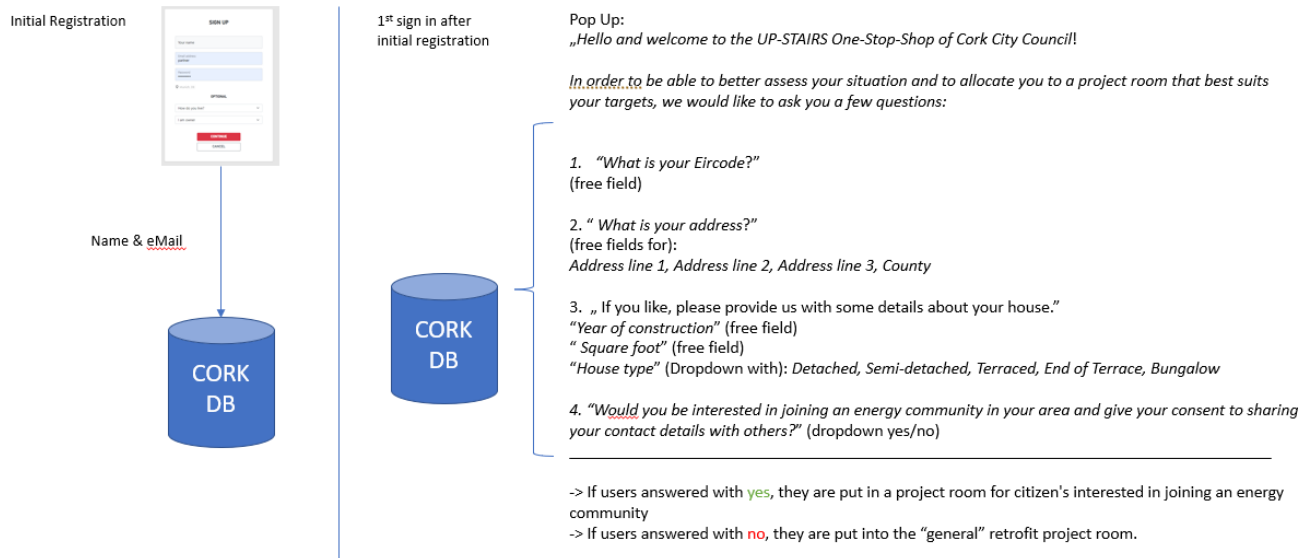
Use Case	Features / Content (depending on the focus of each OSS)
As a citizen I can retrieve general information on collective EE/ RE / retrofitting projects in my region	• Information on the benefits of sustainable energy measures • Information on CECs and RECs tailored to the public • Information on EE measures tailored to the public • Information on RE technologies tailored to the public • Information on access to financial resources • Information on EE / RE regulation and legislation and their updates
As a citizen I can learn how the UP-STAIRS OSS functions	• Information on how the UP-STAIRS OSS functions • Information on the benefits of a collective action / CEC or REC-project / retrofitting
As a citizen I want to know how I can be part of or support collective action in my community	• Information on how to register, self-classify and participate in collective actions in the community
As a citizen I want to register myself on the UP-STAIRS platform	• Possibility to register on platform GDPR compliant or fill in a contact form

As energy expert I want to register on the UP-STAIRS platform	• Possibility to register on platform GDPR compliant or fill in a contact form
As a citizen I want to be matched to others based on my preferences of EE-,RE- or other measures in forming an energy community	• Possibility to pick topics of interest (for CEC or REC collective action) • Possibility to join a topic-specific project • Possibility to create a topic-specific project
As UP-STAIRS authority or IC I want to ensure quality of content and conversation on the platform	• Possibility to publish projects • Possibility to create and delete topic-specific projects • Possibility to moderate the conversation in projects • Possibility to merge projects of the same topic
As energy community-project member or IC I want to retrieve detailed information on my EE/ RE project.	• Information on measures around RE technologies, EE, heating, etc.
As an energy community project member and IC I want to know how to plan the structure and set-up of my local community project	• Information on working with business and financial models • Very general information on how to create an implementation plan
As energy community-project member and IC I want to see a roadmap / progress status of my project(s)	• Identification of key delivery areas and displaying them on a chart/roadmap • Possibility to edit areas of the roadmap
As UP-STAIRS authority I want to pre-define mechanisms/ project types	• Decision making support regarding technologies • Decision making support regarding financing schemes
As a energy community-member I want to know which benefits I can retrieve in/with the project	• Benefits based on the budget I have available for retrofitting
As IC I want to be supported in setting up a new energy community/project	• Information on how to promote and engage prosumers • Information on how to mitigate any issues that might come up within the energy community (regarding contractors, suppliers, policy, etc.)
As IC I have access to an app containing information on EE and RE	• Information on energy communities tailored to experts • Information on EE measures tailored to experts • Information on RE technologies to experts
As energy community-project-member I want to get into contact with a local IC / the OSS office	• Matching to IC based on project specifics and / or region • Possibility to chat with IC • Possibility to chat with other energy community-members • Possibility to chat to all members of a given energy community-project, including the IC

As energy community project member or IC I want to connect to other IC's, non-organized individuals and/or energy community-project members to engage in collective actions	• Search database to filter according to different criteria (type of collective action, region, etc.)
As energy community-project member I want to interact within the community	• Mechanism to join a given / existing project • Online enquiry from energy community member to IC • Peer to peer advice
As energy community-project member I want to find all related information (documents etc.) for my project online	• Provide all elements (assessment results, technical, legal, financial) of a collective action in one place (project room databased)
As IC I want to upload documents related to the energy community projects for the members or other IC's	• Possibility to upload documents to a database (GDPR compliant)

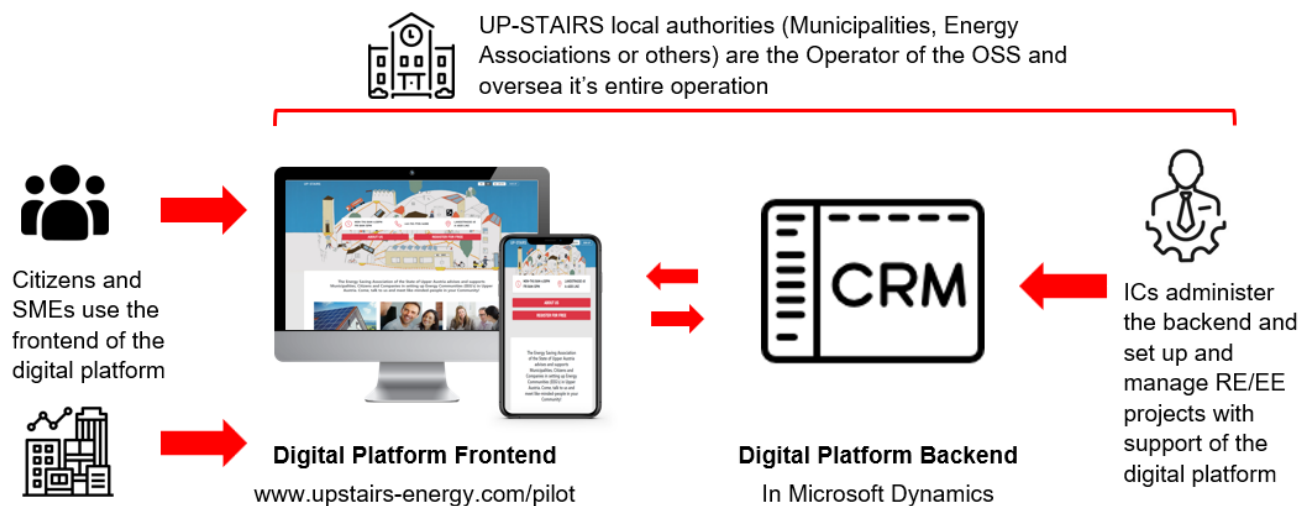
The Use Cases described above are realized (based on the specific services offered by the respective OSS) within the Pre- and Post-Registration areas, as described earlier. All contents / use cases can be accessed by the end-users and the ICs/ OSS authorities through the Website (under a specific URL) of the OSS. The Information stored in the Pre-Registration part is filed in content-templates, which have been set up individually at the beginning of the UP-STAIRS Digital Platform development and re-used for each OSS, based on their specific content needs.

Information gathered during the registration process like E-Mail-address, home addresses, specific information of the homes, interest in joining a CEC or REC is stored in Microsoft Dynamics. As an example of how and what is stored, the following overview can be used:



From the perspective of the users of the UP-STAIRS Digital Platform, a distinction can be made between the frontend and the backend functions. End users and small businesses using the frontend can access the general information about the OSS or after they have logged in with their E-Mail address, they can access the different tools and resources provided by the OSS.

The Implementation Champions and/or local authorities as operator of the OSSs can administer the backend through Microsoft Dynamics functionality and administer additional tools through the browser interface, based on their specific IC-login credentials.



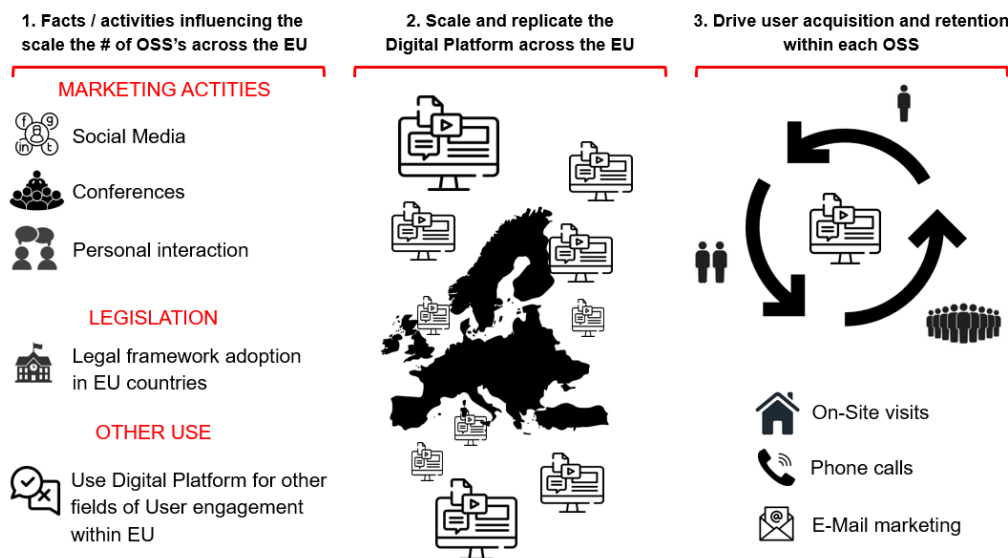
3.2. Users of the Digital Platform

The user groups targeted to use the digital platform can be separated into the following categories and sub-categories:

- **Citizens & Municipalities** can be individuals or community groups who want to learn more about collective action in the energy system, existing energy communities and/or RE projects and/or EE measures implemented. Once a citizen shows further interest and for example signs up on the platform, they can be allocated to the user group of energy community initiators (interested in setting up a new energy community in their region) and energy community members (interested in joining an existing energy community in their region).
- **SME** – In general, UP-STAIRS is not targeting SMEs. As they can, by local legislation in some of the participating countries (like e.g. Upper Austria), be part of RECs, we include them in this user group definition, but treat them, from the perspective of the Digital Platform, like citizens. Therefore, they can potentially be members in Energy Communities or other collective actions and take a comparable role as citizens, if they are e.g. owner of a building or energy production facility.
- **Implementation Champions (ICs)** could be for example employees or external experts of energy agencies or municipal organizations who operate the OSS. They can be also active citizens (groups), local organizations or a local SMEs, consultants or councillors. They support citizens in setting up a new energy community and connect citizens in the same region.
- **UP-STAIRS authorities** are regional or local authorities and act as the administrator of the UP-STAIRS service model framework.

4. How to drive scale of the UP-STAIRS OSS framework

In order to be able to estimate in which countries, regions, cities or communities the UP-STAIRS OSS framework will be used and thus a basis for the replication and scaling strategy is available, we have to consider which efforts are taken to drive adoption, which marketing- and communication channels are used and how effective these are. Later, once OSSs have been set up, the success of the OSS itself in the sense of end user acquisition and engagement determines which tools are being used and which efforts occur. The following graphic describes the dependency:



Also, an important fact for the platform's success regarding active participation of citizens, energy experts and authorities are well-planned communication and outreach approaches to ensure that target groups are aware of the platform. The platform must be easy to use and self-explanatory for end users, ICs, energy agencies and authorities. While the modular structure of the platform aims to fit all markets, the information included in the modules must be adapted to national, regional and local differences. As requirements and regulations often change, advice on the platform may not be fully exhaustive.

The following features will, in addition, support the adaptation of the platform:

- Supported languages: English, Spanish, Bulgarian
- Compliance with "FAIR" data principles as described in the DMP_IP report (findable, accessible, interoperable, reusable)
- Full GDPR compliance
- Responsive web and mobile application

4.1. Marketing driven scaling

The project UP-STAIRS was and is actively promoted by various active people within and outside the project through lectures, exhibitions, social media posts and direct interaction with people at country or regional level. Such marketing activities usually require low or no budgets, at most travel expenses. If we are thinking about replicating the UP-STAIRS platform and assuming that no separate budgets are available for marketing, the aforementioned activities social media, conferences and personal interaction must be used to ensure the results of the project as well as the existence of the DP are known. In addition, the outcomes of Deliverable D6.3 on dissemination and communication might be used to drive adoption. The are summarized in short here:

The UP-STAIRS dissemination strategy was set up to raise interest from different audiences by demonstrating the value added through its implementation. In summary:

- To raise awareness of the project across the EU, promoting future take-up of the one-stop-shop scheme in other countries and regions.
- To build capacity and support authorities from other regions in the implementation of one-stop-shops services to promote collective actions among consumers and the implementation of recommended energy-saving measures.
- To define follow-up activities to build on project results.
- To identify strategies and support mechanisms to implement the proposed follow-up activities and to ensure the sustainability of the pilots beyond the project life.

The following key target audiences have been identified:

Target Group	Potential benefits
Municipalities	Interest in climate protection, citizens involvement and collective action as well as being perceived as active in these fields
Private households/ citizens: Early adopters, other profiles of citizens	Participation in local initiatives. Interest in climate protection and interaction in their neighbourhood. Interest in cost savings and other benefits
Small and Mid-sized Enterprises (SMEs)	Interest in developing and offering solutions and new services. Interest in climate protection and in showing commitment to local projects
National, Local and Regional Energy Authorities	Showcase the viability and positive impacts of a community-level financial, business and social model. Contribution to energy and climate targets and the related regulatory framework. Interest in citizens involvement and collective action as well as being perceived as active
Implementation Champions (ICs): e.g. mayors, active citizens (groups), local organisation or a local SME	As initiators and driving forces behind collective action, their interests are climate protection, collective action, social innovation and economic benefits.
Stakeholders	Potential benefits
Municipalities and municipality associations	Interest in climate protection, citizens involvement and collective action as well as being perceived as active in these fields.
Authorities from other regions across the EU	To raise awareness, promote collective actions
Funding bodies on regional and national level	Showcase the viability and positive impacts of a community-level financial, business and social model. Contribution to energy and climate targets and the related regulatory framework. Interest in citizens involvement and collective action as well as being perceived as active in these fields.
Business network of energy transition companies	Interest in developing and offering solutions and new services. Interest in climate protection and in showing commitment to local projects.
Energy Companies (suppliers and installers) and Technology Providers, Energy Consultants	Interest in developing and offering solutions and new services. Interest in climate protection and in showing commitment to local projects.
Media	Interesting topic and content for their audiences
Universities, research organisations	Bridge the gap between academic research, industry technology providers and policy makers. Showcase how demonstrations create opportunities for early market uptake by collecting and analysing empirical data on the impacts of boosting collective actions for the energy transition.
European Energy Organisations	Provide interesting solutions to respective members and policy makers

The consortium partners put together a list of potential parties to be used to spread the word of the UP-STAIRS project, such as municipalities, municipality associations, national/regional energy authorities, energy associations, climate action offices, finance institutions and renewable energy technology providers, such as Energiewerkstatt Holding GmbH Austria, OÖ Energiesparverband Upper Austria, Association of Bulgarian Energy Agencies Bulgaria, Association of Rhodope Municipalities Bulgaria, Energy Cork Ireland, Climate Action Regional Office, Cork County Ireland, Codema - Dublin's Energy Agency Ireland, Smart MPower Ireland, Community Power Ireland, Gemeinde Brunnthal Landkreis München Germany, Development Finance Institution Latvia, Ministry of Energy Poland, Krakow Metropolis Association Poland, Santa Coloma de Cervelló Town Council Spain, Hospitalet City Council Spain, Ajuntament de Pallejà Spain, Town Hall of Cornellà de Llobregat Spain, Institut Català d'Energia (ICAEN) Spain, Som Mobilitat SCCL Spain, ECOOO Revolution Solar, S.L. Spain, Sant Just Desvern City Council Spain, Catalan Energy Efficiency Cluster Spain.

Likewise, several European and international projects and initiatives have been identified to search for synergies, such as JRC Science for Policy Report "One-stop-shops for energy renovations of buildings", RESCOOP, CO- POWER, SociSDGs Project, Citizenergy project, EPOV, ENGAGER, InnovaSUMP, ChangeMakers'ON, Solar 'power', PARENT, CITYnvest, Rhodoshop, Samso Energy Academy, Community Energy Wales, Ynni Lleol, DEG, MAPS, Socifaction program, Cultures of Cumminity Energy, Prometeo, Barcelona Energy Information Points, Sustainable Energy Communities of Ireland, among others.

Further activities, recommendations and materials to be used to drive adoption have been identified by D6.3, Section 4ff. and can be used.

Also, a brief summary of marketing activities to gain interest and adoption amongst the aforementioned groups and institutions will help support scaling and replication of the UP-STAIRS DP:

- Social Media Campaigns: Utilize platforms like Facebook, Twitter, Instagram, and LinkedIn to share information about community initiatives, events, and achievements. Engage with the audience by posting regular updates, success stories, and relevant content related to renewable energy projects or community events.
- Website and Blogs: Maintain an informative and user-friendly website dedicated to community projects. Share articles, blog posts, project updates, and resources related to renewable energy initiatives, making it a hub of information for interested citizens.
- Community Events and Workshops: Organize local events, workshops, seminars, or webinars focused on renewable energy, sustainability, and the benefits of participating in community-driven initiatives. Invite experts, showcase success stories, and involve citizens in interactive sessions to build interest and awareness.
- Partnerships and Collaborations: Collaborate with local businesses, schools, universities, and non-profit organizations to amplify the reach of community initiatives. Partnerships can include joint events, co-marketing efforts, or educational programs that benefit both parties and attract a broader audience.
- Newsletter and Email Campaigns: Create regular newsletters or email campaigns to update subscribers about ongoing projects, upcoming events, and opportunities for community

involvement. Personalize content to cater to different segments of the community, focusing on their interests and concerns.

- Public Relations (PR) Initiatives: Engage with local media outlets, newspapers, and radio stations to feature community projects, success stories, and upcoming events. Press releases and media coverage can significantly increase visibility and encourage citizen participation.
- Community Engagement Platforms: Implement online forums, discussion groups, or platforms specifically designed for community engagement. Encourage dialogue, share information, and solicit feedback from citizens regarding renewable energy projects, fostering a sense of involvement and ownership.
- Educational Campaigns: Launch educational campaigns targeting schools, colleges, and educational institutions to raise awareness among students and educators. Offer educational materials, workshops, or interactive sessions to inform and inspire the younger generation about renewable energy and community initiatives.
- Testimonials and Case Studies: Share testimonials from community members who have actively participated in renewable energy projects. Highlight their experiences, benefits gained, and positive impacts to inspire others to join in.

Implementing a mix of these marketing activities tailored to the community's interests and needs can effectively raise awareness, foster engagement, and encourage active participation in renewable energy and community initiatives.

4.2. Legal framework per EU country

If looking into scaling the UP-STAIRS OSS framework within the current context – enabling and setting up RECs and CECs - it is important to take the current situation of the EU legislation in respect to RECs and CECs into account. The legal framework within the European Union (EU) regarding renewable energy communities (RECs) primarily revolves around the Renewable Energy Directive (RED II) and other associated directives. Regarding the implementation by the EU member states RED II allows flexibility to adopt and implement these provisions according to their specific contexts. Therefore, the legal framework for RECs differs among EU countries based on their national legislation and regulatory measures. As member states are required to report on the implementation of RED II and its provisions for renewable energy communities and since the legal framework in the EU can evolve over time with new directives, regulations, or amendments, it's advisable to get regular updates to the latest national laws within specific EU member states to adapt (marketing) activities to drive scale and adoption, as described in section 4.1.

Therefore, it is important to not only look into the legislation of the participating pilot countries (Spain, Austria, Ireland, Bulgaria), but also into other countries, in which legislation has been updated and might be favourable to setting up REC's and CEC's in the meanwhile. In the following an overview of the current situation of the participating and selected other countries is given. This update, as said in the previous paragraph, needs to be done on a regular basis.

Germany: Known for its advanced policies supporting RECs, Germany has comprehensive legislation enabling the formation and operation of energy cooperatives and communities. The Renewable Energy Sources Act (EEG) and related regulations facilitate community ownership, participation, and feed-in tariffs for renewable energy production. Nevertheless, the current tenant regulation within the EEG does not fully comply with the RED II directive and is therefore not usable in the sense of the UP-STAIRS project.

Spain: Spain has been working on frameworks to promote RECs, allowing for collective self-consumption and shared renewable energy projects. Legislation like Royal Decree 244/2019 supports the creation of these communities and outlines regulatory procedures for their operation. It completes the regulatory framework, driven by Royal Decree-Law 15/2018, which provides increased certainty and security to users. Users with surplus electricity can export it to the grid. Additionally, this decree opens the door to shared production facilities, with a radius limit of 500 m. Consumer / prosumer may join only one compensation scheme, e.g. surplus compensation scheme. In Spain, one of the factors supporting the implementation of local RES projects is the framework for Energy Consumption Cooperatives. These cooperatives are entities responsible for managing activities in the local energy environment. They can also implement integrated renewable energy projects. The existing cooperative framework suits the energy communities, due to their wide range of activities.

France: The French legal framework allows for energy communities to emerge through mechanisms like the Energy Code (Code de l'énergie) and support schemes for collective self-consumption. These communities benefit from feed-in tariffs and support mechanisms.

Italy: Italy has regulations supporting collective self-consumption and renewable energy sharing among communities. Legislative measures enable energy communities to sell excess energy and receive incentives under the Energy Community Code.

Netherlands: The Dutch legal framework allows for the formation of energy cooperatives and communities. Various regulations support local energy initiatives, enabling collective self-consumption and facilitating access to the grid for RECs.

Austria: Austria has established legal provisions for RECs through the Green Electricity Act (Ökostromgesetz) and other related legislation. These communities benefit from feed-in tariffs, incentives, and grid access support. Members of Renewables Energy Community can be (according to the legal framework): residents, municipalities and SMEs. There are specific actions foreseen to be performed by RECs. These are: production, storage, use and sale of energy obtained from renewable energy sources.

Sweden: Swedish legislation encourages local energy initiatives and allows for the establishment of energy cooperatives and communities. Various support mechanisms and incentives are in place to promote renewable energy projects at the community level.

Ireland: Ireland has been making strides in promoting renewable energy and community participation in energy projects. The country has been working on developing a legal framework to support RECs.

Ireland has introduced the Microgeneration Support Scheme, which aims to incentivize small-scale renewable energy generation, including by households and communities. This scheme supports the installation of solar panels, wind turbines, and other renewable energy technologies.

In addition, the Electricity Regulation Act of 1999 was amended in 2019 to include provisions for community participation in renewable energy projects. It allows for the development of Renewable Energy Communities and the sale of excess electricity to the grid.

Bulgaria: Bulgaria has also been working on creating a legal framework to encourage the establishment and operation of RECs. Bulgaria's Energy Act includes provisions for renewable energy communities, allowing for collective energy production and consumption. The legislation supports community-owned renewable energy projects and enables them to connect to the grid. Feed-in Tariffs and Support Schemes offer feed-in tariffs and support schemes for renewable energy generation. While not explicitly tailored for RECs, these schemes can benefit community-led renewable energy projects by providing financial incentives. Bulgaria has been considering further amendments and developments in its legal framework to better support and promote RECs. Efforts are ongoing to refine regulations, streamline administrative procedures, and create more favorable conditions for community-based renewable energy initiatives.

Other Member States: Several other EU countries, such as **Denmark, Portugal, Belgium, and Finland**, have also implemented legal frameworks to support RECs. These frameworks typically involve regulations for collective self-consumption, grid access, financial incentives, and support mechanisms tailored to encourage community-based renewable energy projects.

4.3. Other potential collective activities across the EU that can make use of the UP-STAIRS DP

As the DP of the UP-STAIRS project is built on content templates for the pre-registration part, which can hold any type of content/information and the communication and collaboration tools within the post-registration part are also re-usable for other kinds of similar projects, expanding the DP offerings to other usage scenarios involving local communities, regions or cities should be possible. Here are some activities and scenarios that could be included:

- Sustainable Transportation Initiatives: Create a section dedicated to promoting sustainable transportation solutions within communities. Offer information on electric vehicles, bike-sharing programs, carpooling initiatives, and public transportation options. Provide resources and guides for setting up community-driven transportation projects.
- Waste Management and Recycling Programs: Develop content and resources related to waste reduction, recycling practices, and community-driven waste management initiatives. Offer guides, tools, and case studies for establishing local recycling programs or waste reduction campaigns.

- Green Spaces and Urban Planning: Provide information and guidelines for creating and maintaining green spaces, parks, community gardens, and urban forestry initiatives. Include resources on sustainable urban planning and community engagement in beautification projects.
- Local Economic Development and Entrepreneurship: Provide resources and guidance for supporting local economic development, entrepreneurship, and small business initiatives within communities. Offer information on funding opportunities, business incubators, and community-driven economic projects.

Expanding the DP to cover these scenarios might involve creating additional sections, resources and tools tailored to each thematic area, but can certainly help giving such initiatives a start.

5. Anticipation of scaling- and replication-sizes

To define the requirements for scaling the UP-STAIRS DP, it must be determined first, which quantitative datapoints this report will refer to. Potential datapoints are:

1. the number of One-Stop-Shops (OSS) which might get set up,
2. the number of users an OSS might reach/acquire and
3. the number of the people with whom e-Mail communication might be established.

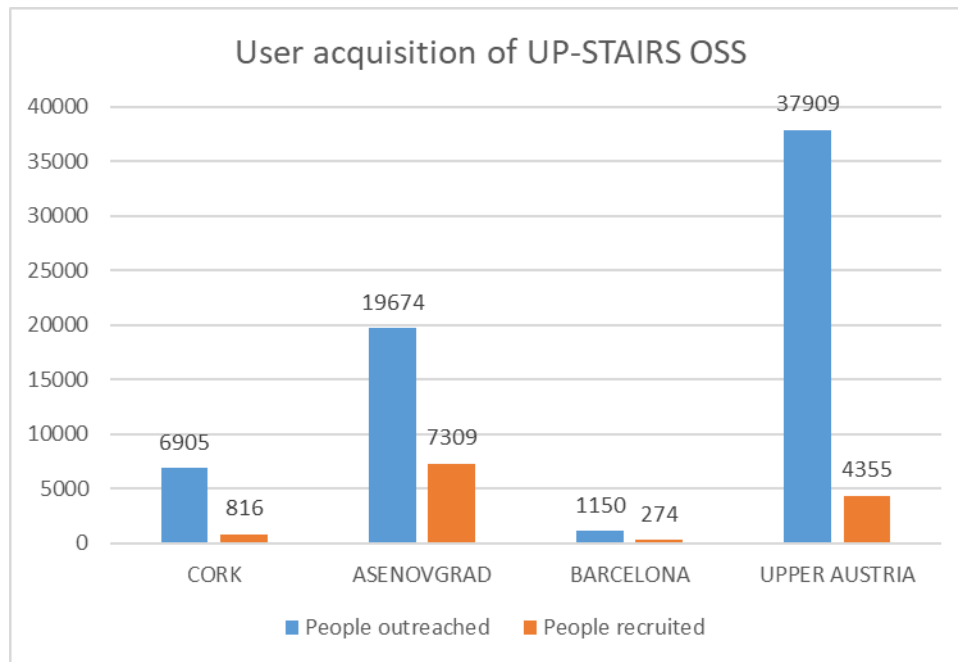
Of course, other parameters can be thought of, but to be able to make final assessments within the framework of this report, we will refer to these three parameters.

During the UP-STAIRS project, a monitoring program was created to collect information about reach and impact of the OSSs and to draw conclusions about the practical implementation of OSS models for collective action. Furthermore, other KPIs like qualitative and quantitative monitoring parameters, target stakeholders to be addressed, tools to be used and time-schedules to be monitored have been defined and collected. These are, in the context of this scaling and replication report, not observed further. Whereas the collected results have been used to evaluate the progress of the pilot OSSs operation and to measure the performance towards the promised KPIs, they will be used purely for evaluating scaling options and related efforts and costs within this report.

The KPIs gathered can be of course used from future OSS operators to measure and evaluate their success of operation, therefore they are listed here:

- People outreached
- People involved/recruited
- Energy savings (in MWh/year)
- PV energy produced (in MWh/year)
- Building area refurbished (in m²)
- PV energy installed (in MW)
- Associated investment (in Euro)

In terms of reach of end users, data relating to the first tranche of UP-STAIRS One-Stop-Shops in Bulgaria, Austria, Ireland and Spain are shown in the chart below. The 5th pilot Rhodope, which was added during the last year of the UP-STAIRS project, has not been considered, to ensure comparability.



All pilots showed great results, whereas the relation from people outreached to people recruited is varying very much. Due to the very different sizes of the pilots in the four participating countries, it is very difficult to make a general statement about the expected number of users per OSS. Obviously, this also counts for the overall number of OSSs to be setup.

In addition, the marketing activities and underlying legislation explained in the previous sections are influencing factors for the number and success of the respective projects. To be able to specify scaling strategies and the associated efforts and costs for the DP, the following scaling numbers are assumed for the following elaborations:

On-Boarding new One-Stop-Shops

of OSSs
1-20 Regions
21-200 Regions
200+ Regions

Number of Users

of Users
1-5.000 Active Users
5.001-50.000 Active Users
50.000+ Active Users

E-Mail Communication

of Users
1-1.000 Active Users
1.001-10.000 Active Users
10.001-100.000 Active Users
100.000+ Active Users

6. Technical & OSS specific requirements of Digital Platform adoption

Technical considerations

Depending on the size of OSS replications, it needs to be considered, if the replication will be done manually or as a self-service for interested regions, cities, communities.

Setting up the UP-STAIRS DP for replication and scaling as a self-service tool for cities, communities or regions can offer several advantages but also comes with its challenges. Here are some considerations:

Advantages:

- Scalability: A self-service tool allows for easy replication of the website across multiple instances, enabling scalability without requiring manual intervention for each instance.
- Operator empowerment: Operators can have more control and flexibility over their website setup, including content customization and configuration based on their specific needs and preferences.
- Time and Resource Efficiency: Automating the setup process through a self-service tool can save time and resources compared to manually replicating the content and configurations for each website instance.
- Consistency: By providing predefined templates or guidelines within the self-service tool, you can ensure a level of consistency across replicated websites while allowing for customization within set parameters.
- Ease of Management: A centralized dashboard or control panel for managing multiple website instances can streamline administration, updates, and maintenance tasks.

Challenges:

- Complexity of Development: Building a user-friendly self-service tool that accommodates various customization options while ensuring ease of use can be technically challenging and time-consuming.
- User Support and Training: Users might require guidance or support in using the self-service tool effectively. Providing adequate documentation, tutorials, or customer support channels is crucial for user adoption and satisfaction.
- Security and Quality Control: Ensuring security measures, quality control, and adherence to standards across multiple instances can be challenging. Implementing safeguards against vulnerabilities and maintaining quality standards is essential.
- Customization vs. Limitations: Balancing the flexibility of customization with predefined templates or options within the self-service tool is crucial. Too many limitations might restrict users, while too much freedom could lead to inconsistent or poorly configured instances.
- Upkeep and Maintenance: Regular updates, bug fixes, and improvements to the self-service tool require ongoing maintenance efforts to ensure functionality, security, and user satisfaction.

Ultimately, the decision to develop a self-service tool for replicating websites depends on factors such as the intended user base, scalability needs, resource availability, technical expertise, and the level of customization required for each website instance. Conducting thorough research, user testing, and considering user feedback during the development phase can significantly contribute to the success of such a tool.

OSS specific considerations

As mentioned before in section 3, the replication (contents, modules & functionality) of the DP which will be set up needs also to be planned according to the used service model framework.

The UP-STAIRS service model framework has been developed in the same structure:

- a. Organizational advice and support: Considering one of the UPSTAIRS OSS added values is the facilitation of collective actions, several services to support citizens in organizing around collective actions or energy communities can be provided.
- b. Legal advice and support: Legal aspects are usually one of the barriers encountered by citizens when trying to engage in a sustainable energy project. Each OSS needs to analyse if they have the internal capacities to provide this sort of advice or if they need to partner with an external agent. The scope can also vary a lot: General information, provision of standardized templates for legal documents, individual/group advice.
- c. Financial advice and support: Financial aspects are also a common barrier for pursuing sustainable energy projects. The OSS can provide a range of services depending on the available resources and capacities.
- d. Information and technical advice: On the technical side, the OSS can provide neutral information for the end-users to better decide on the type of project or the type of providers to contract.
- e. Arbitration and mediation: Considering the UPSTAIRS added value is focusing on collective actions, usually the mediation processes are important to ensure a successful implementation.

7. Implementation efforts based on scaling-sizes and current layout of the DP

The size of replication of the UP-STARIS DP will, as discussed in the previous sections, depend on many variables. According to the scaling-sizes mentioned in section 5, the following tables show the necessary activities which needs to be done based on the different scaling sizes as well as the related implementation efforts.

On-Boarding new One-Stop-Shops

# of OSS's	Type of efforts	Implementation effort/cost
1-20 Regions	Manual Onboarding of One-Stop-Shops	6-12h per added OSS*
21-200 Regions	- Self Service - Some regions might still need manual customization	10-20 days for the development of the self-service tool - Manual customization efforts need to be calculated separately
200+ Regions	Self Service with additional automation	10-20 days in addition to efforts '21-200 Regions'

* The assumed implementation effort is based on the assumption that all contents are available free of errors.

Number of Users

# of users	Type of efforts	Implementation effort/cost
1-50.00 Active Users	Current solution of Digital Platform is sufficient to handle up to 50.000 active users	none
5.001-50.000 Active Users	- Upgrade of Microsoft Azure instance to Premium - Further scaling on demand possible	~ €500 per month
50.000+ Active Users	- Dedicated administration - Cloud Flare subscription needed - Additional security layers needed	- Additional costs per month - Dedicated technical staff needed

E-Mail Communication

# of users	Type of efforts	Implementation effort/cost
1-1.000 Active Users	Current solution of Digital Platform is sufficient to handle up to 1.000 active users	None
1.010-10.000 Active Users	Upgrade to Microsoft Dynamics CRM	20-30 days for set up and adjustments ~ €800per month
10.001-100000 Active Users	Professionalize Newsletters and CRM Communication	~ €1.200 per month
100.000+ Active Users	Depending on operational mode, divers central activities can/ should be taken over by central management	- Dedicated marketing team - E-Mail marketing catalogue with pre-defined CRM activities

8. Implementation and final remarks

Based on the findings regarding the UP-STAIRS DP, here are some final recommendations for implementing the scaling and replication strategy:

1. Technical scaling

- Planning and Architecture: Design a robust and scalable architecture for the UP-STAIRS DP considering future growth.
- Database Design: Implement a database structure that accommodates replication needs and handles increased data volumes efficiently.
- Security Measures: Prioritize security protocols and encryption standards across replicated instances.
- Scalability and Performance: Focus on enhancing performance and scalability by utilizing load balancing, caching mechanisms, and efficient resource allocation.
- Configuration and Customization: Develop a flexible system allowing customization based on specific regional or local requirements.
- Testing and Quality Assurance: Rigorous testing of the replicated platforms for functionality, performance, and security.
- Deployment and Management: Implement automated deployment processes and efficient management tools for replicated instances.
- Legal and Compliance Considerations: Ensure compliance with various legal frameworks, especially regarding data privacy and local regulations.
- Documentation and Support: Create comprehensive documentation and support mechanisms for each replicated instance.
- Cost Estimation: Estimate the costs associated with replication, including infrastructure, development, and maintenance.
- Version Control and Updates: Establish version control mechanisms and a schedule for updates and maintenance.

2. Geographical Scaling Across Countries and the EU:

- Consider legislative frameworks supporting energy communities and renewable energy initiatives while replicating the platform across different regions.
- Ensure adaptability to different languages, compliance with data principles (FAIR principles, GDPR), and responsive design for diverse geographical locations.

3. OSS-Specific Scaling and Adaptation:

- Align the replication strategy with the UP-STAIRS service model framework, considering organizational, legal, financial, technical, and mediation aspects for collective actions.
- Plan for adaptability of OSS modules to suit different regional requirements and priorities.
- Focus on standardizing baseline services while allowing flexibility for customization based on local needs.

4. Marketing-Driven Scaling:

- Leverage marketing strategies used during the UP-STAIRS project, such as social media campaigns, website maintenance, community events, partnerships, newsletters, PR initiatives, and educational campaigns to drive adoption and replication.
- Utilize existing networks, partnerships, and identified target audiences to spread awareness and promote the UP-STAIRS project's success.

5. Technical and OSS-Specific Requirements of UP-STAIRS DP Adoption:

- Consider the possibility of developing a self-service replication tool for interested regions or communities to ease the replication process.
- Address technical challenges, user support needs, security, customization, and maintenance while implementing a self-service tool.
- Plan for OSS-specific services considering organizational advice, legal support, financial guidance, technical advice, and mediation.

6. Implementation Efforts Based on Scaling Sizes and Current Layout:

- Tailor implementation efforts based on scaling sizes defined in the report, considering the number of OSSs, users, and email communications expected.
- Create adaptable replication strategies that accommodate varying project sizes and regional differences.
- Allocate resources and efforts based on the scalability targets to ensure efficient implementation across different replication sizes.

These recommendations should be tailored further based on detailed assessments of current infrastructure, technology capabilities, resource availability, and specific regional requirements. The emphasis should be on flexibility, adaptability, and efficient management while ensuring compliance and user-centric design across replicated instances.