

## Danube GeoTour

Valorisation of geo-heritage for sustainable and innovative tourism development of Danube Geoparks

# A GAMIFICATION TOOL TO SUPPORT GEOPRODUCT CREATION

## Issue paper Output 4.2

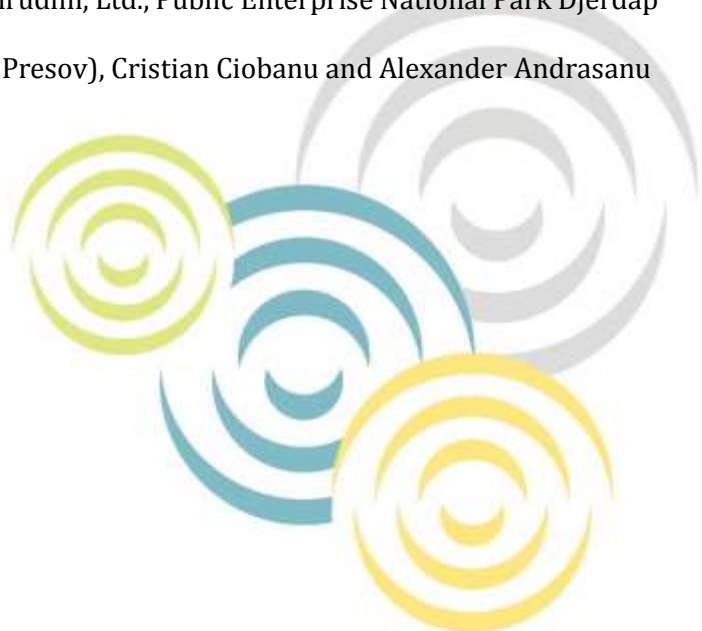
Programme: Interreg Danube Transnational Programme  
PA2: Environment and culture responsible Danube region  
Project Duration 01/2017 to 06/2019  
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Responsible Partner(s): University of Bucharest, University of Presov

Participating Partners: Idrija Heritage Centre, Balaton-felvidéki National Park Directorate, Styrian Eisenwurzen, Public Institution "Nature Park Papuk", ARGE Geopark Karavanks, Institute of the Republic of Slovenia for Nature Conservation, Bakony & Balaton Regional Tourism Nonprofit Ltd., Vodní Zdroje Chrudim, Ltd., Public Enterprise National Park Djerdap

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## 1 Introduction

One of the main goal of the GeoTour project is to support using of the exceptional wealth of Geopark natural resources and heritage through sustainable tourism development that avoids the negative environmental impacts. All the partners are devoting their time and energy to develop new innovative products which would lead to spreading the knowledge about the heritage and at the same time, educate people about its need to be protected.

Our common strategy for sustainable management of tourism pressures was the base for creating innovative geoproducts. We believe that new products and services and interactive way of their presentation will increase local inhabitants' engagement, Geopark management capacities and lower the quality gap between Danube and other EU Geoparks.

And especially with the aim to engage local inhabitants, visitors and managers of GeoParks, as well as business sector, to participate in the new GeoProduct development, we have decided to plan under the implementation of the GeoTour project, GeoApp based on the gamification tool, enable users to explore the area of Geoparks and get to knowledge about the unique heritage there as well as to motivate them to create new interesting GeoProducts which would help to present and preserve the heritage.

## 2 Background

The idea of the GeoApp comes from the fact, that companies in the areas of GeoParks are interested in development of products which would be based on the local heritage and can help to support regional development and competitiveness. Such an innovative form of cooperation via products can be also very attractive for tourists who often would like to buy local products and also can bring interesting ideas for new products and services.

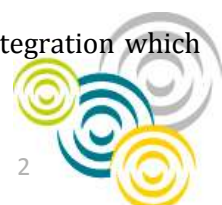
At the beginning of the process we started the discussion focusing on the identification of the best form of cooperation and features which shall be included in the online tool. We have created initial content design and definition of hierarchy/steps/levels and the scope of involvement of different target groups by stages of the innovation process.

The processes were discussed and proposed according to the requirements of all GeoParks, those who have already been cooperating with local companies and also those who would like to start such a form of cooperation. University of Bucharest was coordinating, outlining the concept of the gamification tool and co-developing the application in support of the University of Presov, Geoparks Karavanke, Iron Mountain Geopark and LP IHC, while all other partners were actively discussing and reviewing the proposed processes.

## 3 Technical information

The application is based on the language PHP (version 7.0) and framework Laravel (version 5.4). Data are saved in two databases – relational database PostgreSQL (version 9) and documented database MongoDB (version 3). Fronted was developed via Less - CSS pre-processor and React - Single Page Application.

The development was performed according to the technique of Continuous Integration which enable to gradually add features.



The application is ready for future development regarding features and language versions.

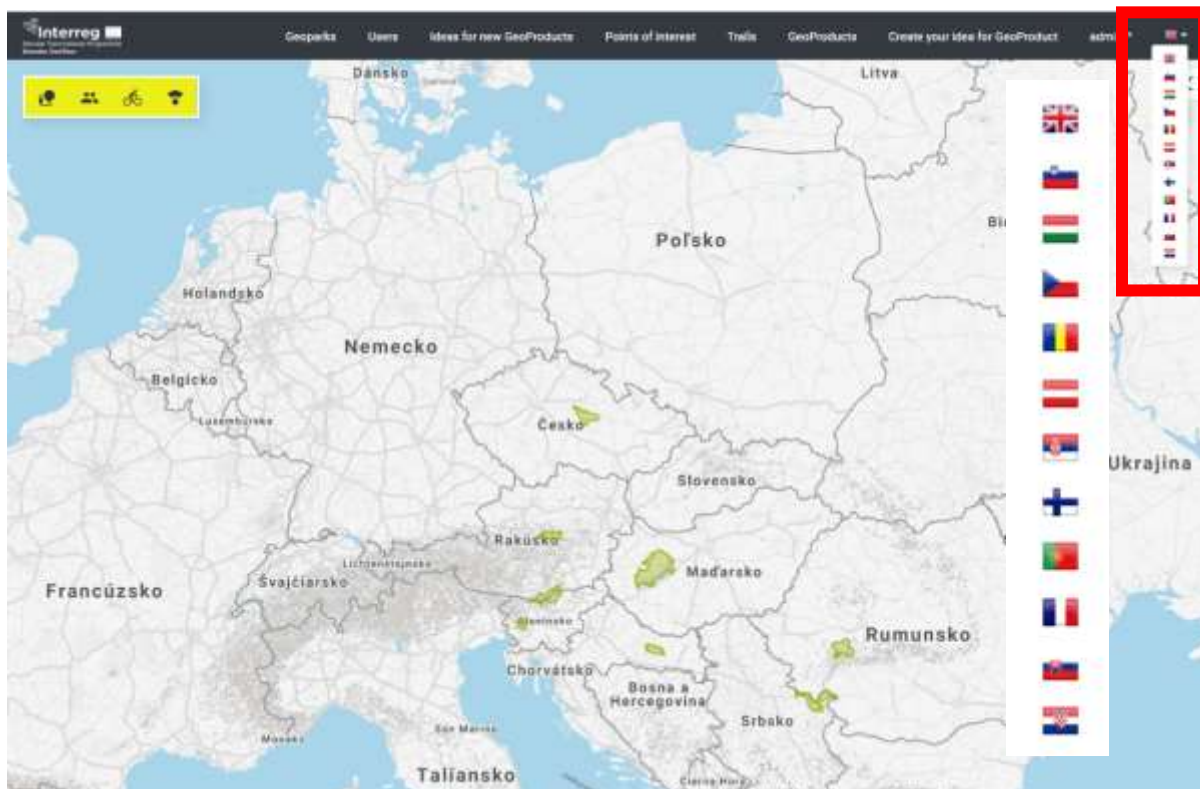
## 4 Application features

In the following sections you can find guideline for the application which is available at the link:  
<http://geo.slavokozar.sk/>

### 4.1 Language versions

With the aim to provide the appropriate access to visitors who don't speak English, the whole GeoApp is designed to work in the English as well as in the national languages of the participatory countries. As the default language was chosen English but you can simply change that by clicking on the icon in the right upper corner.

The language of the app is set automatically according to the place where you actually are. So e.g. if you are in the Slovak republic, the system will provide you map in the Slovak language.



## 4.2 User management

In order to provide user-friendly and understandable application, you can choose of the four roles:

1. Tourist
2. Manager of GeoPark
3. Business user
4. Supervisor - admin

As the range of functionality is pretty wide but particular group of users need just some of them, for the group 2-4, there is needed to login into app, while this step leads to selection of the visible features and permission for the user.

### **Tourist**

- Registration: Not needed
- Login: Login is not needed
- Geopark: they can see all geoparks on the map and read basic information
- Points of interest: they can see all points of interest and provide their feedback and comments.
- Trails: they can see all trails and provide their feedback and comments.
- Geoproducts: they can see all geoproducts and provide their feedback and comments.
- Create your idea for GeoProduct: they can try to create and test their idea for geoproduct.
- Ideas for new GeoProducts: they can see and rate ideas for new GeoProducts

### **Manager of GeoPark**

- Registration: Needed – can be done by admin
- Login: Needed
- Geopark: they can edit information about geopark
- Points of interest: they can edit information about points of interest
- Trails: they can edit information about trails
- Geoproducts: they can edit information about geoproducts.
- Create your idea for GeoProduct: they can try to create and test their idea for geoproduct.
- Ideas for new GeoProducts: they can see and rate ideas for new GeoProducts

### **Business**

- Registration: Needed – can be done by Manager of the GeoPark
- Login: Needed
- Geopark: they can see all geoparks on the map and read basic information
- Points of interest: they can see all points of interest and provide their feedback and comments.
- Trails: they can see all trails and provide their feedback and comments.
- Geoproducts: they can see all geoproducts and provide their feedback and comments.
- Create your idea for GeoProduct: they can try to create and test their idea for geoproduct.
- Ideas for new GeoProducts: they can see and rate ideas for new GeoProducts

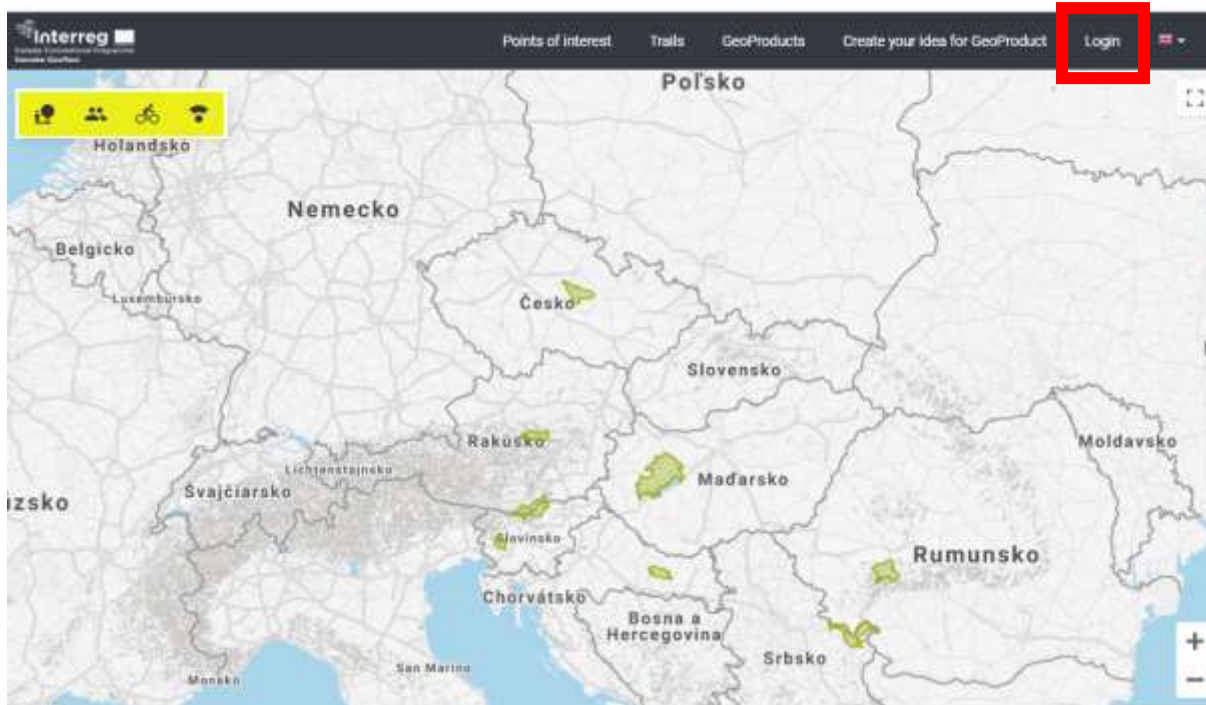


### Supervisor - admin

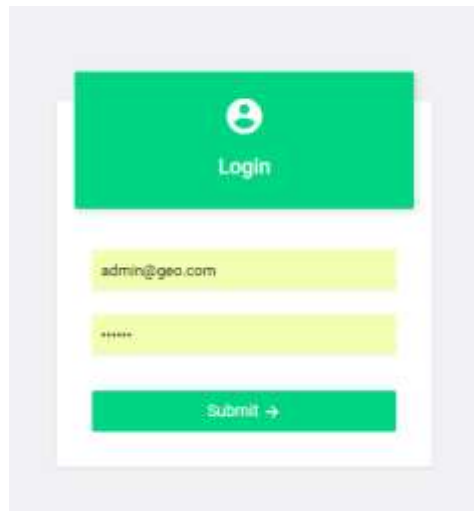
- Registration: there is only one account for the admin
- Login: Needed
- Geopark: they can edit information about geopark
- Points of interest: they can edit information about points of interest
- Trails: they can edit information about trails
- Geoproducts: they can edit information about geoproducts.
- Create your idea for GeoProduct: they can try to create and test their idea for geoproduct.
- Ideas for new GeoProducts: they can see and rate ideas for new GeoProducts

#### 4.2.1 Login

In order to login into app, please click on the button “Login” in the main menu.



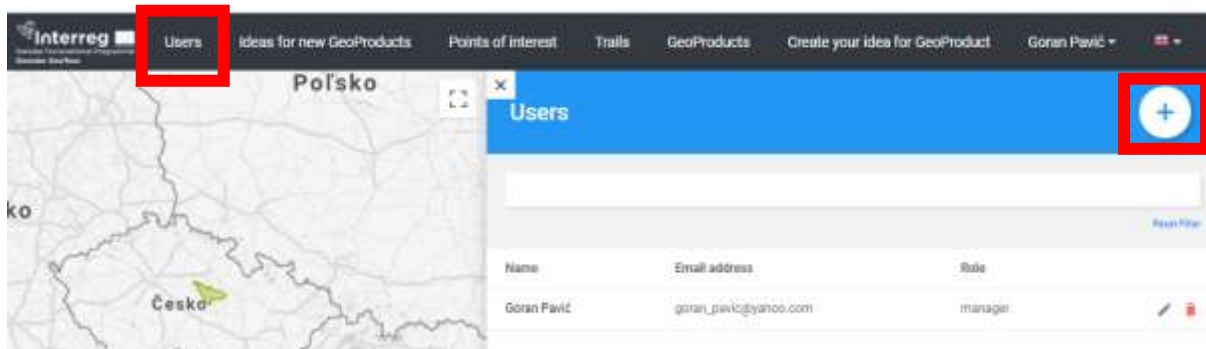
Once, you fill you name (email) and password, click on the “Submit” button to login.



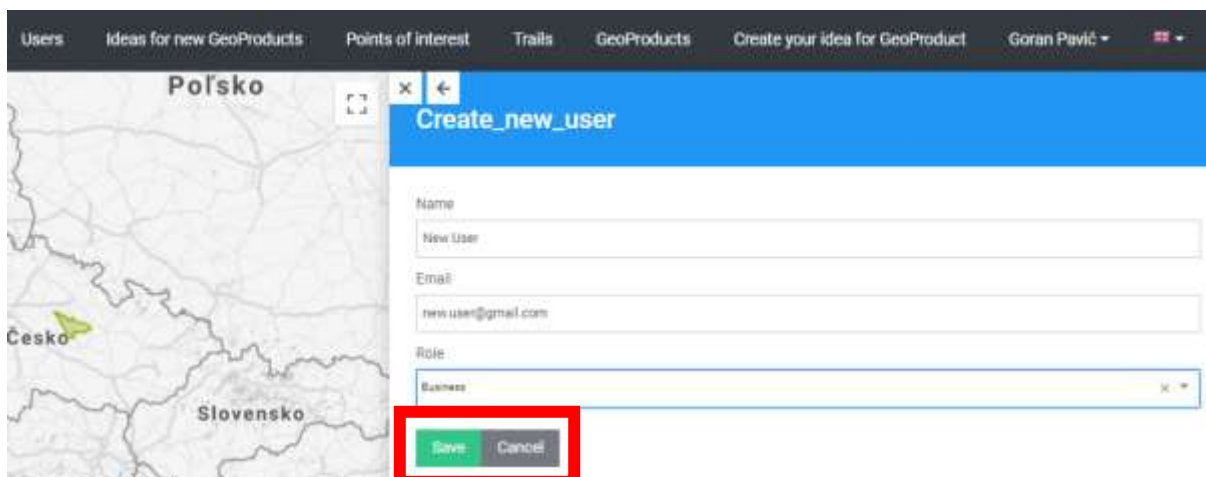
#### 4.2.2 Registration – add new user

According to the identified processes, new users cannot register by themselves. The only way of creating new user is by adding them as manager of GeoPark.

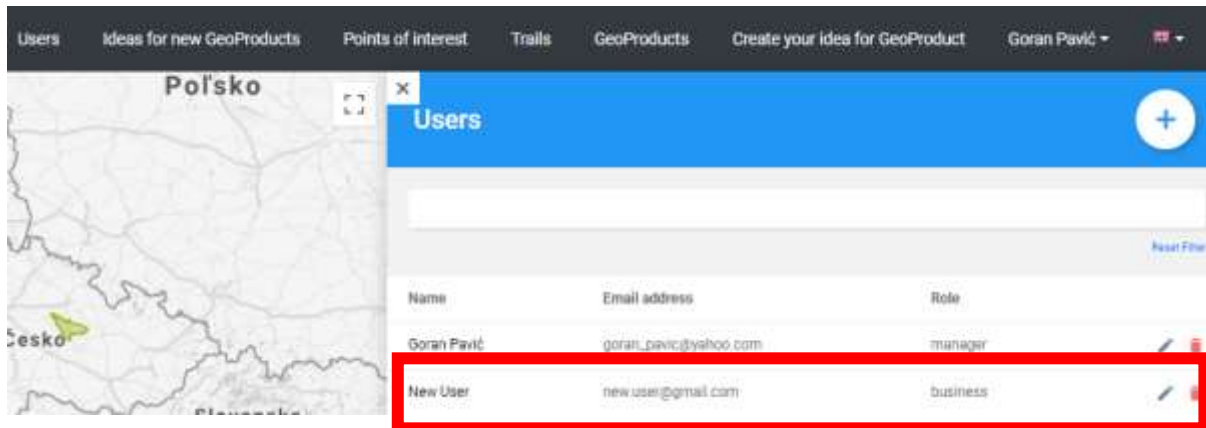
In case, you are in the role of GeoPark manager and you would like to add new user, as first, you need to login. Then, click on the section “Users” in the menu and then lick to + button.



As the next step, fill the form and click on the button “Save”. The basic required information are the name of the user, email and role, which can be defined as GeoPark manager or Business.

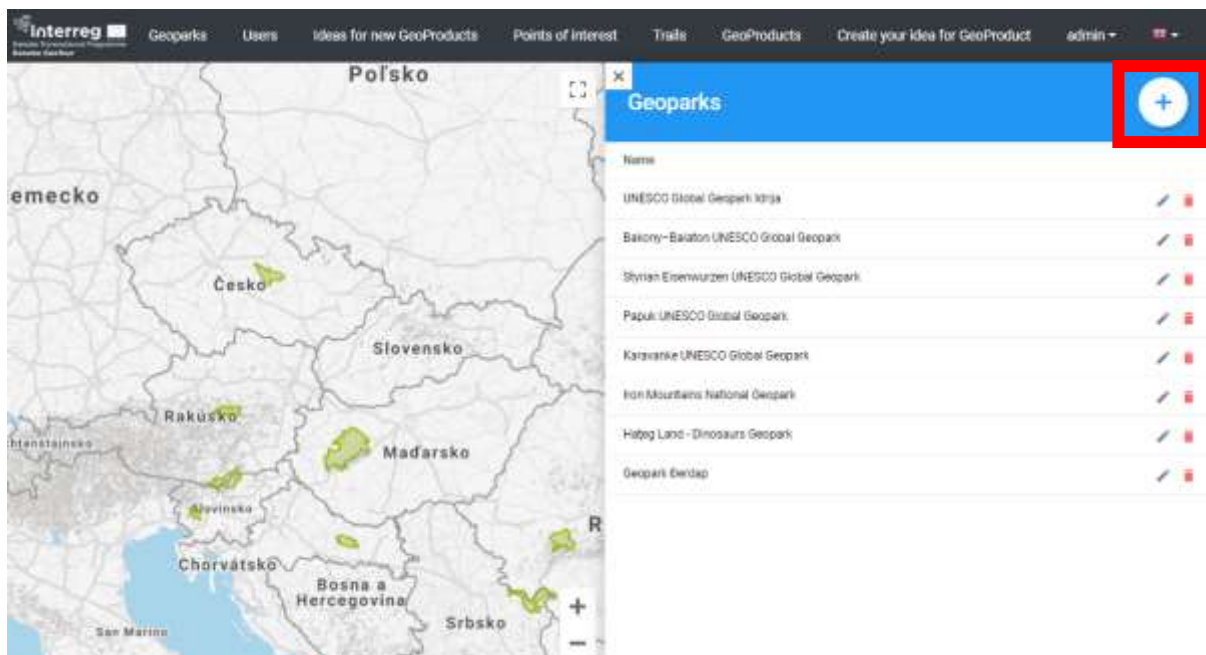


And as the next step you will see the next user in the list of users.



### 4.3 Geoparks

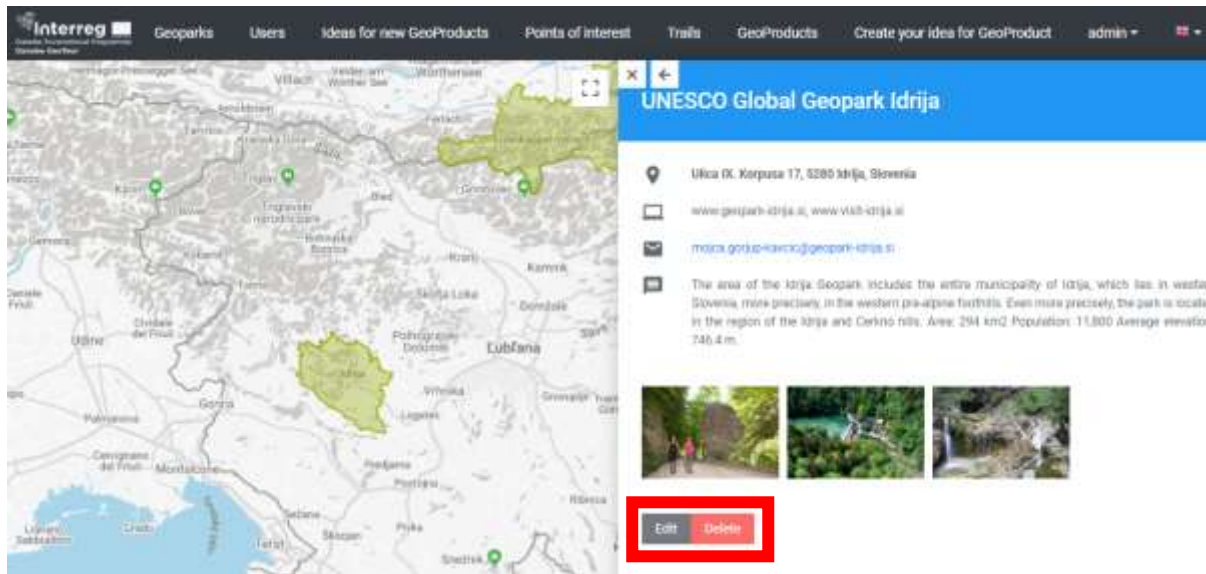
The app provides the easy-to-read map of Geoparks in PP’s countries and basic information about them. The user can simply go through the map and explore the particular GeoPark in their area.



By clicking on the Geopark on the map, the app will show you basic information. The intention of this section is not fully present the Geopark but just to provide short information including contact person and website where can be found more complex description.

Today, there are described Geoparks from the project consortium, but GeoApp can be easily broaden with the aim to promote also additional Geoparks.





As the manager of the Geopark, you can edit the information – just click on the button “Edit”. In this section, you can provide basic information about Geopark, as e.g. address, website, contact information, description about interesting places and photos.



## UNESCO Global Geopark Idrija

Local language	Slovenian ▼
Name	UNESCO Global Geopark Idrija
Name in local language	Center za idrijsko dediščino, Idrija
Address	Ulica IX. Korpusa 17, 5280 Idrija, Slovenia
Web page	www.geopark-idrija.si, www.visit-idrija.si
Email address	mojca.gorjup-kavcic@geopark-idrija.si
Geo shape file (KMZ format)	<input type="button" value="Vybrať súbor"/> Nie je vybratý žiadny súbor

### Description

**B** / U / {} Normal ▼ [List icons] [Undo] [Redo]

The area of the Idrija Geopark includes the entire municipality of Idrija, which lies in western Slovenia, more precisely, in the western pre-alpine foothills. Even more precisely, the park is located in the region of the Idrija and Cerkno hills. Area: 294 km<sup>2</sup> Population: 11,800 Average elevation: 746.4 m.

### Description in local language

**B** / U / {} Normal ▼ [List icons] [Undo] [Redo]

Območje Geoparka Idrija zavzema celotno občino Idrija, ki leži v zahodni Sloveniji, natančneje v Zahodnem predalpskem hribovju. Še natančneje ga lahko umestimo v območje Idrijsko-Cerkljanskega hribovja. Velikost: 294 km<sup>2</sup> Število prebivalstva: 11.800 Povprečna nadmorska višina: 746,4 m

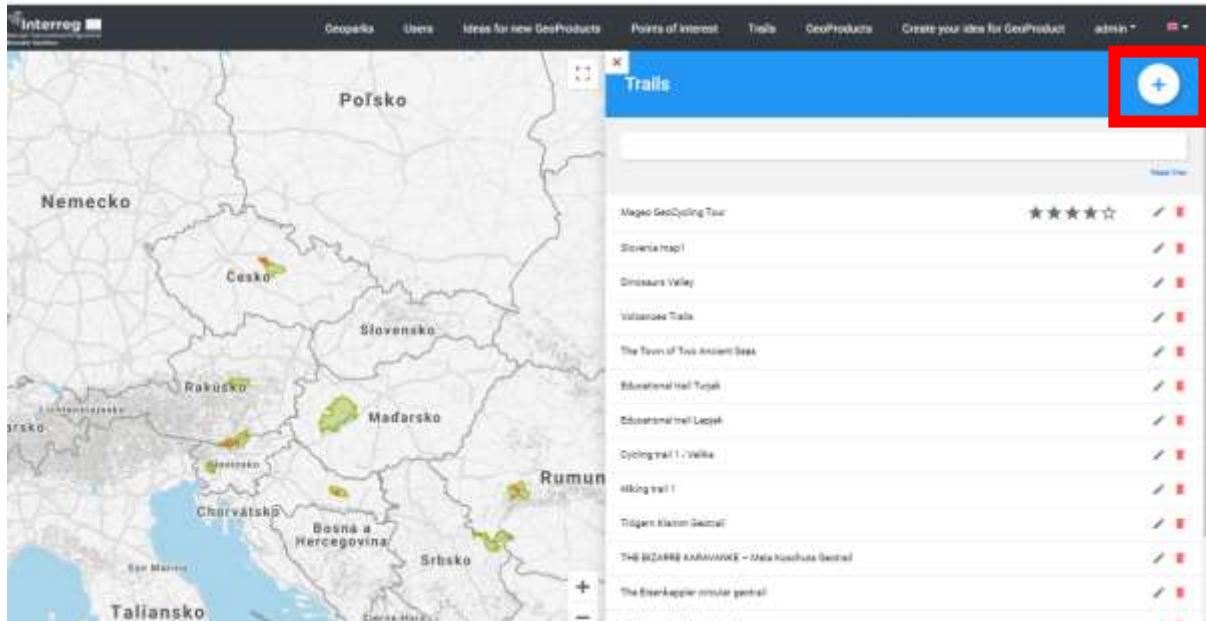
### Gallery

Drag & Drop your files or [Browse](#)

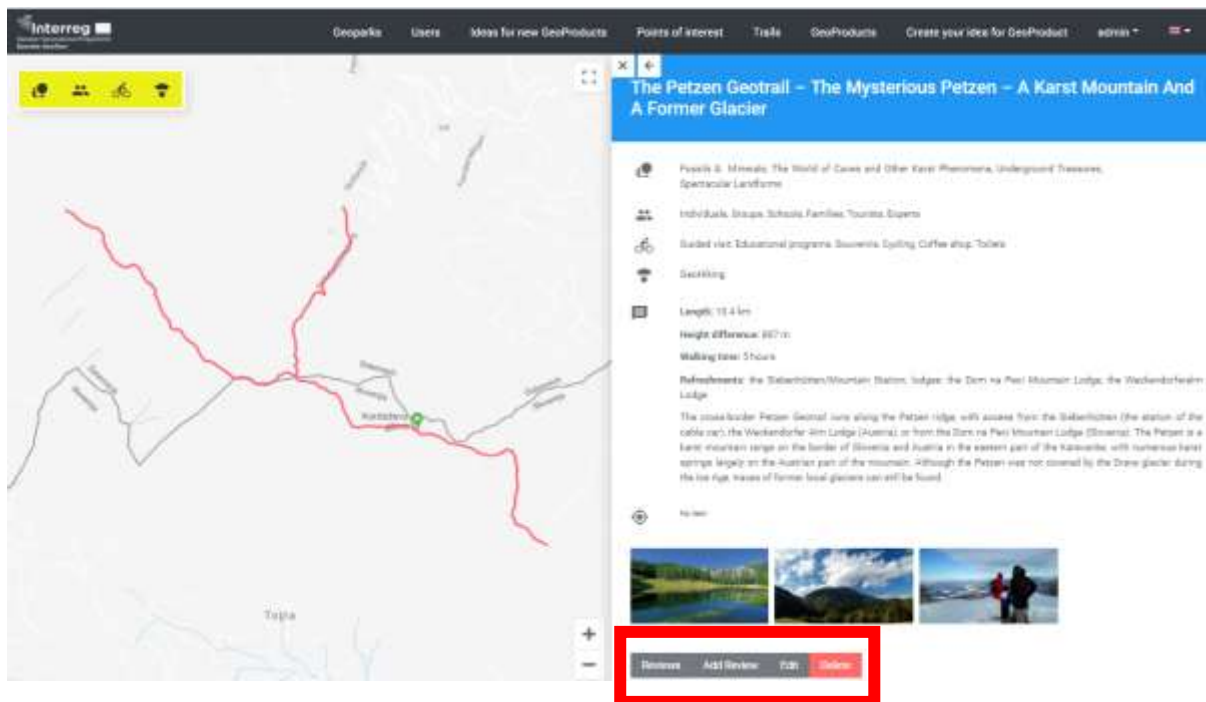


## 4.4 Trails

By clicking on the “Trails” in the main menu, you will enter the database of trails in the Geoparks. This list includes mainly trails, which are linked to the GeoHeritage, bringing visitors to the beautiful, exceptional interesting places. Each trail is precisely showed on the map according to the Geo shape file (KMZ).

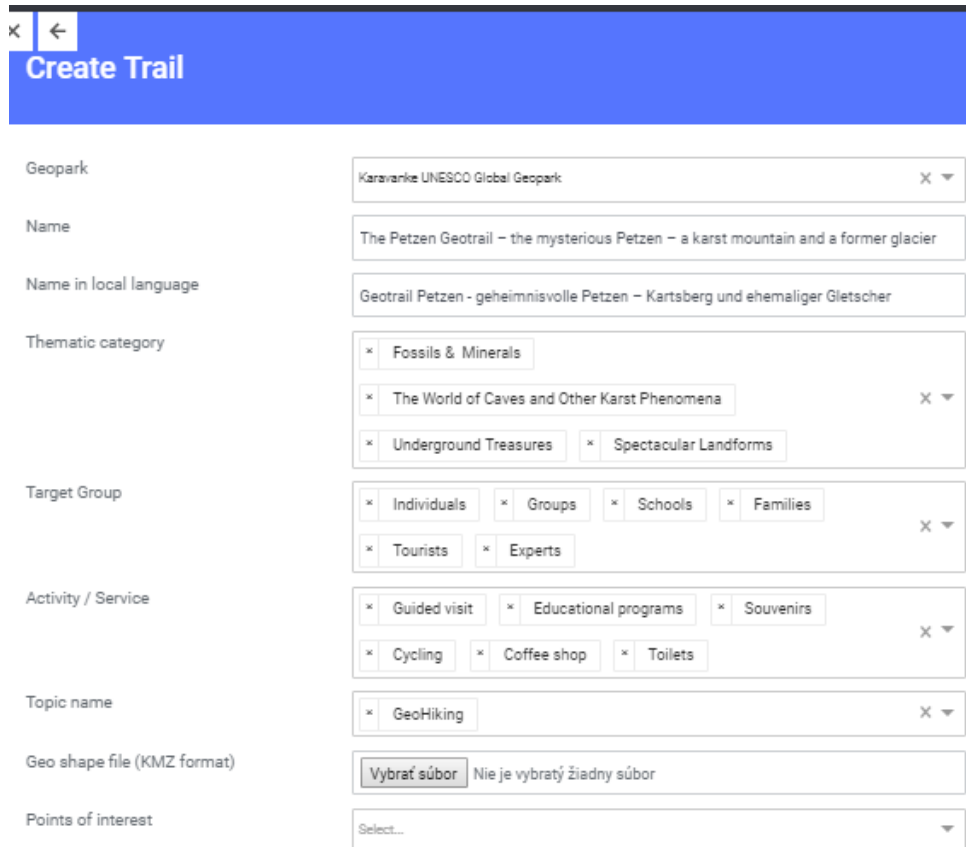


These trails are defined by the Geopark managers, who can add them by clicking on the + button while as common feature, they can also edit and in case of need, delete particular trail.



The trail can be described by basic information, as e.g. name of the trail, the Geopark within which it is situated...Each trail can be also described by the following thematic standardized values of:

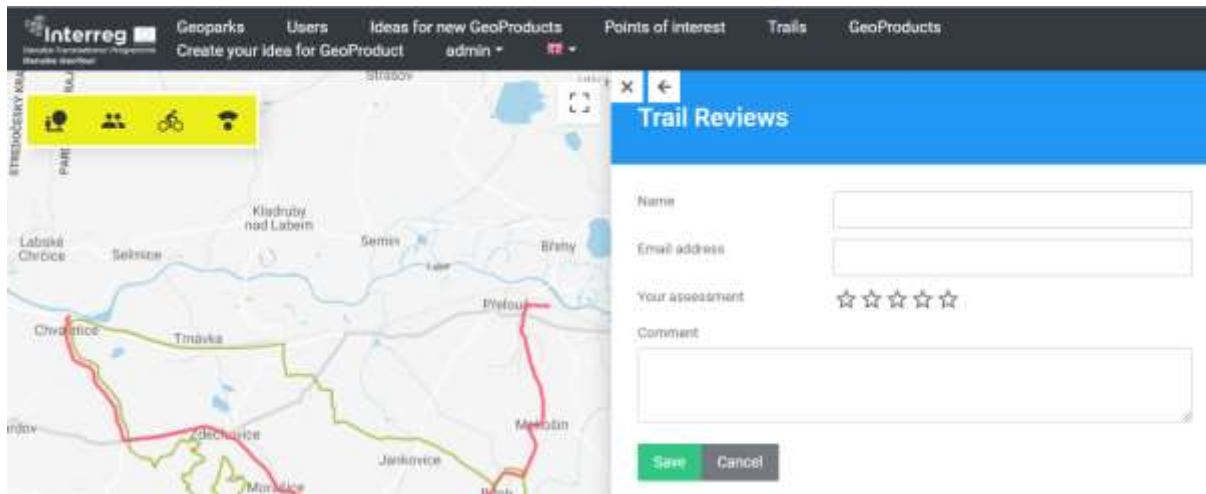
- Thematic category,
- Target group,
- Activity/Service,
- Topic name.



The screenshot shows a web form titled "Create Trail" with the following fields and content:

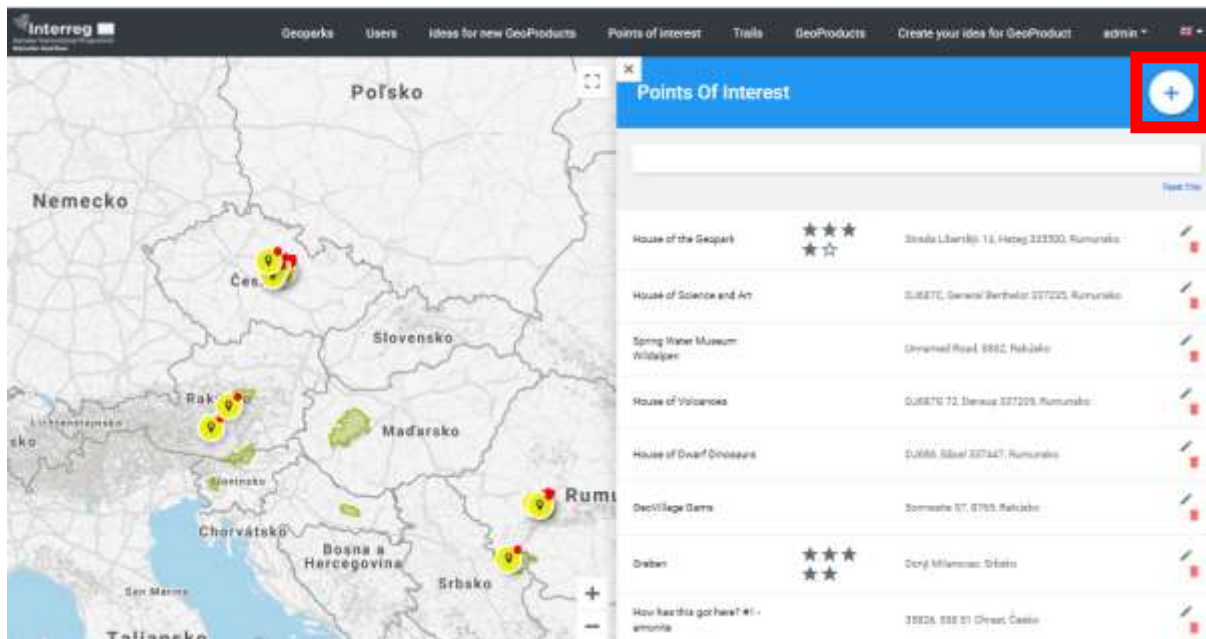
- Geopark:** Karavanke UNESCO Global Geopark
- Name:** The Petzen Geotrail – the mysterious Petzen – a karst mountain and a former glacier
- Name in local language:** Geotrail Petzen - geheimnisvolle Petzen – Kartsberg und ehemaliger Gletscher
- Thematic category:** Fossils & Minerals, The World of Caves and Other Karst Phenomena, Underground Treasures, Spectacular Landforms
- Target Group:** Individuals, Groups, Schools, Families, Tourists, Experts
- Activity / Service:** Guided visit, Educational programs, Souvenirs, Cycling, Coffee shop, Toilets
- Topic name:** GeoHiking
- Geo shape file (KMZ format):** Vybrať súbor (Nie je vybratý žiadny súbor)
- Points of interest:** Select...

For visitors who would like to share their opinion about the concrete trail, there is also possibility to create review. To prevent misleading anonymous reviews, there is still requirement to define email address as identification of the user. Moreover, in case of need, the managers of the Geoparks can also delete the review.

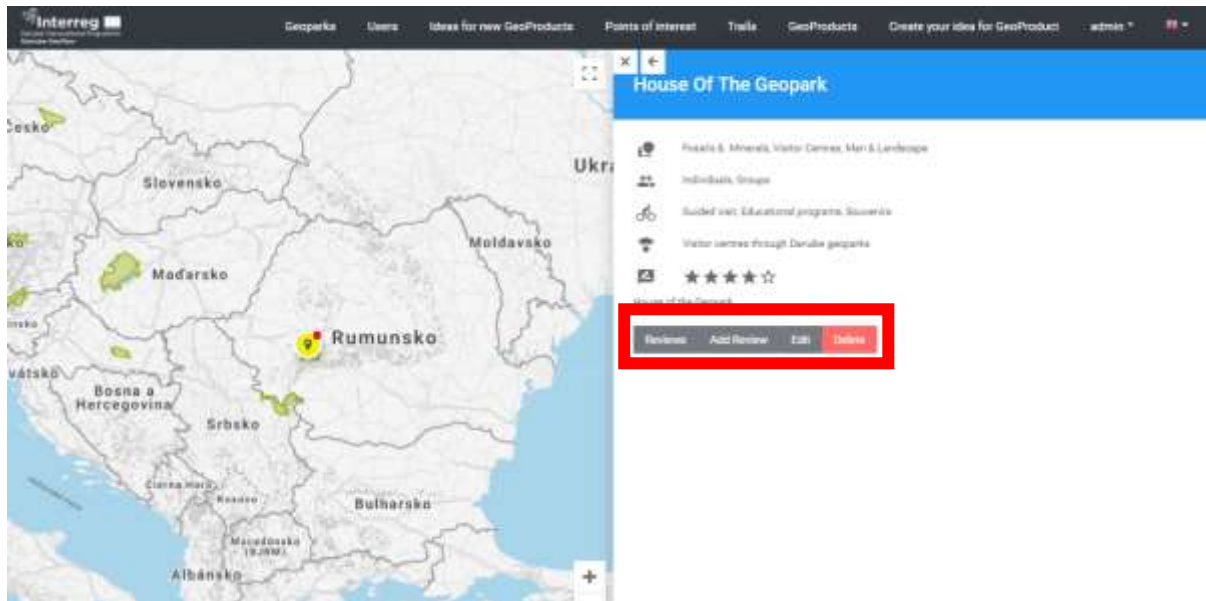


## 4.5 Points of Interest

Interesting places in the area of Geoparks can be found in the section Points of interest. Managers of the Geoparks can add there various kind of destinations to present heritage in the area to visitors and people exploring the country planning the trip. Each point is precisely showed on the map according to the GPS coordinates.



All points of interest are defined by the Geopark managers, who can add them by clicking on the + button while as common feature, they can also edit and in case of need, delete concrete point(s).



The destination - point can be described by basic information, as e.g. name, the Geopark within which it is situated...Each point can be also described by the following thematic standardized values of:

- Thematic category,
- Target group,
- Activity/Service,
- Topic name.

House Of The Geopark

Geopark:

Name:

Name in local language:

Latitude:  Longitude:

Address:  [select\\_on\\_map](#)

Thematic category:  Fossils & Minerals  Visitor Centres  Man & Landscape

Target Group:  Individuals  Groups

Activity / Service:  Guided visit  Educational programs  Souvenirs

Topic name:  Visitor centres through Danube geoparks

Description

**B I U** Normal

House of the Geopark

Description in local language

**B I U** Normal

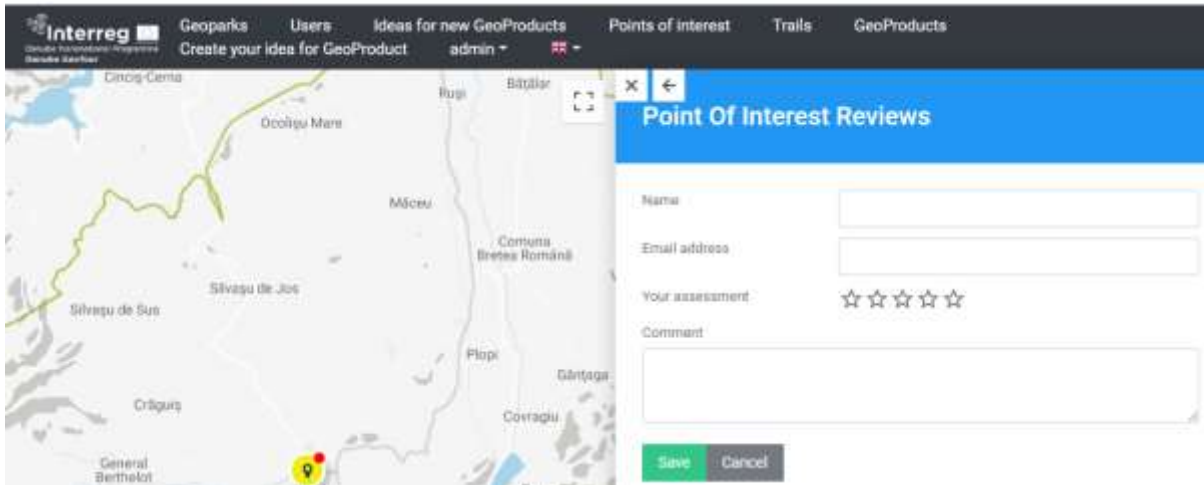
House of the Geopark in local language

Gallery

Drag & Drop your files or [Browse](#)



For visitors who would like to share their opinion about the concrete trail, there is also possibility to create review. To prevent misleading anonymous reviews, there is still requirement to define email address as identification of the user. Moreover, in case of need, the managers of the Geoparks can also delete the review.



The screenshot shows a web interface for submitting a review. On the left, a map displays a yellow trail route through a landscape with various locations labeled, including 'Cincis-Cerna', 'Drocişu Mare', 'Măceu', 'Comuna Bretea Română', 'Plopi', 'Gârtaş', 'Covragiu', 'Crigoruş', 'Silvaşu de Sus', 'Silvaşu de Jos', and 'General Berthelot'. A red location pin is visible on the map. On the right, a blue header reads 'Point Of Interest Reviews'. Below the header, the form contains the following fields: 'Name' (text input), 'Email address' (text input), 'Your assessment' (a star rating system with five stars), and 'Comment' (a large text area). At the bottom of the form are two buttons: 'Save' (green) and 'Cancel' (grey).

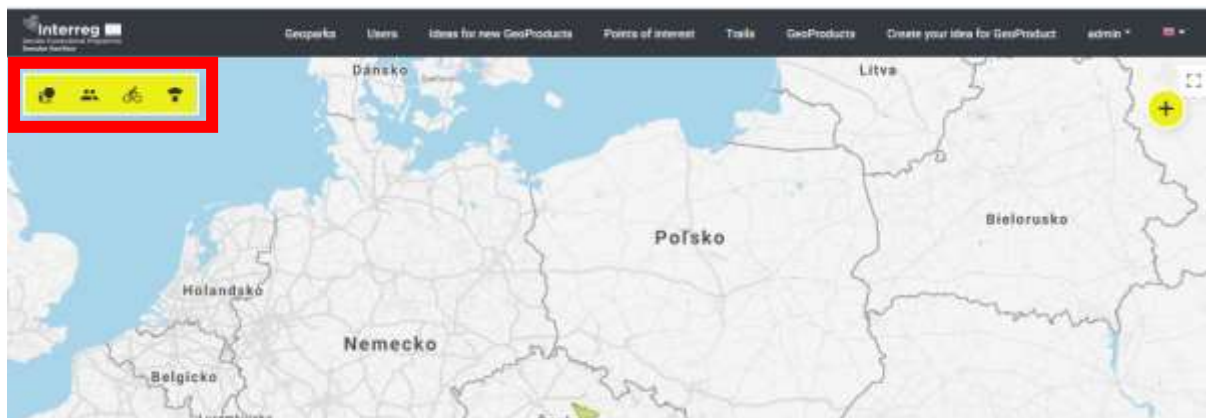


## 4.6 Digital map

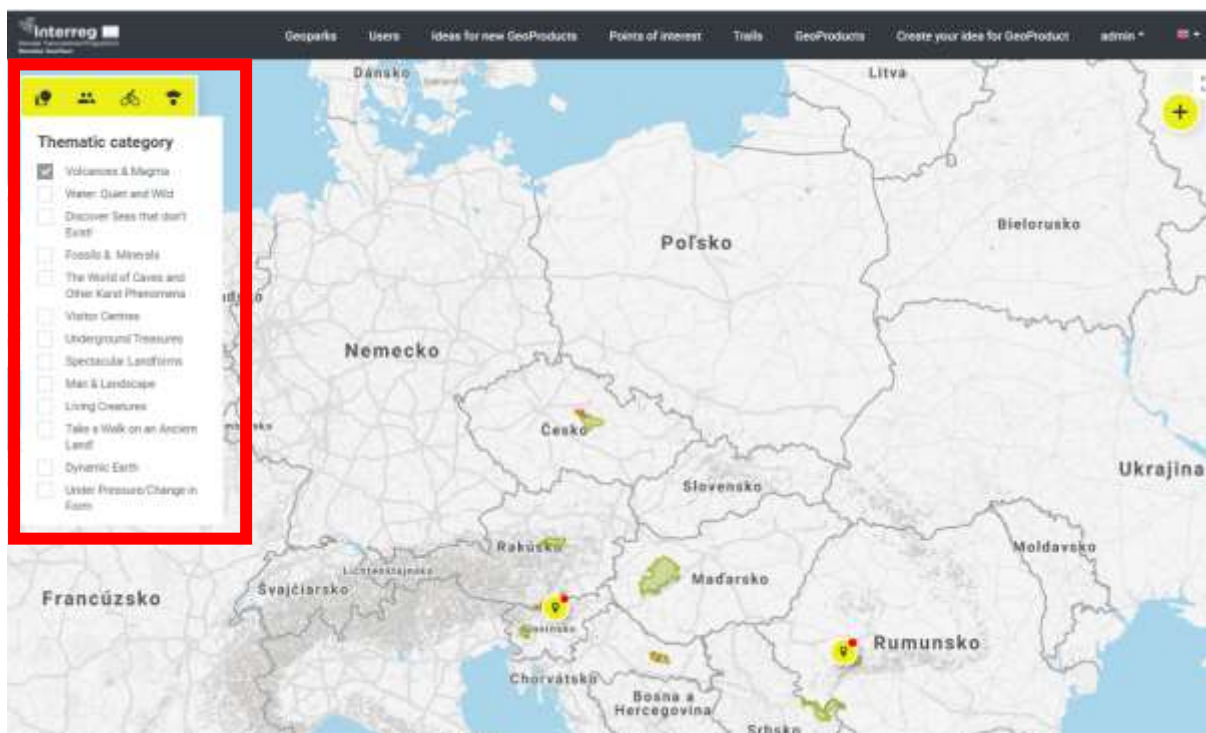
To enable users simply and fast explore the Geoparks and looking for inspiration for you GeoProducts, we created digital map of trails and points of interest.

In the upper left corner, you can find the filter to select what you are looking for. The filter is composed by four sections:

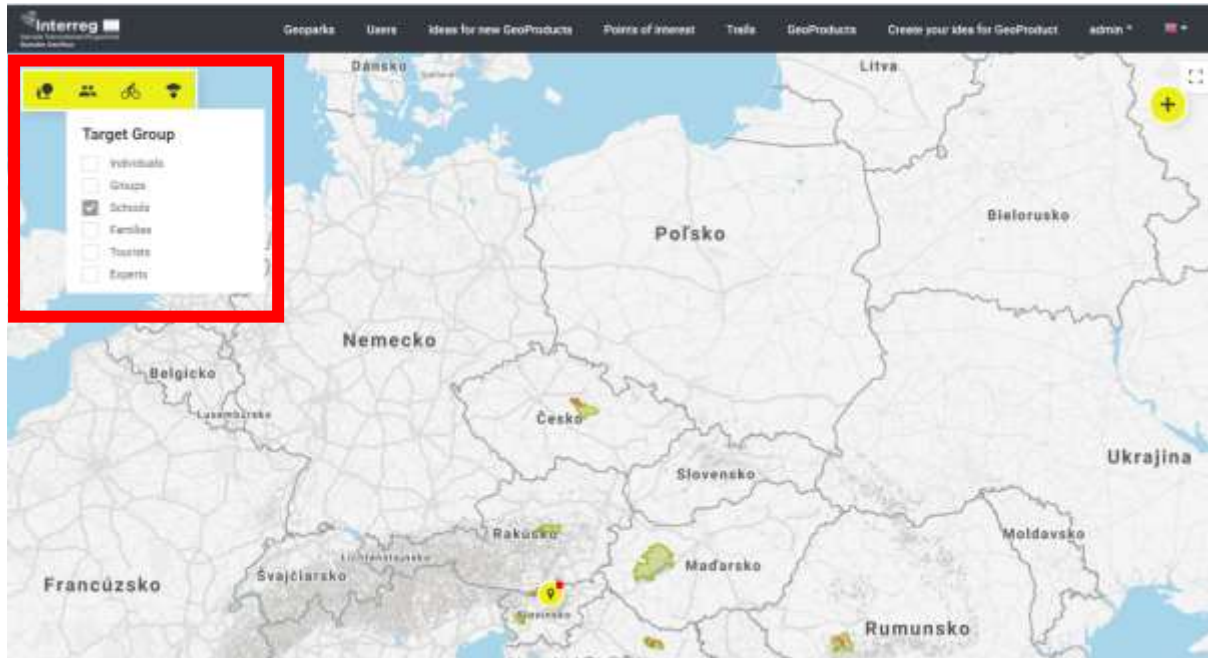
- Thematic category
- Target group
- Activity/Service
- Topic name



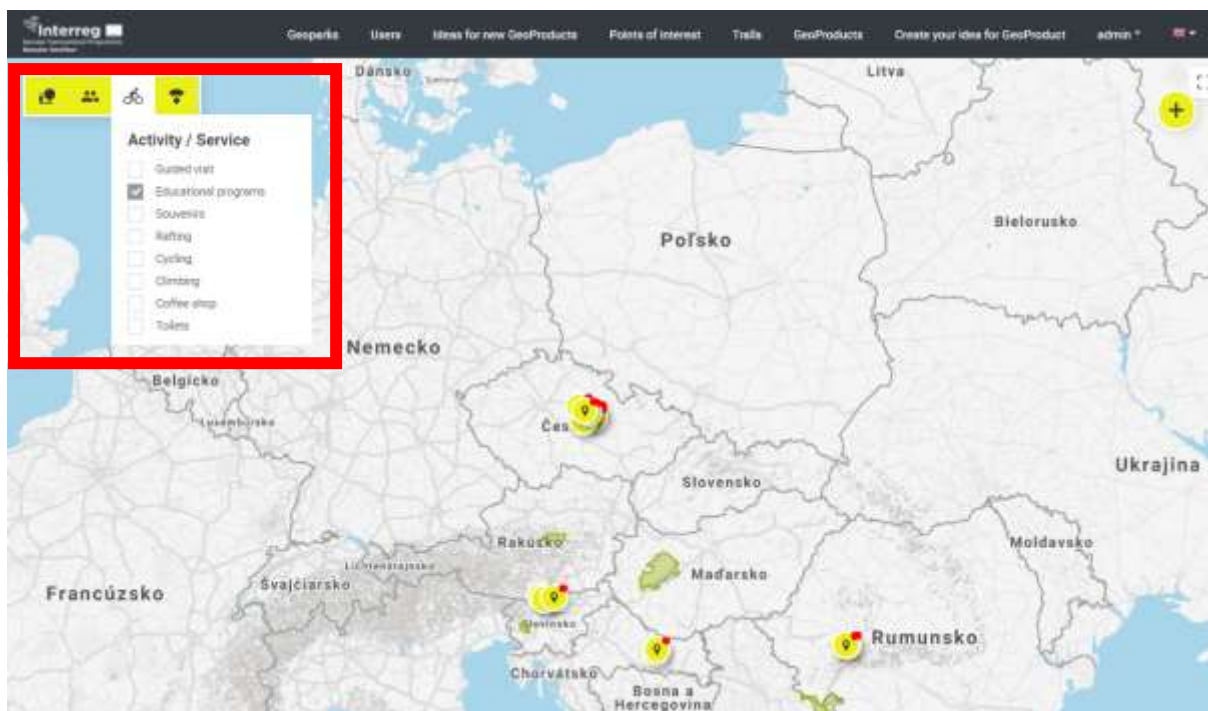
In the section “Thematic category” you can find 13 categories which were defined by experts from Geoparks according to their knowledge and experience. Each trail and point has relevant one or more thematic category which enable users to easily find the place according to their interest.



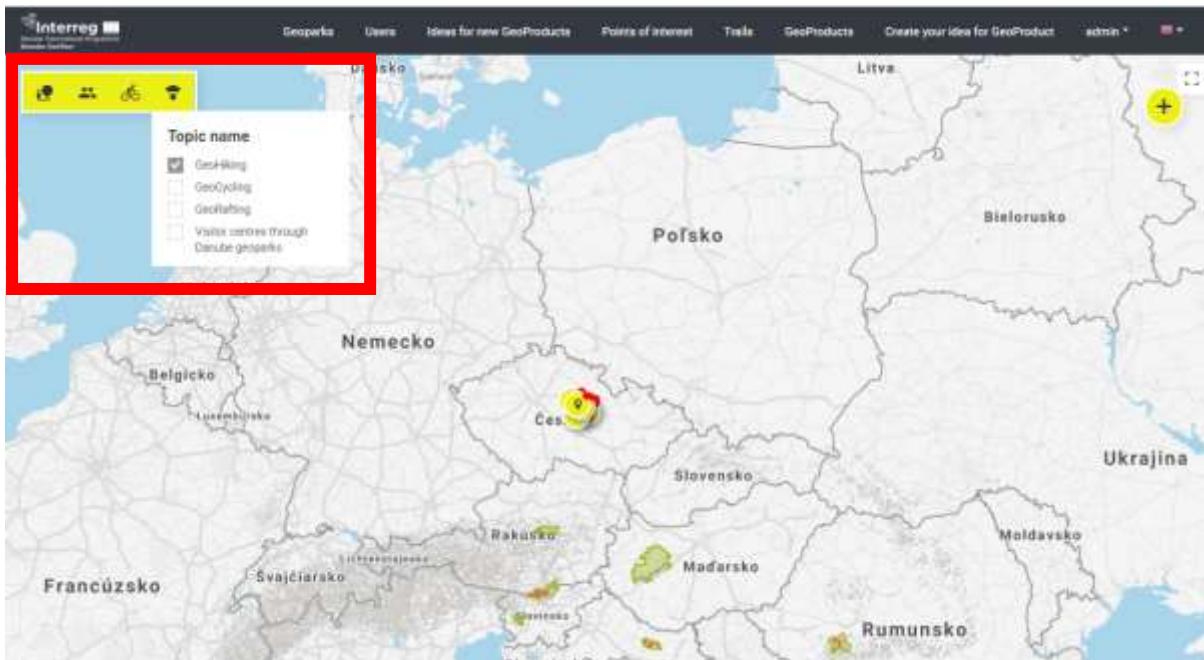
The second section help users to find right destination according to their role, what can help in many cases like e.g. when the teacher would like to find the right place for children planning the trip.



When you are planning your trip, searching for right destination to combine sport activities and geoheritage exploration, you can use the third section in the filter.



In the last section of the filter, you can select the destinations which are linked to the pre-defined topics.



According to the activated filter the GeoApp will show the user digital map with selected trails and points of interest.



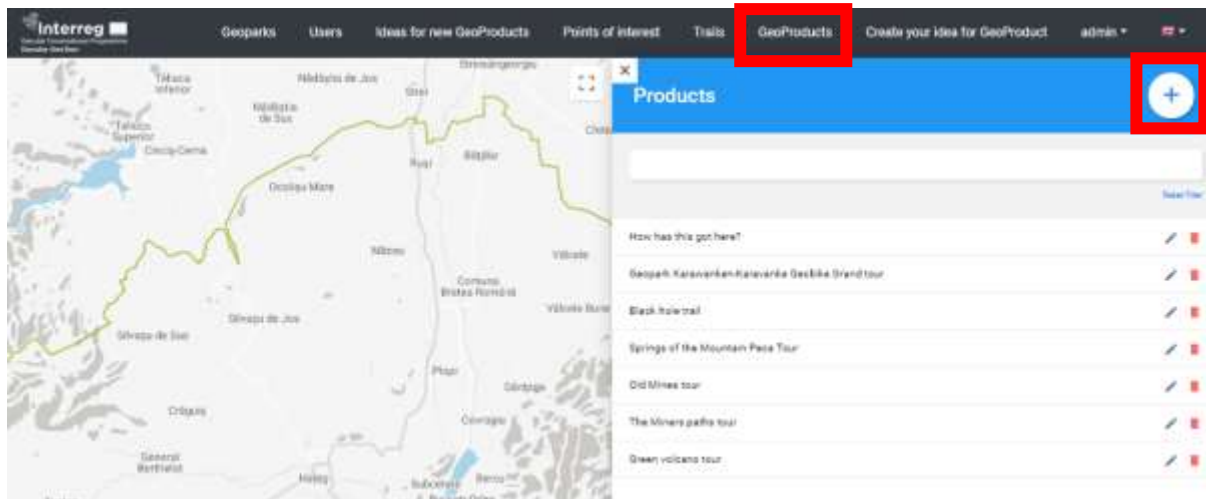
## 4.7 GeoProducts

Geoproducts are a special kind of product which are connected to the territory, are developed in partnership with a geopark and also have a clear economic structure that makes them marketable.

Danube GeoTour project aims at defining and creating new geoproducts which can contribute to a regional geotourism product.

This on-line platform is a tool for the use of geoproduct by the target groups. In order to optimise the targeting, geoproducts are presented on the platform in two ways: real available geoproducts on the map and a section for explaining, developing and testing geoproducts available for all (geopark staff, SMEs, NGOs, academics etc.)

The first time where the user encounters the term geoproducts is on the main menu bar. The section shows a list of available geoproducts in all the participating geoparks, products that can be found also on the map.



Registered users can upload new geoproducts any time. This option is very useful especially after a new geoproduct is created and tested in the training section, and after the geopark has approved the geoproduct.

✕
←
Edit

Geopark

Karavanke UNESCO Global Geopark ✕ ▾

Name

Green volcano tour

Name in local language

grüne Vulkantour

Points of interest

- ✱ The Smrekovec info point – the extinct giant
- ✱ Information center of the Geopark Karawanken / Karavanke in Mežica ✕ ▾

Description

B / U / { } Normal ▾
 ☰ ☷ ☹ ☺ ☻
↺ ↻

Green volcano tour is a 67 km long tour which starts in the Karawanken -Karavanke Geopark Infocenter passing the village Črna na Koroškem which has rich ethnological history seen in the ethnological collection. From Črna the trail leads through the Bistra Valley where bikers pass beautiful outcrops rocks belonging to the periadriatic lineament. As soon as they reach the volcano Smrekovec, which erupted 23 million years ago under the sea, the bikers can get detailed information about the geological formations, structure and the history of the area, as well as information about the life of the locals and what the diverse natural area has to offer, at the Smrekovec infopoint. Bikers have also the possibility to stay overnight in the nice mountain cottage. On their way back bikers will pass one more natural feature in the Karawanken-Karavanke UNESCO Global Geopark, the so called Najevnik linden tree, which is the thickest linden tree in Slovenia and the forest protected area Jazbina.

Description in local language

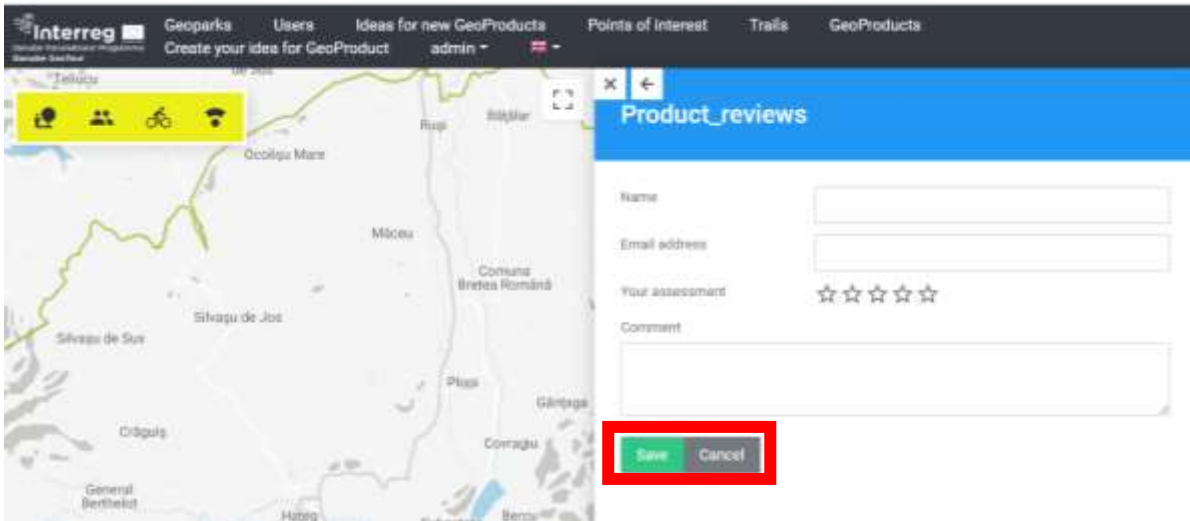
B / U / { } Normal ▾
 ☰ ☷ ☹ ☺ ☻
↺ ↻

Die grüne Vulkantour ist eine 67 km lange Tour, die im Geopark-Infocenter Karawanken-Karavanke startet und durch den Ort Črna na Koroškem führt, der eine reiche ethnologische Geschichte besitzt und diese in einer ethnologischen Sammlung zeigt. Von Črna aus führt der Weg durch das Bistra-Tal, wo Biker an schönen Felsen des periadriatischen Lineaments vorbeifahren. Sobald sie den ehemaligen Vulkan Smrekovec erreichen, der vor 23 Millionen Jahren unter dem Meer ausbrach, können die Biker detaillierte Informationen über die geologischen Formationen, die Struktur und die Geschichte der Region sowie über das Leben der Einheimischen erhalten. Das vielfältige Naturgebiet wird am Infopoint Smrekovec präsentiert. Biker haben auch die Möglichkeit in der schönen Berghütte zu übernachten. Auf dem Rückweg passieren Biker ein weiteres Naturerlebnis im UNESCO Global Geopark von Karawanken-Karavanke, die sogenannte Najevnik-Linde, die die älteste Linde Sloweniens und auch das Waldschutzgebiet Jazbina.

Gallery

Drag & Drop your files or [Browse](#)

Part of the continuous testing of the geoproduct is the user review option, by which any user can review a geoproduct he/she bought.



The screenshot shows a web interface for 'Product\_reviews'. The top navigation bar includes 'Interreg', 'Geoparks', 'Users', 'Ideas for new GeoProducts', 'Points of Interest', 'Trails', and 'GeoProducts'. Below the navigation is a map of a region with various locations labeled. A yellow bar with icons for a person, a group, a bicycle, and a Wi-Fi symbol is overlaid on the map. The 'Product\_reviews' form on the right contains the following fields:

- Name:
- Email address:
- Your assessment: ☆☆☆☆☆
- Comment:

At the bottom of the form, there are two buttons: 'Save' (highlighted in green) and 'Cancel' (highlighted in grey), both enclosed in a red rectangular box.

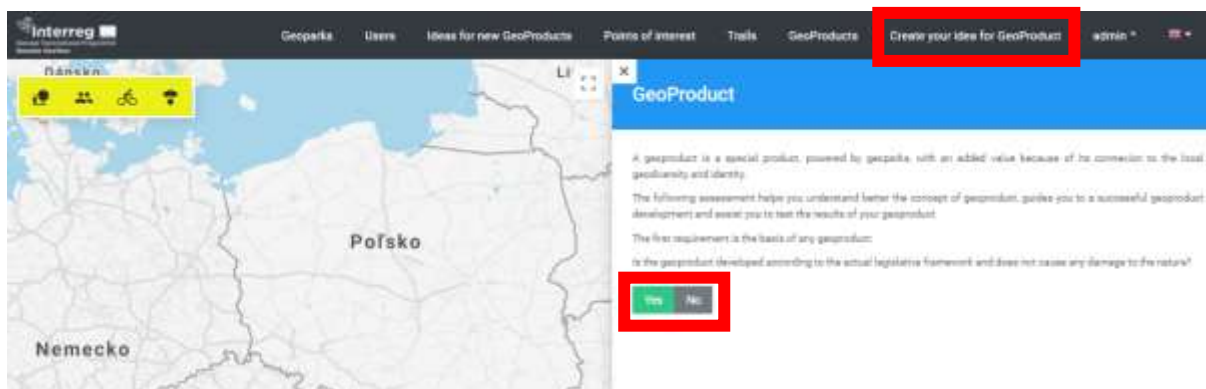
## 4.8 Create your idea for GeoProduct

This section is different than all the others and its purposes are to:

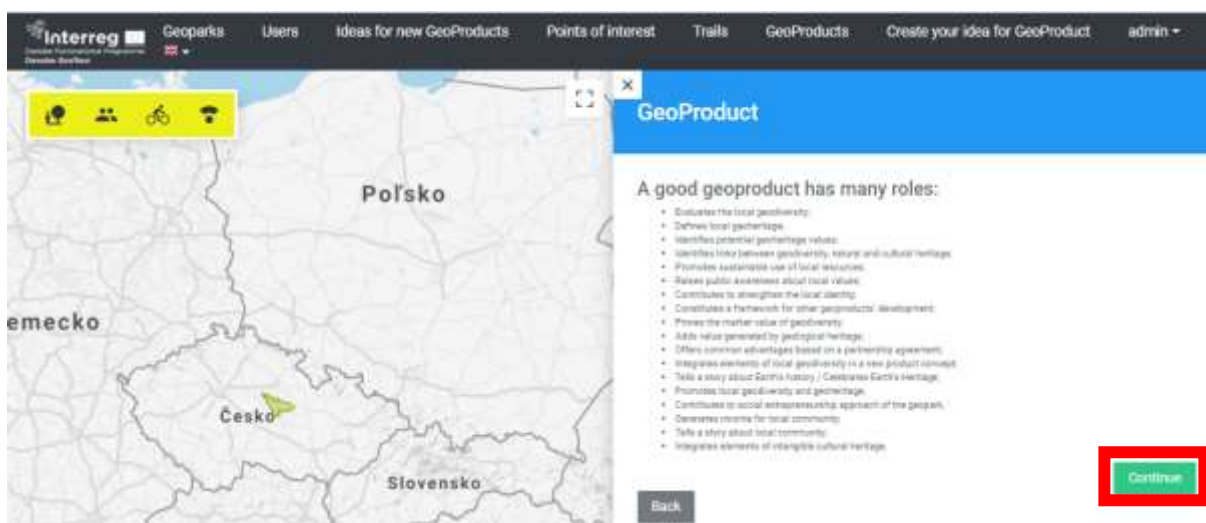
- Explain and promote the concept of geoproduct
- Assist producers in creating geoproducts or in shaping their existing product to be transformed into geoproducts
- Assist the geopark staff in explaining the concept to the partners and evaluate proposed geoproducts
- Act like a learning platform for education and training for all ages and related sectors.

So, the training section is built as using gamification techniques, as stages in developing a geoproduct. The user answers questions, has the opportunity to further research the subject by viewing the linked materials, and in the end gets a final score of his/her geoproduct. This is very useful for both the actual producer and the trainee.

The section starts with a short definition then asks the first question, which is a basic requirement for a geoproduct to exist.



It continues with a general description of the geoproduct's roles.

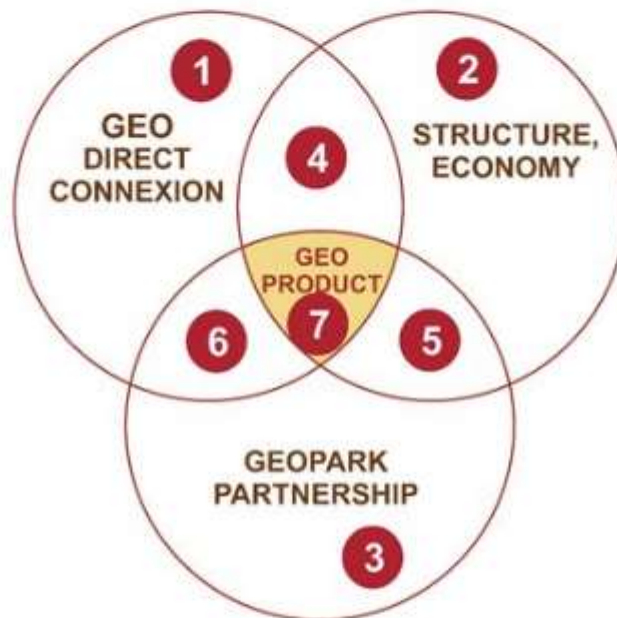


The following stage is the qualitative assessment, where users are asked to (re)create the story of their geoproduct. How it started, what stage is it in now and what is needed in the future for it to be a successful geoproduct. To do this, the first step is to show what is the current position of the geoproduct on the definition chart.

## Quantitative\_assessment

### Stage of Geoproduct

Read more about the stage of the geoproduct



We have to consider three aspects which the geoproduct must comprise in order to be a product: (i) It has to respond to a need; (ii) It has to be created, constructed through a production process; (iii) It has to be marketable and sold.

[Click here if you want to know more](#)

Please describe the steps you taken so far in your geoproduct development, or how do you plan to start your geoproduct creation, by selecting one of the 7 positions:

Current stage of your geoproduct

Please choose...

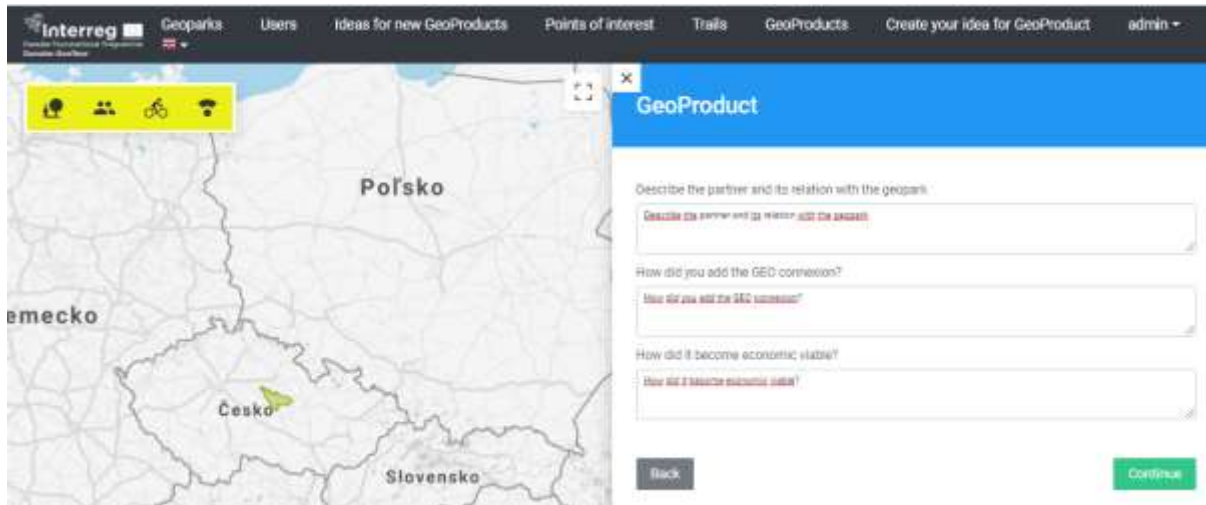
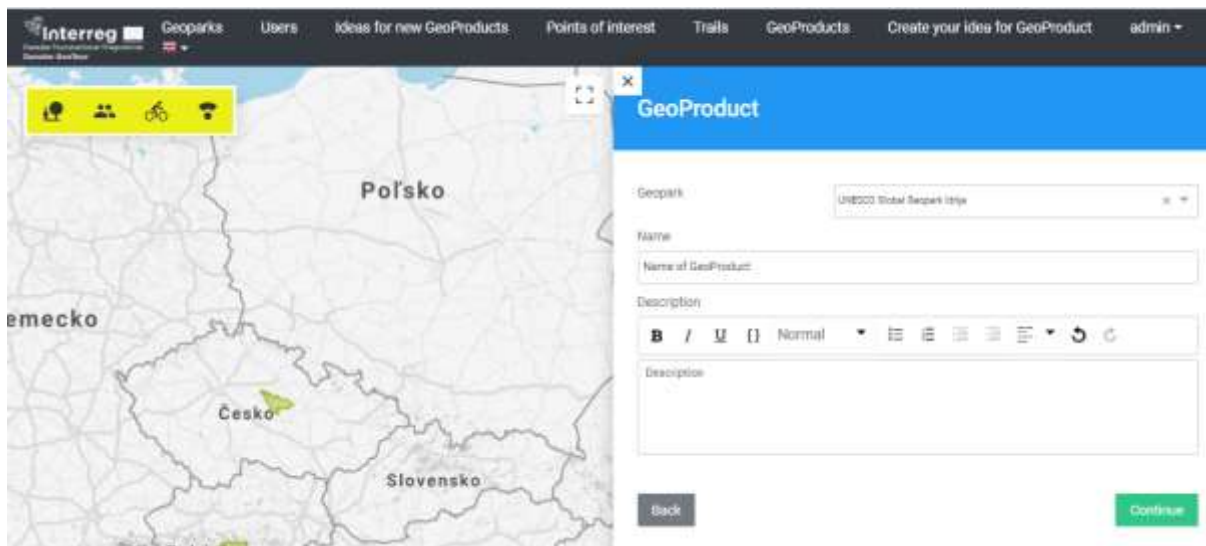
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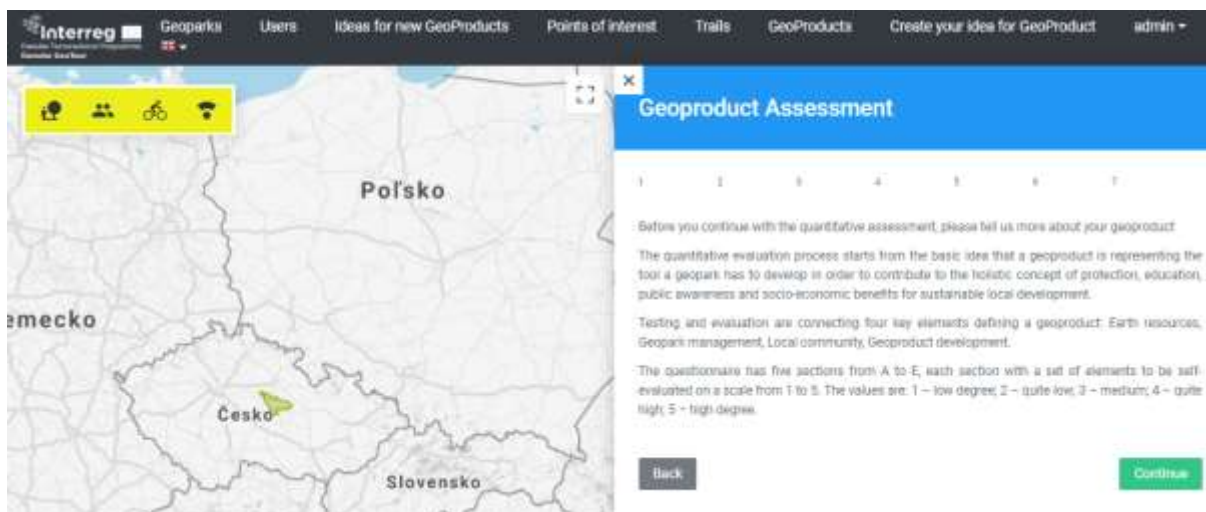


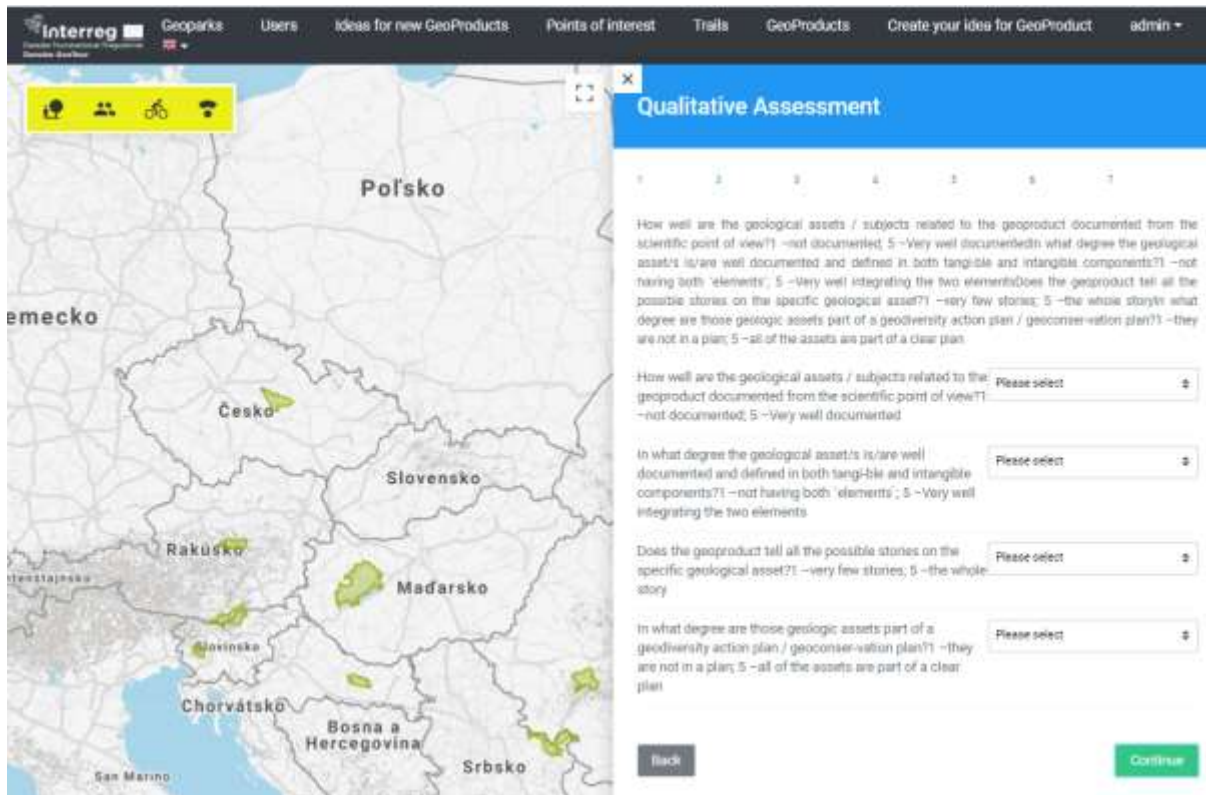


According to the answer, the user is asked to write more about the geoproduct.

The next stage is the quantitative assessment, designed to offer a concrete number of points for each evaluated geoproduct.



**Qualitative Assessment**

1 2 3 4 5 6 7

How well are the geological assets / subjects related to the geoproduct documented from the scientific point of view? 1 -not documented; 5 -Very well documented

In what degree the geological asset/s is/are well documented and defined in both tangible and intangible components? 1 -not having both 'elements'; 5 -Very well integrating the two elements

Does the geoproduct tell all the possible stories on the specific geological asset? 1 -very few stories; 5 -the whole story

In what degree are those geologic assets part of a geodiversity action plan / geoconservation plan? 1 -they are not in a plan; 5 -all of the assets are part of a clear plan

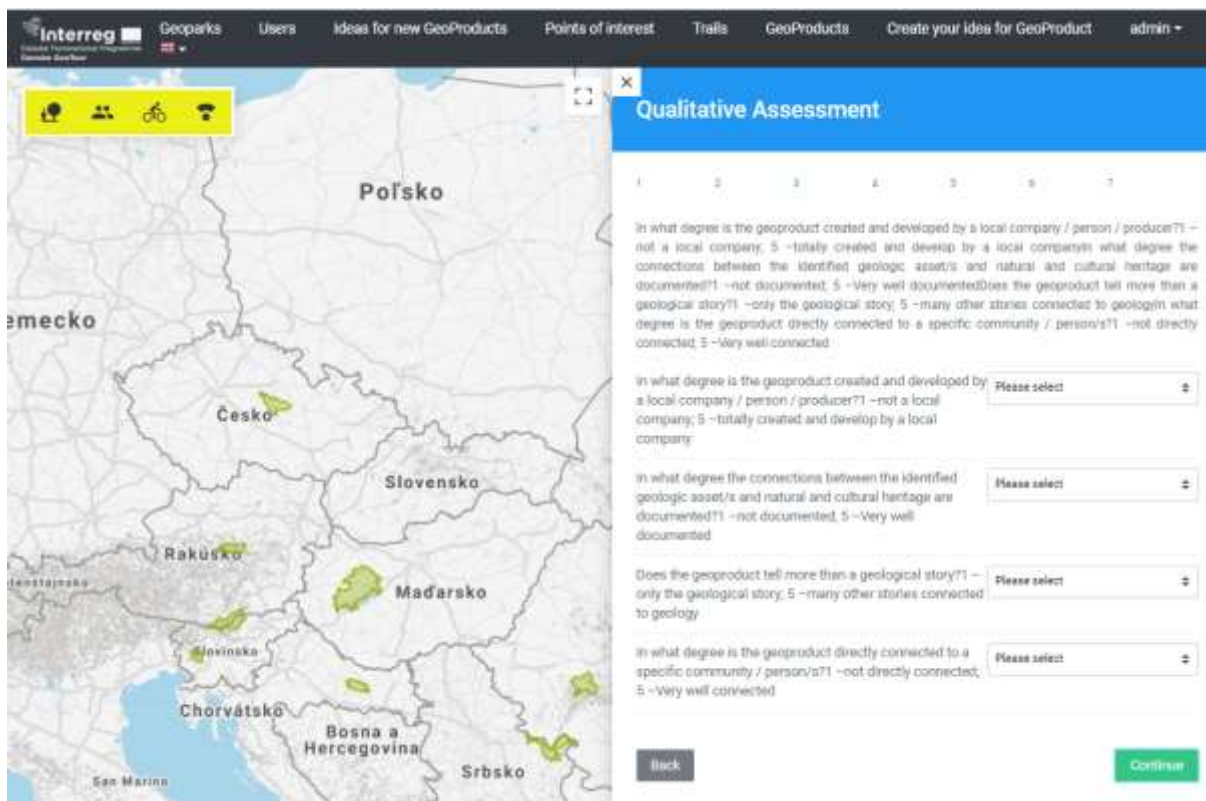
Please select

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**Qualitative Assessment**

1 2 3 4 5 6 7

In what degree is the geoproduct created and developed by a local company / person / producer? 1 -not a local company; 5 -totally created and develop by a local company

Does the geoproduct tell more than a geological story? 1 -only the geological story; 5 -many other stories connected to geology

In what degree is the geoproduct directly connected to a specific community / person/s? 1 -not directly connected; 5 -Very well connected

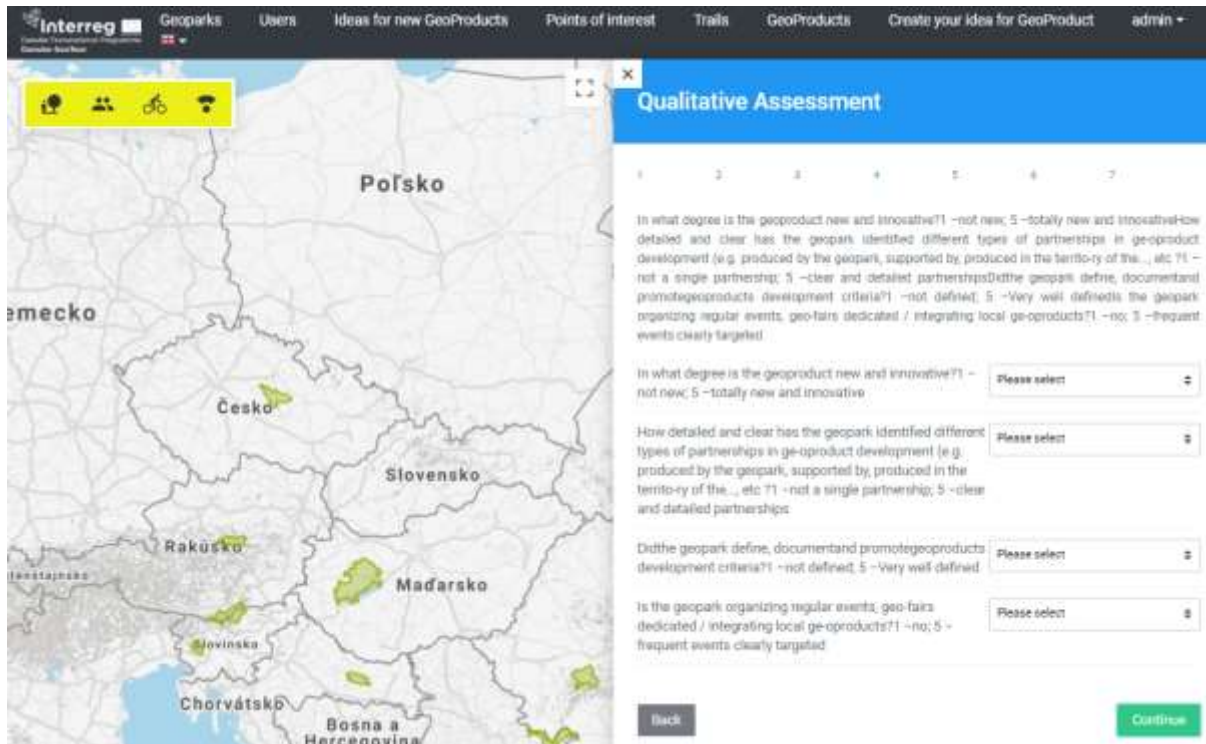
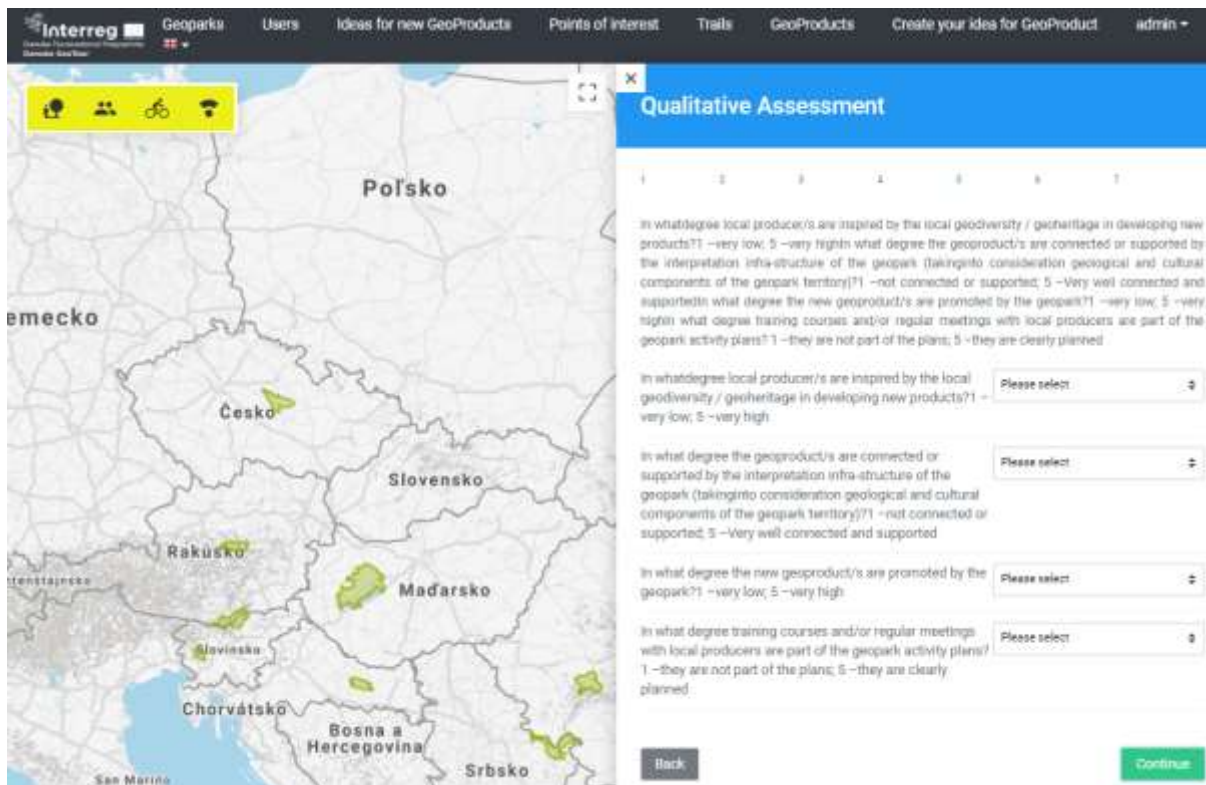
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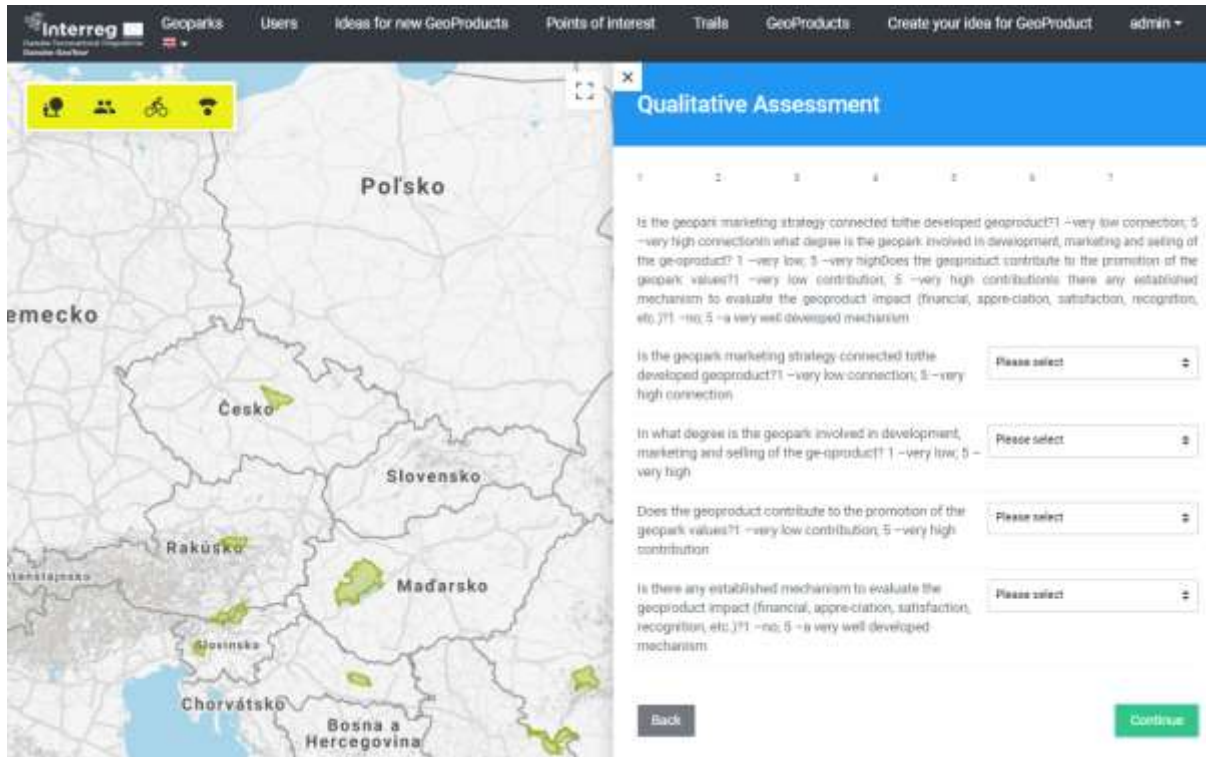
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**Qualitative Assessment**

1 2 3 4 5 6 7

Is the geopark marketing strategy connected to the developed geoproduct? 1 -very low connection; 5 -very high connection

In what degree is the geopark involved in development, marketing and selling of the geoproduct? 1 -very low; 5 -very high

Does the geoproduct contribute to the promotion of the geopark values? 1 -very low contribution; 5 -very high contribution

Is there any established mechanism to evaluate the geoproduct impact (financial, appreciation, satisfaction, recognition, etc.)? 1 -no; 5 -a very well developed mechanism

Please select

Please select

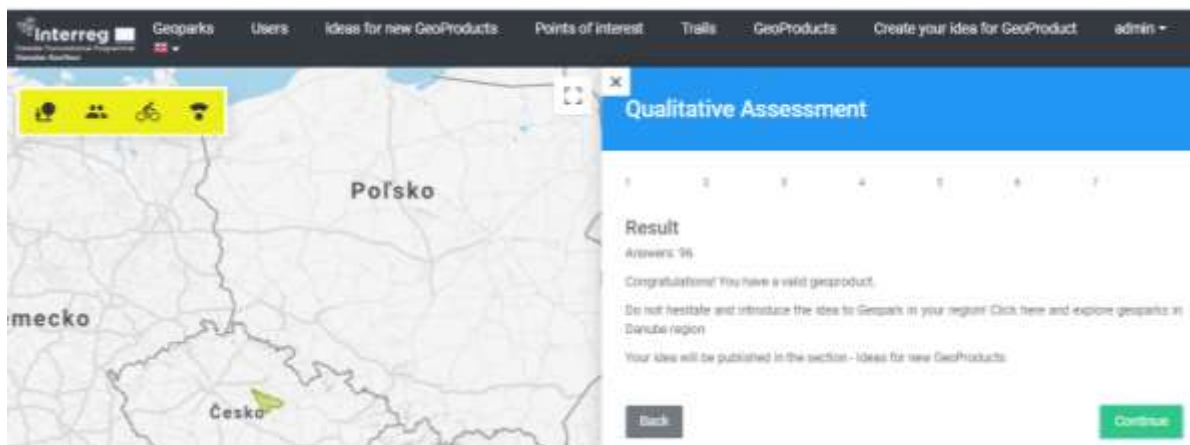
Please select

Please select

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There are 20 questions, for in each section, noted with 1 to 5, so the maximum total is 100 points.

The final answer gives an accurate image of the current state of the geoproduct and also can give a clue about the status of the host geopark.



**Qualitative Assessment**

1 2 3 4 5 6 7

**Result**

Answers: 96

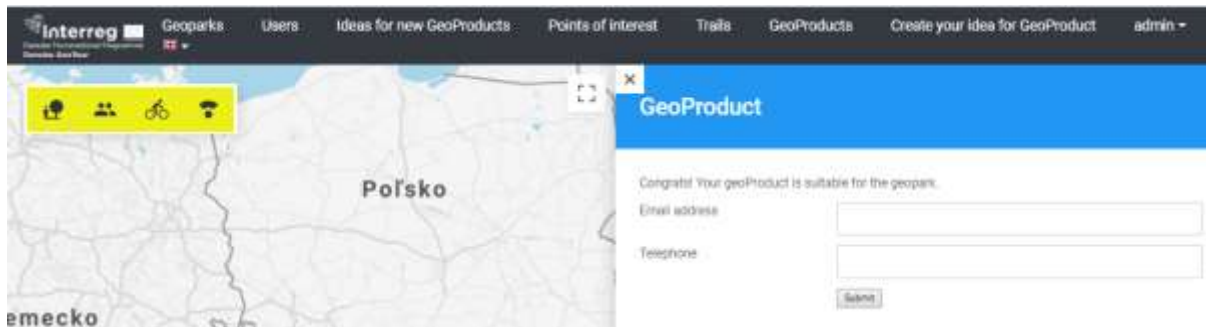
Congratulations! You have a valid geoproduct.

Do not hesitate and introduce the idea to Geopark in your region! Click here and explore geoparks in Danube region

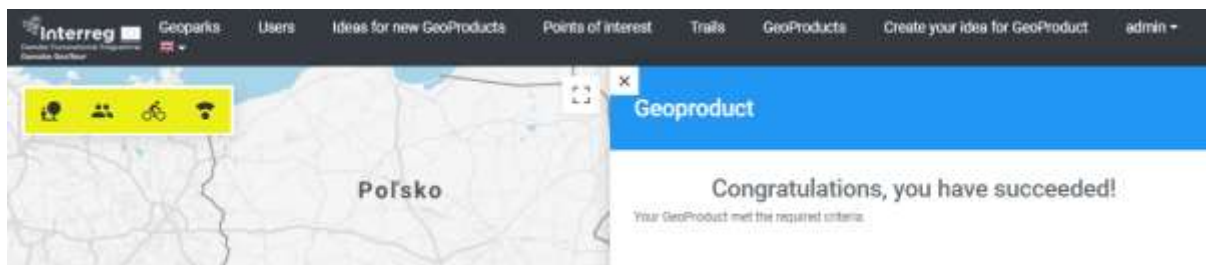
Your idea will be published in the section - Ideas for new GeoProducts

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If the geoproduct got a positive score, the user has the option to submit his/her review to the geopark in which the geoproduct is developed.



The geopark will receive the proposed geoproduct and can engage with the possible partner to know more. The result for this platform can be the inclusion of the geoproduct on the map.



## 5 Conclusion

Our joint effort leads to the developed online application which can help to present the GeoProducts in the new, interactive and attractive way and support the creation of the new ideas which can be later transfer to the products and services. And what is also very important, we created the tool enable us to educate people and bring them knowledge which is core to know, especially for the producers and service providers.

Today, we can say that good base for the future was created. The application is based on the modern technologies which enable to create and link additional modules which would lead to even support its attractiveness. We also believe that in the future, the network will raise and new GeoParks will join our initiative which enable us to transfer the knowledge and support international cooperation, not even among GeoParks, but especially between the producers and service providers.

In the next phase, we will be working on the analysis of incoming feedback from users and its implementation into the app to support its usability and sustainability as only the useful and user-friendly tool will be accepted by the target groups. Our intention is the start the discussion with other European GeoParks, get their feedback as experts and motivate them to join our group, so we can jointly present the heritage of GeoParks in even wider range. For this purpose, as well as for sustainability of the whole application, the core will be not the money, but the effort and enthusiasm of the partners and cooperating stakeholders.