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Smart Business Skills of Tourism University
Students Applicable on International Labour
Market

Project No.2021-1-SK01-KA220-HED-000023160

PR3 - Project documentation

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Introduction

Abbreviations used in the documentation:

- URL: universal name format used to refer to a resource on the Internet
- V4: Visegrad Group
- ID: identification number
- CO2: carbon dioxide
- SMTP: a protocol that allows the transmission of emails between stations
- AI: Artificial Intelligence

Smartbus was created as a project of the Erasmus+ programme, action KA220-HED - Cooperation partnerships in higher education, which aims to develop the soft and hard skills of students in the tourism sector based on the requirements of the labour market. It is intended to help students stay on the labour market and help them acquire the technical skills needed to work in the digital age. The project is aimed at educating mainly students from the V4 countries - Slovakia, Czech Republic, Poland. However, the project is public, so the general public, to whom the application is available, can also gain experience. More information about the project is available at <https://smartbuss.eu/index.html>.

Objectives

The objectives of the project were defined as follows:

- Developing hard (digital) and soft skills of tourism students in the post-covid period in selected courses that meet the labour market requirements in the V4 (Visegrad Group)
- Development of long-term and sustainable cooperation in the field of tourism within selected V4 universities and Pelicantravel
- Providing an online web application (coupled with a blog tool) to the public/students/teachers to expand the possibilities to start a startup and launch their own business

Project phases:

1. Identify the skills students need to stay in the digital age
2. Modification of the syllabus - universities modify the syllabus based on the analysis from the first step
3. Design and development of an application that will be used by students and subsequently by the general public
4. Testing the results of the project - testing the new curriculum and incorporating feedback from students

For more information on the project milestones, please visit: <https://smartbuss.eu/#timeline>

Smartbus application structure:

The Smartbus application consists of three larger units, which we will describe:

- Webpage - <https://smartbuss.eu/index.html>
- Form - <https://app.smartbuss.eu/en/form>
- Admin - <https://app.smartbuss.eu/smartbus-admin>

1. Webpage

This is the official project page, where you can find all the important information through the blog, timeline and project results. We can say that this is the information part of Smartbus, accessible to members of the campus but also to the general public.

2. Form

Let's define the roles at the beginning:

- Agent: a person who creates an offer based on a client's request or can also be a student, start-up entrepreneur, general public, etc.
- Client: a person who is interested in the offer

Form can also be called the application part of Smartbus.

The form can be accessed via the web page and within it via *Application* -> *App* - this type of form is available to the general public.

There are four language versions into which the form is translated: English, Slovak, Czech, Polish.

The form contains the following fields:

- Client request - text field, field size can be customized
- Addressing the client - text field, long text
- Client email - text field, short text
- Introductory text - text field, field size can be customized
- Number of persons - field for selecting the number of persons
- Turn on calendar widget - Toggle
- Add menu - button
- Agent name - text field, short text
- Agent email - text field, short text
- Agent phone - text field, short text
- Note - text field, field size can be customized

1. The first field to be filled in is the client's request. For example, it could be a flight to Dublin for a long weekend for two people, in June, without a transfer.
2. The following is the section to be filled in by the agent. It is important to fill in both the "Client Address" and the "Introduction Text" correctly, as these are the texts that are displayed to the client. The client will be sent an offer email which will be entered in the "Client Email" field.
3. The most important part in the form is the creation of the offer. The form currently offers the possibility to add flights directly from pelikan.sk (or pelikan.cz or flipo.pl).

After pressing "Add offer" a new window will appear, where the agent will copy the link with the ID from the Pelikan webpage. Detailed information about the times of each flight and the names of the airports will be automatically pulled up. How to get this ID link? On the [Pelikan](#) site, the agent searches for the flight that most closely matches the client's request and presses the "share button" (in the upper right corner

of the selected offer)  to copy the flight information and paste it into the offer.

If the offers were created by a startup entrepreneur, the startup may offer various benefits and services. That is why this is an optional field in the form. As the names suggest, the services are extra paid and the benefits are free. For services, it is possible to set the price of the service and choose whether the service applies to the entire order or per person.

The price is displayed in the menu as services are added over time. If the price is calculated and the required services and benefits are listed, the offer is saved. The offer can be edited at any time.

An interesting functionality in the form is the Calendar widget. By turning it on, we allow the client to see other options or similar flight options in the resulting menu.

4. In the last part of the form, we fill in the agent's contact information and save.

In the form, some fields are mandatory, without them you cannot create a menu. These are:

- Reaching out to the client
- Client's email
- Number of persons
- At least one offer
- Name of agent
- Agent's email

An offer is sent to the client, which the agent sees in the offer preview. The tickets are in a scrolling window that the client can click on and see the flight times, flight lengths, stopovers, destination, airlines, flight numbers, baggage, flight type (economy or business).

Benefits, services and a note on the offer are also visible in the offer

Each offer may include information on the sustainability of the chosen ticket, i.e. approximately how many kg of CO2 the aircraft will emit into the air during the flight to the chosen destination. This data is pulled from Google Flights, and each offer also includes information about the licence used to calculate CO2: The data exposed by this API is licensed under CC BY-SA 4.0.

Blog

Our goal was to provide the ability to create a blog for the agent with the ability to share it with the client. There are many blog tools on the market for the general public. We narrowed down the selection and made it easier for agents to find the right blog tool for Smartbus' needs:

- <https://www.blogger.com/>
- <https://www.notion.so/>
- <https://zapier.com/blog/create-google-docs-template/>

An agent can create a blog and various articles in one of the given blog tools. If he decides to send any of the articles to the client, the fields in the Form are built for that. Just copy the

url of the article and paste it into the Form in any field. Of course the agent can also use another blog tool, those three are just our recommendation.

3.Admin

This part of Smartbus can also be called administrative. Only logged in users, i.e. administrators and teachers, but also for example startup owners have access to this part. It is used to manage assignments and offers created by students.

Project and Project groups

Projects and project groups can be created here. An example of a use case for groups is universities. One university is one group. This university uses the Smartbus application in multiple subjects, with multiple groups of students and they are divided into projects.

Under the Projects tab, there is a "Generate Assignment URL" button that teachers use to generate an assignment. You select under which project the assignments will belong and then the URL is generated. Professors will send this URL to their students. This url links to a form that, when completed by the students, is automatically saved under that project.

When creating a project, it is mandatory to fill in SMTP information in addition to the usual information - this is the setting of the mail server from where the mail is sent. The professor fills in the SMTP info, his/her mail, and thanks to that he/she will be able to send grades directly from the app to the students' mails. He will get the SMTP server information from the network administrator at the university.

Offers

Offers are stored in Offers from the assignment, which were made by the students. The professor can filter the group of students and the assignment he wants to look at with them.

AI, or artificial intelligence, evaluation is an interesting feature of this whole project. It helps students with their learning, it's feedback on their work. Pupils create an offer based on a request and then the teacher in the admin will have it evaluated by the AI. We use ChatGPT and send such a request (prompt) to it:

```
$request = implode("\n", [  
    'You are an travel expert wizard, experienced in planning complex  
trips all over the world. Your knowledge is both wide and deep. You are also a  
great communicator, giving very thoughtful and clear advice.',  
    'You do so in structured format, thinking through challenges you  
are facing, solutions, then reviewing each solution, looking for issues or possible  
improvements, coming up with a possible new and better solution, then giving a  
final recommendation.',  
    'Your goal is to evaluate offer prepared by a student. The offer  
consists of original query from a client, our text response prepared by student and  
flight data offer, which represents the specific flight offer for a client. Each  
offer can have one, two or three flight alternatives.',  
    '',  
    'Below is the request from client: ',  
    $offer->getRequestFromClient(),  
    ''
```

```

        'Below is the Data of the offered flights - these data are
graphically presented to client so the client clearly sees the information which is
available in these data and it is part of the offer presented to client',
        json_encode($itemData),
        '',
        'Below is the text provided by student to a client:',
        $item->getNote() ?? 'No note from student!',
        '',
        'This is format for your evaluation',
        'Numeric evaluation: Rate this offer based on the checklist,
provided feedback both in words and number rating in scale 1-10 with 10 the best
score. Format should be like this: 1/10, 2/10, [X/10]',
        'Rating 1: is the offer communicated professionally? If empty
message set rating to 0',
        'Rating 2: does the offer check all requirements from client',
        '',
        'recommendation: What are the possible improvements of the offer ?
Highlight the facts which are missing based on the client requirements and suggest
what should be improved based on the specific information from client about his
destination and situation',
        'Recommendation for improvement should be incredibly thoughtful,
comprising at a minimum four sentences of thinking. Doublecheck all the
recommendations with Flight data in the offer, the response should not focus on
areas which are correctly offered',
        '',
        'Also include json representation of the review in the format
below',
        '{"rating1": 0, "rating1Text": "", "rating2": 0, "rating2Text": "",
"recommendation": "recommendation"}',
    ];
}];

```

We actually define to ChatGPT what we want to rate, it looks at the offer and assigns a value from 1 to 10, where 10 is the highest score.

They cannot take advantage of public offers.

We have actions we can perform on the bids to evaluate their AI, edit them (form opens), view the bid as final or view its technical details (which project it belongs to, who created it...)

Offer Reviews

The Offer Reviews section is a dashboard for AI reviews. These reviews are grouped by project, by student, and finally by assignment. The public projects are displayed first. Then, within each project, there is a list of students and their average rating for all assignments that have been submitted to that project. And last are the individual assignments and their grades. Each assignment has two ratings, which are evaluated based on the prompt described in the previous section Offers.

Users

This section lists all users for the project. User management - creating, editing, deactivating/deleting and accessing the selected project - takes place here. For each user, the first name, last name, email, access to the project and the number of bids made are displayed. Services and Benefits

The Services and Benefits section is used for their management. For each of them a name is defined in English, Slovak, Czech, Polish. For Services I also select the price by currency.

Technical Notes

Tech stack

The tools we have selected are open source, except for ChatGPT:

- **Symfony 6:** Facilitates rapid development and easy maintenance of web applications, providing a framework for routing, security, and template rendering.
- **PHP 8.1:** Offers increased performance and new features for cleaner, more efficient code. It is used server-side to interact with the database and integrate with external services such as ChatGPT.
- **MariaDB:** Chosen for its reliability and speed, MariaDB stores all data including user accounts, client requests, ...
- **ChatGPT:** Integrated as an AI rating tool, it provides deep analytics and valuable feedback on travel deals.

AI evaluation process

Structured data from the selected offers is sent to ChatGPT using the API in a specific format, allowing it to understand and analyse the context of the offer. Everything is explained in the prompts in the Offers section. In the sent structured data, a command i.e. prompt is defined at the beginning in which we define the role of ChatGPT which increases the chances of better evaluation result.

Chat GPT evaluates the offer based on predefined criteria both verbally and numerically from 0 to 10. The criteria are precisely defined in the Prompt in the Offers section, here we describe them in a shortened version:

- You're a travel expert who knows how to plan trips around the world. You're very knowledgeable and a great communicator who offers clear and helpful advice.
- You approach tasks in a structured way: first you think about the challenges, then you find solutions, examine those solutions for potential problems and try to improve them. Finally, you give your best recommendation.
- Your task is to evaluate the offer prepared by the student. The offer includes:
 - The original request from the client.
 - Student-prepared answer text.
 - Flight details offered to the client, which may include up to three different flight options.

At the beginning, the first prompt was made and according to the response from ChatGPT it was tuned until the final prompt that we use in the application was created. Successive iterations iterated over the words until we got the appropriate responses.

Example answer:

```
{  
  "rating1": 0,  
  "rating1Text": "",  
  "rating2": 0,  
  "rating2Text": "",  
  "recommendation": "recommendation"  
}
```

ChatGPT API documentation:

<https://platform.openai.com/docs/api-reference/introduction>

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