



THE PROJECT OF SMART:TRIP TEAM

TRAVELLER'S SMARTGLASSES

Ryabenko Stepan
Avdeev Stepan
School 1799

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Thank you!



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Introduction

Our life is rapidly changing nowadays: new technologies appear, devices become smarter and smarter, the speed of mobile networks increases each year. Technical progress affects all aspects of our life. And the industry of Travel & Tourism is definitely not an exception. However, the ways the average tourist can explore places he visits have not really changed.

As everyone knows, the most common problem during a journey is the lack of information and time. Each of us has always dreamt about a reliable assistant who will help us during our trips to other countries and cities. It is unreal to supply all tourists with qualified guides, so we came up with an innovative solution, in which modern technologies combine in order to provide a smart personal assistant to each tourist.

Smartglasses

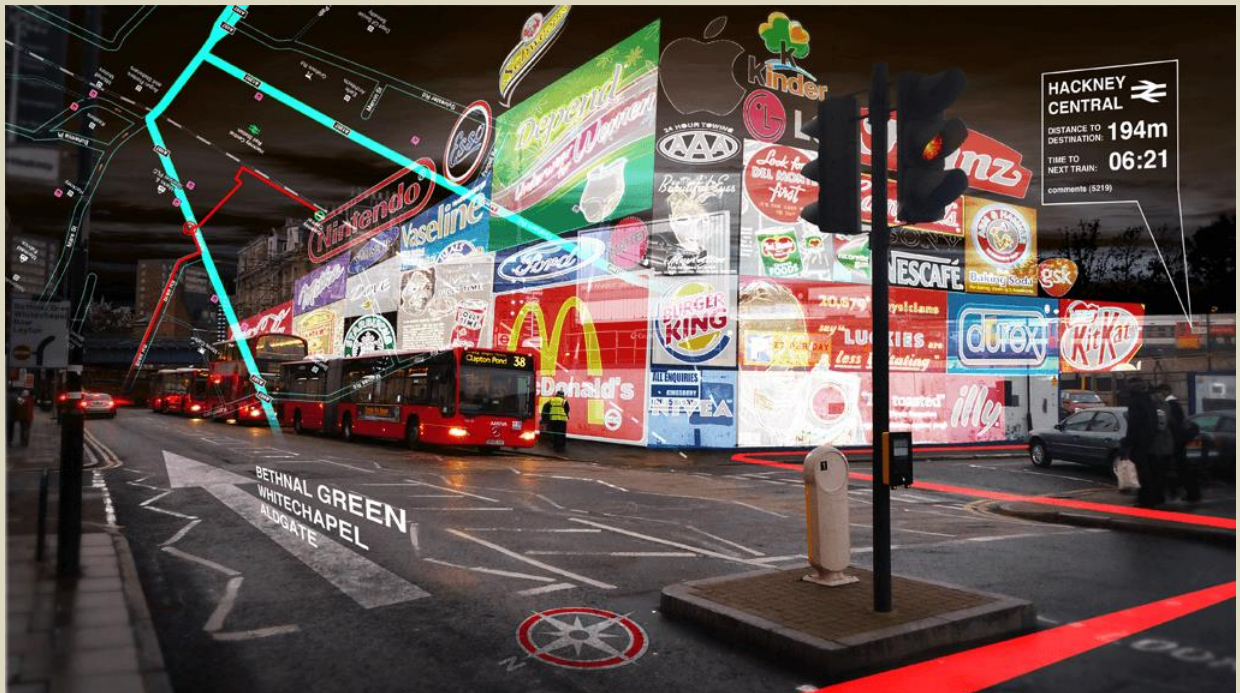
So, we are glad to present a new product -smartglasses designed to make each tourist's trip easier, more interesting, and more convenient and in this way smarter. Potentially GTTP Smart:Trip team can grow into a new enterprise to offer this innovative product to customers.

It is not a secret that in 2013 Google presented Google glass. It is also no secret that the attempt to launch Google Glass as a consumer product was not entirely successful. After the suspension, it was decided to resume production of the improved business-oriented version.

How smartglasses is different from Google's product? In fact, our product is designed as a smart personal assistant for tourists. We change the concept of smartglasses usage to make it a useful, attractive and popular product for many tourists. Building on advantages and effectiveness of the visual and audial methods of perception of the information and modern technology advancements we are taking a step into the future of the tourism.



Augmented reality is the main technology of our smartglasses.



In order to understand how augmented reality technology works, one must first understand its objective: to bring computer generated objects into the real world, which only the user can see.

In most augmented reality applications, a user will see both synthetic and natural light. This is done by overlaying projected images on top of a pair of see-through goggles or glasses, which allow the images and interactive virtual objects to layer on top of the user's view of the real world.

From social media filters, to surgical procedures, AR is rapidly growing in popularity because it brings elements of the virtual world, into our real world, thus enhancing the things we see, hear, and feel. Our smartglasses will bring augmented reality to tourists.

We believe that augmented reality will affect tourist's experience. For example, using an app connected to smartglasses a tourist can easily learn the history and milestones of any attraction of interest.

If for instance you are visiting Moscow and wish to see the Kremlin, our smartglasses will provide you with experience of a time travel. And you will find out that through the centuries the Kremlin looked differently.



In the time of Prince Yuri Dolgoruki in early 12th century, when Moscow was founded, the very first version of the Kremlin was made of pine.

In mid -14th century Prince Ivan Kalita rebuilt the Kremlin using oak.

Few decades later Prince Dmitry Donskoy was the first to build our Kremlin of white stone.

And the red Kremlin walls we admire today were constructed by Tsar Ivan the Third in the end of the 15th century.

In the following centuries the Moscow Kremlin lived through numerous successive renovations and redecorations of different scale; however it preserved its historic image and style.

Smartglasses will make it possible for tourists to track the history of this and many other outstanding landmarks.

The aim of many people while traveling is to get acquainted with the culture and traditions of the country. So you can expect many tourists to use smartglasses as a time machine to expand their sightseeing with an experience of traveling through ages.

Neural Networks

The next thing is that we are going to use neural networks.

Neural networks are artificial networks, based on the principles of the work of neurons in brain.

On the basis of neural networks, through pre-stored presets of building outlines, geographic data and the work of the Google Maps API, the building or object is recognized on-the-fly, after which the system considers the building or object to be recognized and displays a corresponding marking on the object itself, "fixing it in air ". In the meantime, the data received from the camera will be uploaded to the application servers for more correct recognition in the future.



We want to use neural networks for better connection and establishing precise locations of smartglasses and tourists who use them to increase their comfort and safety.

Our smartglasses will help tourists to navigate around the place they visit and discover places, choose a café or restaurant worth visiting, call a taxi or find the nearest metro station, call an ambulance or get to the nearest hospital in case of emergency.

The Advantages of the Product

- Augmented reality

Tourists are going to love our smartglasses - a new generation of wearable electronics that introduces tourists to augmented reality.

- User-friendly adaptive interface
- Specially developed operating system

Tiny projectors are attached on the arches of the glasses in order to project a user-friendly and adaptive interface based on a specially developed operating system.

- Bone conduction audio

The transmission of sound occurs without the use of a speaker but directly through the bones of the skull by vibration.

- Comfortable design

Changing the bezel, diopters and the design of the glasses is an undoubted advantage.

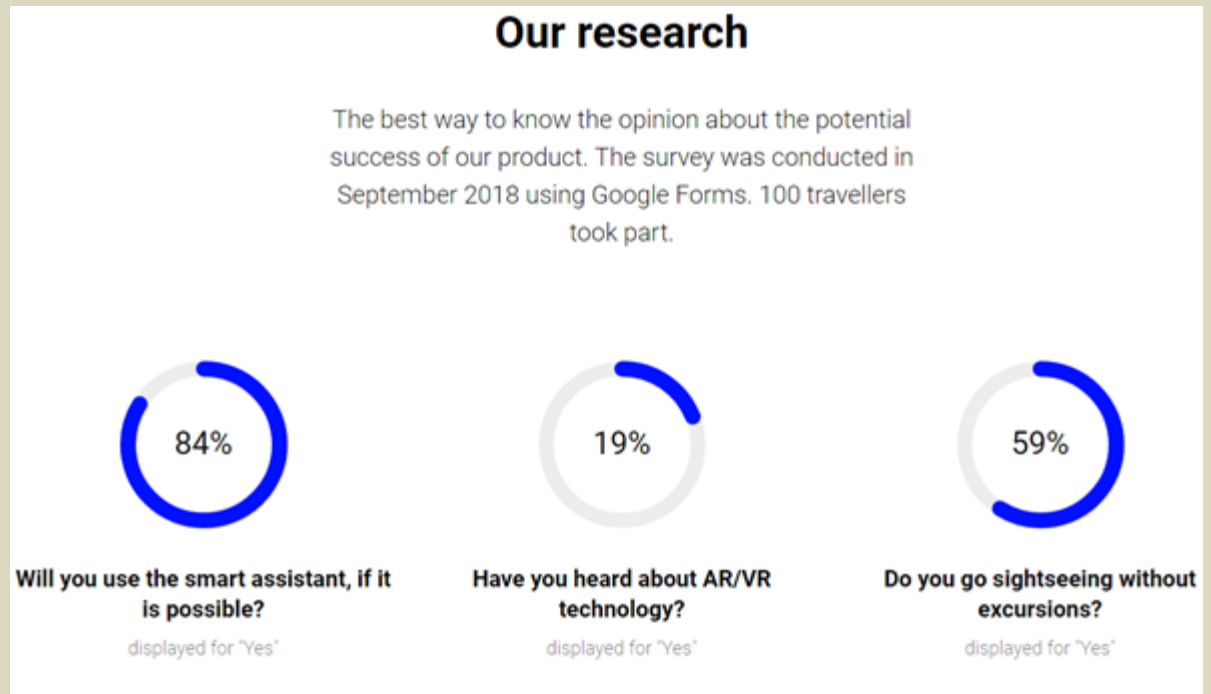
- Compatibility with various apps

The software is also nicely organized. All in all, our glasses are going to work with any available apps like Translator, Maps, TripAdvisor and others.

This is what makes our product unique: using the latest technology trends it enables tourists' comfort and ease of use.

Research. Potential Customers' Feedbacks

We conducted our research using Google Forms and then added our questions to a forum, where travelers and tourists can share their ideas about the development of tourism.



The answers justify the decision about smartglasses as a personal tourist's assistant concept.

Expert's Opinion

We also made an interview with a real expert in marketing and hi-tech Vyacheslav Razosvsky about our product.

- Hello, Vyacheslav! Analyzing tourism we found out several problems. The main problem, which we are going to fix, is that there is no multifunctional smart assistant, which will help tourists to ease their life that is why we want to invent smartglasses for tourism. What do you think about this problem and our solution?
- Well, the solution is, without a doubt very interesting, however you need to understand that it is a very hard way to improve tourism industry. You need to take in consideration all the finance, investment, interest of the target audience, and, of course the innovations.
- Nowadays life is impossible without modern technologies, nevertheless, we can easily see that there is a lack of technologies and innovations in the sphere of tourism. What are the methods to make tourism more innovative and attractive?
- I can't but mention that AR and VR are very perspective as they are very useful in the user-experienced sphere, and moreover they haven't been used in tourism yet. Yes, without a doubt ,VR excursions are popular nowadays, but making a product, based exactly on virtual or augmented reality is a breakthrough and has nothing in common with previous inventions.
- In our project we are going to use neural networks. What do you think about neural networks in the tourism industry?
- I guess that it is a very important step in the development of tourism. Neural networks have already been used in manufacture, economics and entertainment. I consider that it is also a very perspective technology, so it may become a useful decoration to any product.

Another factor in favor of our decision was frequent absence of the English-language signs, maps and information points that challenges tourists visiting Russia especially where getting around is concerned. And while the navigating system is being re-developed it is far from completion. In the summer 2018 for instance when a FIFA Football World Cup was held in several Russian cities a lot of tourists and fans complained about this inconvenience. Moreover, for the comfort of our users, we offer the services of translation to make the communication easier.

Actually, the design of smartglasses can be changed to reflect different events held in Moscow. This will attract more tourists and serve as an advertisement as well.

Thus, we can use our glasses for other events and arrangements in Moscow: such as concerts, festivals and exhibitions.



Attractive Smartglasses for Kids

Another interesting finding our research revealed was that children – who, as digital natives, we expected to be most excited about using smartglasses as tourists, were initially not at all keen on this idea. They told us it would be as boring as listening to the guides.

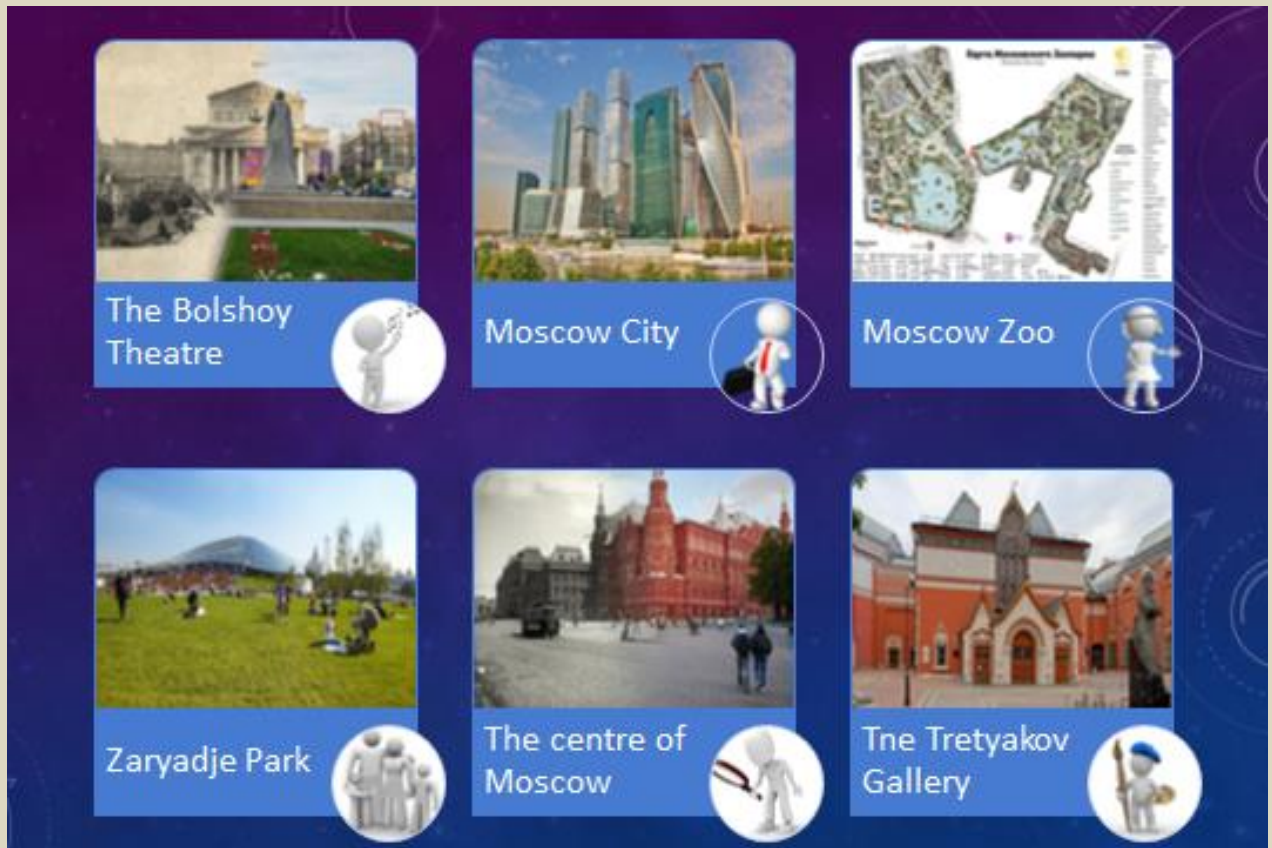


We decided that smartglasses will offer children quests and treasure hunts, and popular cartoon characters will be their guides. We shared our idea with the kids and their eyes brightened.

Different Kinds of Tours

We plan to develop different kinds of tours targeted on different audiences.

Our tours will be customized. Customers will have a choice among the following ones: a tour for those who want to explore Moscow in 3 hours; Moscow for a family tour with children; tour for young tourists, Moscow for experienced visitors; literary Moscow; musical Moscow and many others.



The variety of tours and routes will give an opportunity to explore Moscow and its history from many different angles. Customers will be able to read a short description of each route in order to find the one on their taste.

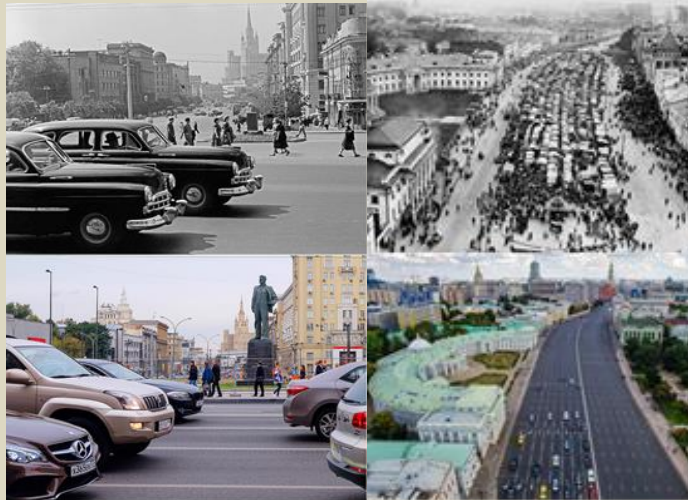
The Functions

- Tours with virtual guides

Smart glasses will provide tourists with full description of historical buildings, architecture style.

- “Time machine”

What is more, special function of our smartglasses will show people how the building/palace/ cathedral looked like some centuries ago.



Mayakovskogo Square 1954/2015 Sukharevskaya Square 1920/2015

- Own system of rating cafes and restaurants

For comfort of our users the smart glasses have lists of cafes and restaurants which are worth visiting. Moreover they are connected with the Navigation system which will not let them get lost.

- Emergency and help

If a user needs help, smartglasses can call an ambulance and show the nearest hospitals. If you cannot manage with the system, the function “Help and Information” will provide you with accurate description and instructions. To solve technical problems you can call the customer service. For ease and convenience smartglasses will be connected to the app which can be loaded to your smartphone.

- Translating system
- Special weather forecasts

Smartglasses will provide tourists with special weather forecasts, which will be reflected in the interface. The glasses will help a user to get dressed, according to the weather.

The Price

We used simulations to estimate the optimal price for our product. A tourist comes to a city for a week wishing to visit as many places, attractions, excursions and museums as possible. Smartglasses - a smart personal assistant, will make the experience more comfortable, safe and easy. Does it mean a tourist really needs to buy smartglasses? We answer in the negative and give our solution. Instead of buying a tourist can rent our smartglasses.

We checked prices of guided walking tours in Moscow which amounted to \$22.6. During a week-long visit a tourist might pay from \$120.8 up to \$166 for guided tours. Given that beside customized guided tours our smartglasses provides additional services described earlier we estimated a potential price of \$ 39.99 for 6 hours.

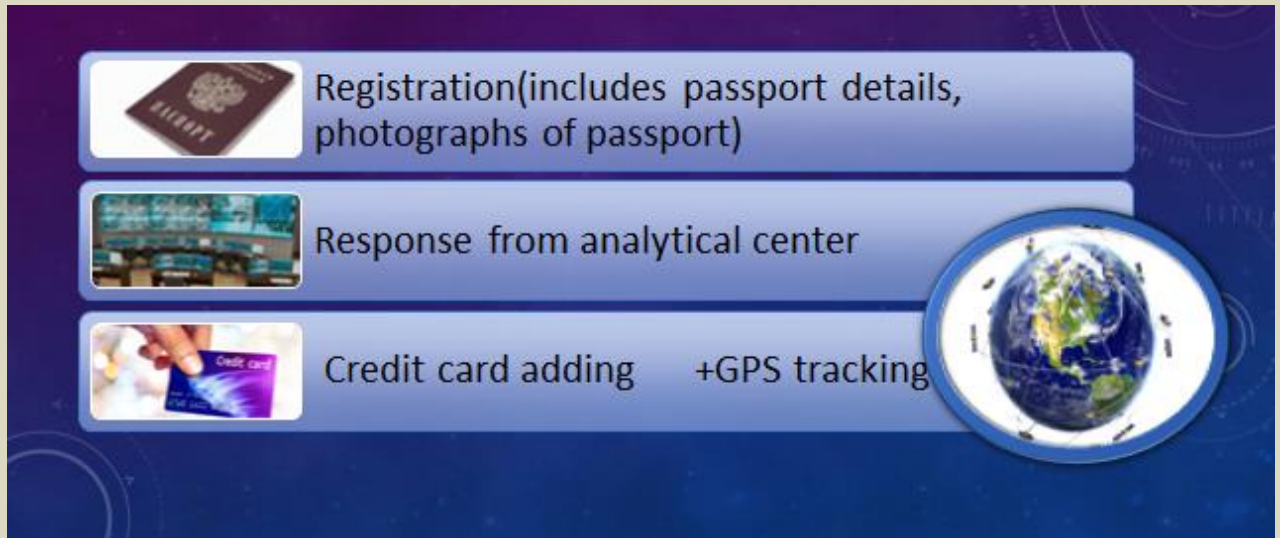
Some people may think that it is the maximum time for sightseeing and so we just do not need to lease our product for longer. In fact the timing depends on the battery life which lasts maximum 6 hours with normal use.

Promotion

We'll use digital marketing tools and social networks for promotion and plan to cooperate with travel agencies and other potential partners from amongst travel & tourism businesses who will offer their customers an opportunity to rent our smartglasses.



Customer Support and Security: Sharing System



At this stage we are going to use the sharing system.

Customers will view and accept the service agreement and will register at the platform providing personal data which goes to analytical center for approval, and in case they gain approval will add payment information to rent smartglasses for the period they need it.

They will be provided with the app that launches automatically the first time they turn on their rented smartglasses. They will be guided through all necessary steps and instructions including troubleshooting.

We think that this is an easy and convenient way to provide support to customers and protect our products. Besides, using neural network we'll be able to track our smartglasses in case of loss or theft.

Business Startup Costs

The Google and Epson glasses cost is 1000-1500 dollars. We decided to use them as the base price per a pair of glasses. But this price does not include the working out and the development of software. We had to answer a question: “What is the cost of software and how much money do we need to start our business?”

To answer this question we needed to conduct further research and ask for advice our friend and mentor, who has been working for Hewlett Packard Enterprise for many years. The cost of software development is 500,000\$ and the price for servers is 300\$. In total it amounts to \$ 800,000. The trial product release will consist of 20 smartglasses at the cost of \$20,000.

Of course, we are going to ramp up the quantity of smartglasses. With this in mind we'll need 900 000 dollars to launch and operate the business.

Investment

We regard venture capital funds as possible investors. We are aware that they seek private equity stakes in startups and small- to medium-sized enterprises with strong growth potential alongside many other factors influencing their decisions. Venture funds are popular today, and although we understand the possibility of loss of control and minority ownership status but as of now we see venture capital as the most realistic way to attract money.

Breakeven

We calculated that breakeven point might happen in 16 months and 2 days after the business launch if the popularity of our product would be growing every week.

At the start we expect to have 5 new customers a week, but at the end of the 6th month we'll need 20 new customers every week. We calculated the progression with the help of financial analysts and learned that on the day before the breakeven we would have 143 customers per day who will pay us over \$ 5000 daily.

So the start price of 900 000 dollars will have a breakeven in 16 months. The profitability and the efficiency of our project is almost 1 year and a half.

So if everything goes according to the plan, our prospects are not bad at all.

SWOT Analysis

	HELPFUL	HARMFUL
	STRENGTHS	WEAKNESSES
INTERNAL ORIGIN	<ul style="list-style-type: none"> • We make an attractive product and meet the needs of customers through a wide range of functions. • On the grounds that we are using new technologies, our innovative product will certainly draw attention of many tourists. • We are always ready for cooperation, but are not tied to any big company, so can always make decisions ourselves. 	<ul style="list-style-type: none"> • For sure we need a large financial investment. • The uniqueness of our concept may cause distrust of people at first.
	OPPORTUNITIES	THREATS
EXTERNAL ORIGIN	<ul style="list-style-type: none"> • We will be able to keep up with times and take in consideration all events, held in Moscow. • With the help of our website we can easily get requests of clients and expand the amount of routes and functions of the glasses. • Our product will certainly draw attention of other big companies and there is a chance of collaboration with an economy tycoon. 	<ul style="list-style-type: none"> • The fact that we do not have any competitors on the market can cause our unpreparedness for the rivalry in the future.

Conclusion

We hope we managed to deliver a message of the innovative product that has a potential to advance tourists' experiences and the whole sphere of wearable electronics.

We reflect all our ideas about the product at the official website of our team. There we publish all the news related to the smartglasses. We will be very glad to hear from you. On our website you can send us a request or ask us a question.

<http://smarttrip.tilda.ws/>



We believe that the real future is based on the latest technologies meant to simplify and ease our life. Developing products full of innovation is our mission which we will never betray.

And finally, we'd like to thank Global Travel and Tourism Partnership for opportunity to have a great learning experience and gain a set of relevant skills we could use throughout our lives.

And thank you, Global Partners, for outstanding support that makes possible GTTP Research Award Conference and our attendance at this remarkable event in 2018.

We also wish to thank GTTP /JA Russia for encouragement and support of our research project.

Bibliography:

- 1) Make Your Own Neural Network: A Gentle Journey Through the Mathematics – Tariq Rashid
- 2) Neural Networks: A Systematic Introduction – Raul Rohas
- 3) Neural networks – Saimon Haykin
- 4) Syngress IT Security Project Management Handbook – R. Rodgers; S. Snidaker
- 5) The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies – Erik Brynjolfsson; Andrew McAfee

Teacher Note

The students were involved in a powerful student-centered case strategy that, no doubt, imparted students with critical thinking, communication, and interpersonal skills. The Innovations in Tourism topic is actual and close to students' interests. It provided students work through complex, ambiguous, real world problems, encouraging them to see it from another angle. The task was multidisciplinary and allowed the application of knowledge in different Sciences. Working on their case students researched and evaluated multiple sources of data, made conclusions, developed their teamwork skills. In fact, the process required good organizational and time management skills. It increased students proficiency with written and oral communication, as well as collaboration and team-work.

Teacher's role in the project is very important. In fact, the students must work on their case mainly independently. However, depending on the age, individual characteristics, experience, the teacher will have to provide some assistance to them. To do this, you need to determine in what role you will participate in the project work of the student. I've chosen a mixture of a work colleague, an expert and a super wiser. I shared the responsibility for the progress and results of the work. We enriched each other with our knowledge and experience, enthusiasm. I provided the necessary information and gave advice when my pupils applied for them. As a teacher I encouraged the students to be as active as possible, to be the initiators of the work, the organizers of interaction with the teacher. Choosing the role I took into account the individual characteristics my students, as well as the educational tasks needed to be solved during the work on the case. I discussed with the students the extent of my participation in the process. Knowing in advance the measure of their independence and responsibility, they did not feel deprived of my attention, and at the same time they were not tempted to shift the work on the shoulders of the teacher.

To my mind, the correctly chosen position of the teacher largely determines the success of the case study as a method of training and education.

Since the theme of this project is multidisciplinary, it can be used in various lessons, such as History, Culture studies, Financial Literacy, IT, etc. Depending on the educational goals, it can be deepened and expanded. Thus, studying the history of the ancient world, you can give the task to students to expand the Bank of the history of buildings, make photo collages, compare the past and present architecture. At IT lessons a teacher can offer to think over the digital component of the project ideas, and the lessons of Project technologies to think over their own solutions to the problems. For the development of critical thinking the children could be offered to present the project schematically. It is obvious that the

theme, form and content of the project provide the teacher with a field for the implementation of any pedagogical ideas.

I am grateful to GTTP and all organizers of the project for the unique opportunity to take part in the project.

Tatiana Shilova