

# **Orijentir – Interactive City Guide for All**

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## **1 ABSTRACT**

“Orijentir” is conceived as an accessible city map that pretends to provide solutions for better accessibility for people with visual, cognitive, mobility and hearing limitations in Belgrade, capital of Serbia and Novi Sad, the second biggest city, through an accessible application for mobile devices with Android, iOS and Windows OS. The application will be used as an assistive technology to guide from a point of origin to a destination by using of metropolitan transport and/or pedestrian routing. By providing optimal and accessible routing and orientation by GIS and GPS it will try to improve freedom of movement of persons with disabilities as one of the key human rights and to help their independent living.

The project presents the extension on just developed application called Accessibility Map designed by Vidan Danković that provides information about the accessibility of facilities. The application is intended for all those who have a need for this information, persons with disabilities, pregnant women, parents with young children, the elderly, etc.

Orijentir will be a coalition project of Centre for Society Orientation (COD) as a project leader, Accessibility Audit Association of Serbia, Ecumenical Humanitarian Organization (EHO) and different participants from public sector such as government and administration of Serbia, Belgrade and Novi Sad and University of Belgrade as well as different private companies and European funds and US development funds for disability issues.

The project development started in January 2013 and our team of 3 NGO’s from Belgrade and Novi Sad is at the moment on the first stage, working on important cadastral data collection. Estimated project duration is two years.

## **2 INTRADUCTION**

There is an increasing awareness of social responsibility in every community to make an inclusive society, society accessible for. This accessibility applies to both the outside environment and to the interior environments. In many countries this awareness is reinforced by anti-discrimination legislation advisory and regulatory guidelines. The collaboration of all important stakeholders in the process of making decisions during the definition of laws and standards, design of urban plans, construction works is crucial for understanding of necessities of every individual and providing environment without barriers. However, in many cases such as Serbia crucial stakeholder are not included in these processes which lead to creation of inaccessible environments.

Accessibility is a general term used to describe the degree to which a product, device, service, or environment is available to as many people as possible. Accessibility can be viewed as the "ability to access" and possible benefit of some system or entity. Accessibility is often used to focus on people with disabilities and their right of access to entities, often through use of assistive technology.

The term "accessibility" is also used in the Convention on the Rights of Persons with Disabilities as well as the term "universal design". Accessibility is strongly related to universal design when the approach involves "direct access". This is about making things accessible to all people (whether they have a disability or not).

Disability according to ADA standards is a generic term that includes all the components about the person: impairments, activity limitations and participation restrictions. It expresses aspects of negative interaction between the individual with health problems and physical and social environment.

The disability rights movement advocates equal access to social, political, and economic life which includes not only physical access but access to the same tools, services, organizations and facilities.

While it is often used to describe facilities or amenities to assist people with disabilities, as in "wheelchair accessible", the term can extend to Braille signage, wheelchair ramps, elevators, audio signals at pedestrian crossings, walkway contours, website design, reading accessibility, and so on.

Consider redefinition of laws and standards as long and complicate process which includes changes on all levels, therefore through this project it would be tried to provide solutions for better accessibility for people with visual, cognitive, mobility and hearing limitations in Belgrade, capital of Serbia and Novi Sad, the second biggest city by using ICT (Information and Communication Technology), or more specific: GPS (Global Positioning System) and GIS (Geographic Information System).

### 3 OBJECTIVES

“Orijetir” is conceived as an accessible city map that pretends to provide solutions for better accessibility for people with disabilities in Belgrade and Novi Sad through an accessible application for mobile devices with Android, iOS and Windows OS. The application will be used as an assistive technology to guide from a point of origin to a destination by using of metropolitan transport and/or pedestrian routing. By providing optimal and accessible routing and orientation by GIS and GPS it will try to improve freedom of movement of persons with disabilities as one of the key human rights and to help their independent living.

It is easy to see how in the urban or natural environment the same message is presented on many different ways. The analogy of presenting the same message on different ways in the same urban environment is essential for providing equal opportunities to all and Centre for Society Orientation (COD) as a project leader dealing with this issue from the human rights perceptive. This application will provide specific guiding to persons with visual, cognitive, mobility and hearing limitations trough voice, text and imaging inputs on different languages.

The project presents the extension on just developed application called Accessibility Map designed by Vidan Danković (Accessibility Audit Association of Serbia) through the program Social Change Hackathon presented on the 48 hours competition for the development of 15 social responsible applications for mobile devices. Accessibility Map provides information about the accessibility of facilities. The application is intended for all those who have a need for this information, persons with disabilities, pregnant women, parents with young children, the elderly, etc. Objects are mapped for users with a few simple questions followed by illustration. There is the option of adding additional images and descriptions, and all objects are passing through the administrator verification. Furthermore, data provided by users can be useful tool for city administrators about inaccessible places in town. The project is supported by SEE ICT organizations from Belgrade, with the support of the Institute for Sustainable Communities (ISC) and USAID.

There is an increasing awareness of social responsibility in every community to make a society accessible for all. In many countries this awareness is reinforced by anti-discrimination legislation advisory and regulatory guidelines. However, in many cases such as Serbia, people with disabilities are classified as persons that need protection or care, outside of mainstream society in the medical model of disability.

This project pretends to make one step forward by providing solutions for better accessibility of people with disabilities in Serbia by using ICT. We strongly believe that this project as one of the first step in accessibility improvement in Serbia will raise awareness about the needs of people with disabilities and initiate changes on all levels.

### 4 PROJECT SETTING

“Orijentir” project will be developed in the following phases:

- Cadastral data collection as a preparatory stage for the creation of digital map for Belgrade and Novi Sad <sup>1</sup>
- Cadastral data processing as a preparatory stage for the development of applications
- Focus groups sessions- gathering information about the needs of future application users
- Software development <sup>2</sup>
- Software testing

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<sup>1</sup> Since Serbia is not covered with sufficient data on Google Maps and OSM servers the first stage of the project will be data collection for the creation of interactive map. It will include cadastral information about buildings and streets as well as information about public transport and pedestrian crossings. The information will be collected from our cadastre and public companies in charge for maintaining public transportation and pedestrian crossings.

<sup>2</sup> The application will be first developed for Android since it is the most widely used in Serbia.

- Volunteers training on accessibility standards for special data collection <sup>3</sup>
- Special data collection by usage of Accessibility Map <sup>4</sup>
- Training for future users
- Software operation
- Maintaining application stability and update
- Visual identity

Since the project development started in January 2013 our team of 3 NGO's from Belgrade and Novi Sad is at the moment on the first stage. Estimated project duration is two years.

## 5 PARTICIPANTS

This project will be a coalition project of COD as a project leader, Accessibility Audit Association of Serbia, Ecumenical Humanitarian Organization (EHO) and different participants from public sector such as government and administration of Serbia, Belgrade and Novi Sad and University of Belgrade as well as different private companies and European and US development funds funds for disability issues.

COD is Serbian NGO working since 2008 on providing support to local coalitions of disabled people organizations. Through the development of Local Action Plans in field of disability they focus on the inclusion of disability issues in the process of creating a local policy. Out of consultancy process, coaching and mentoring of local DPO coalitions COD works on outlining specific measures that need to be taken to ensure the full participation of people with disabilities in all fields. For the moment COD is working with 9 local coalitions of disabled people organizations, representing 60 DPO's from 13 municipalities, from all 6 regions in Serbia. Projects are supported by Handicap International, European Commission, USAID y Swedish International Development Cooperation Agency.

Accessibility Audit Association in Serbia (URP) is a non-profit organization, established in 2009 to gather recognized individuals and organizations advocating for the development and implementation of accessibility standards in order to create an environment that benefits for all people. They are committed for implementation of the concept "Design for All" (DfA), which is the professional support for designers and architects with the aim that public space, buildings, services, products and services are planned in a way so that they can use them all the people, regardless of their physical, sensory, intellectual, social characteristics or age.

EHO is a humanitarian, non-factional, non-governmental and non-profit association of citizens from Novi Sad, Serbia. They are actively involved in the building of a cohesive civil society in Serbia by working in the following areas: poverty reduction, development of inter-church cooperation and promotion of human rights. Their work and activities are entirely project-based and resources for project are provided through calls for proposals from national and international donors who support social development and support, inter-church cooperation and health-educative program.

## 6 INNOVATION

From the late 1980s when GPS was introduced there have been huge number of projects trying to provide better accessibility for visual impaired trough smart city concept which implies usage of ICT. These projects are usually specialised only for visual impaired and provide maps for West countries and are not multi-lingual. Also, it is important to mention that because of the high costs these applications are not accessible to users form developing countries. In order to provide lower development costs new applications are usually based on free sources such as Google Maps or Open Street Map. That is a good platform, but unfortunately without sufficient information for our country, so in the first step we are working on development of maps for Serbia.

<sup>3</sup> Educative short movie that provides volunteers with basic information about accessibility standards will be made.

<sup>4</sup> Students of architecture from University of Belgrade and Novi Sad will be included in data collection trough university seminar as well as 20 volunteers with disability who are cooperating with one of the partner organization. The source for the mapping will be existing Accessible Map application. It will be amended with information about bus stops location and pedestrian crossings which accessibility should be evaluated.

Consider a local context and knowledge more adequate in resolving problems of disabled in Serbia, because global applications didn't bring adequate solution, this project will pretend to provide solutions for better accessibility for people with disabilities in general in two biggest cities in Serbia. The application will be developed on three relevant OS's and supported by latest technologies available on mobile devices such as GPS, compass and accelerometer, as well as 3G or Wi-Fi connection to provide maps and a guidance system. The application will be developed to achieve full accessibility following principles of universal design. It will be multi-modal and multi-language project.

## 7 OUTCOMES

The direct result of this project reflects in improvement of mobility and accessibility of persons with disability in order to raise their quality of life and independent living and that is his major benefit. For now, through the Accessible Map project we have recorded over 5000 accessible and inaccessible public buildings in Serbia. However through the data collection phase it will give a further step in creating a greater data base relating to the accessibility: accessible facilities, pedestrian crossings with lowered curbs, sound semaphore, etc.

Through the process of mapping, in order to improve this database, volunteer training will be done. By this training our volunteers will learn about the principles of accessibility, which will increase public awareness of the needs of people with disabilities in our society. It is important to mention that since the first phase of the project will include basic cadastral database collection required for the formation of an interactive map of Belgrade and Novi Sad this project is not only useful for people with disabilities in Serbia but for the benefit of all citizens as well as tourists who come to visit Serbia.

It is important to emphasize that in this project people with disabilities are actively included. Regardless of the existing principles of universal design and accessibility, we believe that every context is different and that through active work with interest group we all begin to get a clearer picture of their actual needs in our society.

## 8 CONCLUSION

Implementation of the project will ensure free movement of persons with disabilities by giving them opportunity to participate in ordinary life activities. Through the citizen participation on mapping accessible and inaccessible spots in our cities we will try to motivate people to start their own small actions to help their neighbours with disability. Indication of inaccessible environments in Serbia will force authorities to initiate some changes as well.

Since the application will be based on pedestrian and public transport routing it will be able to indicate most common routs for people with disabilities in Belgrade and Novi Sad and provide companies responsible for implementation of accessible standards on street and in public transport with information which routs and spots are their priorities in future accessibility improvement.

The application will bring more people with disabilities to public and change generally accepted attitude about medical model of disability in our society and that after the successful development the application could be extensible to other Serbian cities and cities dealing with the same problems in this region.

It is not possible to eliminate all barriers at once, but the right information is halfway. If you pointed the finger on barriers people will know what kind of different problems exist and it will raise awareness of this important issue.

## 9 REFERENCES

- ADA STANDARDS: <http://www.ada.gov/pubs/adastatute08.htm#12102>, accessed on 10/01/2013
- ARGUS : D1.2 State of the art of the relevant technologies and standards (CO), 2012.
- CONVENTION ON THE RIGHTS OF PERSONS WITH DISABILITIES: <http://www.un.org/disabilities/convention/conventionfull.shtml>, accessed on 07/01/2013
- COTTON BRIAN, Moving Citizens in the Smarter City—Using a Framework Approach to Plan Intelligent Transportation Systems Strategies and Implement Solutions, A Frost & Sullivan White Paper.
- DISABILITY MONITOR INITIATIVE FOR SOUTH EAST EUROPE: Slobodno kretanje osoba sa invaliditetom u Jugoistočnoj Evropi: Nepristupačno pravo? [Free movement of persons with disabilities in Southeastern Europe: An inaccessible right?], Belgrade, 2006.