Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Information Technologies

Diploma Thesis Abstract

Development of web application based on open data

Bc. Mario Nivardo Villanueva Duran

Summary

This thesis attempts to explore and provide an overview of Open Data in the Czech Republic. Mainly focused on data set of registered foreigners living in the Czech Republic based on open data set of Czech Statistical Office CZSO.

Furthermore concepts about open data and how it can be useful in different areas will be explained with examples of applications using open data. In this digital age open data is very likely to increase with the rise of the Internet, because it stands for the changing relation between citizens and government. In these days many citizens no longer accept the passive stance representative democracy held for them. Open Government is to be seen in the context of citizens' rights: the right to actively participate in the process of agenda-setting and decision-making.

Keywords: Open Data, Data set, Reuse, Redistribution Data, Web Application, Foreigners in the Czech Republic, Software development process, HTML5, CSS3, JavaScript, Highcharts JS, CEZET Map.

Extended Abstract

This thesis is focused on data set of registered foreigners living in the Czech Republic based on open data set of Czech Statistical Office CZSO. The fields to be analyzed are such as: Total number of foreigners, Demographic events of foreigners, Acquisition of Czech citizenship, Education, Employment, Criminality and Illegal migration in order to generate meaningful statistics which can benefit the municipality, community, companies, tourists or anyone who can find it useful. A web application will be developed using a responsive design based on the software development process (SDLC) using HTML5, CSS3 and JavaScript. In order to make an interactive application will be used CEZET Map to create an interactive map of the Czech Republic and Highcharts JS to create an interactive charts which makes the statistics more understandable.

Objectives

The main goal of this diploma thesis is to design and develop a web application which will make use of open data in order to provide meaningful information by using interactive statistics about foreigners living in the Czech Republic.

Partial goals of the thesis are such as:

- Making a literature review of the current state of Open Data analyzing the advantages and disadvantages.
- Making an analysis and design of a web application based on Open Data of the Czech Statistical Office CZSO.
- Evaluating the developed application and formulating conclusions.

Methodology

The theoretical part is focused on the study and analysis of Open Data, accounting their advantages, disadvantages and its use. The practical part is based on using software engineering methods such as UML Usecase diagram and prototyping. The proposal of working application prototype will be presented here. The application will be analyzed and evaluated regarding other existing solutions. Final conclusions will be constructed with a synthesis of theoretical knowledge and practical outcomes.

Conclusion

The main goal of the thesis was to analyze, design and develop a web application using open data, which was successfully developed by using open data sets from the Czech Statistical Office (CZSO) which makes the statistics more understandable in the eyes of any user without the need to have knowledge in statistics because users has the options to interact with the Maps and Charts to focus on the statistic they are interested in. In order to accomplish a partial goal, there was a brief analysis of public entities such as: Otevrenadata.cz, Nadace Open Society Fund, Ministry of the Interior of the Czech Republic, and mainly about Czech Statistical Office CZSO covering the foreigner section. Furthermore concepts about open data and how they can be useful in different areas was explained with an example of how it benefits the application in the Czech

Republic and EU. Software development process and system development life cycle were also described.

Furthermore, in order to understand how this application was developed and how the downloaded data sets were used, there was a detailed step by step explanation of the whole process from designing and developing the system called *"Foreigners in the Czech Republic"*, which provides meaningful statistics by using an interactive Map, Line and bar charts.

"Foreigners in Czech Republic" web application supports all kind of devices such as Desktop, Tablets and Mobile phones because it was developed using a responsive design. Taking into consideration that in this generation everyone for their comfort are using smaller devices instead of a traditional desktop computer. This completed application was running on the university server from early February 2017. http://app.csita.cz/Statistics/

References

CZSO: Czech Statistical Office. [Online] http://www.czso.cz. Accessed on: 19.3.2017.

Ministry of the Interior of the Czech Republic: Information Publication for Foreigners Czech Republic: ISBN 978-80-7312-068-9. Accessed on 15.03.2017.

Ian Sommerville, Software Engineering: ISBN-13: 9780137035151. Accessed on: 10.02.2017

Nixon, R. Learning PHP, MySQL, JavaScript, CSS & HTML5: A Step-by-Step Guide to Creating Dynamic Websites. O'Reilly, 2014. ISBN: 9781491949450. Accessed on: 19.03.2017

Lee, T.-B, n.d. Five Star Open Data. [online] http://5stardata.info/. Accessed on: 1.3.2017.

Al-Khouri, A. M. "Open data: A paradigm shift in the heart of government." Journal of Public Administration and Governance: ISSN 2161-7104. Accessed on: 27.3.2017.