



MYGEOSS Final Event

Open Data, Open Source, Open Minds

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WALK & the CITY App

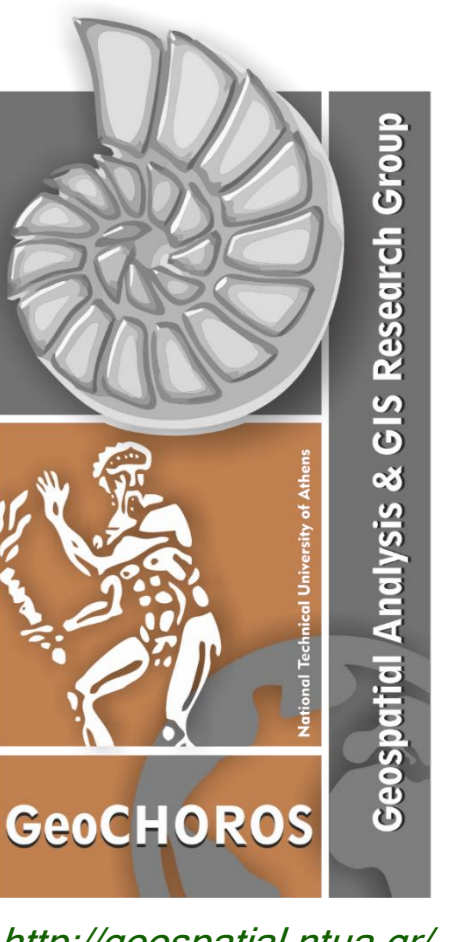
Measuring walkability in European cities through open & crowdsourced data

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http://geospatial.ntua.gr/

1. Introduction

Nowadays, walking matters more than ever before in the fields of urban planning and public health management. This is due to the extensive car-dependent lifestyles many European citizens have chosen to embrace and maintain with increasing frequency. Car commuting is detrimental to the environmental as well as the daily quality of life for the city citizens. Extensive car trips contribute, among others, to negative climate change issues, pollution through emissions, heavy dependency on the crude oil markets, increased noise and vibration levels in the streets, and a sedentary lifestyle with extremely low physical activity levels of population. In turn, this results in obese and overweight populations with multiple health issues, extensive medical care and consequently higher death rates and a grim forecast for the future. According to the World Health Organization (W.H.O) insufficient physical activity is 1 of the 10 leading risk factors for death worldwide and a key risk factor for non-communicable diseases such as cardiovascular diseases, cancer and diabetes. Obviously, sustainable and health promoting modes of active transportation, such as walking and bicycling, are a priority in the urban mobility planning agenda of many major European cities. Such modes of transportation can successfully mitigate the majority of the aforementioned issues and challenges. Travelling through walking is a universally accepted, self-sufficient, human-powered and environmentally friendly mode of transportation. The majority of researchers and practitioners have established significant associations between walking and being physically active with the buildings constructions attributes and the general spatial development pattern of an urban area. The mixed-use development entailing street network connectivity, residential density and proximity to public transport are some of the major factors of the urban built environment which affect walking behavior. Within this framework the concept of "walkability" is significant for both urban transport planners and public health practitioners. Therefore, walkability is a composite quantitative index of the built environment and combines neighborhood design attributes likely to reflect how conducive a location is to walking.

2. What is our mobile app & web-based platform about?

WALK & the CITY is a project designed for citizens, scientists and public authorities dealing with open walkability data and information in European cities, either crowdsourced or objectively measured. It is consisted of two interconnected modules, an Android (version KitKat 4.4 +) mobile app and an interactive website:

The WALK & the CITY Android app can be used by registered users in order to record their walking routes and trip purpose, on a voluntary basis and by utilizing the GPS functionality of their mobile device. At the end of any walking trip an evaluation questionnaire pops up on the screen. Users are then asked to answer nine (9) questions regarding the built environment's characteristics of the route they followed. All collected geospatial and qualitative data and info about the users walking journeys are online uploaded to a web-based open source database and from there, are accessible for free download, preview and comments to the Walk and the City community. The second feature of the mobile application is the picture and photo capturing function of problematic and dynamic walkability related concepts. Furthermore, users are able to categorize as pedestrian-friendly or pedestrian-unfriendly instances and submit their geotagged photos on the webmap, as well as to point out their concerns about active mobility and accessibility in their neighborhood or district by submitting their comments, ideas and thoughts on each available photo depicted on the map.

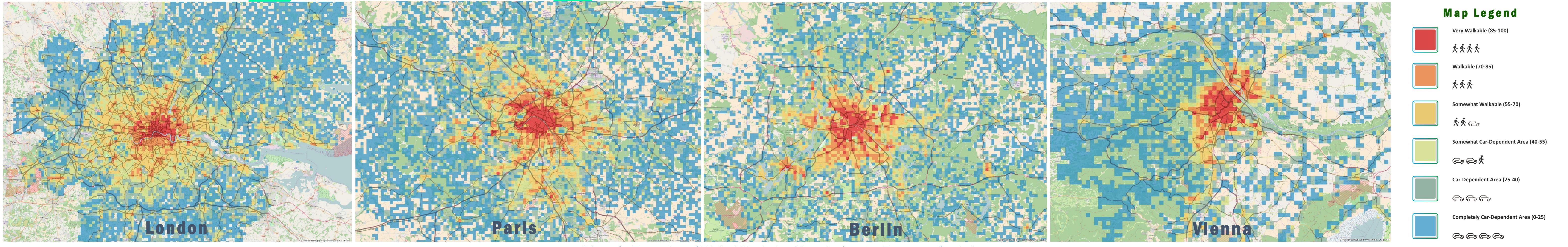


The WALK & the CITY website is an open web-based interactive platform where users can have access to both the crowdsourced and the objectively measured (regarding the European Walkability Index) datasets. More specifically, all the crowdsourced data generated by the users of the mobile application can be viewed and filtered on the relevant map. Thus, European Citizens can get informed about the walkability problems home or visited cities are facing today, as well as to contribute and communicate their ideas and concerns by commenting on submitted by other users photos and geodata. Data pertaining to the walking routes are also accessible for free and can be processed as well as analyzed by every interested stakeholder in order, for him/her, to find out his/her walking environment's state of play. Moreover, on the website users can "discover" and check out the proposed European Walkability Index (E.W.I.) levels and spatial distribution in more than 100 major Functional Urban Areas (F.U.A).

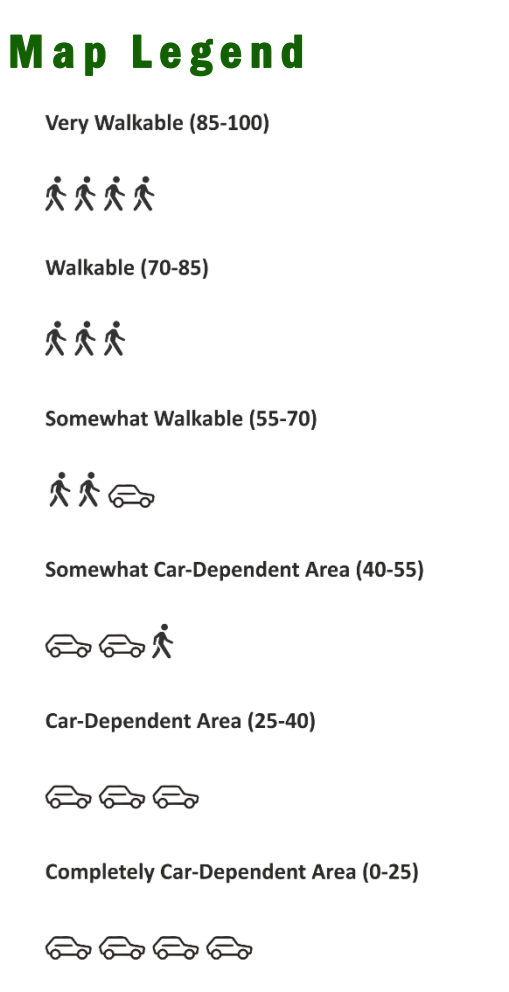
The European Walkability Index Map: It depicts an index assessed via the quantitative combination of eight (8) variables of available GIS-derived open geodata sources, in terms of the built environment characteristics, in order to spatially and qualitatively evaluate the levels of walkability or car-dependency in a user-defined area of any of the studied cities. More specifically, the index is composed by the following variables: the land-use mix, the population density, the "walkable" street network connectivity, the "walkable" street density, the pedestrian streets density, the access (400m) to public transport, the access (400m) to food stores and the slope. Firstly, the index has been internally processed and computed in a Geographic Information System environment and afterwards results for each urban area have been uploaded to the online Walkability Index Map. Additionally, scores have been geo-visualized in a web-GIS module and the European 1km² Reference Grid (provided by the European Environment Agency as a free and open dataset) has been used for that purpose.



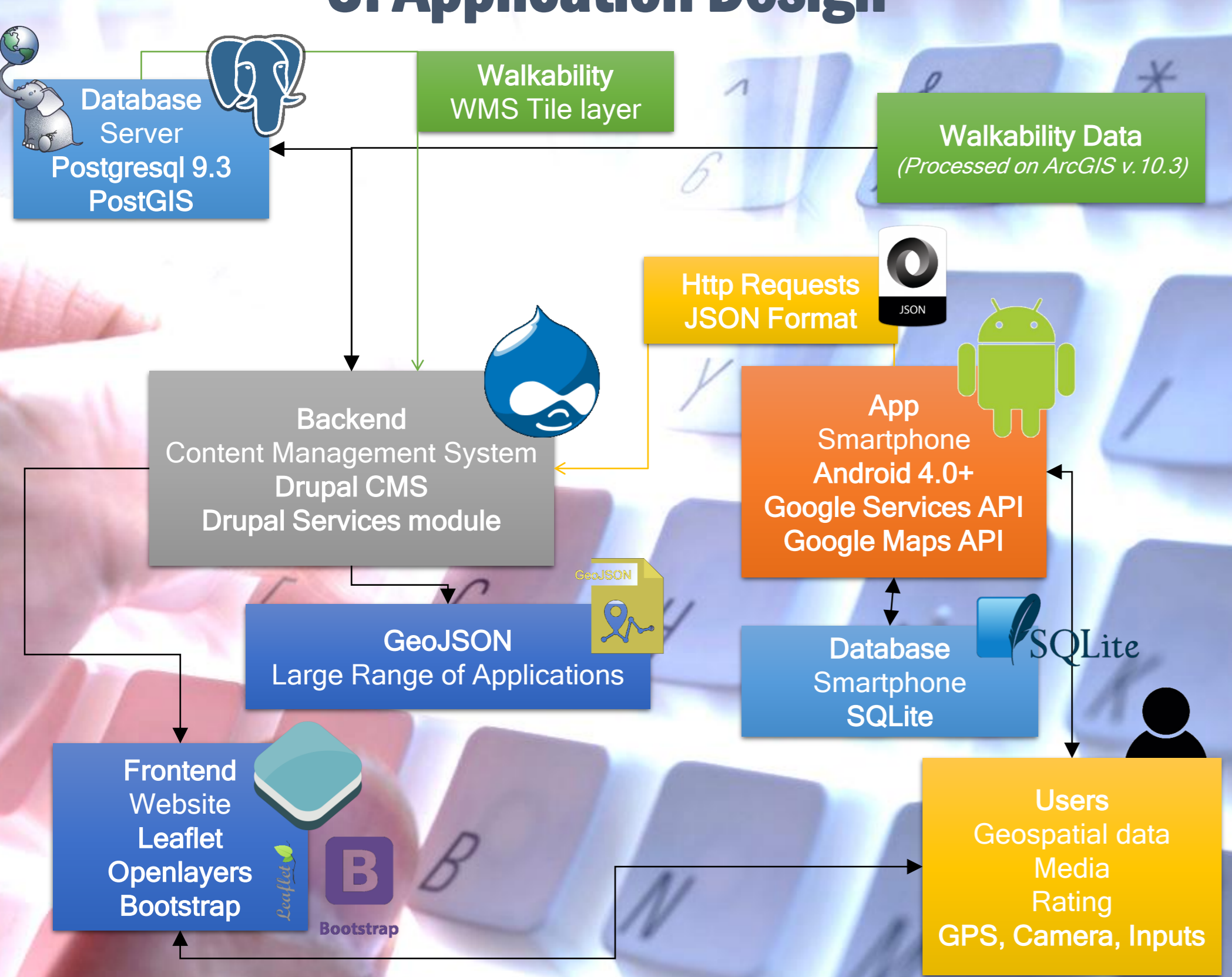
Diagram 1. Variables of the Walkability Index



Maps 1. Examples of Walkability Index Maps in 4 major European Capitals



3. Application Design



4. Discovering the most walkable European cities

Top 20

1 Munich (75,37) City Boundary	11 Barcelona (73,33) City Boundary
2 Torino (75,34) City Boundary	12 Frankfurt (73,27) City Boundary
3 Brussels (75,32) City Boundary	13 Berlin (72,96) City Boundary
4 Vienna (75,04) City Boundary	14 Stockholm (72,95) City Boundary
5 Copenhagen (74,71) City Boundary	15 Seville (72,84) City Boundary
6 Bremen (74,38) City Boundary	16 Paris (72,51) Greater City Boundary
7 Krakow (73,67) City Boundary	17 Amsterdam (72,35) City Boundary
8 Helsinki (73,45) City Boundary	18 Valencia (72,26) City Boundary
9 Praha (73,39) City Boundary	19 Dublin (72,14) Greater City Boundary
10 Zurich (73,39) City Boundary	20 Zagreb (71,20) City Boundary

(Our ranking includes Functional Urban Areas with population of more than 1.000.000 people)

5. Why is this an innovative idea?

- The WALK & the CITY mobile app and web-based platform provide the ability to European citizens to publicly report or/and dynamically analyze critical and/or problematic urban features - characteristics with respect to the walking accessibility and potential of their city area.
- Our project constitutes the first pan-European attempt to create an index which delves into the walkability level of our cities as well as urban districts in a comparative and objective manner.
- Our applied methodological approach for the walkability index calculation is totally based on open and free datasets reducing in this manner, its development and application costs.
- The index assists citizens and urban authorities in making better spatial decisions as well as organizing less car-oriented (depended) and more sustainable and healthy lifestyles (e.g by developing a walking strategy or by making a district more accessible & livable). Scores stemming from crowdsourced data and European Walkability Index (EWI) can be combined by stockholders, researchers, practitioners and active citizens in an advanced and more complex walkability analysis framework.
- Finally, our web-based interactive platform can act as a prototype observatory for urban active mobility and walking accessibility through which citizens are able to comment and in-situ report issues and characteristics of the built environment the live or visit.