

IMPROVING ACCESSIBILITY INFORMATION IN PEDESTRIAN MAPS AND DATABASES

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BACKGROUND AND OBJECTIVES

In order to satisfy the various needs of the different users, the geospatial databases for pedestrian route planning should contain detailed information on accessibility, such as pavement surfaces, deep slopes, and stairs. A comprehensive spatial database for pedestrians with special needs would increase their spatial awareness, help them to orient themselves more easily and, finally, find their way in unfamiliar environments.

The aim of the study was to collect knowledge about what kinds of geographic information currently exist and what are the information contents requirements of mobility impaired users so that they could resolve whether or not they would be able to take a particular route. The final goal of this ongoing research is to create a set of guidelines for developing the geospatial databases in terms of accessibility and Design for All.

APPROACH AND METHODS

We scrutinized a wide range of map services, geospatial databases, hiking and outdoor route services, city maps, and journey planners on the web for pedestrian use in Finland. In total, we examined approximately 25 map sites and services, some of them covering large areas. Additionally, we included web maps and map services of special accessible paths and routes in the survey, as well as available guidelines for considering accessibility for pedestrians.

RESULTS

We studied the data contents of the different types of map services, especially from the accessibility point of view to get an overview. The national databases were included; the Topographic Database, maintained by the National Land Survey (NLS) and Digiroad, maintained by the Finnish Road Administration. The NLS's Topographic database includes relevant attribute information but not detailed information on accessibility. The main emphasis in the database of Digiroad is on vehicle navigation; it needs additional data in order to meet the level of detail required by pedestrians. The OpenStreetMap (OSM) was included in the study; it has areas with high information density, but lower data density areas still exist. At best, a wide range of accessibility information is available.

For the overview of city maps, we analyzed maps from 16 Finnish cities. Some attribute information is included but not detailed information on accessibility. For hiking and outdoor activities, there is a site for Finnish national parks and different map services for regional hiking areas. The information on accessibility is not explicitly offered for map users, but destinations classified as barrier-free can be found. The actual accessible paths have been designed especially for disabled users. While the available information on accessibility is extensive, it is given in narrative textual form. The data is not included in geospatial databases.

People use more and more often maps interactively. Also route maps for current needs are frequently required, and therefore we studied also journey planners. Some basic requirements for the service are specified according to user needs. An optimised route calculation is traditionally based on parameters such as the travelling time or the shortest distance, which are the most important preferences for many users, but not necessarily for mobility impaired users.

In addition different kinds of guidelines for accessibility were studied. In summary, based on the literature and web searches conducted, the information contents of geospatial databases for fulfilling the requirements of the users with impairments were suggested.

CONCLUSION AND FUTURE PLANS

A considerable number of examples of geospatial databases and map services in Finland have been examined from the point of view of accessibility. Some good map applications already exist, but in order to fully serve a disabled pedestrian, more detailed information on accessibility should be included.

The quality of navigational data is one of the major issues for pedestrians. It is a challenge to update the data contents and the structure of city map databases to be fully exploitable for navigational purposes and to create an accessible city.

It is possible to gain a spatial database that includes usable and relevant information for many kinds of users by a change in attitude, more effort and proper guidelines. Well-defined guidelines for data contents, data classification, and functionality would ameliorate the present situation and make maps and map information more useful and, particularly, the environments more accessible for everyone.