

Case Study

TOOL FOR PLANNING PUBLIC TRANSPORT

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Description of Application

Switzerland has a very dense public transport network even reaching very remote mountainous areas. The cost for this service is shared among three levels: National, State and commune.

The Swiss government provides a certain amount of subsidies to the respective department of each state. The state (e.g. Lucerne) distributes these funds to the communes for maintenance and development of new infrastructure, according to the number of potential communal users of the various public transportation means.

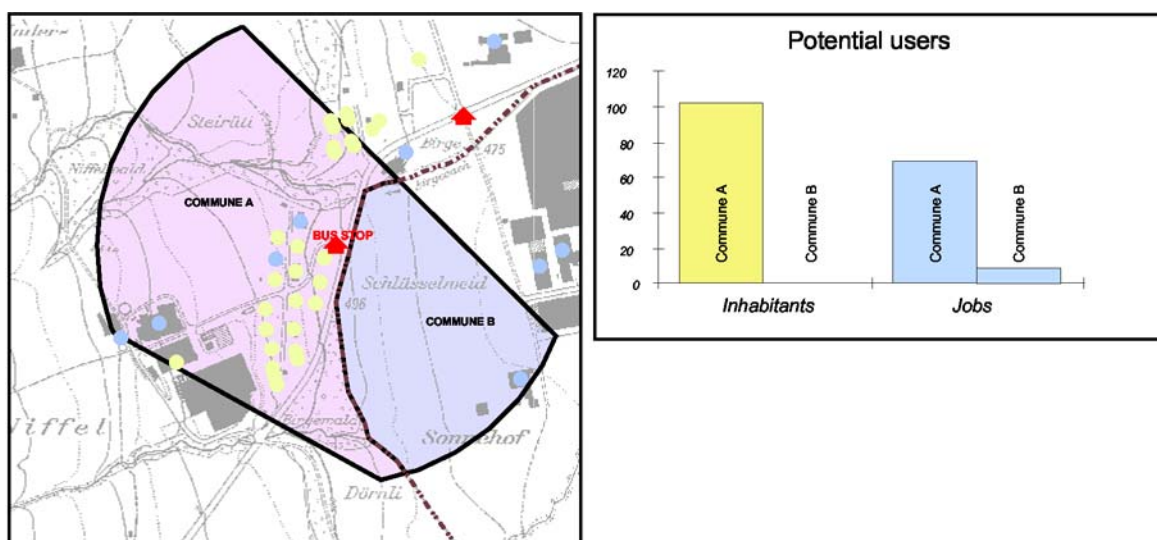
The number of potential public transport users is defined by the number of inhabitants and the number of jobs in the catchment of each public transport stop.

To enable the respective department of the state of Lucerne, to develop a key to distribute the budget to each commune an application was developed linking a Geographic Information System (GIS) with the census database of the state.

Firstly, theoretical catchments for each public transport stop are delineated. If a catchment area is spread across two or more communities, it is split at the communal boundaries.

Through a combination of the census database and the geographic location of these stations the number of potential users is calculated for each public transport stop. These values are then fed into a database application of the respective state department where a key for cost distribution at communal level is automatically calculated.

The information gained from the above-mentioned analyses is important for public transport planning as well as for resource allocation in general.



Benefits

The use of GIS contributes to many planning and management tasks in the field of public transportation:

- Evaluation of a cost and subvention distribution key

- Easy update if new census data are available or a change in public transport stops takes place
- Facilitation of the identification of non profitably stops
- Support of timetable planning efforts

Issues

- At the moment the algorithm used to delineate the catchments for public transport stops is quite simple. To define more accurate and realistic catchments boundaries a cost-distance function could be used.
- Potential public transport user data should be linked to actual (survey) user data to determine the quality of the statistical statements and to enhance it.
- Develop a tool to identify areas where public transport is foreseen in the future.

Data used

- Support of timetable planning efforts Census data (Database)
- Location of public transport stops (GIS data)
- Boundaries (GIS data)

Funding

The GIS Coordination Office of the state of Lucerne implemented this application on demand of the Department of Public Works in 1996. The Public Works Department has the mandate and budget to manage public transportation. Parts of these funds are used for the development of this application and its yearly adjustment to new census / public transport stops data.