The State-wide Bicycle Network North Rhine-Westphalia .

Signposting System · Steps Towards the Establishment · Support, Maintenance and Updating · Communication · Internet Bicycle Route Planner

Ministerium für Verkehr,
Energie und Landesplanung
des Landes
Nordrhein-Westfalen

NRW.

1. THE STATE OF NORTH RHINE-WESTPHALIA

The Federal State of North Rhine-Westphalia (NRW) is the most populous state in the Federal Republic of Germany, with a population of circa 18 million. Here the same number of people as the population of Holland lives on an area equal to that of neighbouring Belgium. NRW has a federal state system with a total of 427 independent communities.

2. STEPS TOWARDS THE ESTABLISHMENT OF THE STATE-WIDE BICYCLE NETWORK

2.1 Inducement

In the past decades extensive bicycle routes in NRW were equipped with largely different forms of signs and signposting. This variety impacted negatively on the clarity and facility of usage for cyclists, and hence necessitated unification.

Signposting for bicycle transport in NRW will be significantly improved through the standardisation.

Moreover, the RVN NRW makes an important contribution to the promotion of the economy and tourism in NRW.

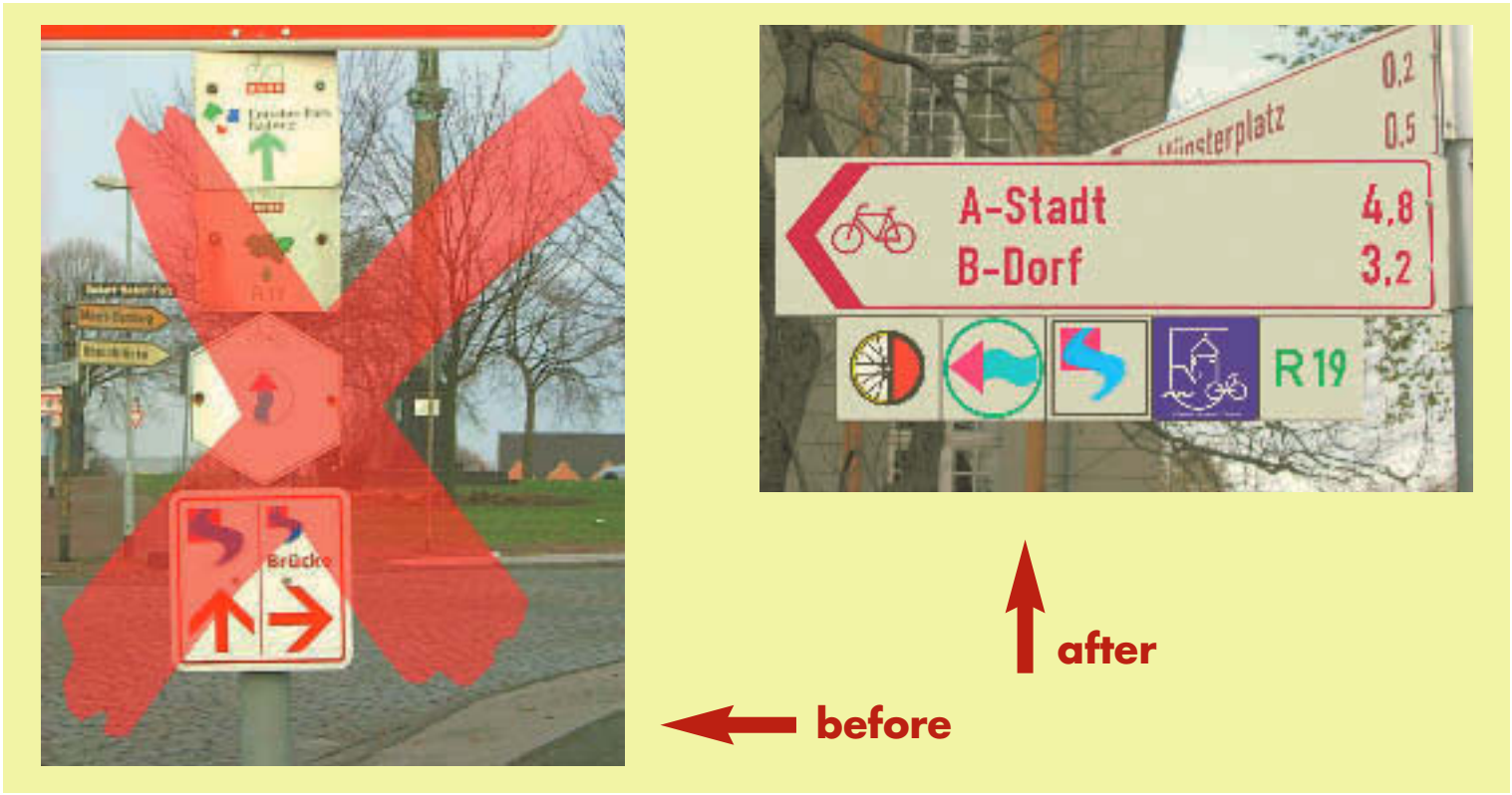

Fig. 1: Signposting design before und after the introduction of the RVN NRW

Thus the goal was to establish a network of major bicycle routes in the whole of NRW that were equipped with the same unified signposting system (see figure 1). In the year 1995, the State Government decided on the establishment of the State-wide Bicycle Network North Rhine-Westphalia (RVN NRW). It comprises a total length of 13,500 km and the total investment volume amounts to ca. 6 million Euros (this equals the costs of only 30 km new bicycle paths).

The RVN NRW represents a further significant step towards the promotion of bicycle transport, alongside other important projects such as the "Bicycle-friendly cities and communities" and "100 bicycle stations in NRW".

2.2 Goals of the State-wide Bicycle Network

The concept of the RVN NRW is to connect all communities in the State of NRW with an area-wide system of bicycle-friendly routes that are equipped with a unified signposting system. Bicycle routes will connect all centres and all railway stations with one another in short and direct ways.

2.3 Standards of the State-wide Bicycle Network

The following design and quality criteria form the basis of the RVN NRW (see figure 1):

Network planning

- The RVN NRW guides the user through high quality and secure routes. The network connects all cities and communities in NRW. It represents the link between daily and leisure transport as well as the local Bicycle Networks.
- The integration of all railway stations in the RVN NRW is a central planning pre-requisite, so that the usage of this environment-friendly transport mode is promoted.
- The connection of the cities in RVN NRW is effected in such a way that both city centres as well as larger city quarters are integrated in the network.

Fig. 2: Network structure of the RVN NRW

Route guidance

- In the selection of routes, the short and direct routing (path and time) is in the foreground.
- In the process of network design safe and convenient paths are selected.
- The attractiveness of the routes is a further design criterion in order to encourage the usage of bicycles.
- In order to achieve the planning criteria for secure routing, the bicycle transport facilities and secure routes segments (e.g. 30-km zones, agriculture paths) or routes that are planned for the security of the cyclist are integrated in the network.

Digital project processing

The planning of the RVN NRW is carried out digitally with the aid of a database. This facilitates the support and maintenance of the network, as data can thus be centrally maintained and constantly updated.

A further positive effect of the digital processing is that the RVN NRW has established the basis for information systems and value-added services, like for example comprehensive information via internet (www.radroutenplaner.nrw.de), as well as GPS routing.

2.4 Standardized signposting

Definition of the signposting system

By selecting the signposting system the State of NRW wants to consciously set high-quality standards for the communities. For this reason, the "Guideline on Signposting for Bicycle Transport" of the German Research Society for Roads and Transport (FGSV) was introduced as the signposting system.

Fig. 3: Arrow signposts in the standardised state design

Thus through the RVN NRW, bicycle routes in NRW will be equipped with standardized signposting based on uniform systematic principles. Arrow and tabular signposts (dimensions 1000 x 250 mm, indication of two destinations, distances and where appropriate theme route inserts) indicate the route course at complex junctions (see figure 3). Signposts along the way (dimensions 300 x 300 mm, bicycle pictograph, direction arrow) confirm routes along straight routes or at clearly laid out junctions (see fiugre 4).

Fig. 4: Inter-route signposts in the standardised state design

Legal status of the signposting

With the RVN NRW, the State of NRW accords bicycle signposting a particular significance within the state transport politics: for the first time in Germany signposting for bicycle transport has the same legal status as signposting for vehicle transport. The associated clear regulation of responsibilities for updating and maintenance has a positive influence on the continuity and quality of the signposting system.

2.5 Financing

Normally, measures to promote bicycle transport that the state is interested in are sponsored by up to 80% of the costs. However, in order to secure the area-wide and speedy introduction of the RVN NRW, while in parallel creating the same initial conditions for all communities, the state of NRW is financing the initial equipment of communities with the signposts of the RVN NRW to 100%. Alongside the planning services of the consultants this also comprises the production and installation of the signposts and signs. This is also a special service on the part of the State.

2.6 Steps towards the implementation

The RVN NRW was executed in several individual steps:

- On the basis of the first draft network design, the IVV and SVK Planning Firms travelled all routes, taking into account the agreed qualitative criteria and thus developed the network planning.
- This network design was cleared in detail with all 427 communities in NRW.
- The following aspects were taken into consideration in the destination planning:
  - The destination information comprises a long- and a short-distance destination.
  - As a rule, city or district names are used as destinations.
  - Already existing high-quality signposting of local routes that are congruent with the routes of the State network have been integrated into the RVN NRW.

- After the clearance of the destination planning, the exact signposting on site was carried out in the second perambulation. Hereby, the detailed planning for every single signpost was stipulated, for example the naming of the long- and short-distance destinations, as well as information on distances, theme route inserts, direction to railway stations and the means of mounting. In addition, the future position of new signposts were clearly documented through photographs (see figure 5).

Fig. 5: On-site surveying of routes and planning

- Thereinafter, the IVK/SVK Planning Firms negotiated these plans with the road owners (see figure 6). All signpost contents, locations and means of mounting were discussed jointly. Upon conclusion of this phase, the road transport authorities gave the official order to implement the signposting.

Fig. 6: Coordination meeting with the involved parties

- Thereupon, the NRW State Enterprise for Road Construction issued an invitation to tenders for the production and mounting of the signposts in each county, commissioned a company and controled the construction work after the installation of the signposts.
- In conclusion, all parties involved received an updated inventory cadastre, both in hard copy and electronically (see figure 7).

Fig. 7: Cadastre bulleting on the RVN NRW

3. SUPPORT, MAINTENANCE AND UPDATING

3.1 Quality assurance of the route guidance

Following the installation of the signposts these pass into the ownership – and thus also the responsibility – of the corresponding road administration. From this point onwards, the following activities are required in a recurring rhythm:

- Replacement of missing signposts
- Cleaning and overhauling of the signposts
- Inspection of the stability of the signposts
- Monitoring of the recognisability (where necessary cropping trees and bushes)

Fig.8: Signpost stickers on the RVN NRW

In order to ensure the support and maintenance of this high-quality guidance system, the conventional route controls were complemented by the establishment of a central toll-free service hotline. A label sticked on every post in the network bears the phone number, as well as the individual post number. In this way, citizens can report damages by telephone, thus contributing to the quality assurance of the network and supporting the road owners in their work (see figure 8).

3.2 Updating of the network with local/touristic network changes

The RVN NRW constitutes the most significant major axes for bicycle transport in NRW. The goal is to complement this basic network with local Bicycle Networks and high-quality touristic theme routes, in order to achieve a consolidated orientation system for bicycle transport in NRW. To achieve this goal, the "100 Communities in the Network" State support programme was created in 2005.

4. COMMUNICATION

A significant element for the successful implementation of the new product is the target group-specific communication of the RVN NRW. The following steps were taken:

4.1 Project information – Communication with parties involved in the project

- At the start of the operation, the project stewardship conducted information events at which the inducement and objectives of the "Bicycle Network NRW" project, the project financing and the corresponding contact persons were presented.
- The Ministry of Transport issued a newsletter twice a year for the information of the parties involved in the project. Twelve newsletters are planned in total.
- Another important component of the public relations was the creation of a separate internet address for the RVN NRW (www.radverkehrsnetz.nrw.de).

4.2 Local Public Relations – Communication with Users

- The toll-free hotline is the central contact point at the State Enterprise for Road Construction for queries and suggestions regarding the RVN NRW.
- In order to inform the general public about the qualities of the Bicycle Network, press meetings take place at the start of the installation work.
- Large-size posters inform the citizens about the integration of the respective counties in the NRW network. All counties receive 200 large scale posters for this purpose at the start of construction activities.
- Following the installation of the signposts, every community receives maps (print run 5% of the population, at least 10,000 copies) that present the routes, introduce the signposting system, advertise for the use of bicycles on these routes and highlight landmarks.
- To promote the RVN NRW at local information events, bicycle action days etc., a large-size exhibition wall, demonstration signposts and banners are available on a loan basis. In addition, advertising material is distributed at such events bearing the logo of the RVN NRW, for example, bicycle bells, bicycle lights, trouser bands, lanyard keychains, shopping cart chips, caps, safety vests and t-shirts.
- Presentations are made on the RVN NRW and the Bicycle Route Planner at many national and international fairs and congresses introducing this major project (see figure 9).

Fig. 9: Fair stand on the RVN NRW

5. The NRW Bicycle Route Planner on the Internet

Since August 2003, the NRW Ministry of Transport has been providing a unique service for cyclists on the Internet: an interactive bicycle route planner. The software allows planning a bike tour by selecting start, destination and intermediate stops by clicking on the map or by entering addresses.

Fig. 10: Different full-screen maps

Fig. 11: Examples of additional info boxes when clic

The overall goal when designing the bicycle route planner was to provide the same or even better service than routing software for vehicles on the Internet. According to the requirements set, the bicycle route planner should, inter alia:

- Take into account the special needs of cyclists
- Use dedicated safe bicycle routes whenever possible
- Allow special routing options such as "prefer thematic routes" or "avoid steep grades"
- Provide additional tourist information
- Link railway stations to the network
- Allow "door-to-door" routing between all addresses in NRW
- Use state-of-the-art interactive mapping technology
- Provide route maps, driving instructions and GPS tracks for every route calculated

Fig. 12: Route with access in secondary network

The backbones of the Bicycle Route Planner's user interface are full-screen maps with useful tools, like free zooming, moving, scrolling and printing. According to the zoom level, different maps are used – up to detailed maps provided by the State Surveyor's Office with a scale of 1:10,000, showing street names (see figure 10).

The Bicycle Route Planner offers comprehensive information. The bicycle tourist can interactively discover the location of tourist attractions, train stations, bicycle stations, tourist information as well as Bed&Bike hotels. Clicking on a symbol on the map opens further frames with more extensive information and links to other related sites – e.g. the schedule information system for railway stations (see figure 11). The data for the points of interests are maintained by tourist associations with the aid of an on-line editor system in the internet.

Whoever wants to know exactly where the thematic bicycle routes in NRW are located can have them displayed on a corresponding map.

To start a route choice process the locations for start, destination and intermediate stops can be marked by clicks on a map. Moreover, an address-specific door-to-door search calculates bicycle routes between 3.8 million addresses in NRW. A special algorithm ensures that the route calculated will use dedicated bike routes, and other roads and paths only to gain access to the network at start or

king on icons

Fig. 13: Impact of different route choice parameters

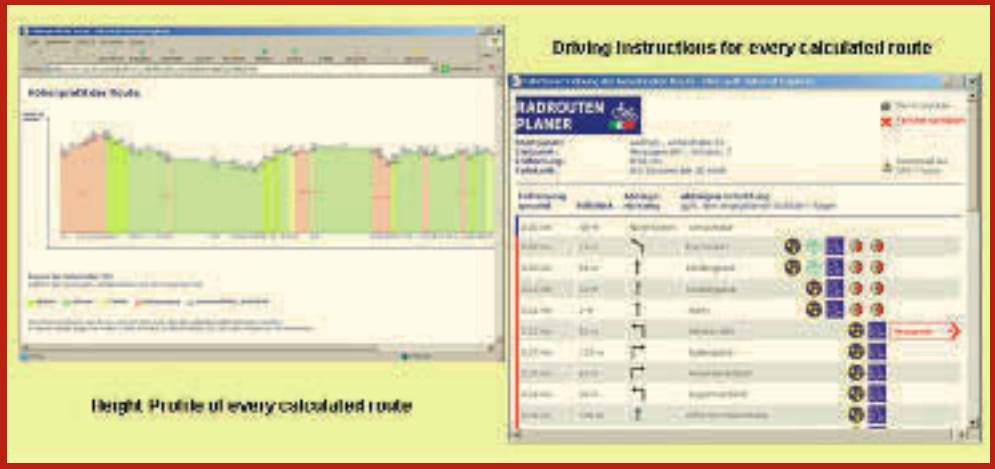

Fig. 14: Examples of height profile and driving directions

destination. This ensures that cyclists will find safe routes for most of the trip. The optimal route is shown on screen in two colours: blue for the parts in the secondary network and red for the parts in the bicycle network (see figure 12).

However, a user can modify the route choice procedures by selecting options like "prefer thematic routes" or "avoid steep grades". Figure 13 provides an example of the latter. The left part of the figure shows a calculated shortest route with the corresponding height profile that reveals a steep grade at the end of the trip. The right part of figure 13 shows the result of a route choice between the same flags when using the route choice option "avoid steep grades".

For each route calculated the programme provides a full-screen interactive map, the length and duration of the trip, a list of detailed driving directions presenting street names as well as distances and signposts and a route height profile (see figure 14). A download of the corresponding GPS track for each route calculated enables cyclists with their own GPS receiver to get detailed route guidance on their GPS applicance.

The Internet service, particularly the network, is constantly being maintained and expanded. More and more local bicycle networks will be incorporated. In May 2005, the network statistics are as follows:

- State-wide bicycle network: 13,413 km
- Thematic routes: 10,659 km
- Local bicycle networks: 739 km
- Bicycle routes outside NRW: 700 km
- Other roads and paths: 235,000 km

The service available at www.radroutenplaner.nrw.de was an unexpected success from the very start. From August 2003 to May 2005 more than 31 million pages were generated. Even in winter, more than 20,000 pages have been generated per day. In April 2005 for example, with the start of the bicycle season, more than 100,000 pages were generated per day. The service has received very good critique on television and radio and in the newspapers. In summer 2004, the State Minister of Transport accepted the German "Best for Bike" award for the best decision promoting bicycle transport in 2004.

www.radverkehrsnetz.nrw.de

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