

A Map That Took 25 Years to Complete

Large Scale Base-map As Authentic Registration?

Production of the large scale base-map of The Netherlands was finally completed in January 2001. Overall, it took more than 25 years for the geo-information community in the Netherlands to achieve this goal. Besides the technical story behind this map, there is also an organisational one. Usually the two stories are intertwined, but as most readers of GIM International have abundant knowledge of geo-information techniques and technology the focus here is on the organisation behind the map.

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The large scale base map of The Netherlands (abbreviated in Dutch as GBKN) is the most detailed topographic map nationally available. At the present moment, no other country offers a map with this level of information density related to area. Detail is here defined in relation to a scale of 1:500 or 1:1,000 in urban areas and 1:2,000 in rural areas. In this aspect of the map may be recognised the heritage of the former map sheet index. Nowadays information management is fully supported by spatial databases. The usable scale range for presentation starts from 1:100 and moves up to 1:5,000. Point precision in the national reference system is 0,2 metre in urban areas and 0,4 metre in rural areas. This sets the lower limit of the presentation scale. At the 'small scale end' the rich detail of the map sets the limit.

Contents of the Map

The database contains all essential standard topographic information relating to The Netherlands, with clearly documented and precisely maintained contents. Spatial information is added by users depending upon their requirements. The map contains three basic types of information:

- ?? Well-identifiable topographic objects: buildings, constructions and infrastructure objects such as bridges and viaducts. This information group is also re-ferred to as 'hard' topography.
- ?? Other topographic objects: waterways and features such as hedges, fences, etc. This is referred to as 'soft' topography.
- ?? Semantic information: street names, house numbers, names of waterways, etc.

Map Use

The spatial database does not include extra intelligence related to the represented objects. Basic elements are lines; the map has a 'spaghetti' structure. This means that the line elements are classified as limits of topographic objects; these elements are 'unaware' of the 'existence' of other elements, nor do they contain further information about that specific area-object.

A lot of applications are possible here, varying from consultative functions and visualisation and from geo-reference in planning and construction to a basis for a geographic information system.

So it comes as no surprise that the group of users is large and diverse. Users are mostly municipalities, utility companies (electricity, water, telecommunication and gas supply services), water and management boards responsible for reclaimed land, cadastre, architects, developers, etc. The map is presently consulted on an average of 1,800 times per day.

Map Production [1]

A study of the history of the map shows a complex decision making, financing and production process which could easily require a book for its summarisation.

Already in the sixties and the early seventies of the last century, a wide range of organisations and companies had begun the production of large scale base-maps in The Netherlands to fulfil their own information needs. As many different parties were involved, diversity occurred. This led to investigation on the part of experts, institutions and commissions. All in all, the result was a report, published in 1974, setting down statements concerning the scale, structure, datum, precision, contents, visualisation, material and the value of a standard base-map. Recommendations included initiation of production of such a map, execution of this project under full responsibility of the minister for Housing and Plan-ning, establishment of a central council to guide map production and, finally, the establishment of provincial working groups under the auspices of a permanent council. The practical work was assigned to the Dutch cadastre. In 1975, an energetic start was made on the map-making and positive progress resulted in several provinces. However, soon financial problems arose.

Local Needs

In 1978 the production process was in need of stimulation. The central council presented a few bottlenecks to the minister for Housing and Planning. Problems arose because of: divergent requirements leading to diverging solutions, different levels of benefits for different users, problems in allocating financial contributions for the different parties, difficulties in combining existing spatial data with the base-map, the need for systematic manufacturing and the maintenance of the map. The data acquisition process was supported by photogrammetry and already available maps were used. In the province of Noord Brabant it was decided that the map should have terrestrial precision. In this province only the fronts of the houses and roadsides are represented, limiting the use of the map to mainly utility companies which use it to register their assets.

In the years that followed, the problems never completely disappeared and the process had its ups and downs. By 1985 only a mere 12% of The Netherlands was covered by the map. In the late eighties the cadastre still held the initiative but financial problems increased to the point that it became clear that financial input on the part of the cadastre -50 per cent of the production costs for the process - was too high.

Public Private Partnership

In 1990 it was decided that the Netherlands cadastre should operate more independently from the government and should cover the costs of all provided products.

Because the need for a base-map was still very much alive, a new partnership framework for making the base-map was launched in 1992. All parties involved in the production process agreed to the framework, including the apportioning of financial support: utility companies 60 per cent, municipalities 20 per cent and the cadastre 20 per cent. A public private partnership model was established for the provincial working groups. A new organisation was subsequently introduced: the national partnership for the base map. The national board comprises officials from the cadastre, KPN (at that time the national telecom company), boards of municipalities, of utility companies and of water and management boards responsible for reclaimed land. The task of the national partnership for the base-map at that time was to support the regions where municipalities gave only low priority to the base-map and to initiate the process of map-making in those regions where the progress was too slow. The effect was very positive. In 1995 already more than 60 per cent of The Netherlands was covered by the map - an enormous amount of progress had been made in a couple of years

Further Standardisation

In 1997 it became clear that the goal no longer lay beyond the horizon.

The map-making process took 25 years of regional initiatives and financing. These are the reasons for some discrepancies in structure and contents of the map. Also, price and terms of delivery discrepancies appear in the process of updating. At the moment eleven regional organisations, together with more than fifty municipalities, are responsible for the maintenance of the map in their own territory. Discrepancies are more pronounced in places where the map is managed by municipalities. In response to this situation the national partnership for the base-map decided to develop a policy for the near future, to run from 1998 to 2002.

The policy plan drew up initiatives for the achievement of uniformity in the face of local differences and project teams em-

barked upon their activities to tackle the problems. Team members were representatives of organisations using the map. The teams recognised problems in uniformity covering:

- ?? Structure and contents.
- ?? Updating and maintenance.
- ?? Selling and distribution.

In 2000 and 2001 reports were published which included guidelines for bringing into line the structure, content and update of the base-map.

Structure and Contents

Given guidelines for a uniform structure and contents of the map and with the correct software, users can develop an object-oriented map. An object-oriented map has a lot of advantages in terms of offering people information, because of the improved possibilities for combining specific user data with spatial base data, and in the presentation of such a product.

The national partnership for the base-map did not support the final step towards object-orientation as, on the one hand not all users are in need of it nor do they want to pay for it, and on the other hand the partnership recognised chances of conflicts arising between the objects originating from different users defining their own specific objects.

Updating and Maintenance

The description of the process for updating the map recommends that the regional and municipal organisations organise the process in a uniform way. It also describes techniques for an efficient maintenance of the map data. In May 2001 a meeting was held in order to celebrate the completion of the map. During that meeting, managers of all the organisations that had been involved in producing the base-map signed an agreement confirming the role of the national partnership for the base-map and the relationship between the organisations and the national board. The signing of the agreement will result in a new organisational structure, with representatives of the regions on the board and therefore more support for the board by the regions and more centralised control of the maintenance of the map.

Selling and Distribution: Authentic Registrations

One important activity that has been initiated is the development of a virtual selling point on the Internet. Up until now, nation-wide users had to contact all the regions from which they wanted to buy the map. It is expected that in 2002 the map will be ordered very easily by logging on to one web-site. Another interesting new item is the coming into existence and development of Authentic Registrations (AR) in The Netherlands. The goal of this registration system is that common and commonly used datasets belonging to governmental organisations should be of benefit to all public authorities and, even better, to everyone who uses this kind of data for his or her own purposes. It is clear that any AR needs a lot of investigation and legislation, but the benefits are considerable and are expected to exceed any difficulties that may arise in implementation.

In the autumn of 2001 an investigation will begin that will highlight the opportunities offered by the large scale base map as an AR. As and when the large scale base-map receives that status it will have a great impact on the use of the data, which will expand. It will become legally mandatory to use the base-map for planning and security purposes. This is expected to reduce the costs involved in maintenance.

Concluding Remarks

A Dutch saying goes 'standing still is moving backwards' but this is clearly not the case with the GBKN. Already a large number of developments are in progress and they will certainly have their impact on the (near) future.

Although it took 25 years to complete, the large scale base-map has already justified its existence and shows great potential for becoming THE standard large scale base-map of The Netherlands!

[1]: Ir. J. Polman, *Geschiedenis van de GBKN, Kartografisch Tijdschrift, jaargang XXVI, nummer 2, 2000.*

Biography of the Author

Hans van Eekelen has held several positions in The Netherlands Cadastre. Since March 2001 he has been active as a member of the National Partnership for the Base-map

Information also on: www.gbkn.nl