

# GOKaRT: Graphical Online Search Tool for Maps

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## **Abstract**

The map department of the Staats- und Universitätsbibliothek Göttingen together with the Berlin State Library propose a project to develop a web-based graphic cataloguing and search system for maps, to be funded by the German Research Foundation. This tool shall be made available to all map holdings in archives, libraries, university departments and museums in Germany as a comfortable means for the administration of map holdings and as a search tool. Sheets belonging to map series as well as single maps (old and new) will be registered cooperatively by the participants with simple tools. This cooperation in data maintenance will facilitate the work especially for understaffed map holdings. Depending on the type of map there are four different mechanisms for map reference. For map series electronic index sheets are used which will show information regarding the various issues of the map sheets. Due to the intuitive graphic search entry GOKaRT-users will easily find the required maps of a certain region available in a chosen holding. User administration modules ensure comfortable handling. GOKaRT is being developed on the basis of licence-free open source programmes.

In case financing is provided by the German Research Foundation, GOKaRT can be used free of charge internationally. This would require a contract stipulating data exchange between the partners as well as permanent storage and usability of the data.

**Key Words:** GOKaRT; maps; search system

This article contains some ideas about GOKaRT (**G**raphisches **O**nline **K**arten **R**echerche **T**ool) a project which is now in its final preparatory phase. Under the leadership of the map departments in Göttingen and Berlin, the map curators' commission of the Deutsche Gesellschaft für Kartographie will submit a project proposal to the DFG (the German Research Foundation). The background and the current development of the project will be described. The project's aim is to create a virtual network offering the use of graphical search tools as the primary option for map collections in archives, libraries or institutes in Germany.

The starting point for our considerations is the generally unsatisfactory catalogue situation for maps, which is independent of the institution where maps are collected. To a great extent the heterogeneity of the cataloguing rules which are applied is the main reason for this situation, though it is not the only one. Whereas the map collections in libraries mostly apply a uniform set of rules, we also encounter only local schemata or, in small collections, even only a rough filing and arrangement by region. Small in this connection does not mean small in relation to the number of map sheets — the collections at university institutes of geography often comprise more than 100,000 sheets — but small refers to the number of personnel as they often have to do their work without any professional staff.

These collections mainly consist of map series, this being the reason for the large quantity of map sheets. There is a long tradition of using index sheets for map series. The problem however is that it only indicates that the map is part of the collection, it does not give any information on the editions, if there are more than one. In the middle of the 1990s first attempts with electronic index sheets were made. They were available on the internet and were displayed in the form of clickable html images. At the same time the first commercial products made their appearance on the market; these local installations were very expensive and had only a limited distribution.

The use of electronic catalogues in libraries and archives entails new challenges; among other things, a new approach to the application of the present rules becomes necessary. In a card catalogue you find terms; electronic catalogues only have character strings. Concerning maps with their unspecific titles this has far-reaching consequences for the title search and also for the number of hits. New technologies offer new opportunities, thereby opening up new fields of activity for us map curators. The first attempts at a graphical administration and search tool were promising. However, it quickly became clear that the use of licences could lead to incalculable costs. And there was the question about the tool's compatibility with the internet or its use in a library network environment. In Germany the map curators' commission started discussing the basis and conditions for the specific tool as early as 2003. At the end of an intensive work phase in 2006 the requirements were formulated and became part of the project proposal. In this connection one has to differentiate between two main points which are outlined as follows:

1. Requirements of the map curators from the users' point of view:
  - intuitive, web-compatible handling;
  - low data transmission rates;
  - no special software or implementations needed.

The system should provide the functionality for the user in a way that, starting with a world map, he can zoom to an area, move the cursor to a special place where he gets a bounding box, this action allowing the search for maps in this field. Search results are displayed in a list; within these results the user can further specify his search. Search criteria like scale (from – to), year of publication (from – to), period (from – to) or subject can be selected.

2. Requirements of the map curators from the staff's point of view:
  - high stability;
  - integration of existing data;
  - various interface facilities;
  - simple easy-to-use technical standards;
  - licence free open-source-programmes.

In particular, the use of open-source-programmes and data allows future developments and is a basis for the flexible adaptation to changing conditions. A close cooperation with university institutes (theses) could help us to

check and optimise single elements of GOKaRT without having to invest too much money. There are not only requirements which affect the technical side but also those which are important for the map curators. What we have to do is prepare the maps for the localisation as basis for a graphical search.

According to map type and scale there are four different possibilities:

- corner point coordinates — which is important for all map series, based on geodetic indications;
- midpoint coordinates (in combination with sheet size and scale) — for old maps which have a prime meridian other than Greenwich;
- bounding box — for general maps;
- concordance of topical headings with coordinates — it is intended to add coordinates to standardised terms or geographic terms like cities or administrative regions; this is more difficult for cultural or natural areas without exact boundaries.

These considerations led to precise requirements regarding the future system; they take into account the current standards for web-based databases. For a graphical search, general maps will be used, the data coming from the UMN Mapserver. There is the open source relational database system PostgreSQL for the bibliographic data and MySQL for the user administration and the various authorisations for the administrator, the editor and the user. The technical input will be provided at the computing centre of Göttingen university. The preparation of GOKaRT is advanced, which can be seen in the complex architecture of communications between servers, browsers and databases (Figure 1), so we hope to be successful in acquiring funding for the project. Provided that we receive the funds and the GOKaRT project can start, it will be possible to cooperate with international collections and map curators on the basis of data exchange.

While still in its infancy, the possibility of international cooperation among map curators to create visual graphic indexes and, thereby, open up collections to a wider audience which is not necessarily as spatially aware as the more traditional map user is very welcome. The Groupe de Cartothécaires is very well placed to make a major impact on modern map use and we look forward to working with colleagues throughout Europe on this innovative project.

Fig. 1: Scheme of the complex architecture.

