

Mapping rights done right? – An interactive web tool with user at its heart

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Abstract:

The Holy Roman Empire in the early modern period is often seen as an inhomogeneous space with a multitude of dominion rights (such as manorial, ecclesiastical, and judicial) with clearly outlined borders. This territorial perception is partly defined by contemporary maps about that times, resembling a so-called ‘Flickenteppich’ (‘patchwork quilt’): they show space as highly fragmented, depicted by areas with contrasting colours and defined by borderlines (Gambashidze & Moser, 2023). This conventional cartographic approach insufficiently captures overlaps of different historical dimensions, affiliations, and complex historical spaces at large. The interdisciplinary project ‘Digitale Kartenwerkstatt Altes Reich’ (DigiKAR), combines historical research, information science, and cartography to tackle this challenge. We question traditional notions of spatial representations and develop concepts of collecting, modelling, and visualising historical data from the Holy Roman Empire (between ca. 1500 and 1800) (Gambashidze et al., 2023; Gambashidze & Moser, 2022).

One of our foci concentrates on developing and testing interactive web-based visualisation. The main target group for this application are historians. We question conventional cartographic approaches by developing and testing point-based (location-based) visualisations to illustrate the above-mentioned spatial overlaps. For this purpose, we chose two case study areas.

In our experimental study, we develop web visualisation as prototypes derived from theoretical concepts based on the needs of historians. Our approach includes user studies already at earlier stages of visualisation development. Such a user-centred approach improves the usability of the resulting visualisation.

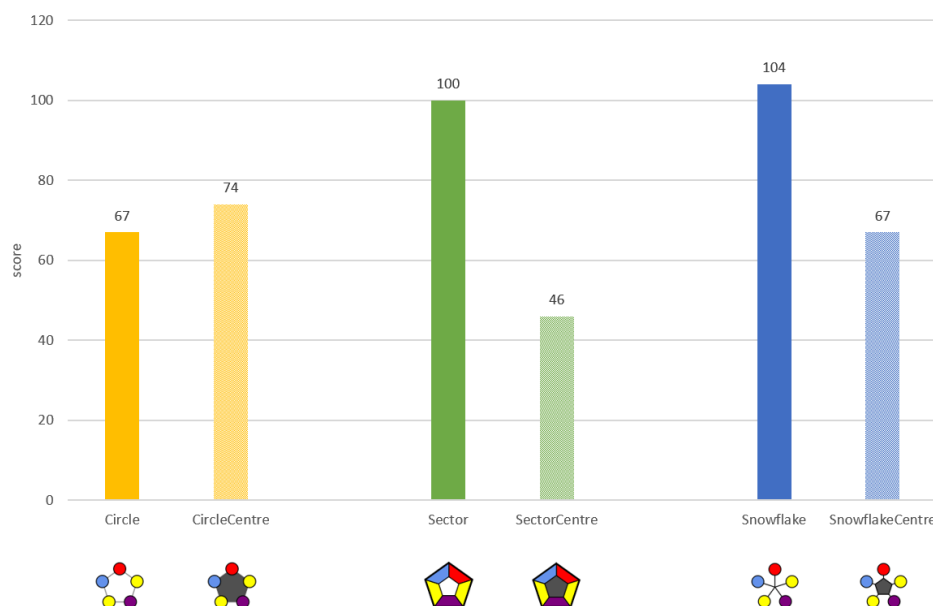


Figure 1: Symbol variant evaluation; using a coefficient combining selected criteria: accuracy, certainty, readability, overall performance, appeal, and speed (order is based on the importance and weight of each criterion in the overall coefficient).

We carried out two different types of user studies. With the first user study, we evaluated the developed symbol variants with the coefficient combining criteria such as readability, aesthetics, overall performance, etc (Figure 1). These symbol variants were of different visual complexity. The goal was to identify the symbol variant which performs best according to selected criteria. This study had a quantitative character: we used a semi-structured questionnaire in combination with map-related tasks. Furthermore, users were asked to rate the symbols. (Gambashidze, 2023). In the user study, the so-called ‘Snowflake’ symbol performed best. Hence, we based the further research on this symbol.

In the second user study (still ongoing), we are focusing on the usability aspects of the web map and its user interface (Figure 2). This includes interactions and visual aspects of the developed interface. The second user study is qualitative: we focus on around three tasks (with subtasks) to be solved and conclude with open questions. While we ask the participants to solve the questions we encourage them to think aloud to get the most insights. For this user study, the participants need historical knowledge. This contrasts with the first study where the focus was on perceptual aspects only. Hence, the first study participants were not required to have a specific scientific background.

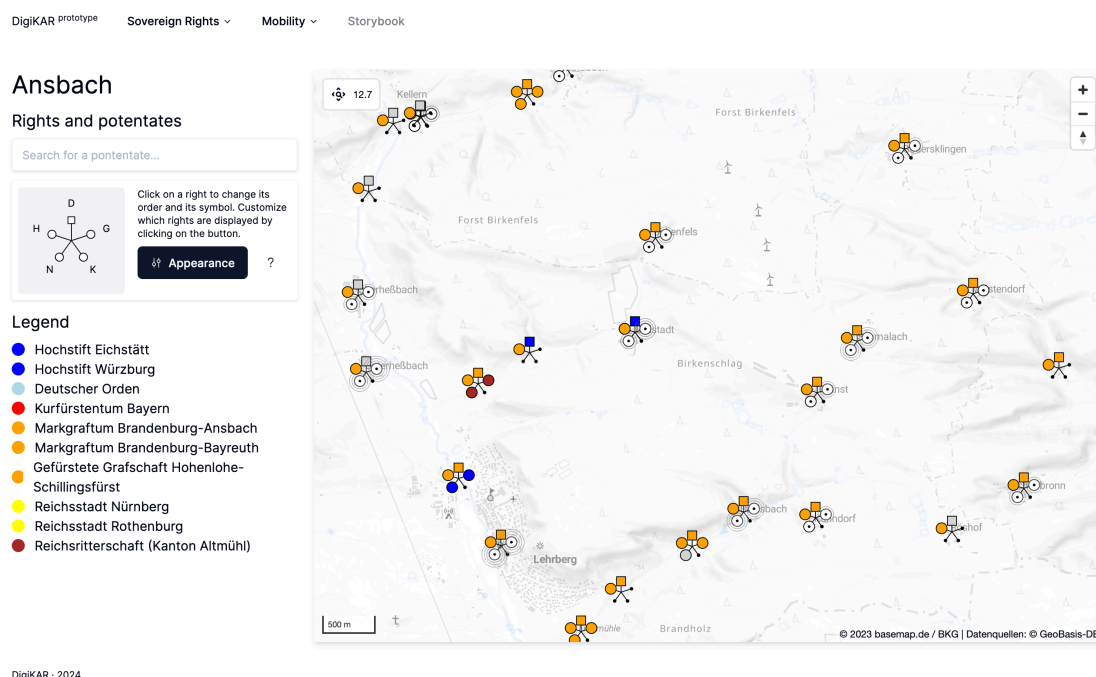


Figure 2: The interactive map visualises historical data. The symbols on the map represent a certain place with different sovereign rights (circles) and assigned potentates (colour-coded).

By integrating user studies in our exploratory and experimental research, we develop an interactive visualisation which depicts the complex structure of historical spaces, enriches cartographic techniques, and fulfils usability aspects.

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