

The Qualitative Development and Evaluation of a New User Perspective Map

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Abstract:

This paper will document the findings of an upcoming qualitative study that aims to capture formal insights into the user experience and impressions of a new 360°, user-centred map. The map is designed to potentially enhance visitor experiences in outdoor spaces.

Often, viewing maps provided in public spaces requires users to translate a 2D abstract depiction of the land from above into their current 3D environment on the ground. This process can become challenging when maps are shown in orientations that do not match the user's perspective, leading to confusion and disorientation (Montello, 2009).

In contrast, panoramic imagery or panoramic maps work to connect to the user's visual environment but lack the ability to identify things beyond their surroundings (i.e. what is behind a feature, such as a mountain or the trees). Attempts have been made to alleviate this problem through systematic distortions of 3D models (Falk, Schafhitzel, Weiskopf, & Ertl, 2007), (Wu & Popescu, 2015). The *Here & There* map attempts to highlight what lies behind and between objects by warping the ground plane of 3D model from an oblique to an overhead view (Schulze & Webb, 2009). In both Schulze & Webb's map and panorama maps, the scene is shown from an elevated view— lacking a connection to users on the ground perspective.

Our work proposes a more user-centric map that, when displayed in a 360° ring around the user, preserves direction by accurately showing the bearing of features from their position. (See Figure 1). While contemporary panoramic maps typically incorporate the height of objects, this map imitates a stylized landscape that is flattened to ensure distant objects remain visible. The first prototype of this concept was on display to the public in 2024. Made of wood and plastic tubing, the structure hung the two pieces of our vinyl map in a ring around the user (See Figure 2). When standing inside, spectators could see what was in every direction beyond the obstructions from where they were standing. There are no known map formats that combine the visual imitation of a landscape, preserves direction, and connect the immediate environment to distant features in a 360° surrounding display. Given its novelty, this study uses formal qualitative research to capture users' reactions and experiences with the map.

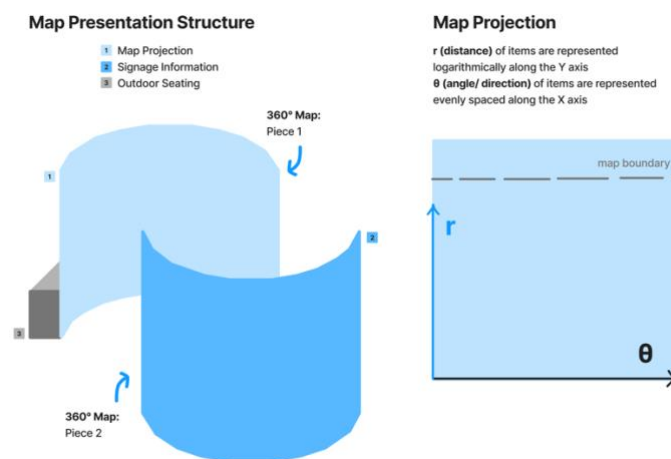


Figure 1. Diagram of 360° map structure and map projection. (J. Bricker, 2025)



Figure 2. 360° Wien/ Vienna: A 360° map prototype presented outside for EuroCarto 2024. (J. Bricker, 2024).

This exploratory study uses qualitative methods to understand how people engage with the map's structure and to evaluate its potential usefulness as a spatial tool. Observations and focus groups will be conducted with locals, new residents, map professionals, and non-experts. Participants will view and engage with a test structure and map presented in a controlled lab setting. An algorithm will be written to generate the map format and a testing map will be developed over the research process. The map content will be of a prominent urban green space in Vienna that has attractions, natural features, and facilities for visitors to enjoy. Tasks and discussion will focus on participants' understanding of the structure and its challenges, opportunities, and potential applications. Data will be analysed using Affinity diagramming, which is often used in the field of design to identify themes grounded in data (Hannington & Martin, 2012, p.12). Cartographic and design research will be used to inform both the map design and testing, thus contributing to interdisciplinary literature at the intersection of these fields.

This work will help inform future prototypes and research directions in potentially relevant fields such as historical cartography, outdoor interpretive signage, educational cartography, pedestrian wayfinding, and tourism.

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