Designing for Map-Based Interfaces and Interactions

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Abstract. Maps, in their many forms, have long been used to guide and coordinate different human activities, ranging from local to global, and small scale to large scale. As such, maps continue to play a central role as the basis for a wide variety of interactive tools and applications in our modern digital age as well. This workshop aims to bring together researchers, designers and practitioners interested in maps and map-like visualizations as the underlying physical, theoretical, or metaphorical framework for designing interfaces and interactions. This workshop will create a common ground and a collaborative space for sharing design, research, and practical expertise to aid its participants with creating novel future map-based designs in different fields, including visualization, visual design, interaction design, user interface design, and cartography.

Keywords: Map visualizations · map-like visualizations · visualizations · visual design · user interface design · interaction design · cartography.

1 Introduction

"It [map] is a tool for geography, astronomy, and the many other studies and activities prompted by the momentous little adverb, 'where.' As the invention of tools is epochal in human history, the invention of the map, which is probably the first intellectual tool, is pre-eminent in human development." [3]

Maps, in all their varied forms [5], continue to play "pre-eminent" roles as "intellectual tools" in human development even in our modern digital age. They form the underlying physical, theoretical, or metaphorical basis for a diverse range of technologies, applications, tools and services necessary for effective functioning of our societies, and countless types of tasks we perform in our daily lives. Despite this, maps are often the unnoticed element of our many activities and tasks that heavily depend on them. This is perhaps because maps are so common that we take them for granted, and do not stop to even think about how valuable they are in our lives, or how challenging it is to design them to support different kinds of tasks.

It is thought that the earliest maps in human history have been created to help people navigate and find their way, and by doing so *"reduce their fear of the unknown"* [8]. While maps still continue to be used for navigation in many cases, they can also act as visual tools for organizing information, visualizing knowledge, suggesting explanations, and inspiring us *"to ask more questions, [and] consider other possibilities"* [8].

To support such a wide range of tasks, maps, as "intellectual tools", are essentially a from abstraction that generalize and simplify what they represent, thus compromising the reality of what they represent or parts of it [1]. Therefore, rather than even aiming to fully represent any reality [2], maps should instead be designed to support *"exploring data and seeing data in different ways"* [10]. This, however, is not such a simple task. Designing effective maps is in fact rather complex and challenging, requiring expertise in cartography, visual communication and graphic design, in addition to expertise in the specific areas of the underlying data being represented.

In addition, nowadays maps and map-like visualizations [4] form the underlying platform for a wide range of interactive digital tools and services. Therefore, such interactive maps [9] need to enable their users perform an even wider range of interactive "exploratory" tasks, *"far beyond what is possible with static maps"* [7]. This, in turn, requires that the design of interactive maps be guided by the expertise of interaction designers as well.

Currently there are no transdisciplinary venues that bring together design, research, and practical expertise from across all the different fields involved in designing for map-based interfaces and interactions. This workshop aims to address this challenge by providing such a transdisciplinary venue. It follows on from a successful previous MAPII workshop [6], which was held as part of the International Conference on Advanced Visual Interfaces (AVI 2022).

2 Objectives

The primary objective of this workshop is to create a common ground and collaborative space for sharing design, research, and practical expertise, practices, learnings, and experiences of its participants to help them with creating novel future map-based designs in different fields, including visualization, visual design, interaction design, user interface design, and cartography. Some of the main topics to be covered by this workshop include, but are not limited to, the following:

- research and design foundations of map-based interfaces and interactions.
- theories, principles and practices guiding the design of map-based interfaces and interactions.
- applications of map-based interfaces and interactions, in areas such environment, sustainability, epidemiology, healthcare, education, and entertainment.
- user evaluations of map-based interfaces and interactions.

3 Target Audience

This workshop is targeted at designers, researchers, and practitioners from across a wide range of related areas. The main audience is expected to be those interested in the design, development, deployment, and evaluation of maps and map-like visualizations used, for instance, in visual user interfaces and interactive tools, applications, and services.

Prospective workshop participants were invited to submit a short paper describing their interests and work related to the topics of this workshop. Numbers permitting, the workshop will be open to other participants without a contributing short paper.

4 Workshop Structure

This one-day workshop is informal and interactive, combining short presentations of the accepted workshop papers with group discussions, aimed at assisting the authors and other participants with developing their research and design ideas. The workshop also includes a hands-on group activity. As part of this, the workshop participants are invited to work in small groups to perform map-based tasks and create design sketches for an interactive application. The designs can then be shared at the INTERACT conference. The main components of this workshop are:

- short presentations of the accepted workshop papers.
- a group discussion to guide future related research and designs.
- a hands-on map-based group activity, facilitated by the workshop organizers.
- a group discussion on future collaborations and outcomes.

Further details on the full workshop program are available at the workshop website[3].

5 Expected Outcomes

In addition to sharing the accepted workshop papers with its participants, the authors are invited to submit extended version of their papers for inclusion in an edited volume, to be published by INTERACT 2023 organizers. Furthermore, as noted, the workshop includes a discussion session on future publications in, for instance, a special issue of an international journal and/or a co-authored report for dissemination of the workshop findings.

The workshop website[3] is also being used for publicizing its aims and objectives, as well as disseminating its outcomes.

[3] `http://avcd.aalto.fi/mapii2023/`

6 Workshop Organizers

Masood Masoodian (PhD) is a Professor of Visual Communication Design in the School of Arts, Design and Architecture at Aalto University. He leads the AVCD[4] research group in the Department of Art and Media. Prof Masoodian's research interests include visual design, interaction design and visualization. He often uses maps as the basis for the design of visualizations and user interactions in a wide range of areas, including health, environment, and sustainability. He was a co-organizer of the MAPII 2022 workshop[5] at the International Conference on Advanced Visual Interfaces (AVI 2022), as well as several INTERACT workshops and numerous other international conferences and workshops.

Saturnino Luz (PhD) is a Professor of Digital Biomarkers and Precision Medicine at The Usher, Edinburgh Medical School, The University of Edinburgh. His research interests include digital biomarkers for neurodegenrative diseases, precision medicine, and inference in high dimensional data sets and graphical models. His work on map-based interfaces includes visualization of human and environmental variables for modelling of infectious disease spread, and other applications in health care. He has organized, chaired and participated in the programme committees of several conferences, and served as associate editor in several journals. He was also a co-organizer of the MAPII 2022 workshop at AVI.

7 Program Committee

- Saturnino Luz *(The University of Edinburgh, United Kingdom)*,
- Masood Masoodian *(Aalto University, Finland)*,
- Shane Sheehan *(The University of Edinburgh, United Kingdom)*,
- Artemis Skarlatidou *(University College London, United Kingdom)*,
- Thomas Rist *(Augsburg University of Applied Sciences, Germany)*.

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[4] `http://avcd.aalto.fi/`
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