



# Mobile mapping, User Journeys & Collaborative Interviews with QualNotes App: Make your own Map!

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## Abstract

The workshop is dedicated to empowering participants to better understanding the biophysical landscape using the ‘QualNotes’ App. The App facilitates qualitative and collaborative field data collection. It is of particular interest to HCI researchers working with Apps or data that are reactive to the physical environment, such as geolocated, outdoor mixed reality Apps (*PokemonGo*), data collection with input from wearables that might be mapped and so on, as well as educators interested in teaching digital methods.

## CCS Concepts

• **Applied computing** → Education; Interactive learning environments.

## Keywords

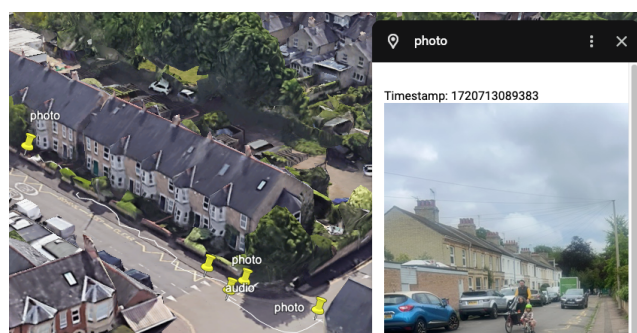
Phygitalisation, Digitalization, Qualitative Methods, Geographical Information Systems (GIS)

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## 1 Workshop Description

QualNotes is an open-source mobile application for the collection of qualitative data. It provides secure ethics and management of data collection projects. It also integrates three popular methods of qualitative research to collect data – mobile mapping, interviews, and participant observation. The App allows the complete digitalization of the data collection including digital consent form management. The two key motivations were (i) to streamline research-related paperwork, and, (ii) to enable digital and collaborative teaching of qualitative methods. In the workshop, we introduce App version 3.5.9+1 (iOS, MacOS, Android and WebApp) with worked examples of the creation of mobile maps and the use of mobile mapping as a research method [1]. See also Figure 1. We also provide the context



**Figure 1: Example of a fully digital end-to-end mobile mapping exercise. The data collected with QualNotes is visualized in the photo with Google Earth. Cambridge, UK. 2024.**

behind the App’s cross-disciplinary collaboration as a template to inspire similar cross field collaborations [2].

### 1.1 Workshop Objectives

- Gain hands-on experience using the QualNotes for recording physical user journeys.
- Learn to setup and use collaborative interviews, card sort and schedules.
- Export to Google Earth

### 1.2 Workshop Significance

Qualitative research methods are primarily taught, used in:

1. Social Sciences (e.g., sociology, anthropology, human geography) to explore human behavior and social phenomena. [3] have explored how digital tools are reshaping spatial practices and the production of geographical knowledge
2. Human-Computer Interaction (HCI). [4] argue how qualitative research in HCI is essential for understanding user experiences (UX).
3. Health Sciences to understand patient experiences and health behaviors. For example, some California-based hospitals use physical journey maps of their customers.
4. To understand the consumer in general. For example, [5] showed how to conduct economic analysis with location data. [6] showed guidelines on how to apply qualitative methods to improve marketing. [7] highlights the value of *Genchi-genbutsu* [8] data collection in Design Thinking practice.

From an industry perspective, market research firms such as KANTAR, Nielsen; and product design firms such VeryDay (now

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**Figure 2: A set of tools typically used in qualitative data collection. In the picture a Sony Cybershot, a voice recorder, a Nokia phone, a laptop, photos, a wireless keyboard, a map, and a notebook, and paper notes.**

part of McKinsey), ideo and others are also frequent users of qualitative methods. When it comes to analyzing collected data, such as that of an interview, both (industry and academia) rely on tools such as NVivo (founded by an Australian female professor) and Maxqdata (initially developed by Udo Kuckartz, a German sociologist and computer enthusiast). However, in terms of collecting data in interviews, mobile mapping, most is still collected using a series of non-connected material devices (cameras, voice recorders, pen and paper for forms) in a non-integrated process (See Fig. 2). This upstream process contrasts with the advanced digitalization in analysis side spearheaded by NVivo, and the open-source QGIS for GIS data. While interviewing human geographers, we realized that very few data collection Apps had been designed with the academia in mind. A further confirmation of this misalignment is the fact that some commercial Apps initially designed for other purposes such as hiking, see Rambler App in [2], were being used to teach mobile mapping methods in the classroom (see also Table. 1, for papers based on data collected with the Strava App).

**1.2.1 Apps in the classroom.** Indeed, most classroom instruction of qualitative methods is still largely paper-based. While the benefits of pen and paper are well understood, their disadvantages, when it comes to mobile mapping, are clear particularly as related to geolocated observations and real-time collaboration. With Qual-Notes, the collaborative and real-time teaching functionality allows students to learn with a familiar technical device (their mobile phone), while also learning how to use this device for research purposes. That haptic experience of learning with the technology has a greater felt potential for being remembered, as they are using it while learning, than for example if they were learning from a book with pen and paper and having to later replicate that learning offline or non-digitally. Moreover, within tertiary education, any researcher and/or lecturer using or teaching qualitative methods can cut overhead work by using the App's secure ethics management. Hence, it represents a promising step towards digitization of three key HCI-research methods. The app has also integrated the ability to add key reflection notes.

**1.2.2 Digital divide.** In walking and mobile research methods, where tracking participant location is important, some researchers

already use a variety of GIS Apps. These GIS Apps can be sorted into two groups: paid and free. Two examples of free Apps also used for research are "Rambler" and "Strava" [9]. Conversely, paid data collection Apps (See Table 1) may be more suited to academic requirements but their cost pose questions about the digital divide in academia [10]. Some Apps have been investigated for their data policy inconsistencies [11, 12]. Table 1 shows a selection of 18 data collection Apps referenced or mentioned in papers. According to Google Scholar, in total they have been mentioned in about 50,000 papers. In contrast, in the data analysis side, the top three software for analysis ("Nvivo", "Maxqda", and "Atlas.ti"), are mentioned in about 500,000 papers in total. A 1 to 10 ratio.

### 1.3 Workshop Benefits

1. **Digitalization:** For educators, this workshop shows tips and techniques to teach mobile mapping through a digital App. From onboarding to real time collaboration. For researchers that seek a fully digitized data collection project:
2. **Enhance Data Traceability:** Digital records provide a clear audit trail, making it easier to track the data collection process thanks to continuous GPS location, route tracking and timestamping.
3. **Improve Data Reliability:** Digital data collection in a single device can help to reduce human error, entry error, loss of data, and reduce the clutter in the project. For example, signatures of consent can be collected on the App directly, reducing paperwork carry.
4. **Trustworthiness:** Digital data collection means it is easier to share (anonymized) data, promoting transparency and replicability.
5. **Streamline Quantitative Analysis:** Digital data from the start makes it easier to compute quantitative metrics, allowing for straightforward statistical analysis than otherwise.
6. **Support evolution of Walking methods [27]:** For example, crowdsourcing collection. In summary, digitalization offers new avenues to foster innovation as reported by [28–30].

### 1.4 Expected Workshop Outcomes and Impact

The workshop offers a platform for participants from diverse disciplinary backgrounds to collaborate and innovate at the intersection of cloud-based GIS, and the data collection methods.

1. Creation of a shared understanding of new research ways based in emplaced mapping in digital formats.
2. Translate the novel techniques to HCI.
3. Establishment of links to community network for ongoing interdisciplinary collaboration and knowledge exchange.

## 2 Workshop Format and Activities

Interactive Introduction to User Journey Mapping (1/2 hour)

1. Icebreakers. (indoor)
2. Engaging discussions on the importance of user journey mapping in HCI/human geography. (Lean Coffee format)
3. Deep Dive (1h) Interactive session exploring the app's capabilities in creating user journey maps: A walk in the park: learning to see. (outdoors)

**Table 1: Impact of selected field data collection Apps in academia**

	Name	Main use case in literature (example paper)	Downloads <sup>a</sup>	Mentions <sup>b</sup>
	Strava	Social fitness [9]	50M	3.8k
	ArcGIS Online	Cloud Field Data Collection & Visualization [13]	Web	15k
	ODK Collect	Health, Environmental Research [14]	1M	1.7k
	KoboCollect	Humanitarian	1M	3.4k
	ESRI Survey123	GIS Professionals, [15]	1M	1.1k
	ArcGIS Field Maps	GIS in the classroom [16]	0.5M	155
	Ramblr	Hiking trails [17]	0.5M	50
	Qfield for QGIS	Field Data Collection [18]	0.5M	600
	EpiCollect	Health, Humanitarian Efforts	0.1M	1.5k
	Fulcrum	Construction, Field Services [19]	0.1M	65
	ESRI Quick Capture	Field Surveyors [20]	0.1M	46
	iFormBuilder	Construction, Field Services [21]	50k	124
	Cybertracker	Conservation, Animal Tracking [22]	10k	1.4k
	Ushahidi	Crisis Response [23]	10k	7k
	Indeemo	Video Ethnography	10k	70
	StoryMaps (ESRI)	Visual Stories on a Map [24]	1k	24k
	Google My Maps	Personal Use [25] (discontinued)	-	2.9k
	Fieldpapers	Academics, NGOs	Web	1.4k
	MangoMap	GIS Professionals [26]	-	225

<sup>a</sup> Downloads on Google Play Store. <sup>b</sup> Mentions in papers returned by a Google Scholar search by enclosing the name column in quote marks and in some cases adding the GIS or App keyword to filter out non-related search results with homonymous terms.

4. Collaborative Session (1h) Participants work in groups employing QualNotes in analysis mode to elicit insights. (in-doors). How to draw actionable insights from user journey maps. Story mapping. What is “coding” an interview. Teams present.

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