

SustainTourism – Experiencing Tourism From Home

MYRIAM BOTT and SARA WOLF*, Chair of Psychological Ergonomics, JMU Würzburg, Germany

Tourist travel contributes to greenhouse gas emissions, but exploring alternative forms of tourism is limited. Virtual tourism offers a possible solution but is often limited to seeing other places and its added value still needs to be explored. To understand the experiences and needs of virtual tourists, we conducted a Cultural Probe study with 28 participants. Key insights from this process were to conceptualize tourism experiences as a process rather than a one-off moment, engaging all the senses or allowing to connect with locals. Based on these insights, we iteratively developed SustainTourism, an app-based platform that connects virtual tourists with experiences curated by locals. The platform guides users through a multi-day process, from anticipation to individual experiences and moments of remembrance. Our next steps involve studying the impact of SustainTourism on virtual tourism experiences and exploring additional ways to meet virtual tourists' needs.

1 INTRODUCTION

Climate change dominates today's newspapers, with its close connection to human greenhouse gas emissions [16]. The tourism industry, responsible for 5% to 14% of global emissions, mainly from travel, is a significant contributor [6]. However, simply reducing tourist travel to save emissions and resources underestimates tourism's positive psychological and social effects on well-being, health, and wellness [3] and the tourism industry's economic importance. Thus, alternatives must be found to enable tourism experiences and global exchange while reducing tourist travel's negative impact [13]. One possible solution is virtual tourism, but it "must develop more features and value additions to achieve tourist satisfaction" [2, p. 1]. To explore (virtual) tourists' values, needs, and potential novel features of virtual tourism experiences, we conducted a cultural probe study with 28 participants from seven countries and developed "SustainTourism" in response. Thus, we make two contributions: First, we present key insights from the empirical inquiry uncovering particular needs to be met by virtual tourism experiences. Second, we present a novel virtual tourism concept and prototype, "SustainTourism", as an example of how virtual tourism needs could be met. "SustainTourism" connects virtual tourists with locally curated experiences. To demonstrate our concept's functioning, we curated a virtual tourism experience of our hometown, Würzburg.

2 RELATED WORK

While many definitions of tourism depend on the act of travelling to other destinations [17], researchers have suggested that tourist experiences might depend more on a specific inner state and mindset than on travelling great distances [5, 10, 19]. Such perspectives open up new possibilities like experiencing tourism within one's usual environment (post-tourism [19]) and mediated through technological means, often called *virtual tourism*. In recent years, especially since tourist travel was restricted due to the COVID-19 pandemic, a broad range of products promising virtual tourism experiences has emerged. For example, products like *Samibeli* [1], *WildEarth Live Safari* [20] or *Virtual Japan* [9] offer to experience other places through guided virtual tours. Like these examples, many products focus on *showing or seeing other places* [21]. Similarly, research in HCI has mainly

*Supervisor

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focused on improving how other places can be seen or shown, like through drones [11], VR systems [18], or enhanced video conferencing systems [12]. However, if we aim to enable valuable virtual tourism experiences, focusing on seeing or showing other places is not enough. It is much more important to understand what motivates people to undertake tourist travel. Tourism research recognised this early on: There are many motives for tourist travel, both cultural and socio-psychological ones [4]. To address such motives, virtual tourism products must go beyond showing other places, which they rarely do at present [21]. But what needs do (virtual) tourists have today, and what could products look like that meet these needs? We explore these questions next.

3 UNDERSTANDING (VIRTUAL) TOURIST EXPERIENCES AND NEEDS

To better understand (virtual) tourists' needs, values, and experiences, we performed a Cultural Probe study [7]. We recruited 28 students (average age: 24.04 years, balanced gender distribution) from seven countries: Japan (13), Germany (8), Canada (2), Iran (2), Turkey (1), England (1), and China (1). All participants were enrolled in an online summer school on user-centred design in a tourism context at our university. So the students were virtual tourists in Würzburg themselves and could empathise well with the position. The students mainly studied Conceptual Design (13) and Human-Computer Interaction (8). After giving informed consent, all students received Cultural Probe packages, via mail to stimulate and support reflection on their own (virtual) tourism behavior and perspective [7]. Cultural Probe packages consist of items connected to inspirational and reflective tasks that are designed and made for specific recipients [7], such as the students in our study (see 1). The students collected respective data in response to the inspirational tasks over weeks and recorded it on an online whiteboard (Miro). The resulting whiteboard was filled with photos, collages, and notes, and the students themselves started to structure their data through Affinity Diagrams [8], Problem Statements [15] and Empathy Maps [8, 14] in small groups. We merged all the data for further analysis and inspiration and created additional models, such as an Identity and a Sequence Model describing particular tourist identities and the process of tourism [8]. We then performed adapted "Wall Walk" sessions [8] with seven HCI researchers, designers, and psychologists. The session participants explored the data in-depth and generated design ideas and key insights.



Fig. 1. A Cultural Probe package sent to participants that included various tasks to reflect on personal tourism experiences and behaviors.

3.1 Findings: (Virtual) Tourists experiences and needs

The following presents five key insights reflecting essential aspects of (virtual) tourist needs and values. First, we identified **tourism as a multi-phase process** consisting of five distinct phases that encompass times before and after actual journeys (see Figure 2). This insight highlights an aspect that is not given much attention in current tourism products: When designing virtual tourism experiences, a complex, temporally extended process needs to be considered, not just a one-off moment. In addition, we identified two specific tourist identity elements, namely

the collector and the archivist, that reflect our participants' sources of pride and core values concerning (virtual) tourism. Collectors enjoy interacting with locals, visiting souvenir shops, and returning unique items from foreign places. Collectors aim to bring back unique items so they get reminded of their tourist experience later on. Archivists plan ahead and like getting an overview of foreign places first. In doing so, archivists seek great photo spots to save their experiences for later and dislike unexpected events. Similarly to the first insight, the two identity elements are seldom addressed in current virtual tourism products where the action of "taking something back home" is not supported. The fourth and fifth key insight focus on two elements essential for tourism experiences that current virtual tourism products rarely address.

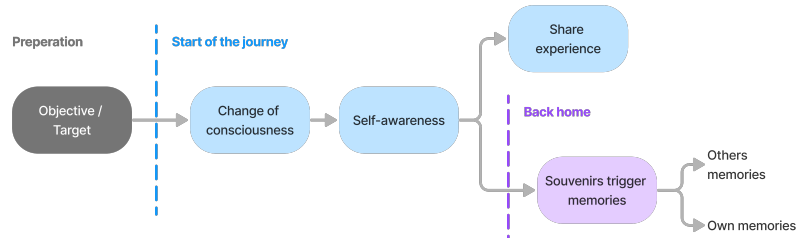


Fig. 2. Tourism as an extended process

First, **tourism experiences are multisensory**. They are perceptual experiences that involve a multitude of senses simultaneously and thus lead to memorable experiences. Lastly, participants expressed a strong desire for **social interactions** during tourism experiences, aiming at establishing connections with locals, most commonly with locals. Spending time with others and connecting with locals were considered significant highlights in tourism experiences.

4 DESIGN PROCESS

Based on the findings reported above, we generated six visions reflecting various potentials for future virtual tourism experiences. For example, the vision "White Paper" showcases places, sounds, and recipes of a city, simulating multiple senses. Users collect their experiences on this blank page to memorize. The vision "White Paper 2" is enhanced with videos from the featured city. Another example is the vision "Travel Calendar", which features a box with doors revealing new daily experiences to create excitement and anticipation. "Travel Calendar" addressed the process perspective on tourism experiences but lacked social connections and interactions. Further consolidating the initial visions, we combined "Travel Calendar" and "White paper 1+2" elements to best address the key insights identified. As a result, we developed the concept of "SustainTourism - Experiencing Tourism from Home", a platform connecting adventurous (virtual) tourists and interested locals. "SustainTourism" allows virtual tourists to have multi-sensory, evolving tourism experiences with social interaction from home, thus addressing all key insights. Here, another focus was on creating a product that is easily accessible without the need to buy additional hardware or go to special locations (as would be the case with VR, for example). We prototyped the concept using Figma and performed two user testing iterations with two users each to gain feedback. This resulted in improvements to the app's interface, onboarding process, and souvenir crafting experience. Also, we changed the visual design throughout the iterations. The application was then turned into a mobile application using the Glide program for further research.

4.1 SustainTourism - Experiencing Tourism from Home

To demonstrate "SustainTourism's" concept, we curated a virtual tourism experience of our hometown, Würzburg, and now describe it by guiding readers through the experience of a virtual Würzburg tourist. The experience, booked through "SustainTourism", consists of two parts: a package and additional content within the app (see Figure 3). Virtual tourists start by downloading the app and are guided through onboarding. They can purchase a

tourism experience for their chosen city, such as Würzburg. However, unlike current virtual tourism products, the virtual tour booked through the app unfolds over time and involves additional sensory material sent to virtual tourists via mail. The package contains five closed boxes reflecting our five-day virtual tourism experience. Before the actual virtual tourism experience, the app's content of our experience is sealed and can only be unlocked after a countdown has expired. Each day, virtual tourists can unlock a unique experience. The app guides virtual tourists through 10-20 minute experiences that integrate additional content from the package, such as dried roses that emit a scent one would have while strolling through the rose garden, a famous Würzburg garden (see Figure 3). Media support within the app, such as photos, videos and sound recordings, is intended to reinforce the virtual tourism experiences. In addition, virtual tourists are guided in crafting a unique souvenir throughout the experience - a magical picture cube. The souvenir cube allows for unlocking additional content after the immediate virtual tourism experience, such as the coordinates of places to experience in the future.



Fig. 3. Example content for Würzburg: Motto, the content of the app and package for each day.

"SustainTourism" addresses all key insights identified. For example, it allows for a processual virtual tourism experience by stretching the experience over several days and addressing the time before and after the immediate experience in the design, e.g., through countdowns or souvenirs. Also, "SustainTourism" appeals to many senses, given the combination of digital media and physical package content. By curating experiences, locals can share unique places, artefacts and experiences with virtual tourists, connecting with them socially through the app and package. The needs of archivists and collectors are met, for example, the cube shows many interesting images and can be used as a souvenir.

5 CONCLUSION AND FUTURE WORK

Virtual tourism products are expected to replace mass tourism potentially but to do so, it "must develop more features and value additions to achieve tourist satisfaction" [2, p. 1]. With the present work, we have responded to this call and presented empirical findings on the experiences and needs of (virtual) tourists as well as a prototype that meets these needs. The initial user research on (virtual) tourism experiences revealed essential aspects such as conceptualizing tourism experiences as a process rather than one-off moments, enabling social connections, and engaging multiple senses. "SustainTourism" is an innovative and sustainable concept that aims to address (virtual) tourism needs and thus contribute to advancing alternatives for tourist travel. Our concept is an example of how identified needs can be met with a focus on easy, broad access (e.g., via smartphones), but of course, other ways are conceivable. We understand our results to be both descriptive and generative and invite others to design further examples. For example, it might be interesting to develop VR applications that would support "tourism as an extended process" or to test our concept with various cities.

In future work, we want to explore adding further embodied factors of travel, such as a change in temperature or distance traveled, into our concept. So far, we have focused on providing students with a virtual tourism experience of foreign places. In the next step, we want to focus on other groups, such as people who can no longer travel due to age or illness.

Following the project described here, we initiated a more extensive user study comparing various versions of the concept (e.g., with or without sensory materials) to learn more about how well "SustainTourism" can address the various needs of virtual tourists. We hope that "SustainTourism" can serve as a first example of how to address (virtual) tourists' needs, thus allowing for more valuable virtual tourism experiences and ultimately contributing to building up more sustainable ways of having tourism experiences.

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