

Community Based Electronic Guidebooks

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Abstract

The complexity and dynamic of travelling offers many opportunities for technological support, but so far printed guidebooks remain the typical companion. Virtual communities are able to provide valuable travel information through a powerful social interface. The paper argues that current community platforms are technologically ill-suited for effective knowledge creation, maintenance and distribution, often based on newsgroup clients invented decades ago for different users and goals. The paper demonstrates work in progress on enhancing information sharing in virtual communities. The paper concludes by proposing key aspects of a mobile collaborative guidebook.

1 Introduction

Travellers face complex information needs, ranging from destination choices and itinerary planning to information needs arising spontaneously during travel and being determined by unpredictable circumstances. More so on self-organized tours, where itinerary and activities are completely free to be chosen. The objects of the information need may be thousands of miles away, involving an unknown language, society and culture. Information needs of travellers are characterized by highly dynamic and individual factors, e.g. perceived attractive sites, weather conditions, prices, transportation, accommodation, appointments. Consider the following description of a tourist's information need: „I have three weeks to travel with a certain amount of money, and I would like to see a part of central Africa, but also visit a certain city a friend of mine is living in. What places should I visit?“. The more individualization is permitted, the more variables have to be taken into account and the more information must be available.

While electronic guidebooks may offer almost unlimited storage capacity, the cost of entering all information possibly relevant to any user would defy most

commercial business models. An ideal information system not only needs to hold a vast amount of data, it would also have to provide a correspondingly powerful way of specifying queries. No query mechanism achieves the expressiveness and fine distinctions of human language. Also, most travellers may lack the ability to use a complex query language. Case (2002, p.289) concludes in his survey on human information seeking research: "Empirical research tells us that many people use formal sources rarely, relying instead on informal sources such as friends and family [...] Formal systems will never be able to satisfy most information needs".

Books may contain outdated information due to time-consuming production and distribution processes. Popular guidebooks may even fall prey to their own popularity: as recommended venues are literally swamped by travellers, attracting features (remoteness, prices, service quality) may deteriorate. The business model for guidebooks is only profitable with update cycles of several years, too long to reflect such changes.

The reader does not know how information was gathered and selected, and which assumptions underlie the recommendations. This is aggravated by the fact that travellers face a "market for lemons", as a market with uncertainty about product quality was coined by Akerlof (1970). Trip itineraries, hotels etc. might be perceived to differ strongly from the description given beforehand because the traveller's preferences do not match the ones of the person giving the recommendation.

A few episodes collected by the author during a recent (October 2004) visit to Brazil illustrate the problem of outdated information products (the guidebook used was the Rough Guide to Brazil (Cleary 2003):

- When looking for the recommended Hostel Dois Continentes in São Luís), it turns out to have ceased existence 2 years before and the premises had been turned into an expensive hotel
- Arriving at Fortaleza Airport, he looked in vain for the direct bus to the beach areas described in the guidebook. According to the tourism information officer at the airport, this connection had not been served for almost three years.

The next chapter will discuss benefits of using online communication to solve information needs. Chapter 3 presents related work, while chapter 4 discusses deficiencies of typical web based discussion spaces. We then present an idea for a hybrid community system and conclude with requirements for future system. This research is in the theory generation phase, i.e. we strive to formulate hypotheses that are grounded in literature and exploratory empirical work. As typical for this research phase, we have to prefer a deeper understanding to rigorous research methodologies. We therefore select from a wide variety of

sources and include empirical work that is only able to justify hypotheses, not to support them in a rigorous sense.

2 Communities as information systems for travellers

On the internet numerous large and long-lived communities about travelling exist, so obviously those communities serve a need and create some benefit for their users. Thorn Tree, the online discussion space of guidebook publisher Lonely Planet, receives around 5000 posts per day. Although no registration is required to read 209659 users were registered as of September 2004.

The question remains whether these successful online-communities are mediating relevant information or are merely spaces for socializing. Traditional research on virtual communities focuses more on the social relationships (Rheingold 1993) or business opportunities. There is evidence that indeed communities may serve as effective information systems (Prestipino 2004; Prestipino & Schwabe 2005).

Virtual communities extend a traveller's personal network to possibly thousands of people. The community provides a "human" interface to the knowledge, matching the actual information need better than using a reduced query language and allowing for refinement and clarification. Community members may point to existing knowledge or tailor information to his need and give information the inquirer did not think of or deem important. Discussions are visible, persistent and open for all participants to comment, so information in the end will be considered and multi-faceted. Virtual communities constitute an information market where experts pick questions they are able and motivated to answer, thereby avoiding overload of experts.

3 Related Work

Research projects related to supporting travellers with information mostly address HCI issues and way finding. The goals of Tellmaris, an EU-funded project, are "to evaluate the usability of 3D maps provided on mobile computers for access to tourist information, and to explore how such maps can help tourists to make better decisions when travelling and planning their holiday" (Laakso, Gjesdal & Sulebak 2003). CRUMPET (Poslad et al. 2001) provides location based services, e.g. showing directions to reach a location, but adds group features like analyzing preferences of a group's members and then proposing a restaurant is likely to appeal to everybody and located close-by.

Systems like Tellmaris and CRUMPET mediate information products in a more convenient way, i.e. using a mobile device and filtering information according to a user's location and a small set of specified preferences. The

proposed solution is an interaction between a human user and an information system. The approaches do not take into consideration that travellers are consumers and at the same time producers of information. No process for users adding information is mentioned. Communication between humans or collaborative creation of knowledge is not considered. The approaches lack a business model. The provider needs to finance resources for content creation and keeping content up to date. On the other hand, it is not clear where information came from and how legitimized it is.

4 Discussion support for Virtual Communities

This chapter discusses shortcomings of typical based discussion spaces and presents empirically collected data. We then build on these findings to suggest improvements and give examples of our work in progress.

In this paper two examples of active, long-lived tourism communities will be presented: Guidebook publisher Lonely Planet's Thorn Tree forum (<http://thorntree.lonelyplanet.com>) and Brasil-Web (<http://www.brasil-web.de/phpBB2/index.php>).

Web based discussion spaces typically use a list structure for thread visualization. Information is created, structured and archived in discussion trees. This feature makes it easy to participate in ongoing discussions but brings about several consequences that will be discussed in the following sections.

4.1 Structure of content

While electronic retrieval may support full-text search for a certain piece of information, a well-designed structure is much more suitable for a systematic knowledge acquisition. A well-designed book has little redundancy; the content is described in a way that later pieces of knowledge build on prior pieces; and the content is structured in a way that is didactically and aesthetically appealing. Typical guide books have to find a compromise to support search for specific information and to give an overview over the general information. They address both information needs in different book sections. Online travel communities are poorly prepared to give an overview as all content is structured in discussion trees. Several threads might deal with the same topic, fragmenting information. Threads themselves lack structure, as they mimic a discussion transcript, i.e. it is often required to read the whole thread. Because of the different granularity of information in thread topics and individual posts and the lack of structure on both levels it is difficult to find or maintain information. Outdated information can only be corrected by adding another post, thereby increasing the problem of structure.

Lists do not convey hierarchical relations between threads. A user needs to assess quality, timeliness and appropriateness for each information object she finds.

4.2 Visualization

Topics are visualized as a list sorted by date of the last contribution. Thus, older threads are put out of the visible screen space and forgotten, and a new topic dealing with the same thread might spawn. This effect can be shown by measuring the time span a discussion is active: in the high-volume discussion board Thorn Tree a discussion “lives” on average 38 hours, whereas on Brasil-Web the average is 78 hours (cf. table 1). Although Brasil-Web is a much smaller community, more people participate in discussion - 4.8 versus 3.03 in Thorn Tree.

	Brasil-Web	Thorn Tree
Average Number of participants w/o first poster	4.8	3.03
Average activity span of a discussion (hours)	78	38
Average number of replies	7.5	3.62
Threads with questions	75	183
Threads with unsolicited information	21	21
Number of Threads	96	204

table 1 Evaluation of Brasil-Web and Thorn Tree Forums cf. Widmer 2005

The tiring problem of the same questions being asked over and over again was confirmed by interviews, e.g. with the founder of Brasil-Web (Preisig 2004), and posted statements by community members like the following quote from Thorn Tree³:

“Please read this thread first before you ask a question, hopefully you’ll find your answer already inside! [...] Do a TT search! At least five posters a week ask what to do in London, whether to go visit Stonehenge on their way around the world, and whether it’s possible to work under the table/overstay a tourist visa.”

As an example, searching Thorn Trees UK branch for the term “FAQ” brought about 33 posts (between 16.12.2004 and 28.03.2005) where topic starters were urged by community members to read the FAQ as their question had at least partially been answered in the past. But in any case some people contributed replies and thus the knowledge of the community was fragmented into several threads.

In USENET, this problem led to the creation of Frequently Asked Questions (FAQs), lists of common questions with answers that are placed prominently. But FAQs themselves need to be maintained. The burden lies upon the moderators

and collaboration is difficult, using personal messages and forum discussions, as reflected by this Thorn Tree post:

"I am working to revise and update the sticky FAQ thread [...] We recently worked with the mods to take care of some of the links, but there's lot more that could be done [...] What topics would you like covered? Do you have links to good information on these or other topics? Post your suggestions here, or PM me"¹.

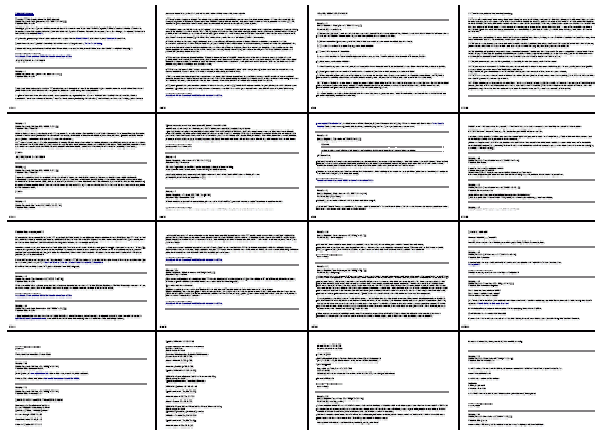


Figure 1 Half the FAQ of Lonely Planet²

Figure 1 shows just half the FAQ of Thorn Tree's South America section. It consists of 45 postings as of 23.03.2005, which deal with heterogeneous topics or are just uncommented links. The UK & Ireland FAQ thread even exceeds this with 111 posts³. In conclusion, FAQs for a complex domain like travelling are difficult to maintain and tend to share all the disadvantages of threaded discussions.

4.3 Usage of technology

An analysis of 204 threads posted in Thorn Tree between 31.05.2004 and 30.08.2004 found 21 posts (10.3%) to be unsolicited information. Also, the FAQ-Thread (see above) is a collection of such unsolicited information not structured or connected to other posts. In Brasil-Web, in the same time span also 21 posts (23%) were classified as unsolicited. An earlier analysis of 206 threads from

¹ <http://thorntree.lonelyplanet.com/messagepost.cfm?postaction=reply&catid=29&threadid=623564&messid=5252876&STARTPAGE=1&parentid=0>, as of 14.11.2004

² <http://thorntree.lonelyplanet.com/messagepost.cfm?postaction=reply&catid=22&threadid=65954&messid=537003&STARTPAGE=1&parentid=0&from=1&showall=true>, as of 23.03.2005

³ <http://thorntree.lonelyplanet.com/messagepost.cfm?postaction=reply&catid=25&threadid=150381&messid=1223077&STARTPAGE=1&parentid=0&from=1>, as of 30.05.2005

Brasil-Web (Prestipino 2004) found that 30.6% were informative and not meant to start a discussion.

Online discussion spaces were invented as a tool for discussion and announcements and do not support unsolicited this kind of information very well. Unlike announcements, unsolicited information is often relevant for a longer time. Unsolicited information adds to the problem of information being hidden, as it increases the speed at which postings are scrolling out of the visible area. Because there is no structure (see above), heterogeneous unsolicited information appears randomly and disconnected and again increases difficulty of knowledge acquisition. On the other hand one might argue that valuable information is never written because it was just then not asked and the potential writer thus did not find an opportunity to share his knowledge.

This chapter argued that virtual communities relying solely on discussion support may face problems of information sharing. The next chapter will present an approach augmenting a community's discussion space with shared material to remedy the mentioned problems.

5 Augmenting discussions through shared material

This paper proposes a tightly interlinked combination of a discussion space with a collaborative knowledge base. Users may search the knowledge base, ask questions or collaborate on the knowledge base. Unsolicited information and the outcome of discussions can then be added to the shared material as homogenous texts, such that it can be corrected and updated easily.

The proposed tool for collaboration on shared material is a Wiki. A Wiki is a set of web pages offered as shared material: anyone is allowed to create or edit a page, although naming conventions, style guides and article templates exist. While this approach might seem inviting to vandals, it has proven to be quite robust, because anybody can revert a Wiki page to a former version with less effort than needed to vandalize a page.

Wikis offer shared material but almost no communication support. For any page, a discussion page exists, but it is just another Wiki page that does not offer any visual structure. This influences credibility, as there is no discussion documenting the creation and validation of information. Awareness of other users is not supported by the system. As discussions are attached to existing topics, it is difficult to ask questions regarding new or individual information needs. Therefore, using just a Wiki without discussion space leads to legitimization and

trust issues and does not take advantage of the community's powerful capability to offer a social interface for information needs.

This paper argues that deficiencies of discussion boards or Wikis are overcome by a combination of both technologies ("wiki communities") and posits the following hypotheses:

- 1) Wiki communities provide more complete information than a traditional online tourist community
- 2) Wiki communities provide better structured information than a traditional online tourist community

The methodology for testing the hypotheses is briefly described below. The evaluation is part of the ongoing project "Online Tourism Community Support" funded by the Swiss National Science Foundation.

Information completeness will be measured as percentage of questions answered: evaluators apply a set of prepared questions to each information product. The evaluators will determine if a question is answered by the information products. Additionally, meta-data relevant to information quality (e.g. Experience of participants, multiple confirmation or disagreement in thread) will be gathered.

Information structure will be measured by the degree to which an information product will lead to a deeper understanding of core concepts in the domain. To measure information structure, a test group will be provided access to either a community (50%) or a Lonely Planet guidebook and asked to write down some generic information about the country in question. The persons selected will have no active knowledge about this country. Independent evaluators will then grade the degree of understanding of core concepts of the country without knowing the treatment.

In October 2003, the Brasil-Web community complemented their discussion space with a Wiki. Several mechanisms were used to facilitate information flow between both media. Users could easily link to existing wiki pages when posting to the forum, thus being able to easily provide existing information (fig. 1). To legitimize information in the wiki, and to give users an indication on where to discuss and ask questions regarding a topic in the wiki, all discussions linked to a wiki page were shown on a wiki page (fig.2).

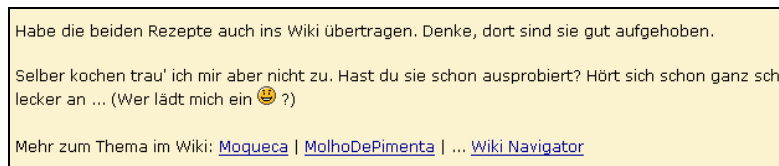


figure 1 Forum posting linking to the Wiki



figure 2 shared material in the wiki and related discussions

Experiences with the new system: The wiki has attracted users and slowly developed to a well structured knowledge base of 240 pages and an average 500 page views per day. This shows that the community of Brasil-web is deeming the shared material useful. Unsolicited information has dropped to 18% in the forum, but it is not possible to say whether this is a result of the wiki.

An evaluation where 18 questions were searched in the community found many information to be in the (then young) wiki, and an overall quality better than a guidebook (Waldburger 2004). However, the mechanisms for interlinking both systems have proven too complicated and rarely been used.

6 Conclusion

This paper presented promising work in progress on how to improve discussion technology, which has long been unchanged. Empirical experiences are still to be collected. While we are still at the beginning of our research, we will give some general remarks on requirements for support systems for tourism communities.

6.1 Supporting travellers throughout all travel phases

We distinguish three phases to describe the process of travelling: preparation before a trip, travelling, and post-travel activities. Before going on a trip, a traveller, deciding where to go and what to do usually has excellent access to

information sources and a working knowledge of how to access them. During a trip she seeks information sources, e.g. Internet cafés, travel agencies or other travellers. Access is much more dependent on language proficiency and knowledge of persons in immediate vicinity. Afterwards, she may externalize her experiences for herself and for others to see, e.g. by creating a personal diary. Some episodes and experiences may already be forgotten.

6.1.1 Support for mobile users

Travellers are naturally mobile users. During a trip, they collect valuable knowledge but also face sudden information needs. Travellers may profit from the ability of using location data for information retrieval. Technology could help meeting locals or other travellers spontaneously based on shared interests, e.g. to do a tour requiring a minimum number of participants.

6.1.2 Personalization

Personalization refers to the user being able to create a personal information space. A forum does not offer good personalization features: it is not possible to edit, annotate or rearrange the information. Also, it would be socially awkward to start a thread meant for personal use, and the user would have little control about the thread in terms of altering information or structure. He would also have no possibility to restrict other users of posting into this thread which might or might not be welcome. It also refers to the possibilities of using available resources for ones personal situation, e.g. linking to information objects offered by the system.

7 References

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