# Travel Safety: A Social Media Enabled Mobile Travel Risk Application

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**Abstract.** We present the design artifact Travel Safety, a mobile travel risk information system (IS). Besides offering general travel risk information, the iPhone application leverages social media, in particular Twitter, to source travel risk information from multiple foreign offices. This provides a comprehensive real-time information base for the application and enables dispatch of automatic travel warnings. On the basis of Travel Safety we want to explore if content from social media can be leveraged to increase the attractiveness and usage of applications. Furthermore, we want to understand critical success factors in the context of using social media content. Travel Safety was evaluated in a large field study with 422 participants. The study reveals that applications can indeed successfully be enriched by social media content. However, our results also reveal that a fully automated sourcing of social media content without human content management bears significant challenges.

**Keywords:** Social Media, Mobile Applications, Travel Risk

## 1 Introduction

Travel risk applications are becoming more and more established in the corporate landscape. Many global corporations equip their employees with IS like [1] and [2]. The promise of these pervasive systems is to manage potential risks before and actively safeguard employees during their travels. However, the high cost of travel risk data feeds has so far prevented broad adoption of travel risk IS. In this paper, we propose a design artifact that, besides offering well-known basic travel risk related features, particularly general travel risk information per country and an integrated emergency call, sources travel risk information from Twitter. Our experience has shown that only the basic features do not drive high usage of the application. Therefore, we investigate the potential of integrating real-time travel risk information sourced from Twitter into the application. By following this research avenue we address two fundamental research questions, i.e. “Can content from social media be leveraged to increase the attractiveness and usage of applications?” and “What are critical success factors in the context of using social media content in applications?”

adfa, p. 1, 2011.

## 2 Design of the artifact

The core requirement of travel risk applications is to provide current, reliable and relevant travel risk information [3]. Travel Safety is designed to source this information from Twitter, instead of obtaining it from expensive commercial providers. In doing so, we followed the design science research paradigm [4,5,6]. Fig. 1 shows the data integration process. The process is fully automated and does not require active human content management. Tweets are aggregated from foreign offices (e.g. the German Federal Foreign Office Twitter account). After detecting the language of each tweet, countries are identified by matching potential country names. Irrelevant content is filter by excluding key words. Finally, a risk indicator graph is generated per country by counting the tweets mentioning the respective country in the aggregated tweets.

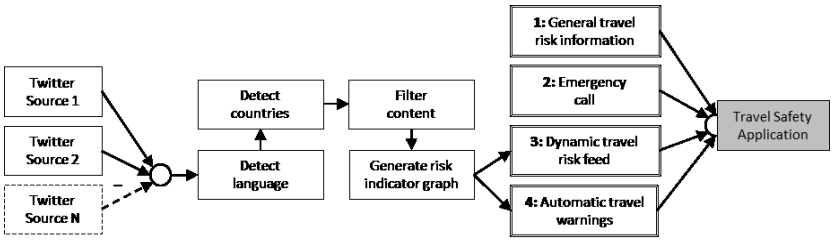


**Fig. 1.** Data integration process and Travel Safety features.

### 2.1 Features

Travel Safety comprises two basic and two Twitter-based features:

1. **General travel risk information:** Travel Safety includes a collection of travel facts listed by country. These facts range from local emergency numbers to vaccination recommendations, drunk driving laws, addresses of embassies and visa requirements. An example is shown in fig. 2b.

2. **Emergency call:** Travel Safety displays local emergency numbers for registered travel destinations. Users can initiate calls to local police, fire stations, and hospitals. Additionally, users can directly call the assistance number of the provider of the application (automobile club). This is shown in fig. 2c.

3. **Dynamic travel risk feed:** By selecting a country on the real-time risk map in fig. 2a, users can view the country's risk indicator graph and the corresponding tweets. This provides detailed information about the current situation in all countries in the world. Fig. 2d shows an example.

4. **Automatic travel warnings:** Travel Safety allows its users to register their travels and receive automatic travel warnings per SMS and/or push-notification by country. An example is shown in fig. 2e.

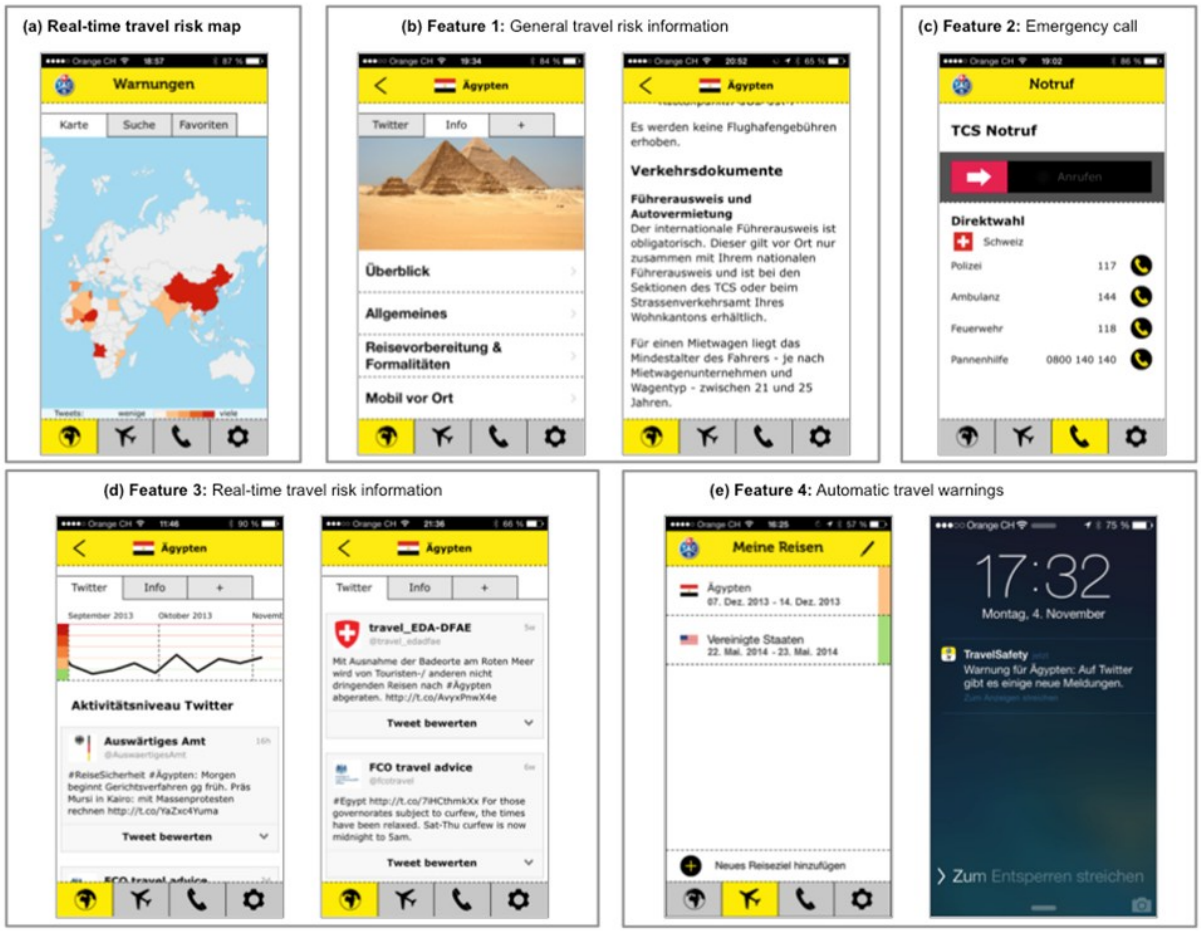


**Fig. 2.** Screencast of Travel Safety iPhone application

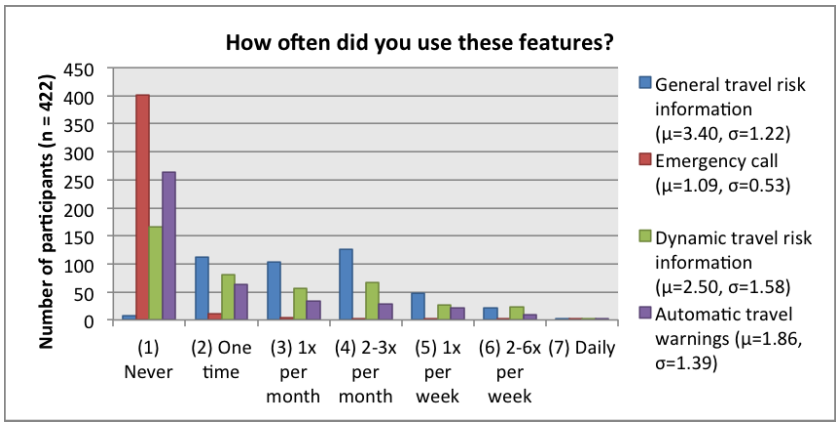


**Fig. 3.** Self-reported usage of the four main Travel Safety features.

## 3 Evaluation of the artifact

Travel safety was evaluated by a large user group in a field study under realistic conditions. The pilot phase took place in Switzerland, started before the Swiss holiday season in summer 2013 and lasted for three months. In total, there were n = 422 participants. The demographically representative group of French and German speaking participants was acquired through a mailing list of a major market research institute. We conducted a conclusive survey at the end of the field experiment to evaluate usage and usefulness of the main Travel Safety features.

Fig. 3 shows the reported usage frequency of the different features. General travel risk information was the most used function in the app (μ=3.40, σ=1.22). Dynamic travel risk information, i.e. twitter feed by country, was the second most accessed feature (μ=2.50, σ=1.58). Automatic travel warnings were less used (μ=1.86, σ=1.39). As expected, emergency calls were only made in very rare cases (μ=1.09, σ=0.53).

Fig. 4 shows the perceived usefulness of the different features in the app (Likert Scale 1 to 7). In contrast to its (fortunately) rare usage, the emergency call feature was perceived as the most useful (μ=5.47, σ=1.73). The second most useful feature of the app was the general travel risk information (μ=5.35, σ=1.53). The usefulness of automatic travel warnings based on tweets was rated higher (μ=4.59, σ=1.7) than dynamic travel risk information, the twitter feed by country (μ=3.58, σ=1.77).

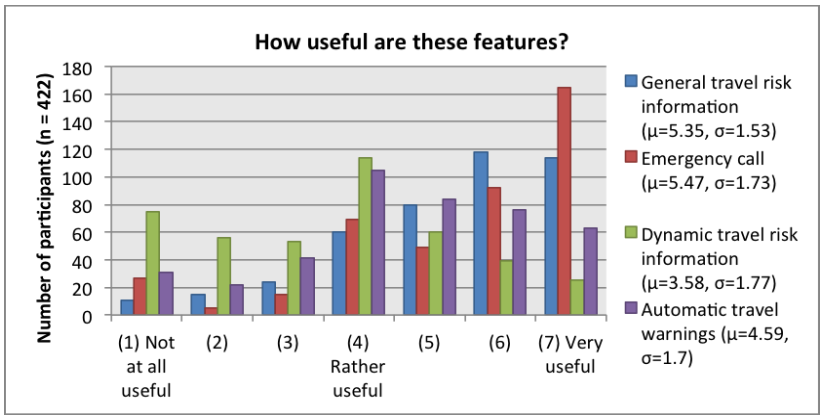


**Fig. 4.** Perceived usefulness of the four main Travel Safety features.

Summing up, the Twitter-enabled features drive usage. Moreover, there is a substantial user base appreciating the usefulness of these features. However, the initial expectations were not fully met. An in depth analysis of the user feedback revealed that the foreign offices indeed issue a substantial amount of tweets which are not or hardly related to travel risks – even if corresponding twitter accounts are labeled as "dedicated to travel risks". After investigating the potential of more sophisticated filtering approaches, we have to conclude that fully automated sourcing of social media content without any human involvement has strong limitations. While we will certainly improve automatic filtering in our next design iteration, we strongly believe that we also have to build upon human computation [7], i.e. encourage users to get involved into content management e.g. by classifying risk-tweets as irrelevant.

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