AN EMPIRICAL STUDY ON THE ACCEPTANCE OF A SECURITY INFORMATION SYSTEM FOR CITIZENS

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ABSTRACT

SIS4you is an Austrian research project with the aim to empower the general public by providing information and advice how to self-protect against burglary and theft. This shall be realized by means of an Internet-based security portal, which allows a low-threshold access for the citizens and which shall be developed in co-operation with the competent authorities (Federal Ministry of the Interior and the police). Negative experience regarding the acceptance of the public that occurred in a similar project in Great Britain must be avoided. Therefore, in advance of the technical realization, a comprehensive social science program is implemented to address the needs of the general public. So far, three focus groups and a representative survey among 2000 Austrians from the age of 16 upwards were implemented. The interest and potential use of the security portal is about 35% of the population. The results show that for building confidence in the portal, the involved and responsible authorities must be visible and crime statistics on the map should not be too detailed (county level), up-to-date (up to two days old), and not too accumulated over longer time periods (maximum one month). Registration should only be optional in order to avoid disclosure of personal data when using the platform.

KEYWORDS

crime prevention platform, personal security perception, security-related public education, crime map, public survey

1. INTRODUCTION

The SIS4you project (SIS4you project, 2011) aims at creating an Internet platform for comprehensive burglary prevention by the means of providing information, advice, and education for citizens through professional experts from security authorities. Therefore an early warning system is established which helps to reduce the threat vulnerability of apartments, houses and business premises. The project is implemented as a multi-functional security portal web application. Advanced IT technologies such as e-learning, semantic information processing, and visualization techniques are integrated into a converged platform. The innovation lies in both functionality and the development of a proof-of-concept prototype. The web application is pioneer work in intrusion prevention for the large-scale public, helping to raise awareness. As a consequence, the project is initiator for future initiatives, products and markets.

Social science research is applied to ensure that citizens accept, and finally trust the product, and data protection concerns are considered in the design of the platform. The needs of the citizens were evaluated by the means of three focus groups and a quantitative survey. In the center of interest is the analysis of conditions that ensure confidence in the platform as well as the promotion of the increased security provided by the platform, while avoiding elements that contribute to uncertainty among citizens. Problems as they occurred in similar projects such as the 'crime map' in England (http://www.police.uk/) can be avoided. Major criticism of the project was about too detailed crime statistics which might unsettle the population and further stigmatize regions. Similar drawbacks and barriers to user acceptance were already considered in the design phase of the platform. The following key elements are studied from a social sciences perspective in greater detail: (1) preparation and composition of general information on burglary prevention, (2) e-learning opportunities with a focus on instructional videos, (3) willingness for personal registration on the portal, (4) interactive elements such as the reporting of suspicious observations and (5) the presentation of current events and alerts on a map.

The main contribution of this paper deals with the results from real user surveys regarding functional requirements on such Web-based platforms, as well as major concerns and hurdles that could hinder or even prevent broad acceptance in the general public.

2. BACKGROUND AND RELATED WORK

A dedicated tool for enhancing security awareness and training of company employees was developed by (Furnell et al., 2002). In contrast to that, our platform focuses on security aspects relevant to the whole population. Previous works suggested using well-established social network sites (Vence et al., 2009) to initiate social campaigns and inform the general public, for instance in the area of health information distribution. However, there are major privacy threats when it comes to personalized services which require the users to enter profile information (Williams, 2010).
One controversial part of the platform is crime mapping as investigated by (Chainey, Tompson, 2008), (Doran, Burgess, 2011) and (Manning, 2008). In 2009, the British police launched an online crime map (Jones, 2009) which was continuously updated and extended to all streets of England and Wales (Travis, 2011) according to recent crime reports (Flatley et al., 2010). As reported, the public's unexpected high interest caused the platform to crash (Travis, Mulholland, 2011), which clearly reveals the importance and high acceptance of such a platform. Since the public launch of crime maps, research focused on various aspects for improvement, such as the granularity of visualized information (Phillips, Lee, 2011). Also major criticism regarding unsettling people, and questions about the usefulness of such maps have been raised (Sampson, Kinnear, 2010).

3. PLATFORM DESIGN STUDY: METHODS AND SAMPLES

Focus Groups. In order to optimize the usability of the platform and promote it to the public a quantitative survey was conducted and three focus groups were formed. The outcome of the survey was an essential input for the content and design of the SIS4you platform. The findings from these focus groups were incorporated immediately and directly in designing the questionnaire for the quantitative survey to obtain a representative estimation of the portal's use. In the course of a discussion, focus groups allow for finding backgrounds of opinions and basic attitudes. Thus, complex motives in the context of subjective security perception can be captured appropriately. Here, several people are interviewed simultaneously, which allows interactions among themselves. Optimally, it is used in combination with a representative sample survey. Prior to a quantitative survey in February 2011, three two-hour focus groups have been conducted. In order to meet the diverse regional needs and different requirements of house owners and apartment renters, the groups were recruited accounting for different criteria: (1) the 'commuter belt' around Vienna includes mainly house owners, (2) the inner-city area of Vienna contains apartment owners, districts with higher socio-economic potential, and smaller residential neighborhoods, and (3) the urban area of Vienna with apartment owners, districts with lower socio-economic potential, and larger residential neighborhoods. Participants in the focus groups were mixed in matters of gender, age, and education. The screening took place in two steps. First, using a telephone screening, twice as many people that meet all the conditions have been selected for the participation in the focus group. This form of recruitment has the advantage that, immediately before the start of the focus groups, a second screening step can be carried out and eventually an optimal focus group can be formed of 8 to 10 people.

Quantitative Survey. In the available empirical studies, an Austria-wide survey has been carried out. The basic population is the Austrian population over the age of 16 years. The survey was conducted in the period from 1st March 2011 to 30th April 2011, and each interview lasted 30 minutes on average. Computer-assisted personal interviews (CAPI) were conducted by respondents in their own homes, selected by the Viennese Institute for Social Research IFES. The selection of households was done by a multi-stratified random sample. Furthermore, the interviewees in the households were also selected by the Swedish key procedure, which is also a random selection method in social sciences. The interviewer and the interview are controlled by international standards, such as checkups, training processes, plausibility checks, and response pattern analysis. By sampling broadly, the structure of the interviewee group is representative for the Austrian population, minor deviations were weighted. The sample includes 52% women, 21% have as highest degree a compulsory education, 36% an apprenticeship, 20% a trade school (BMS, middle school), 15% a diploma (final examination) and 9% had a university degree. The age distribution in years: 22% up to 29 years, 16%

30 to 39 years, 20% 40 to 49 years, 15% 50 to 59 years, 13% 60 to 69 years and 14% were 70 years or older. 56% of the respondents are working. 36% of the respondents live in a detached house, 9% in a serial or two-family house and 55% in flats.

4. RESULTS AND DISCUSSION

Perceived Security. The Austrian population generally feels safe: 38 percent very confident and another 42 percent feel rather secure. Only 4 percent can be classified as unsettled. In their own homes six out of ten respondents feel very safe. 36 percent estimated the personal risk, to become a victim of a criminal act as above average. Similar results have also been observed in two other studies, carried out by IFES with a sample size of n = 1955 and n = 1500 respectively (Raml, Schuster, 2011a/b). In another study conducted by IFES and funded by the KIRAS program (Raml, Schuster, 2011a), five personality types were discovered: persons with a strong sense of security (21%), with a higher perception of safety (32%), with extensive relegation fears (21%), with a high fear of crime (17%) and strong global uncertainty (8%). Especially the last two groups (about a quarter of Austria's population) represent the primary target group of the SIS4you security platform. The following security measures have already been taken by the respondents: 34% have installed motion detectors, 31% have acquired security doors, windows, or locks, 9% protect themselves with an alarm system.

Security Information Provisioning. Only a fifth of the respondents have informed themselves about security at road shows or by reading information on the Internet. The state of knowledge on security topics such as intrusion protection, costs, funding opportunities, and product information is evaluated as rather low. Only one fifth to maximum one third of the respondents thinks that they are well informed. The need for well prepared and understandable information is therefore high, and the platform has potential to dramatically alleviate individual prevention efforts and to strengthen, subsequently, the subjective sense of security.

The portal should primarily be an information platform, where users can easily find an overview of the most important issues and objectives about security and in particular on securing their homes. This should be communicated to the public even in this form, all other functions, such as a crime map or the possibility of sending messages to authorities, should be modular extensions. The platform should be kept simple and rather controversial features should be introduced only gradually, so that people can gather experiences with this 'stripped-down' platform first.

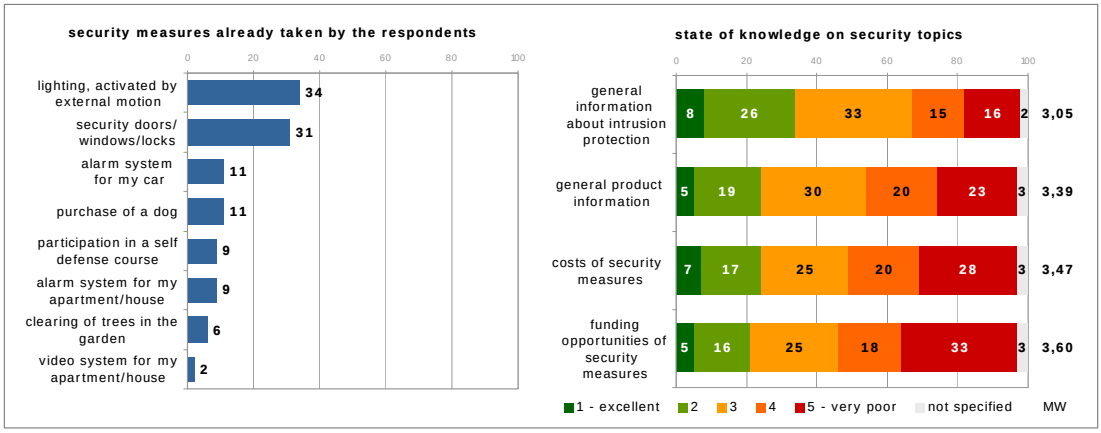

Figure 1: Security Information Provisioning

Potential Impact. The interest in the platform is at 35% and therefore rated as high (compared to the target group of 25 % of the population as mentioned above). There is great interest in information about rules of conduct in case of emergency (58%) and in general information about burglary prevention (52%). The platform should primarily provide information about the occurrence and prevention of burglaries (70%), but beyond that there are additional needs for information that must not be neglected: confidence tricks (53%), car theft (51%) and internet fraud (41%). The data analysis clearly discovers that information on safety measures and solutions should be at the center of the platform - including e-Learning lessons and animations of modern homes with which one can perform a vulnerability assessment of his/her own home. A third of the interviewees would use a 3D view of a house or an apartment with an attached security analysis. The main reason why a significant fraction of the population would not use this service, is that no one likes to enter

detailed information about his/her house. Therefore, an example apartment and an example house, equipped with a balcony, terrace, cellar, garden, ground floor windows, etc. should be provided. The users can then decide which areas in the home they want to look at.

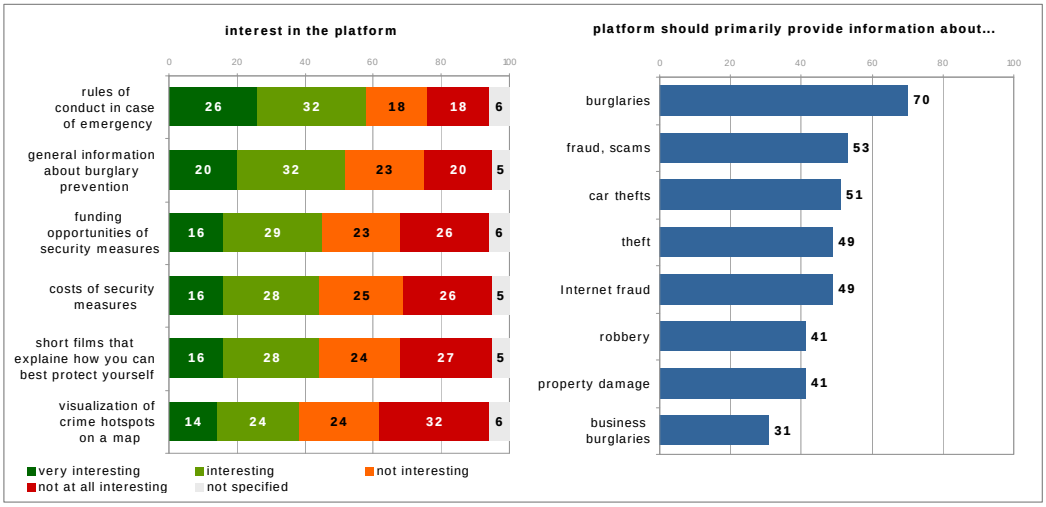

Figure 2: Potential Impact of the Platform and provided Information

User Acceptance. Measures to increase trust in the platform are essential to achieve a wide acceptance by the population. This includes in particular the visibility of the logos of the Federal Ministry of the Interior and the Austrian police, which enjoys high reputation among the population. Furthermore, personal data of citizens should not need to be entered mandatory for basic platform usage. These measures reduce the fear of misuse, and ensure – from the perspective of potential users – the privacy of personal data. We clearly discovered that in the population concerns about misuse are quite widespread. 51 percent of the respondents expressed concerns about the possible misuse by criminals and 45 percent expressed doubts about the assurance of anonymity, if registration would be necessary. People also fear that an opportunity to report suspicious observations could easily lead to defamation of others. The most controversial feature would be the crime map. One part is excited about the opportunity to be warned of and learn about endangered residential areas. However, the other part fears panic and fear-mongering. In that case, people tend to feel more insecure rather than sensing additional security. Large concerns are also mentioned in terms of possible economic consequences. A crime map, for example, could result in a loss of value of real property. For instance, the fact that in a particular area only a less affluent clientele settles might have negative consequences for the established shops. A strong reduction of major doubts should be possible, if the following points at the crime map are guaranteed: (1) Usage policies: With the launch of the platform, it is important to communicate the user, how data is going to be used and how to deal with information. (2) Up-to-date data: Information presented on the crime map should be as current as possible – a daily update would be needed. (3) Latency of the data: Data accumulation over a longer period of time (more than one month) should be avoided in any case. A concern is that this could have a negative impact on property prices. (4) Granularity: In terms of granularity of data, respondents think that the results should be at least 'one level above' the street (e.g., residential area and district level).

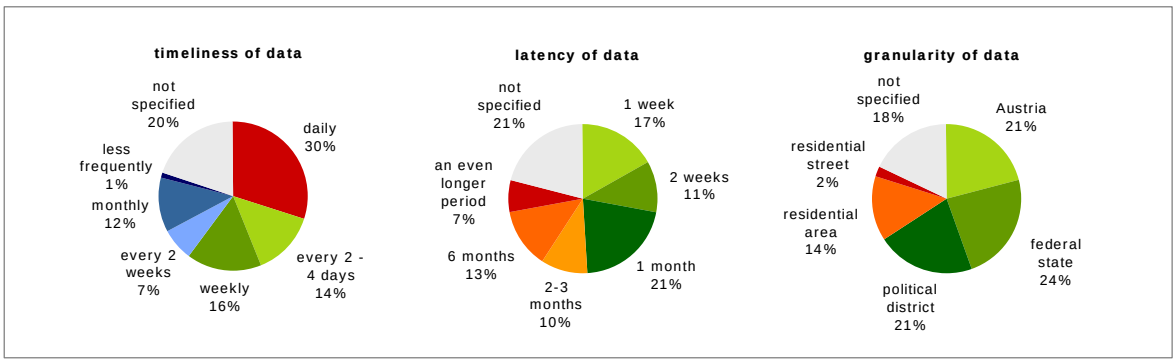

Figure 3: User Acceptance

5. CONCLUSION

In this paper, we discussed results of an empirical study dealing with perceived security in Austria's population, and clearly identified the need for further public education regarding a wide range of security-related aspects. The conducted empirical study is a first important step towards building a widely accepted Internet platform for the provisioning of security-related information, advice and education. It is of paramount importance to consider public concerns and doubts from the beginning, and to undertake any possible countermeasures in order to alleviate major objections and properly address related challenges. Future work includes the public rollout of the platform, accompanying user surveys and periodic evaluation of the user acceptance of single features.

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