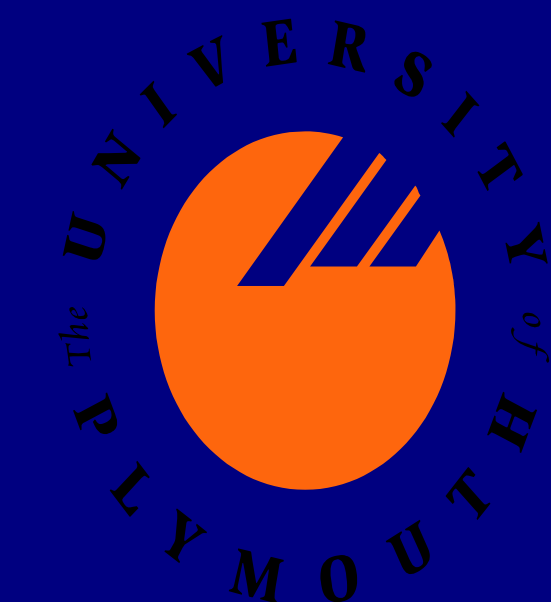


Enhancement of personal privacy using the Semantic Web



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Problem Statement: Modern privacy problems have been identified as a result of unchecked information flows between a variety of different entities. The ubiquitous nature of the Internet facilitates the gathering, storage and onward transmission of personal data - something which business enterprises turn into a commodity. Personal information is a difficult entity to control, once it has been divulged it is difficult to ascertain exactly where else it may be divulged. Social networking web applications, where individuals link to each other give a good example of uncontrolled data exchange. The effects of Internet technologies upon vulnerable groups are therefore of concern, especially given that the consequences can be extreme. Domestic abuse survivors are most vulnerable when they decide to leave an abusive relationship. Control of their personal information is essential at this time and any release in personal information can lead to serious harm or death. Teenagers make full use of the Internet and all the related technologies as a way of keeping up with their peers and often do not consider the consequences of their actions. They are also the group at most risk from stalking and predatory behaviour.

Personal Information: Divulging information is observed in two distinct areas: personal websites, on-line diaries and other internet-mediated communications encourage individuals to divulge their personal information; and public personal information, that is information about an individual held by third parties. Divulging personal information does not in itself pose a problem, however problems arise when the information divulged is abused. In this respect some individuals are considered more prone to harm than others. Abuse and harm of individuals, through grooming, harassment and bullying, coexist with identity theft as examples of criminal behaviours, all aggravated by the ready availability of personal information. Posting information on social networking websites has been linked to murder. The literature identifies the Internet as a tool for stalking behaviour; how modern technology is being used in situations of domestic abuse; and how the Internet has facilitated sexual exploitation of women and children.

Users give out personal information

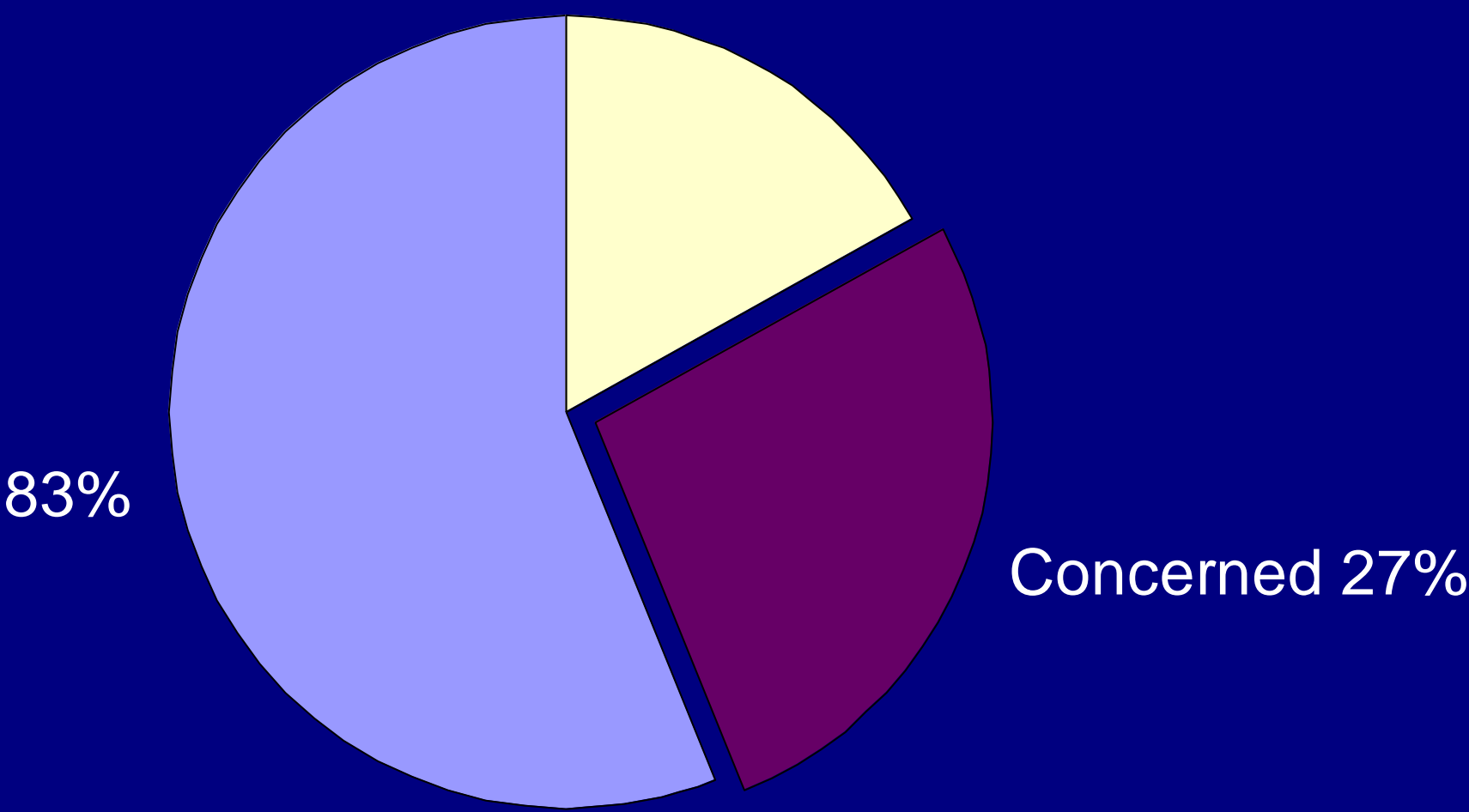


Semantic Web: The Semantic Web concept aims to address the impediments to the free flow of information between entities, that being the format of data. Not all formats have been recognised and accepted, and therefore the Semantic Web aims to provide the standards required to allow data to be shared in a more seamless fashion.

Some standards, those of XML, RDF and OWL are already defined and established standards. The next phase is to combine those standards with reasoning and logic and create an evolution of the Internet where computers automatically gather, combine and reason to provide a more context aware, more relevant experience for the end user.

However, when considered in the context of an unobstructed exchange of personal data, there is potential to create privacy problems for vulnerable individuals.

83% of teenagers gave out personal information

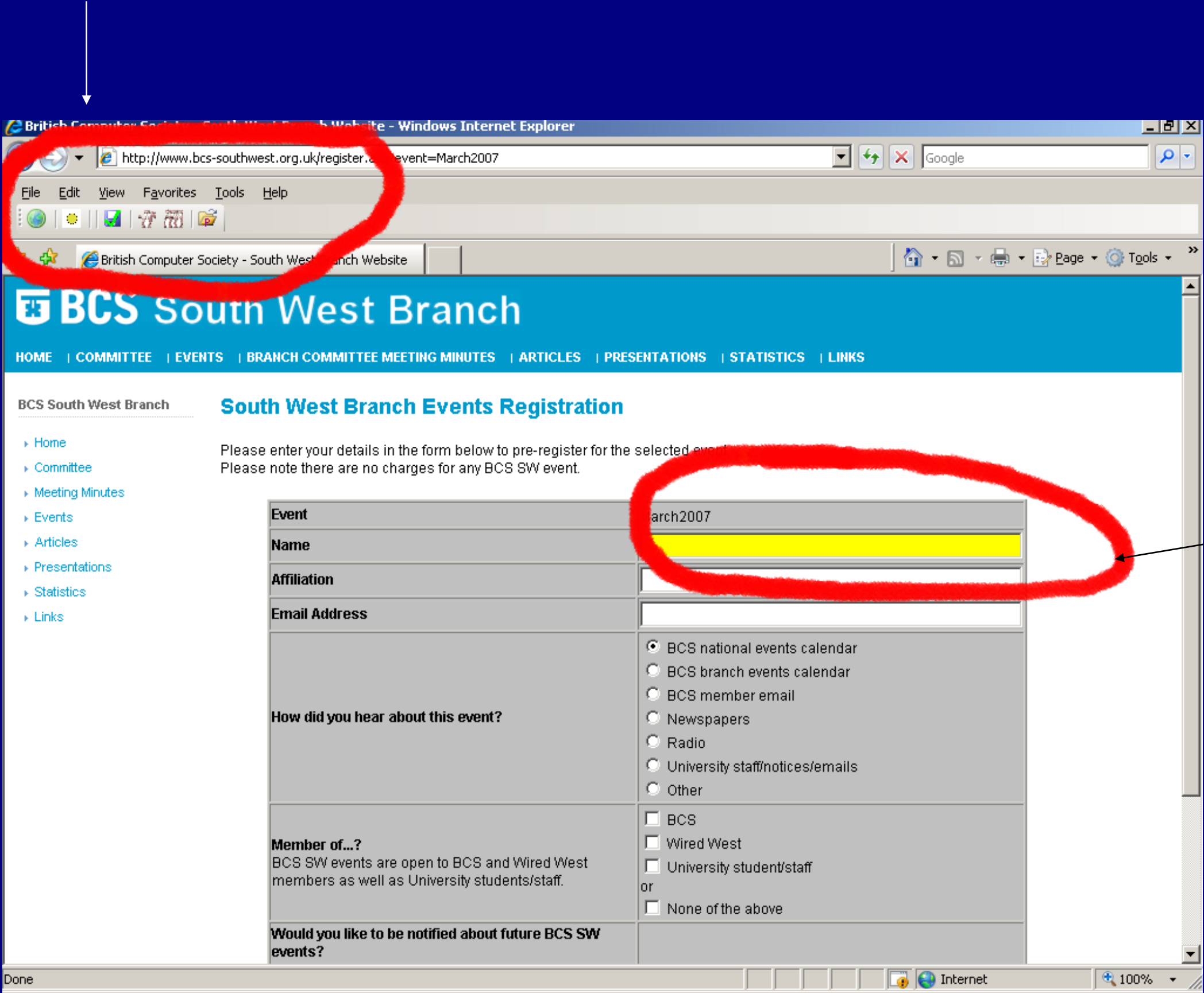


Research Findings: Those who had responsibility for the safety and well being of others, managers of refuges, and teachers, voiced their concerns about the risk potential that the Internet and related technologies posed. Primarily their concerns were connected with the ease with which personal information was divulged through such things as mobile phones, emails, social networking websites, public records and third party databases.

Examples were given where personal information made available through the Internet had compromised women's safety; 83% of the teenagers interviewed divulged personal information with 27% expressing concern about having done so.

Teenagers employed a variety of coping mechanisms: they made good use of any blocking techniques made available by the different software used; where requests for personal information were considered to be excessive, these were ignored or if the request was mandatory, false information supplied. However, the descriptions given by the teenagers of the information they divulged did not entirely match the public information given by themselves in social networks. For example, some chose to claim they were older than they really were, others posted photographs of themselves wearing revealing clothing. On examining the top three social networking websites listed by the teenagers, each of the schools taking part in the focus groups had a substantial presence on them.

Indicators give simple warnings to user



The Prototype: Focussing upon the concerns raised by teachers and managers of refuges, the data collected was evaluated to ascertain where personal privacy risks to teenagers and survivors lay. Risk categories were identified in terms of the potential impact where damage to personal privacy could take place; where threats to giving out personal information might lie; and where there was a potential for unwanted intervention.

A Vulnerability Assessment Framework (VAF) was created to measure potential for vulnerability so that relevant protection levels could be calculated and so allow the prototype to respond more effectively to the context within which the individual finds themselves. A browser plug-in was designed utilising the framework and Semantic Web techniques to create a technological compliment to the current government awareness raising initiatives and therefore facilitate an individuals control of the flow of their personal information.

Future work: The next phase of the research is to evaluate whether this technological approach is successful in providing privacy protection whilst using the Internet. Evaluation of the technological approach is to be carried out by the user groups themselves, where possible. The effectiveness will be assessed in terms of the users understanding and perception of their level of control of their personal information and their understanding of the potential consequences for their actions.