Erasing electronic footprints to protect victims of domestic violence

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A 'cleaner app' which allows those at risk from domestic violence to seek help online without leaving an electronic trail behind them has been developed by experts at Newcastle University, UK.

The rapid growth of internet-based support networks, either through official channels or via social networks, means getting the right help and information wherever we need it, whenever we need it, has never been easier.

But for certain vulnerable groups such as those suffering from domestic violence, the risk of seeking help can outweigh the benefits as it leaves a digital trail which can alert their abuser to the fact they are trying to get help.

Now a team at Newcastle University has developed a suite of technologies that can protect people in abusive relationships from being tracked online, including an app which selectively wipes clean their browsing history and self-destruct QR codes which are embedded on innocent-looking postcards and flyers.

Following the initial pilot studies, trials of the new technologies will begin next month.

"Any online access leaves behind an electronic trail which can easily be followed to see what we've been up to," explains Dr Budi Arief, from the Centre for Cybercrime and Computer Security (CCCS) at Newcastle

University.

"For most of us this is a useful record but for someone living in fear of abuse the very systems set up to help them can actually be used against them. "What our technology does is erase these electronic footprints, allowing people to seek help in safety without fear of reprisal."

Allowing people free access to online resources whilst hiding their activities from their abusers requires a number of complementary technologies that provide layers of protection.

"Another important consideration in the case of domestic violence is that in many cases, victims do not know where to get help from," adds Mr Martin Emms, a PhD student at the School of Computing Science. As a solution, the Newcastle University team has developed single use URL codes that can be distributed to victims.

These codes – represented as QR codes – are embedded into innocent-looking postcards and flyers and take the user directly to a support site. As the name suggests, the link will only direct its user to a support site once; subsequent attempts to use it will be directed to a 'safe page' – an innocuous one such as BBC News or Google home page.

This will be used in combination with the cleaner app. Once accessed, the app selectively wipes clean the user's digital footprints, removing any trace of their search for support – including temporary internet files, browser history entries and cookies - while leaving other electronic trails intact.

"This is very important as a completely clean browsing history raises suspicions," explains Mr Emms.

Other solutions include location-based advertising, utilising Near Field

Communication technology – which has grown in popularity through everyday objects such as Oyster card, Tap & Go payment cards, and other smart cards – to inform the user what to do if they suffer domestic violence, and where/how they can find help.

Instead of a postcard, the information is embedded in a poster advertising the domestic violence support service. Positioned in public places, the feature is only available while the user is standing close to the poster. Once they leave the area, the information cannot be accessed using either the history or the back button. "We talk a lot about digital inclusion and the work being done to make it accessible to all," says Dr Arief.

"Our work has highlighted a vulnerable group whose need for online access is greater than most. These people are prevented from getting help, not through a lack of access or digital knowledge but through fear.

"Our hope is these technologies can be used to overcome this particular barrier and give more victims of domestic violence the confidence to seek help."

The technologies were presented at the Annual Privacy Forum in Cyprus and the team is now working with police and Domestic Violence support agencies to trial the new technologies in support centres across the region.

Detective Superintendent Steve Wade, from Northumbria Police's Protecting Vulnerable People department, said: "Tackling domestic abuse in all its forms is a priority for Northumbria Police and we always encourage victims to come forward and access the specialist support that they need. Any technology that can help victims safely access support has to be welcomed."

More information: "Electronic Footprints in the Sand: Technologies for Assisting Domestic Violence Survivors." Martin Emms, Budi Arief and Aad van Moorsel. Presented at the Annual Privacy Forum, Limassol, Cyprus. Following the initial pilot studies, full trials of the technology are due to begin on April 2, 2013.

Provided by Newcastle University