Developing Your Own Topic Proposal?

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The nature of the threats facing critical information infrastructures will change over time, as will that targets that those threats are posed against. Similarly, research teams will respond and develop a host of new counter measures and policies intended to mitigate the risks of future attacks. From this it follows that it is impossible to build a complete list of topics that are relevant to trends in information security.

If you want to develop an area of interest that is not listed on the course web site (http://www.cs.gla.ac.uk/~johnson/teaching/security), then please consider the following issues to ensure that you identify an area of sufficient complexity/interest to attract a high mark in the subsequent presentations that represent 30% of the marks on this course.

Is the Topic Credible?

If an article appears in the press or on a web site claiming that a cyber-threat exists, this does not mean that the threat or a proposed mitigation is credible. Specific examples might include the development of weapons based on electromagnetic interference for interfering with car engine management systems. While it may be possible to achieve limited effects in test scenarios, questions remain about whether this technology can be 'weaponised' for use against specific targets. Even in cases where a press story may not be credible, there may be ways of extending the topic into areas where there is sufficient research – for example, the use of pulse weapons against non-localised targets might form the basis of a credible topic. Hence it is important to look for scientific/engineering reports that provide a technical basis for any subsequent discussion, see below.

Is there Sufficient Research?

If you can only find a few papers on the topic that you are interested in then you may need to expand your search using appropriate on-line tools. In some cases, you might find articles for which we do not have on-line access. Consider mailing the authors or contacting the Computing subject specialist in the library but do this early as it may take time to retrieve articles. The key to a good mark is to identify sufficient research for you to be able to analyse and critically assess different arguments/perspectives on key topics in cyber-security. If there is only one side to an argument that it can be difficult to sustain interest or develop a convincing presentation.

Are these Multiple Perspectives?

As mentioned, we are looking for surveys of existing literature on key topics in information security. It often helps to identify different perspectives that bias or influence previous research. For

example, a commercial organisation may be more concerned with the viability and cost effectiveness of a forensic technique than a University group that might look more at the rigour or the theoretical completeness of an approach. Some groups focus more on the human factors of security, while others believe that security is a narrow technical problem. It is critical that you learn to identify these various perspectives as soon as possible. Mind maps and card sorting techniques can help with this.

What is the Validity of the Research?

Academic peer review is the primary mechanism used to ensure the quality of research. From this it follows that if you rely on news web sites or company publications that there are few guarantees about the accuracy of the conclusions or their arguments. Even if an article comes from a reliable source, you need to use your own critical judgement to assess the validity of the work. For example, a survey involving a very small sample size or yielding very small statistical differences or reporting means with large standard deviations can all raise questions about the reliability of their conclusions. Be sceptical and for every article, question the validity.

Approval Process and Further Information

If you want to proposed your own topic to work on then draft a proposal as soon as possible and mail it to Johnson@dcs.gla.ac.uk before the third week of the semester. If you need any advice in the meantime then contact me – but do not delay – the longer this takes then the less time you have to work on your presentation.