Implementing a new genre of eHealth system in a reticent environment

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Preamble

This tutorial primarily focuses on the social aspects of implementing a novel eHealth systems called Accountable-eHealth (AeH) systems. The main focus of AeH systems is mitigating information privacy concerns whilst facilitating appropriate access to information for users, and is based on the principles of information accountability (IA).

I. Background and Context

Our thesis is based on a key aspect of cyber security that has seen heightened attention in recent times: Information available on the *cybersphere* must be used appropriately by all stakeholders; otherwise, adequate penalties must be imposed on perpetrators that deliver an adequate degree of disincentives for inappropriate use of information, i.e., deterrence, a recognised measure of enhancing cyber security[1]. Information is the most critical element of eHealth systems in terms of their usefulness to both healthcare providers and patients. However, recent eHealth initiatives around the world has been hindered by privacy concerns of patients as well as healthcare professional, this was clearly evident in the Australian eHealth initiative[2]. AeH systems seek to implement the above mentioned deterrence in terms of IA.

This tutorial focuses on the perspectives of end users on specific aspects of AeH systems. The results from three surveys will be discussed during this half-day tutorial. The surveys were based in the state of Queensland, Australia. The role of information privacy and IA related attributes will be discussed in detail. The principles and logical reasoning behind the development of three empirical research models will be discussed and the validation of the model using a sample dataset will be demonstrated.

The audience will get a firsthand experience of how different characteristics of AeH systems impact overall system acceptance. The practical implications will be discussed that will shed light in to how the results from user studies can be used in the implementation of AeH systems.

II. Audience

The intended audience for this tutorial includes a broad range of eHealth researchers in the information management arena, eHealth policy experts and eHealth technology experts.

III. Syllabus

1. Foundations

The foundation principles of Information accountability and their contextualization to eHealth will be discussed in this opening chapter of the tutorial. The foundations will provide the audience with a comprehensive understanding of the conceptual principles behind information accountability. This chapter is divided into the following subsections.

a. Principles of information accountability (PIAs)

b. PIAs in eHealth

c. Accountable-eHealth systems

2. Socio-technical challenge

This chapter is focused towards the social aspects of information accountability that must be considered when developing AeH systems. The principles and logical reasoning behind the development of two empirical research models will be discussed and the validation of the model using a sample dataset will be demonstrated. The audience will get a firsthand experience of how different

[1] At the Nexus of Cybersecurity and Public Policy: Some Basic Concepts and Issues. http://www.nap.edu/catalog.php?record_id=18749

[2] The personally controlled electronic health record review report (PCEHR). http://www.health.gov.au/internet/main/publishing.nsf/Content/eHealth

characteristics of AeH systems impact overall system acceptance. The practical implications will be discussed that will shed light in to how the results from user studies can be used in the implementation of AeH systems. The chapter is divided into the following subsections.

1. An insight into the eHealth consumer behavior
2. Designing, conducting and validating user studies
    a. Designing constructs and capturing system characteristics
    b. The professional perspective
    c. The consumer perspective
3. Practical implications for implementing AeH systems

IV. LECTURES

Dr. Randike Gajanayake (B.Sc., PhD) g.gajanayake@qut.edu.au

Randike Gajanayake is a postdoctoral research fellow at the School of Electrical Engineering and Computer Science at the Queensland University of Technology, Brisbane, Australia. Randike's PhD thesis principally focused on the applicability of information accountability in the eHealth domain as a measure of information privacy and a measure to balance competing concerns arising from eHealth stakeholder requirements. Randike has been published in peer reviewed health informatics journals and conferences.

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Tony Sahama is a senior lecturer in the Information Security Discipline, Faculty of Science and Engineering. His research interest is in Health/Medical Informatics in particular, Healthcare Information Technology (HIT) and Clinical Decision Support Systems design and development. Tony holds a PhD in Computer Science (Computer Simulation and Modelling, DACE), Master of Education (Higher Education), M.Phil (Statistical Computation) and B.Sc. (specialised in Applied Statistics and Computer Programming). Tony has experience working with researchers in developing customised technological applications for Clinical Decision Support Systems, Data warehousing, Data Integration and IT applications for healthcare decision making processes. Currently, Tony is supervising 4 research masters and 4 PhD level projects in the Medical Informatics research area. Tony holds professional membership with ACM (SIGBioinforamtics), IEEE, IBS, ACS, SSAI and HISA. http://staff.qut.edu.au/staff/sahama/

V. ADDITIONAL READINGS

Copies of the following reading materials will be given to the participants to keep them well-informed throughout the tutorial.

1. Lynda Andrews, **Randike Gajanayake**, and **Tony Sahama**. The general public's perception of having an untethered PCEHR: An Australian Perspective. In International Journal of Medical Informatics (In Press)
2. **Randike Gajanayake**, **Tony Sahama** and Renato Iannella. The role of perceived usefulness and attitude on electronic health record acceptance: An empirical investigation using response surface analysis. In Special Issue of the International Journal of E-Health and Medical Communications, 2014 INVITED PAPER FROM HEALTHCOM2013
3. **Randike Gajanayake**, **Tony Sahama**, and Renato Iannella. Principles of Information Accountability: An eHealth Perspective. In International Journal of E-Health and Medical Communications, 4 (3), 2014
4. **Randike Gajanayake**, Bill Lane, Renato Iannella, and **Tony Sahama** Accountable-eHealth systems: The next step forward for privacy. In Electronic Journal of Health Informatics, 2014 (To appear) INVITED PAPER
5. **Randike Gajanayake**, Renato Iannella, and **Tony Sahama**. Sharing with care: an information accountability perspective. In IEEE Internet Computing, 15 (4), July/August, 2011
6. **Randike Gajanayake**, Renato Iannella, and **Tony Sahama**. Adoption of Accountable-eHealth systems by future healthcare professionals. In 25th European Medical Informatics Conference (MIE), 2014
7. **Randike Gajanayake**, **Tony Sahama** and Renato Iannella. *The role of perceived usefulness and attitude on electronic health record acceptance: An empirical investigation using response surface analysis.* In 15th IEEE International Conference on e-Health Networking, Application & Services (HealthCom), 2013
8. **Randike Gajanayake**, Renato Iannella, and **Tony Sahama**. Consumer acceptance of Accountable-eHealth systems. In 25th European Medical Informatics Conference (MIE), 2014