1. INTRODUCTION

While the goal of eHealth programs is to increase the efficacy of healthcare, the complexities of delivering care and stakeholder acceptance have emerged as significant obstacles to adoption. In this connection with the introduction of the Australian PCEHR (Personally Controlled Electronic Health Record) program, the National E-Health Transition Authority (NEHTA) have implemented an open standards infrastructure that aspire to common thematic priorities of international eHealth programs. However, the implementation of the PCEHR has resulted in poor adoption and criticism from stakeholders with concerns about transparency, accountability (for example, privacy, confidentiality and information security), and limited functionality.

With a view to locating our research within the broader eHealth domain, we have completed a preliminary literature review and have identified a paucity of research into the impact of data-driven approaches on clinical decision making in the Australian context. Furthermore, questions relating to socio-technical factors concomitant with analogous eHealth programs begin to emerge for example: What constitutes an effective data-driven framework for support of quality decision making and co-ordinated care management? What are the key drivers and barriers in the adoption of a data-driven framework?

Our research program seeks to answer these and related questions in order to establish a socio-technical lens for the examination of current state and future state information unification frameworks and technology consumption models. This in turn will guide the development of innovative care process models (evidence based vs. data-driven vs. expert opinion) and a recommendation for an adaptive data-driven approach to collect and make available individualized recommendations for patients at the point of care.

2. eHEALTH-AS-A-SERVICE

Healthcare is first and foremost a service. To that end, high quality service delivery is as much about art as it is about science. Striking that all important balance between the two requires the orchestration of art that is concerned with a stakeholder’s perception of usability and value and science that appeals to the functionality and capability of the underlying systems. Drawing a connection between this socio-technical perspective and the implementation of the PCEHR provides valuable insight into the challenges associated with implementing large scale eHealth programs. There is growing evidence that enthusiasm by health leaders and policy makers for new technologies is not always reflected by adoption and utilization in practice. Moreover, it is argued that a focus on technology over the formulation of a well-defined value proposition have resulted in many ehealth project failures [1]. We contend that the consumption of information technology within the healthcare domain requires a shift in focus from technology to service.
eHealth-as-a-Service (eHaaS) offers an alternative stakeholder-centric framework that establishes the PCEHR as the keystone of a holistic eHealth ‘as a service’ framework unifying longitudinal patient data from disparate sources. The building blocks of an eHealth system, personal health records (PHR), electronic medical records (EMR) and Electronic Health Records (EHR) are encapsulated in the eHaaS framework with the interconnections comprising human behavior and information flow a principle design consideration [2]. As key value propositions data enrichment, co-creation and discovery require a platform that will encourage cooperation and collaboration across organizational boundaries as evidenced by social media platforms. Thus, healthcare organizations need to re-evaluate traditional boundaries due to the complexity of eHealth technologies necessary for collaboration and co-creation [3] (Refer Fig 1).

There is consensus in literature that a significant challenge for delivering large-scale programs is ‘one size does not fit all’ [4]. For that reason we contend that an “on demand computing” construct, specifically Software-as-a-Service (SaaS) that often includes hosting and infrastructure services and is recognized for its efficacy in other domains, may be observed successfully in healthcare settings. In simple terms, eHaaS will establish low cost, on-demand capability for the delivery of service models designed to individual stakeholder requirements. As an extension of the health record bank (HRB), the framework is predicated on a community organization approach with patients playing a gatekeeper role for a copy of their health information. The model will resolve privacy issues, increase stakeholder cooperation, deliver improved financial sustainability and enable coexistence with institutions that maintain their own local copies [5].

The architectural core of eHaaS leverages cloud computing concepts, application programming interfaces (API) and a service oriented architecture (SOA) based platform to deliver a rich functionality required to support complex multidisciplinary workflows. Similarly, the growing commoditization of data requires a consolidation of cloud services that provide seamless and efficient access to health information from multiple platforms at any time from any location. However, services must be aligned to operational requirements in order to create value specific to the individual needs of the stakeholders. Thus, at the operational level, eHaaS offers a framework for identifying service models that will facilitate value creation, collaboration and decision support across the continuum of care. In this context the opportunity to address diverse perspectives inherent in eHealth programs illustrate the potential for collaboration and co-creation leveraging eHaaS (Refer Fig 2).

3. STAKEHOLDER EMPOWERMENT

Individualized healthcare is predicated on providing the ability for stakeholders to extract and distill meaningful information from a broad and pervasive digital landscape. Moreover, the cumulative value creation effect achieved by applying contextual knowledge as information feedback loops within a patient’s knowledge network emerges. As an integral component of the eHaaS construct, this knowledge network will grow in value over the life of the patient increasing the efficacy of predictive modeling, informing individualized preventative and intervention strategies while contributing to population health and broader research efforts. In conjunction with the PCEHR these systems will intelligently integrate personal information with an individualized form of evidence for collaborative decision making and co-creation by the practitioner and patient [7] (Refer Fig 3).

4. PROGRESS TO-DATE

The findings from a preliminary literature review highlights a discrepancy between what is known and how research will contribute to current knowledge. The promise of encapsulating eHealth services in an ‘on demand’ computing construct for stakeholder empowerment is strong. However, further work is required to realize the potential for a sustainable framework to extract value from the unification of human-centered data. The outcome of this scientific discourse will lead to an understanding of the socio-technical factors required for the adoption of a data-driven framework suitable for the Australian healthcare context.

REFERENCES


Fig. 1. A stakeholder-centric model, adapted from [2].

Fig. 3. eHaaS integration into Healthcare.

Fig. 3. eHaaS conceptual model [6].

Using Technology to Support Communication with People with Dementia and their Caregivers

Initiating and maintaining communication with people with dementia is a crucial component in sustaining a positive personal identity and is a hallmark of person-centered care. This requires time, patience, and imagination. New developments in technology can enable a greater number of environments for talk, sustain the caregiver, and elicit engagement and response, even as the disease progresses. Five papers will report on: 1) findings from a pilot comparing personalized and generic video clips to elicit engagement and prompt a variety of conversational utterance types; 2) Web-based video conferencing to facilitate a support group for caregivers of people with dementia, growing out of work with the Indianapolis Discovery Network for Dementia and the Indiana Alzheimer Disease Center; 3) RERC-ACT, the nation’s first center to conduct research and development of assistive technologies for people with cognitive disabilities, will present current research with a special focus on interventions promoting communication for persons with cognitive impairments; 4) analysis of pilot data on how CIRCA-BC, a multimedia computer program developed for persons in British Columbia, can be viewed as an interactant in stimulating reminiscence-based conversation and facilitating topic management with persons with dementia and 5) preliminary findings from the EN-RICH (Enhancing Rural Interventions for Caregiver Health) pilot, a telephone-based CBT intervention for people with early-stage dementia and their family caregivers residing in rural/geographically isolated areas.

Participants:
Dr. Boyd Davis (University of North Carolina at Charlotte) and Dr. Dena Shenk (University of North Carolina at Charlotte)
Mary Guerrero Austrom (Indiana University School of Medicine)
Patricia Cristine Heyn (University of Colorado Denver Anschutz Medical Campus)
Barbara Purves (University of British Columbia) and Alison Phinney (University of British Columbia)

Technology-supported Interventions for People with Dementia: Facilitators and Barriers

The excitement bubbling around technology-supported interventions for persons with dementia has not diminished as researchers have moved to a new stage, that of identifying the facilitators and barriers to the adoption, implementation, and adherence to a technology-based project. Reflections and opinions on data-gathering and data analyses, in pilot studies, early-stage projects, and small business innovation research, suggest that researchers involved with technology-supported interventions for people with dementia are looking closely at their impact, their collaboration with innovative companies, and their potential for continuation, further development and commercialization. In this session, we look at telecare, sensors and monitors, and behavioral interventions in the context of earlier research. We begin with the discussion of an ongoing project, AKTIVE, which identifies barriers and facilitators to home telecare for older persons with dementia from three perspectives: participant, paid carers and paid care workers. Next, we examine a new model that can be used to consider the adoption of technology-based home monitoring of activities for persons with dementia, key to a meta-synthesis of previous gerontology studies. We present an update on a new (NIH) pilot looking at how sensor-based technology can help with incontinence, agitation and sleep for persons with dementia and their caregivers, and we offer a report on SimpleC, an ongoing NIA-supported project using personalized touch-screen technology and touch-screen interventions to bring behavior interventions to the home for persons with dementia. After attending this session, participants will be able to define primary facilitators and barriers to technology-supported interventions, and can solicit or offer recommendations for interventions.

Participants:
Dr. Emma-Reetta Koivunen (University of Leeds) and Murna Downs (University of Bradford)
Diane Feeney Mahoney (MGH Institute of Health Professions)
Karen M. Rose (University of Virginia) and Janet Specht (University of Iowa)
Chantal Kerssens (SimpleC, LLC)
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Highlights of IEEE HEALTHCOM 2013
Joel Rodrigues
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Prof. Joel Rodrigues provided this overview of HEALTHCOM 2013 in his opening remarks to the Conference.

On behalf of the entire IEEE HEALTHCOM 2013 team, I am pleased to welcome all of you to the 15th IEEE International Conference on e-Health Networking, Application and Services (IEEE HEALTHCOM 2013) on such a sunny day on this beautiful campus from the university of Lisbon, the beautiful capital of Portugal, at October 09-12, 2013.

IEEE HEALTHCOM is the flagship conference of the IEEE Communications Society Technical Committee on eHealth. As a Steering Committee Chair of this conference and Vice-Chair of the eHealth TC, it is my great honor to organize our high-level conference in my country, Portugal. IEEE HEALTHCOM 2013 is fully sponsored by the IEEE Communications Society and technically sponsored by recognized institutions that I am pleased to mention as follows:

- University of Beira Interior, Portugal
- Instituto Superior de Ciências Sociais e Políticas, University of Lisbon
- Instituto de Telecomunicações, Portugal
- Next Generation Networks and Applications Research Group (IT-UBI)
- CTTC - Centre Tecnològic de Telecomunicacions de Catalunya, Spain
- CI2 - Centro de Investigação e Criatividade em Informática, Portugal and the Projects
  - AAL4ALL - Ambient Assisted Living for All, an anchor project from the Health Cluster Portugal
  - WSN4QoL - Secure Location-Aware Cooperative Network-Coded WSNs for Better Quality of Life - an FP7 Project.
The conference offers an excellent program addressing the new frontiers of eHealth technologies and brings together experts from all over the world who come to Lisbon to share their expertise and new ideas. Thanks to our authors from the most diverse research areas including nurses, physicians, technologists, social scientists, lawyers, and other professionals. We received contributions from 51 countries and a total of 286 papers submitted for the main conference, and about 45% of the papers were accepted for publication in the conference proceedings.

This year’s conference is a three-and-a-half day program, featuring:

- 20 Technical sessions and 2 poster Sessions
- 3 workshops
- 4 tutorials
- 4 Keynote Speeches
- 2 Technical Panels with participation from the industry

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IEEE HealthCom 2014 is fully sponsored by the IEEE Communications Society. It aims at bringing together interested parties from around the world working in the health care field to exchange ideas, to discuss innovative and emerging solutions, and to develop collaborations. eHealth is defined as the cost-effective and secure use of information and communications technologies in support of health and the related fields, including health-care related services, surveillance, literature, education, knowledge, and research, both at the local site and at a distance. It will make personalized medicine possible and affordable in the near future. The adoption of eHealth technologies in medical fields creates huge opportunities yet lots of challenges still need to be resolved to build reliable, secure, and efficient networks or platforms with great flexibility. Prospective authors are cordially invited to submit their original contributions covering completed or ongoing work related to the eHealth area. The topics include but are not limited to

- Biomedical and biosensors engineering
- Body sensor networks and wearable sensor systems
- Clinical biofeedback, decision support systems, and tools
- eHealth information and network infrastructure
- eHealth for public health (including disease prevention, emergency preparedness, epidemiologic interventions)
- eHealth for aging (to support quality of life for older adults, aging in place and independence)
- Emerging eHealth applications; Health grid and health cloud
- Context-awareness on eHealth
- Health monitoring, traffic characterization, & management
- ICT-enabled personal health system
- Image and video processing on eHealth
- Network/Communications Infrastructures and Architectures for Healthcare
- New IT-enhanced Models for Healthcare delivery
- Pervasive and ubiquitous computing on eHealth
- Practical Applications of e-Health
- Security and privacy on eHealth
- Storage and Display Devices for eHealth
- Telemedicine and mobile telemedicine

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PAPER SUBMISSION
Perspective authors are invited to submit their papers using EDAS System at TBD. A full paper should not have more than five (5) IEEE style pages including results, figures and references. Papers will be reviewed with the standard reviewing procedure (with at least 3 independent anonymous reviews). Accepted papers will be published on IEEEExplore (http://ieeexplore.ieee.org/). The best accepted paper will receive the Best Paper Award. Extended version of best papers will be considered for publication on the International Journal on E-Health and Medical Communications (http://www.igi-global.com/IJEHMC), Elsevier IRBM (http://www.elsevier.com/journals/irbm/1959-0318), Network protocols and algorithms, (http://www.macrothink.org/journal/index.php/npa), and Recent Patents on Telecommunications, (http://www.benthamscience.com/rtelc).

Note: To be published in the IEEE Healthcom 2014 Conference Proceedings and IEEEExplore, an author of an accepted paper is required to register for the conference at the full (member or non-member) rate and present the paper at the conference.