

Australian
Health
Informatics
Education
Council

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STRATEGIC WORK PLAN

2009-10 and beyond

June 2009

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This document has been prepared by the interim Australian Health Informatics Education Council (AHIEC), under a funding contract between the Australian College of Health Informatics and the Commonwealth Department of Health and Ageing (DOHA).

ACHI and AHIEC express their gratitude and appreciation to DOHA for continued support of Health Informatics education and workforce capacity building for Australia.

The participating community of organisations with specific involvement in Health Informatics, includes:

- Australian College of Health Informatics
- Health Information Management Association of Australia
- Health Informatics Society of Australia
- Health Level 7 Australia
- Australian Computer Society
- Australian Institute of Health and Welfare

Interim AHIEC representatives:

- Evelyn Hovenga – ACHI
- Heather Grain – ACHI
- Siaw Teng Liaw - ACHI
- Louise Edmonds – HIMAA
- Vicki Bennett - HIMAA
- Yve Dougal – ACS
- Klaus Veil – HL7 Australia
- Anthony Maeder – HISA
- Robert Steele – University of Sydney
- Juanita Fernando – Monash University
- Julie Roediger – AIHW
- Jo Foster – Nursing Informatics Australia
- Elizabeth Foley– Australian Nursing Federation
- Kathleen Gray – Melbourne University

And liaison representatives from DoHA

GLOSSARY

The terms used in health informatics are emerging and it is often possible to find multiple definitions. This document identifies such terms and discusses the definition. It is intended that agreed, specific definitions will be identified for use in Australia as the projects identified progress and the community move towards greater understanding and collaborated approach to the domain.

ACRONYMS

ACHI	Australian College of Health Informatics
AHIEC	Australian Health Informatics Education Council (evolved from the National Health Informatics Education Committee)
AIHW	Australian Institute of Health and Welfare
CAHIM	Commission on Accreditation for Health Informatics and Information Management Education
DoHA	Department of Health and Ageing
HIMAA	Health Information Management Association of Australia
HISA	Health Informatics Society of Australia
HL7	Health Level Seven – Australia
IMIA	International Medical Informatics Association
NHIEP	National Health Informatics Education Program

FOREWORD

The Australian College of Health Informatics (ACHI) established a Health Informatics Education Committee “to address the supply of health informaticians and to increase the information management skill and knowledge base of health workers across the sector” (National Health Information Management Principal Committee Strategic Work Plan 2007-08 to 2012-13). This long-standing health workforce need is regularly raised as essential for a safe and effective health system by health and informatics professionals, National e-Health Transition Authority (NEHTA), the Productivity Commission and various national and state government inquiries into e-Health, health promotion, general practice and primary care, and hospital services. The most current national reviews, namely the Primary Care Strategy Taskforce, Preventive Care Taskforce and National Health and Hospital Reform Commission, have flagged the importance of addressing the health informatics and workforce capacity and capability.

This report describes the outcomes of a project, managed by ACHI with support from the Commonwealth Department of Health and Ageing (DOHA), to develop a strategic workplan for an Australian Health Informatics Education Program (NHIEP), including the establishment of a national advisory and governance body to oversee and guide the implementation. A National Health Informatics Education Committee (NHIEC), with representation from a broad range of stakeholders who deal with different aspects of health informatics¹, was proposed to contribute to, oversee and guide this project and the NHIEP workplan.

The participating organizations proposed that an advisory council – the Australian Health Informatics Education Council (AHIEC) – may be more representative than a NHIEC. The interim AHIEC, incorporating the actively participating stakeholder representatives, will discuss the optimal governance structure and requirements and make recommendations based on the evidence. As indicated in the contract, HISA and HIMAA have been invited to nominate for Deputy Chair roles in the interim AHIEC. We would also recommend that HL7 Australia and the Australian Computer Society (ACS) be invited to nominate a Deputy Chair to the interim AHIEC. This is in line with a need to include the TAFE sector, which has not been directly engaged at this point.

The constructive collaboration shown by the participating stakeholder representatives on the interim AHIEC, within the constraints of time and professional differences, augurs well for the future success of the NHIEP to develop and support a unified Health Informatics profession. This health informatics profession can and will underpin the NHIEP workplan to develop a health workforce with core health informatics competencies¹ to achieve and maintain the continuity, safety and quality of care in the Australian health system to improve health outcomes.

In particular, the coordinated and collaborative curricular development by the various stakeholders will greatly facilitate the unification and harmonization process of the concepts and people engaged in the various aspects of Health Informatics and health informatics education.

This report and indicative workplan represents a systematic approach to describing the required HI competencies, defining the gaps, developing the strategies to address the capability gaps and monitoring the progress and effectiveness of the strategies implemented. The modular approach, with a mix of sequential and

¹ Health informatics is very broadly the study and application of information and communication technologies, protocols and systems in health care and health.

parallel implementations, provides a degree of flexibility in rolling out the workplan. While this flexibility is important, it does not detract from the urgency of the workplan implementation to achieve a workforce with the required competencies to drive the national health and e-Health agenda.

On behalf of ACHI and the Interim AHIEC, I would like to thank the participating organisations and the Department of Health and Ageing, for their support of this project.

Siaw-Teng Liaw

Chair, ACHI Education Committee

Chair, Interim Australian Health Informatics Education Council

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1 OVERVIEW

The demand for Health Informatics professionals is extending across existing professional groups and into new areas including those supporting e-Health initiatives.

In December 2008, the Australian College of Health Informatics (ACHI) proposed to establish and support a national Health Informatics Education Council *“to address the supply of health informaticians and to increase the information management skill and knowledge base of health workers across the sector”* as expressed in the National Health Information Management Principal Committee (NHIMPC)’s Strategic Work Plan 2007-08 to 2012-13². The background to this is the long-recognised need to build capacity that has been re-emphasised by 1) the recent Booz & Co e-Health discussion paper³, 2) the recent discussion paper *“Towards a National Primary Health Care Strategy”*, 3) the report *“Beyond the Blame Game”* by the National Health and Hospitals Reform Commission, 4) and various State and jurisdiction reports such as the NSW Health Garling report on Acute services.

A more knowledgeable cadre of decision makers as well as staff directly involved in health administration, information, data, processes and e-Health initiatives has the potential to realise significant savings by minimising budget overruns and optimising the realisation of benefits of e-Health. The successful adoption of e-Health strategies is essential to enable the realisation of a nationally sustainable health system⁴. This increasing demand is putting stress on limited existing resources in Health Informatics in Australia. Collaboratively with a wide group of stakeholders, and in particular the Health Information Management Association of Australia (HIMAA), Health Informatics Society of Australia (HISA), and HL7 Australia (HL7), the Australian College of Health Informatics (ACHI) proposed the establishment of the Australian Health Informatics Education Council (AHIEC). This Council seeks to provide a collaborative environment for existing accrediting and credentialing bodies, as well as the community of interest to develop and support the necessary Health Informatics educational standards and advice to strengthen the national informatics and information workforce capacity of the health sector.

In May 2009 ACHI was funded by the Australian Government’s e-Health Branch within the Department of Health and Ageing to establish the AHIEC and to develop a strategic workplan for 2009-10 and beyond. Simultaneously the Health Informatics Society of Australia (HISA) was funded to prepare a background discussion paper that sets out the scope and structure of the Health Informatics workforce and draws together a summary of the key issues, gaps and opportunities for further work to be undertaken on this issue. Its findings are expected to be a valuable resource guiding the implementation phase of AHIEC’s strategic workplan.

1.1 HEALTH POLICY CONTEXT

Health information is used extensively to support all levels of healthcare today. It is the view of the interim Council that the required increase in skills to support existing information requirements in healthcare as well as to successfully implement the ten key elements proposed to underpin a future Australian primary health

² Letter to Lisa McGlynn, Assistant Secretary, Department of Health and Ageing - e-Health Branch Canberra from Dr Terry Hannan, ACHI President, dated December 2008

³ Booz & Co E-Health: Enabler for Australia’s Health Reform, prepared for the NHHRC November 2008
<http://www.nhhrc.org.au/internet/nhhrc/publishing.nsf/Content/discussion-papers>

⁴ Coiera E, Hovenga E.J.S (2007) Building a Sustainable Health System, Invited Survey paper for the *IMIA Yearbook of Medical Informatics 2007, Methods Inf Med 2007; 46 Suppl 1 p.11-18*

care system⁵ is totally dependent upon the adoption and successful implementation of a number of appropriate health ICT systems and a national standard e-Health infrastructure. This in turn is dependent upon the existence of workforce e-Health capability and capacity. Similarly, the National Hospitals and Health Reform Commission⁶ has identified a number of gaps in safety and quality due to suboptimal information sharing, and proposed Health Informatics solutions that are expected to improve with a more appropriately Health Informatics educated workforce. On 30 April 2009 the NHHRC published a supplementary paper to its Interim Report, which outlines the Commission's support for person-controlled electronic health records for every Australian.⁷

The 2008 COAG decision to continue to fund NEHTA's work confirms a continuing Government commitment to a national e-Health strategy that includes a stated need to improve workforce e-Health capability and capacity. NEHTA has made a business case for the development of Electronic Health Records, but again successful implementation is dependent upon an appropriately educated workforce.

The term *e-Health* only came into widespread usage a few years ago. There is no agreed definition for *e-Health*, yet this term is widely used by many, but the meaning adopted for this concept varies considerably Oh et al.⁸ undertook a systematic review of 1209 abstracts and 430 citations and found 10 different definitions for the term *e-Health*, and from a Google search an additional 41 unique definitions were located ranging in length from 3 to 74 words. As a consequence there is a lack of consistency in the population's understanding of and perceptions about the workforce's knowledge and skill requirements and the likely impact of successful e-Health strategy implementations.

1.2 WHY A NATIONAL HEALTH INFORMATICS EDUCATION WORK PLAN?

The Health Informatics discipline and profession(s) is poorly understood by the public at large including health professionals and health administrators; it is a fairly new interdisciplinary discipline with a very large knowledge domain in terms of depth and breadth. Current Health Informatics practitioners have formal academic backgrounds in many areas of medicine, nursing, allied health, electrical and biomedical engineering, medical science, research, epidemiology, public health, statistics, librarians, health information managers, health administrators, and areas of computer science including information systems, information and communication technologies, physics, knowledge management and more. In addition health services consist of many clinical specialties and there are variations in service delivery based on geographic locations and variations in data usage across the health industry, all of which result in variations regarding the use of technologies. Consequently it is not a case of one degree fits all! There need to be Health Informatics educational opportunities that recognize these many special technology, information and knowledge usage needs and the relationships between the varying existing professions and their core competencies.

Germany has provided formal medical informatics education with a strong IT emphasis for more than 30 years, closely followed by the USA where this was concentrated in the research area in the form of doctoral studies. The International Medical Informatics Association (IMIA) now has more than 50 academic facilities from around the world as institutional academic members who collectively have been working on expressing the Health Informatics knowledge domain and associated desired competencies. Whilst a considerable amount of

⁵ Australian Government Department of Health and Ageing, Towards a National Primary Health Care Strategy: A discussion paper from the Australian Government, Commonwealth of Australia, Canberra

<http://www.health.gov.au/internet/main/publishing.nsf/Content/Primary+Health+Strategy-1> viewed May 2009

⁶ Australian Government, National Health and Hospitals Reform Commission (NHHRC) A Healthier Future For All Australians – Interim Report December 2008 available from <http://www.nhhrc.org.au/> viewed May 2009.

⁷ NHHRC Media Release 30 April 2009 <http://www.nhhrc.org.au/> viewed May 2009

⁸ Oh H, Rizo C, Enkin M, Jadad A. 2005 What Is e-Health (3): A Systematic Review of Published Definitions, Journal of Medical Internet Research;7(1):e1 viewed June 2008 at <http://www.jmir.org/2005/1/e1/>

progress has been made this work has been stymied by its complexity, rapid technology changes, new knowledge acquisition and the lack of formal recognition of Health Informatics as an occupation. As a consequence we are witnessing the emergence of many and varied educational programs that collectively have many overlaps and do not meet all competency development requirements to meet the graduate needs of the domain as a whole. A National Health Informatics education work plan enables all stakeholders to participate in identifying the competency needs for the many roles and functions undertaken within the health industry so that educational facilities are in a better position to build on their strengths and meet these educational needs within a national needs context.

2 ROLE OF HEALTH INFORMATICS EDUCATION

All health workers are expected to make use of a variety of Health Informatics tools and methods in all areas of the health industry, clinical, administrative and technical. There is also a need to provide skilled Health Informatics professionals to support technical, functional, content and other requirements of e-Health initiatives within Australia. The scope and content of Health Informatics educational needs are many and varied.

Current health professional educational programs rarely include these new skills and knowledge requirements despite efforts in this direction by some health professional educators. This curricular deficiency gap is primarily due to a lack of understanding of this discipline and a lack of consultation with senior health informaticians in the development of curricula leaving few, if any, opportunities to include appropriate content. One way to overcome this gap is to educate the educators and trainers enabling the integration of relevant Health Informatics knowledge and skills with existing curricula content to better prepare new graduates.

Since 2002, Germany has required Health Informatics competencies as a precondition for licensing physicians.⁹ Existing health workers have a need for continuing professional development that includes Health Informatics education to prepare them to make better use of data collection, existing information, processes and change management to optimise health care systems, knowledge and communication technologies via a wide variety of available information systems. In addition some health professionals have a desire to assume more active roles such as clinical business analysis, project and change management associated with new system implementation. Health Informatics education needs to meet the needs of new and specific functional roles that to date are poorly defined. The survey of the health workers currently undertaken by the Health Informatics Society of Australia in June 2009 is expected to result in a better understanding of all Health Informatics associated roles and functions, including information and systems management, and their distribution with the health workforce.

Health Informatics needs to be recognized as an occupation that has very specific position descriptions based on known minimum competency needs at various levels within a career structure. Such a career structure can then be translated to overall educational requirements that are compliant with the Australian Qualifications Framework.

This workplan recognises that there are some areas which include areas of Health Informatics that have professional recognition, such as Health Information Managers. This group also has difficulty in attracting the number of students required to support Australia's needs. The availability of such information assists Universities and Registered Training Organisations to develop, offer and promote suitable curricula enabling

⁹ Hilgers R, Feldmann U, Jöckel K, et al. Recommendations for the implementation of the regulations for the license to practice for medical doctors from 26/06/2002 in the fields of epidemiology, medical biometry and medical informatics [German]. *GMS Med Inform Biom Epidemiol* 2005; 1(1): Doc05.

workforce capacity building. Another benefit is that this will also benefit HR departments responsible for writing up suitable position descriptions for new vacancies arising as various e-Health strategies are being implemented in the Health industry. The existence of a well defined career structure also assists future health workforce planning activities as managed by the Health Workforce Australia program established late 2007 following a decision by the Council of Australian Governments (COAG) to guide innovation and reform of the national health workforce¹⁰.

2.1 PAST AUSTRALIAN HEALTH INFORMATICS WORKFORCE PLANNING ACTIVITIES

The Australian College of Health Informatics was established in 2002 following the financial assistance of the Commonwealth Department of Health and Ageing enabling a small group of senior Australian Health Informatics academics to explore the potential role of such a College and how such a College could be created. It was concluded that there was a need for the development of a Health Informatics profession to both fill current needs of the health industry, as well as develop and train Health Informatics professionals and clinicians to meet an expected growth in Health Informatics skill and knowledge demand¹¹. This was based on evidence that continues to be relevant today.

At that time there was widespread recognition that Information and Communication Technologies (ICT) would play a pivotal role in streamlining clinical processes, and institutionalising developments such as evidence-based clinical practice. The then evolving focus on quality and safety within the healthcare system also highlighted the fundamental role that good systems design must play. However, with the ever-present budgetary limitations faced by the healthcare sector, it has become increasingly important that ICT adoption is economically sound, deployed in an appropriate fashion and used to address priority information. HISA's current research into the Health Informatics Workforce should further inform current activities and quantify gaps.

2.2 GAPS IDENTIFIED

There was a growing list of failed efforts to realise the benefits of ICT in healthcare in 2002, unfortunately this continues to be true. There are numerous reasons for this including the following gaps:

- *People gap*: A shortage of skilled Health Informatics professionals to assist in planning and implementing health information systems and health information management strategies. At present, demand exceeds the supply of Health Informatics professionals. The historical investments in health ICT have not had any significant prior investment in developing a stable and skilled Health Informatics workforce. The potential available budgets for current projects represent a workload well in excess of that supportable by the available pool of Health Informatics professionals.
- *Professional profile gap*: – There is no clear identification of the Health Informatics skill set in the professional environment. The profession, jobs and qualifications are not well labelled. Position descriptions for advertised vacancies reflect a poor understanding of qualifications required to competently take on the required role and undertake associated work activities.
- *Material and empowerment resources gap*: – Many Health Informatics graduates' are not able to fully apply their knowledge and skills as many current systems fail to meet all user requirements or they are not provided with sufficient access to suitable hardware, software or other devices or technologies.

¹⁰ Health Workforce Australia <http://www.nhwt.gov.au>

¹¹ Cesnik B, Celler B, Coiera E, Hovenga E, Kidd M, Pradhan M 2001 Report on a Workshop to explore the role and feasibility of the Australasian College of Health Informatics (ACHI). Report to the Commonwealth Department of Health and Aged Care, Canberra.

- *Decision maker and project manager skills gap:* despite the increasing number and scope of IT based initiatives in healthcare, many health care administrators, project managers and government decision makers have little understanding of success factors and risks in Health Informatics projects, particularly in clinical projects, nor is there a clear understanding of the skills required to support these projects in delivering on time, on budget with systems that represent real improvements in efficiency and safety.
- *Health Informatics skills gap:* Individuals working in Health Informatics have variable experience and training in Health Informatics, both because there are no clear career paths for such individuals at present, and because the inherent multidisciplinary nature of the field means individuals often come to Health Informatics from disparate health or IT backgrounds. This 'skills gap' represents a major impediment to the development of a safe, effective and cost-efficient national health information infrastructure.
- *Implementation gap:* Consequently, there is a variable skill level in those that do become involved in Health Informatics projects. Project failure is often related to poor implementation, reflecting an absence of mature experience in deployment of complex information systems in the health setting.
- *Change management gap:* Many projects fail as insufficient study of workflow has taken place especially in clinical settings. Clinicians won't use systems when additional time is required for making use of the system or where a change in work practice is required unless they fully appreciate the benefits.
- *Research gap:* Projects also fail because they break basic Informatics 'rules'. Many, for example, are implemented in the mistaken belief that 'technology' is the answer, rather than first focusing on problem definitions at a system level, and evolving appropriate information solutions, grounded in the science of informatics. Health Informatics is relatively young as a formalised discipline, and the basic Health Informatics 'rules' are a work in progress. There is thus a very real need to foster research in HI. However Australian Health Informatics research was critically undervalued and under funded in 2002, some progress has been made but this continues to be an issue. There was no NH&MRC or ARC panel for Health Informatics at that time. Many research applications fall in the gap between the ARC and NH&MRC programmes.
- *Clinical education gap:* Clinically, there is also a growing need for individuals to develop skills in Health Informatics. Specifically, health professionals need to be trained in new information technology skills, both to successfully harness the benefits of the new technologies, as well as to adopt evidence-based and safe work practices. The consequence of a clinical workforce that is under skilled in core informatics techniques like evidence-based information retrieval, use of computerised prescription systems or electronic medical records, or communication technologies like email or the Web, means that many options for widespread system improvement are hampered. Educators and trainers of health professionals tend to have a lack of Health Informatics knowledge and skills resulting in the poor integration of Health Informatics principles in health professional curricula.
- *Health Informatics training gap:* In the last few years several tertiary institutions in Australia have commenced some form of Health Informatics education varying from postgraduate certificates, through Masters and PhD programmes. While this has occurred other educational offerings at Universities have closed or been downgraded, despite the growing demands for suitably qualified professionals by the healthcare industry. University decision making is driven by both short and long term demands of industry and the educational organization's capacity to develop and support programs. Universities may be willing to partner with industry if there is some guarantee for support for the programs provided. Educational providers need to understand the requirements for professional credentialing.
- *Professional standards leadership gap:* The establishment of AHIEC and clear, open declaration of competencies requirements will assist universities in establishing their longer term goals and planning their programs as will the support of the health informatics community through the AHIEC. Issues of research support are also acknowledged as a major imperative to support university development of skills and program sustainability. These imperatives are all considered in the various projects identified in the workplan. The strong position of Australia, and members of the health informatics community internationally also offers the opportunity to recognise that university programs are highly dependent upon international students. Programs which offer internationally recognised credentials will be even more attractive. However, the community of Health Informatics graduates

remains small and there is no coherence at present around what appropriate professional experience is needed to safely and effectively work as a Health Informatics professional. Some general direction is available through the work of such groups like the International Medical Informatics Association (IMIA) and its many institutional academic members, but such direction must be relevant in an Australian context to be realised. There is also a significant gap in the capacity of training and educational organisations to provide less formal training such as short courses aimed at specific skill development to meet very specific gaps or demand in the workplace.

- *Health Informatics educator and trainer gap:* There is a dearth of suitably qualified Health Informatics educators & trainers capable of designing and delivering Health Informatics education at all levels and developing Health Informatics researchers.

2.3 PAST ACHIEVEMENTS

Individual senior Health Informatics academics and ACHI Fellows have managed to influence the Health Informatics research agenda by attracting funding from various sources, PhD students and Post Doctoral Fellows. A particular example is the University of New South Wales' Centre for Medical Informatics under the Direction of Professor Enrico Coeira initially with significant support from the NSW State Government together with strong supportive links between the Centre and health care providers.

The number of Australian Health Informatics research based publications contributing to the international community is increasing. This includes the contributions made via the Standards Australia IT-14 Health Informatics Committee and its technical sub-committees.

The need to define and promote a knowledge skills set for Health Informatics Professionals has resulted in the development of the Australian Health Informatics Education Framework that provides an overview of Australian Health Informatics educational and career options, is endorsed by ACHI and made freely available via their website^{12,13}.

Existing credentialing of professionals by HIMAA, ACHI, ACS and HL7 and of tertiary courses by HIMAA and ACS are examples of activity in this area, but there is an acknowledged need to harmonise and extend both the depth of skills and the skill base across health care professions beyond the current scope.

2.4 WORK UNDERTAKEN PRIOR TO RECEIVING GOVERNMENT FUNDING

ACHI established an Education Committee in December 2008 to work collaboratively with other Health Informatics professional, accrediting and community organisations as well as health industry stakeholders to develop and establish a national approach to and strategy for Health Informatics education. This began in earnest with its hosting of an inaugural stakeholder meeting in Sydney on 10 February 2009. This meeting was attended by 20 participants representing health and IT professional organisations, the medical software industry, universities and the Australian Government. Details about this stakeholder community are provided in Appendix 1. There was a common recognition that the Health Informatics (HI) discipline was not well understood by government, industry, and academia and that the ICT industry does not understand healthcare. It was agreed that there was a need for a recognised Health Informatics career structure and pathways with generic sets of competencies for the many different roles and functions within the health industry as a whole, an agreed Health Informatics body of knowledge and education framework, a critical mass to assist in lobbying for Health Informatics as a discipline, and a National Health Informatics Education Committee (now called the

¹² Garde S, Harrison D, Hovenga E 2005 Australian Skill Needs Analysis of Health Informatics Professionals, Research Report 1,2,3 &4 of the Health Informatics Research Group Central Queensland University, Rockhampton, Qld.

¹³ Garde S, Hovenga E 2006 Australian Health Informatics Education Framework, available from http://www.achi.org.au/publications/hi_educational_framework

Australian Health Informatics Education Council – AHIEC) to address the issues identified and assist government, academia and industry to implement a national program to produce enough people who can achieve the e-Health vision. Meeting outcome details including draft objectives and terms of reference are provided in appendix 2.

A second stakeholder workshop/meeting was held in Sydney on 26 March 2009. This was attended by a mostly different group of 15 stakeholders representing health professional organizations, the medical software industry, Universities and the National e-Health Transition Authority (NEHTA). A Governance options discussion paper had been distributed to all stakeholders prior to this meeting. Many statements of support and suggestions had been received from various stakeholders who were unable to attend the March meeting. There was much discussion but no consensus regarding the adoption of a NHIEC governance option was reached. In principle all the organisations are in agreement with the ultimate goal. The difficulty is that the health Informatics discipline is itself interdisciplinary with a very broad scope in terms of breadth and depth. Consequently there are numerous potential professional skills and knowledge overlaps with well established professional colleges and associations. This will take time to resolve.

3 HOW THIS WORKPLAN WAS DEVELOPED

It was agreed that the development of the detailed workplan requires a balanced set of skills from industry, academia, users, employers and alignment to the national e-Health strategy. The meeting acknowledged and welcomed ACHI's facilitating role in this and agreed to collaboratively develop a substantial draft workplan for consideration at the next meeting. Content to be included in the workplan identified by this group was essentially the same as that identified at the February meeting. Another meeting was held in Canberra and hosted by DoHA on Monday 1 June 2009. A draft work plan outline was distributed to all stakeholders with a request to contribute and/or make suggestions so that a consolidated draft could be discussed at the June Canberra meeting which was facilitated by Dr Ian Graham. This first draft contained 8 projects. During discussions it became evident that further projects needed to be added to the work-plan. Meeting participants agreed that this new group should be named Australian Health Informatics Education Council (AHIEC). An interim membership for this Council was established consisting of the following members:

Teng Liaw - ACHI
Evelyn Hovenga – ACHI
Heather Grain – ACHI
Louise Edmonds – HIMAA
Vicki Bennett - HIMAA
Yve Dougal – ACS
Klaus Veil – HL7 Australia
Anthony Maeder – HISA
Robert Steele – University of Sydney
Juanita Fernando – Monash University
Julie Roediger – Australian Institute of Health and Welfare
Jo Foster – Nursing Informatics Australia
Elizabeth Foley– Australian Nursing Federation
Kathleen Gray – Melbourne University

With additional liaison to DoHA.

This group consists of members who have, over the last 3 months, actively contributed to the development of AHIEC. They will establish a process for establishing a sustainable Council membership as a high priority project within the strategic workplan to ensure all stakeholders have an equal opportunity to nominate and be able to actively participate in continuing the work of this Council. The interim Council has actively reviewed, contributed to and commented upon all proposed projects, their methodologies, timelines and cost estimates

via small local group discussions, teleconferencing and email communication. A set of possible logos were presented at the Canberra meeting and one was selected.

In addition to the existing leadership and support provided by the Australian College of Health Informatics, the initial deputy chairs of the interim AHIEC will be nominated representatives from five core Health Informatics accrediting, credentialing or community organisations:

Australian College of Health Informatics
Health Information Management Association of Australia
Health Informatics Society of Australia
Health Level 7 – Australia
Australian Computer Society

4 OUTCOMES TO BE ACHIEVED

Late May 2009 a contract was signed between the Australian Government's Department of Health and Ageing and the Australian College of Health Informatics to:

1. Establish a National Health Informatics Education Council ¹⁴(now AHIEC) that includes a governance and accountabilities structure, which includes the Health Informatics Society of Australia (HISA) and the Health Information Management Association of Australia Ltd (HIMAA), a membership of health industry stakeholder representatives, a secretariat, a project management infrastructure based on a suitable funding strategy and resource availability, structure, terms of reference, aims and objectives, risk plan, website, marketing and communications plan to inform healthcare providers on the availability and advantages of Health Informatics education.
2. Develop a strategic work-plan for 2009-10 and beyond, for the National Health Informatics Education Program (NHIEP) complete with a structured program of works that the proposed NHIEC will undertake, including a detailed implementation plan highlighting the outcomes to be achieved, the milestones and timeframes for the various project deliverables, and a detailed costing of the planned program. The plan will include identification of the Health Informatics body of knowledge, a framework for educational program accreditation and a proposed accreditation process. The plan will also include a Health Informatics career structure and role based Health Informatics knowledge and skills requirements for health professionals, information technology professionals and health administrators as well as a credentialing process.

At the first stakeholder meeting it was agreed that the implementation of the strategic work-plan needs to result in an increase in the number of people educated in Health Informatics to support the healthcare system of today and tomorrow by building workforce capacity through education and training so that:

- The best possible use of the available health workforce is enabled via the adoption of e-Health strategies to improve workforce planning and assist in overcoming health workforce shortages and workforce distribution issues whilst providing equitable, accessible, sustainable, timely and safe health care. (refer projects 10,11 &12)
- Better health information management is enabled to support evidence based practice, continuity of care, simplify health care and all reporting processes and contribute significantly towards achieving a sustainable health system. (refer projects 7,9 &10).

¹⁴ Based on the consensus of the stakeholder workshop on 01 June 2009, the NHIEC has been renamed by the Australian Health Informatics Education Council (AHIEC). In the short term, the AHIEC will perform the same role as proposed for the NHIEC. Terms of reference will be developed as part of this ACHI project to govern the objectives and activities of the AHIEC.

4.1 WORKFORCE AND CAREER PATHWAY

There is a need to understand the gaps and barriers in workforce e-Health capability today, and to identify a pathway forward to reduce these capability gaps and improve utilization and recognition of the skills required. The following project deliverables for this area need to be incorporated in this work plan, others will follow based on current ACHI project results achieved and further input to the work plan from interim AHIEC members.

- Identification of the Health Informatics body of knowledge, a framework for educational program accreditation and a proposed accreditation process (refer projects 3, 5, 7, 10 & 13).
- The Health Informatics career structure and role based Health Informatics knowledge and skills requirements for health professionals, information technology professionals and health administrators together with a credentialing process (refer project 10 & 11).
- An agreed set of core competencies relative to proposed Health Informatics career structure and health professional e-Health roles (refer project 7 & 10).
- A mentoring and support program to support the Health Informatics professionals at their various levels of professional development

4.2 EDUCATIONAL CAPABILITY AND DELIVERY

The current Health Informatics educational situation in Australia needs to be understood in order to develop an appropriate strategy to ensure appropriate initiatives are encouraged and able to be provided across a wide range of educational pathways, such as local programs with specific objectives, professional and inter professional continuing education and professional development programs, and formal tertiary education. The following project deliverables for this area need to be incorporated in this work plan, others will follow based on further input to the work plan from AHIEC members.

- Identification of gaps and barriers in workforce e-Health capability (refer project 10).
- Identify related educational activities, overlaps, gaps and opportunities (refer Project 10)
- Report on current state of National Health Informatics education (refer project 4).
- A strategy to ensure the entire Health Informatics body of knowledge will be taught in Australia (refer project 10).

4.3 EDUCATIONAL PROGRAM ACCREDITATION

Educational programs and career pathways require a common understanding of both content and quality to support consistent representation of skills and professional recompense and to ensure that monies paid and efforts put into education are appropriate, relevant and of high quality. Accreditation of educational programs requires information about the curriculum design, content and delivery; quality of the teachers and teaching resources, assessment processes and validation; and evaluation based on feedback and learning outcomes.

Health Information Management and Computer Science programs have existing accreditation programs which will inform and be informed by this review.

The sustainability of the program such as the support of the 'parent' organization will also be a criterion. The following project deliverables for this area need to be incorporated in this work plan for educational programs:

- A mechanism to enable work experience placements and recognition of prior learning (refer project 8 & 9)
- An established accreditation/credentialing process (refer project 13)

5 STRATEGIC WORKPLAN FRAMEWORK

The AHIEC's work and outcomes to be achieved will be guided by ACHI's mission and associated guiding principles which are reflected in AHIEC's proposed terms of reference. In addition there needs to be an

organizational framework for all projects reflecting the need of ACHI's contractual obligation to develop a National Health Informatics Education Program (NHIEP) that:

- Identifies the HI body of knowledge to indicate the scope and boundaries,
- Documents known competency requirement from previous international work
- Tests the applicability of these competencies to the Australian environment
- Describes workforce competency needs relative to the many and varied roles and functions undertaken within the health industry
- Undertakes a gap analysis
- Organises and structures Australian workforce competency needs into a framework to assist career structure and curriculum development
- Establishes professional HI education standards to meet career structure needs and for accreditation/credentialing purposes
- Develops HI education and research implementation strategies.

5.1 THE HEALTH INFORMATICS BODY OF KNOWLEDGE

Any discipline's body of knowledge needs to communicate a common understanding of the nature and boundaries of its discipline. The Health Informatics discipline is interdisciplinary and evolving which makes this task more difficult to achieve as this body of knowledge may be diced and sliced in multiple ways depending on one's perspective. As with the e-Health concept there are many definitions of Health Informatics. Definitions of existing professional areas such as Health Information Management reflect some areas of shared knowledge,

The governance of professional education in Health Informatics needs to ensure that such education has as its foundation a common understanding of the nature and scope of the discipline of Health Informatics. This is an essential requirement for strengthening and promoting the profession and a base on which research training and research can build to advance the profession. There is an acknowledged need to recognise existing professional knowledge areas such as Health Information Management, Clinical Informatician (recognised in the USA), and Clinical Terminologists.

A purpose of this strategic work-plan is to outline the Health Informatics body of knowledge in order to provide a national framework for use by the range of education and training providers who may design and review curricula suitable to meet the health industry's workforce capacity needs. The Health Informatics body of knowledge framework consists of the building blocks from which are developed the requisite professional competencies in knowledge, skill and behaviour that have shared relevance across the many different roles, functions and career structure levels, indicating where the various professional and job based activities fit within the overall scope of Health Informatics.

Health Informatics is the body of knowledge that concerns the acquisition, storage, retrieval and use of information in, about and for human health, and the design and management of related information resources, devices and methods to advance the understanding and practice of healthcare. Since the emergence of national and international Health Informatics interest groups in the 1970s, there has been substantial consensus on the core elements of Health Informatics as a discipline:

1. electronic health records, decision support systems and other health information systems
2. standards, including controlled vocabularies and technical standards, to facilitate the exchange of existing health data types and to accommodate and translate emerging data types and technologies
3. information and communication networks and devices in healthcare provision and health science research
4. human-computer interaction related to patient information, clinical care, population health and health policy

Because the discipline of Health Informatics integrates four fields of study – health science, computer science, information science and knowledge management – it has been variously identified with particular perspectives within these contributory fields. Sub-domains of Health Informatics include:

- Those identified with a specific clinical or profession, for example dental, medical, nursing or pharmacy informatics although a more general clinical informatics has been recognized as a Health Informatics specialty in the USA.
- Those identified with non point of care clinical interests in healthcare, for example health management informatics, health information management or public Health Informatics.
- Those identified with particular technology trends in healthcare, for example, e-Health (the Internet and Web); i-Health (interactive and personalised technologies); m-Health (mobile phones or other mobile devices); tele-Health (digital audiovisual technologies), healthcare messaging and clinical terminologies.

Use of the term biomedical informatics may be synonymous with Health Informatics, but often is more inclusive of aspects of biomedical engineering and non-human aspects of biotechnology.

Bioinformatics is a related field, where the study of information at the molecular biological level is affiliated more broadly with life sciences, without direct relevance to healthcare. Health informatics and bioinformatics overlap in the sub-domain of research and clinical care that is concerned with the effects of basic biological data on human health and is now referred to as translational bioinformatics.

5.2 HEALTH INFORMATICS WORKFORCE ISSUES

The Australian and New Zealand Standard Classification of Occupations (ANZCO)¹⁵ does not recognize Health Informaticians as an occupational group. Coding Clerks and Health Information Managers are identified. This classification makes clear the close relationship of the Health Information Management professions to some areas of the Health Informatics discipline as they are educationally prepared to ‘Translate narrative descriptions and numeric information into classification or record systems’ (599911 Coding Clerk) or to ‘plan, develop, implement and manage health information services, such as patient information systems, and clinical and administrative data to meet the medical, legal, ethical and administrative requirements of health care delivery’ (224213 Health Information Manager). It is noted that the HIMAA do not support these definitions, which reflects the need for review of this whole domain. Whereas Health Informaticians need to be educationally prepared to make use of clinical data, health information, knowledge, information and communication technologies for decision making, knowledge discovery, documentation and management purposes to deliver health services in a safe, ethical and legal manner. Another group of Health Informaticians need to be educationally prepared to develop, implement and manage all associated technical services.

The concept of ‘occupation’ is based on the concepts of ‘skill level’ and ‘skill specialisation’. An ‘occupation’ is defined by ANZCO as ‘a set of jobs that require the performance of similar or identical sets of tasks’. The similarity of tasks is defined in ANZCO as ‘a function of the level and specialization of skill required to perform those tasks. Skill is defined as the ability to competently perform the tasks associated with an occupation’.

Data on the health workforce are collected by the Australian Bureau of Statistics through the 5-yearly national population Censuses and monthly labour force surveys, and by the Australian Institute of Health and Welfare (AIHW) through surveys of those registering as health professionals¹⁶. ICT Professionals working in or for the health industry as well as health informaticians are not identifiable. HISA are currently undertaking a survey of health informaticians to better understand the current workforce. Many if not most current health informaticians have another traditional health professional credential so are likely to be included in these categories. Others are likely to be grouped under ‘other health workers’ in these statistical collections, some

¹⁵ Australian Bureau of Statistics and Statistics New Zealand, Australian and New Zealand Standard Classification of Occupations 1st edition 2006 ABS cat.no. 1220.0

¹⁶ AIHW Australia’s Health 2008 p.432 <http://www.aihw.gov.au/publications/aus/ah08/ah08-c08.pdf>

or all may be excluded. In 2006 the total number of persons employed in health occupations (health workforce) was 593,300 as reported by the AIHW (p.436) of which 507,100 were employed in one of the many health occupations including 2178 Coding Clerks and 1256 Health Information Managers. It is not known how many of this large group perform Health Informatics activities on either a full time or substantial part time basis. The National Health Service (NHS) in the UK undertook a workforce survey in 2006 and concluded that they have 1 health informatician per 52 workers¹⁷.

The Department of Education, Employment and Workplace Relations provides information about the ICT labour market¹⁸ and skills-in-demand but again the Health Informatics skills-in-demand are not identified as this occupational group is not yet formally recognised. As a consequence there is no reliable Australian data about the current Health Informatics workforce or skills gap. Government supported health workforce planning and research occurs at both the national and state/territory levels. According to Health Workforce Australia¹⁹ activities are undertaken by the National Health Workforce Taskforce (NHWT), overseen and coordinated by the Health Workforce Principal Committee (HWPC). The Health Workforce Principal Committee (HWPC) has two major roles:

1. To provide a forum for reaching agreement on key national level health workforce issues which require government collaborative action.
2. To provide advice on health workforce issues to the Australian Health Ministers' Advisory Council (AHMAC).

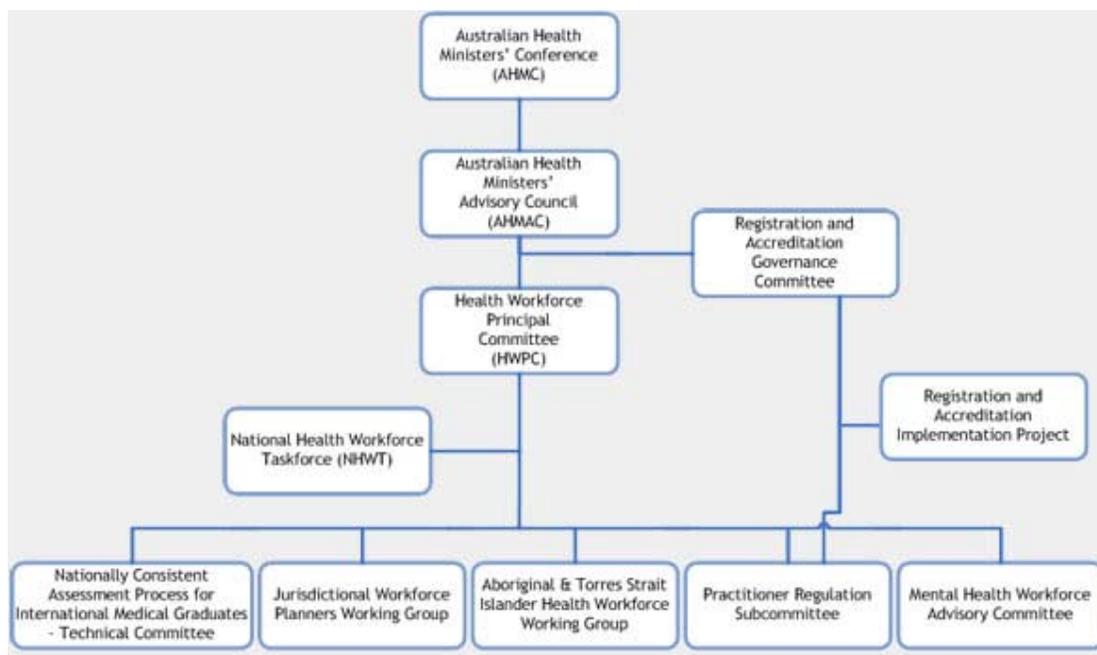


FIGURE 1 AHMAC WORKFORCE COMMITTEE STRUCTURE

Again without formal recognition of Health Informatics as an occupation and professional discipline in its own right, the Health Informatics workforce needs will not be identified and included in these national health workforce activities. The impact of a lack of clear professional visibility also impacts the job and education

¹⁷ Eardley T, NHS Informatics Workforce Survey, 2006 ASSIST: London, England.

http://www.bcs.org/upload/pdf/finalreport_20061120102537.pdf

¹⁸ Department of Education, Employment and Workplace Relations (DEEWR)

<http://www.skillsinfo.gov.au/skills/SkillsIssues/ICTskills/>

¹⁹ Health Workforce Australia <http://www.nhwt.gov.au>

markets. In addition people who do possess these Health Informatics knowledge and skills are not valued, this in turn reflects their rates of pay and career opportunities. If jobs are not seen as profession and not clearly valued within the Community the number of people seeking education in the area is likely to be small. Thus the value is represented in many ways including specific job titles, pay rates, demand and priority within the organization. Professionally accredited education programs for a recognized profession are expected to overcome these hurdles.

We would suggest that AHMAC consider the need for a recognised authority to provide advisory and reporting mechanism on health informatics to both the Health Workforce Principal Committee (HWPC) and the Registration and Accreditation Governance Committee. This could be undertaken by AHIEC as an expert and representative community or a specific group could be created to provide this input.

The following intersecting target group concept domains within the overall health industry ontology viewed from a Health Informatics perspective are relevant to the entire Health Workforce. Each concept influences the set of competencies required by individuals working in the health industry as they reflect the types of roles and functions various members of the health workforce need to undertake.

TABLE 1 INTERSECTION TARGET GROUP CONCEPT DOMAINS INFLUENCING HEALTH INFORMATICS COMPETENCY REQUIREMENTS

Health Informatics body of knowledge	Health workers including all health professions and their colleges/associations	Use of clinical and demographic data associated with individuals
Health services including all clinical specialties	Health Informatics worker employers (public & private sectors)	Organizational data use
Health service geographic locations	Health professional, Health Informatics and ICT education providers.	National and international data use

Another way of visualising the many potential roles and functions to be undertaken by Health Informaticians is via figure 2 of a National e-Health framework indicating the multiple users of health information pertaining to individuals. Each potential user has their own data structuring, aggregation, classification, linking, matching and technical functional requirements to suit the purpose.

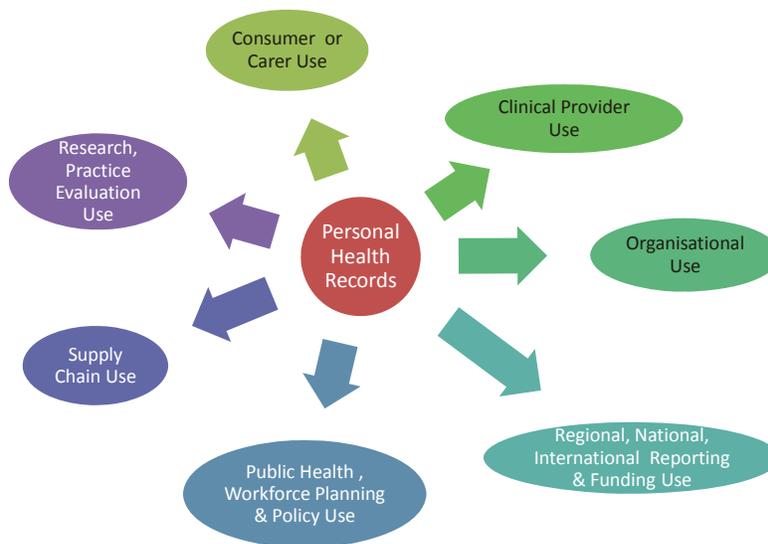


FIGURE 2 NATIONAL E-HEALTH FRAMEWORK

Collectively the 14 proposed Health Informatics education projects to be undertaken under the leadership of the AHIEC are designed around these concepts.

6 HEALTH WORKFORCE AND HEALTH INFORMATICS EDUCATION PROJECT DELIVERABLES

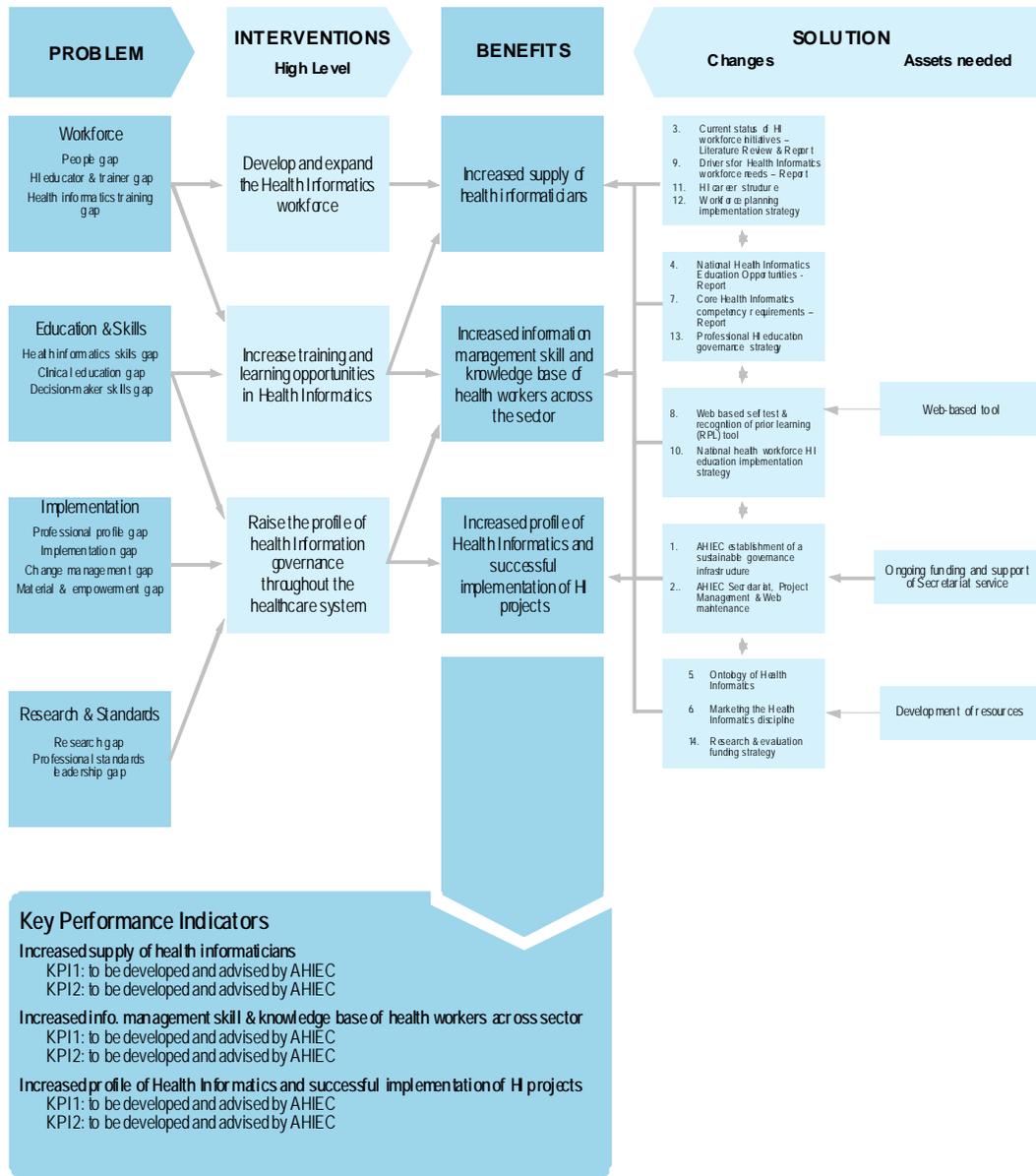
The Workforce Strategy includes 14 different, related projects. Project details including estimated timelines and costs are provided in the Project Section 2 of this document. The plan requires overall coordination by the ACHIE. There are no assumptions that monies will be available, nor of the organization/s available or likely to undertake the work. Figure 3 shows the projects and their relationships organised according to four study phases:

1. Governance and collaboration
2. Situation and gap analysis
3. Tools and programs
4. Engagement and implementation

This workplan identifies projects that will advance and improve the Health Informatics education situation in Australia. Table 2 provides a summary list of all projects included in the strategic workplan including indicative costs that may understate the actual costs to deliver each project. Review of costs and methodologies is proposed at the time of project establishment.

Figure 4 shows the workplan investment logic map which assists in understanding the relationship of the workplan to national strategies and benefits.

ACHI and HIMAA have existing work or programs in place to support accreditation and professional recognition, HL7 global have skill based accreditation programs as part of recognised international programs, while HISA are currently undertaking initiatives to build greater understanding of the Health Informatics workforce today. Each of these activities will support further development and harmonisation of efforts to improve Health Informatics Education, Workforce and Professional recognition.



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By SED Health Consulting

FIGURE 4 STRATEGIC WORKPLAN 2009 AND BEYOND - INVESTMENT LOGIC MAP

TABLE 2 SUMMARY OF WORKPLAN PROJECTS, TIMELINE AND COST ESTIMATES

Project	Timeline	Cost estimate
1. AHIEC Establishment Sustainable, collaborative governance infrastructure for this Health Informatics accrediting body	6 months	Contained within secretariat service costs
2. AHIEC Secretariat, project management and web maintenance	12 months	\$50,000 first year
3. Current status Review National and international Health Informatics workforce initiatives: - a literature review & report.	6-8 weeks	\$20,000
4. National Health Informatics (HI) education opportunities: a report	Stage 1 - 6-8 weeks Stage 2 - 6 months Stage 3 – 12 months	\$100,000
5. Health Informatics Ontology	2 weeks	\$5,000
6. Marketing the Health Informatics discipline (increasing awareness)	Intermittently over 12 months	\$180,000
7. Report on Core Health Informatics Competency Requirements for: a. Health professionals, consumers, managers,; b. Specialisations – Health Informatics, health information management, health professional and clinical informatics specialties	Stage 1 – 1 month Stage 2 – 6 months Stage 3 – 1 month	\$ 8,000 \$50,000 \$10,000
8. Web based self test and recognition of prior learning (RPL) tool	6 months	\$50,000
9. Drivers for Health Informatics Education Workforce Needs Report: employers and e-Health initiatives, industry engagement and Health	Stage 1 – 7-8 months Stage 2 – 3-4 months Stage 3 – 2 months	\$30,000 \$35,000 \$30,000 (Plus 40,000 per year ongoing)
10. Informatics career management including HI Education implementation Strategy Part 1: results of a gap analysis between required and available Health Informatics workforce characteristics Part 2: integration into existing health professional programs	Part 1: 12 months ongoing Part 2: Stage 1 – 3-4 months Stage 2 – 1 month Stage 3 – 3 months	\$90,000 \$40,000
11. Defined Career Structure for Health Informatics and support program including support for Health Informatics professional bodies	3-4 months following completion of all projects above	\$50,000
12. Workforce planning process implementation strategy	18 months (dependent upon other activities)	\$60,000
13. Professional Health Informatics Governance Strategy a. monitoring of educational programs b. Assessment of competency, Professional registration /credentialing	8 weeks following the near completion of all projects above Part 2:	\$33,000 \$80,000
14. Research funding strategy	9 months	\$35,000
Total	12-18 months	\$956,000

Explanatory notes for Table 2

- Implementation of this strategic workplan is dependent upon achieving projects 1& 2 in the first instance.
- Projects 3, 4 & 5 provide the necessary information to underpin the projects that follow.
- The final stage of project 4 is dependent upon the completion of project 7.
- Project 6 is required to support the successful implementation of all other projects and to achieve national recognition of the importance of a suitably Health Informatics educated workforce.
- Project 7 builds on the work undertaken by HISA within the strategic framework adopted for this workplan as a whole. This deliverable provides the foundation for establishing accreditation and credentialing standards and for project 8.
- Project 9 provides the foundation for establishing workforce capacity building requirements and workforce planning.
- Project 7, 8 and 9 deliverables form the basis for undertaking project 10. This deliverable provides the foundation for project 11.
- Once a career structure is described (project 11) will it be possible to start working on project 12.
- The completion of project 10 is necessary before project 13 can be fully implemented although preparatory work can be undertaken simultaneously with project 10 work.

SECTION 2 PROJECTS

The advancement of Health Informatics skills in Australian health care is a multifaceted process. This section of the report identifies the projects and their relationships required to achieve improvement and deliver real advancement. The projects and their relationships are shown in Figure 2 and combine establishment and maintenance projects, projects to identify current state and gaps, implementation and strategic projects as well as projects for tool/advancement projects. These projects are outlined in this section including indicative, conservative estimates of cost and methodologies.

We recognise that the nature of health informatics is emerging and that each of the stakeholder professional groups has their own frames of reference and understanding of the discipline from that perspective. The analysis of core competency requirements related to roles and functions required to support e-health implementation strategies are a central focus to early projects in this workplan. An outcome of the projects in the workplan is a more unified frame of reference that clearly shows the relevant skills and relationships between the various stakeholders.

It is acknowledged that achieving this will require a strong collaborative and open approach that recognises the perspective of all involved. To meet this end the AHIEC has adopted very broad and open involvement and consultation processes.

1 AHIEC ESTABLISHMENT OF A SUSTAINABLE GOVERNANCE INFRASTRUCTURE

An interim membership for this Council was established on 1 June 2009. This Council has taken on the responsibility to sign off on the strategic Workplan. The first deliverable will be an overarching professional development framework and then, establish a suitable Governance infrastructure for sustainable governance and a coordinated approach to Health Informatics accreditation and recognition schemes, including the appointment of its Chair and members and continue to oversee the implementation of the proposed workplan. This Council needs to represent all relevant peak professional bodies (ACHI, ACS, HIMAA, HISA, HL7 Australia, Australian Medical Council and the Australian Nursing & Midwifery Council), private and public employer groups and include four general stakeholder member positions so that representatives can rotate across the many associated types of stakeholders. The interim Council will hand over its responsibilities once the new Council has been formally established and constituted.

1.1 OBJECTIVE

To have a nationally recognized professional Health Informatics accrediting body.

1.2 METHODOLOGY

The interim AHIEC will meet to define the governance infrastructure in accordance with the Professions Australia's Standards for professional accreditation processes June 2008.²⁰ This will include description of:

- AHIEC and its mission
- the legal and registration framework in which the accreditation system operates
- the power of the AHIEC to undertake its assessing and accrediting roles

²⁰ Professions Australia's Standards for professional accreditation processes June 2008, Prepared by Theanne Walters (Australian Medical Council) and members of the Professions Australia Accreditation Forum.
http://www.professions.com.au/Files/Standards_for_Professional_Accreditation_Processes.pdf

- the governance structure for AHIEC; terms of reference and membership requirements, including the requirement for the profession to be represented on the accrediting body, and for membership by other specified stakeholder groups ☒
- the bodies which assess programs acting with AHIEC's policies and procedures and
- AHIEC's communication processes and mechanisms for stakeholder and community communication.

Letters of invitation to provide representatives to become members of the AHIEC will be sent to all relevant peak professional bodies to formalise the AHIEC membership in accordance with these standards and agreed governance infrastructure.

1.3 TIMELINE

6 months - to be completed by the end of December 2009

1.4 COST ESTIMATE

These costs are included in the continuing secretariat service cost managed by ACHI plus self funded stakeholder participant support.

2 AHIEC SECRETARIAT, PROJECT MANAGEMENT AND WEB MAINTENANCE

ACHI will continue to provide the secretariat, project management and web maintenance service for the interim and in time a fully established AHIEC whose work will initially consist of the development of a strategic workplan implementation strategy. A sustainable AHIEC will continue to review and update this strategic workplan and manage all associated ongoing activities. Its work is dependent upon resource availability as well as the AHIEC structure, roles and governance. The preferred option is for the AHIEC secretariat to sit with ACHI. There is a need to establish and manage annual budgets.

2.1 OBJECTIVE

A successful implementation of this strategic workplan and provide continuing secretarial support for all associated AHIEC activities.

2.2 METHODOLOGY

All projects included in this strategic workplan are interdependent and need to be undertaken in a particular order to maximize their benefits. It is proposed that a tender process be adopted to provide stakeholders with the opportunity to take on a project lead role although all work needs to be undertaken collaboratively. It is highly desirable for consortia to take on this work. The distribution of the total amount of work to be undertaken ensures that these projects can all be undertaken within the shortest possible time span.

2.3 COST ESTIMATE

For the first 12 months \$50,000 is required by ACHI to perform these AHIEC support functions.

3 CURRENT STATUS OF NATIONAL AND INTERNATIONAL HEALTH INFORMATICS WORKFORCE INITIATIVES: A LITERATURE REVIEW AND REPORT

A report documenting the results of a literature and web search review about the current national and international Health Informatics workforce and education state of play, including accreditation competency standards currently in use by HIMAA, the ACS and HL7 Australia. There will be a focus on methodologies adopted and lessons learned from past and present Health Informatics workforce initiatives including those associated with describing the Health Informatics body of knowledge, Health Informatics education guidelines, Health Informatics position descriptions, Health Informatics competency identification and Health Informatics credentialing. This activity should build upon the current workforce initiatives being undertaken by the Health Informatics Society of Australia (HISA).

3.1 OBJECTIVE

- To understand and enable learning from and leveraging of past national and international activities on health informatics education and workforce initiatives and associated national educational initiatives.
- Develop a draft national health informatics career framework within which to organise sets of available competencies.

3.2 METHODOLOGY

Undertake a literature and web review including a review of past Australian Government activities, European Commission's funded activities such as the IT Eductra, and the Nightingale project, work undertaken in Canada, the NHS in the UK, AMIA and CAHIM in the USA , IMIA via its education working group consisting of more than 50 academic institutional members, and in Australia previous work undertaken by ACHI, HIMAA, HISA, the ACS, HL7Australia, the roles of the Australian Learning and Teaching Council and Learning and Teaching for Interprofessional Practice, Australia (L-TIPP, Aus). Key words used and databases searched will be documented. Key messages regarding methodologies adopted and outcomes achieved will be extracted from the literature found from which the current situation regarding Health Informatics workforce and education issues can be documented and reported on. It will include recommendations for how Australia can best move forward. The results of this deliverable will influence the methodologies to be undertaken in projects to follow.

The development of a draft national health informatics career framework can only be completed once project 5 has been completed as this framework needs to be in harmony with our adopted health informatics ontology.

3.3 COST ESTIMATE

Searching and evaluating the literature, write a report \$20,000

3.4 TIMELINE

It is estimated that this work could be undertaken by a small project team over a period of 6-8 weeks.

4 NATIONAL HEALTH INFORMATICS EDUCATION OPPORTUNITIES: A REPORT

The ACHI website already documents Health Informatics education programs currently available. This needs to be updated as it is known that a number of other Universities are about to begin providing Health Informatics education in a variety of forms. The AHIEC website needs to be able to provide more detailed information about health informatics educational opportunities as these relate to career opportunities.

4.1 OBJECTIVE

- To provide an internet based communication mechanism both to the Health Informatics and Health communities and to the members and stakeholders of the Australian Health Informatics Education Council thereby supporting both communication and workplan development.
- Identify graduate competencies.
- Develop a strategy to ensure that all health informatics competencies are included in various curricula nationally in conjunction with Project 10.

4.2 METHODOLOGY

All known Health Informatics education & training providers, incl. IT industry education & software provider training will be asked to provide information about Health Informatics programs currently offered or planned. All health professional education providers will be surveyed regarding their Health Informatics inclusion in health professional degree and ongoing education programs. A website search with analyses and synthesis will also be performed. These programs need to be analysed in terms of graduate and learning outcomes to be achieved also analysed in terms of recognition by external bodies, fees, duration, mode of delivery/learning, assessment, geographic availability, location of discipline within the provider organization so that these can be compared with the desired set of Health Informatics competencies once developed, the Health Informatics body of knowledge and/or the Australian Health Informatics Education Framework to establish national educational coverage of the Health Informatics domain. This information can then be used to formulate a strategy for ensuring that Health Informatics body of knowledge components included in various curricula nationally will cover the entire Health Informatics body of knowledge.

4.3 TIMELINE

An interim report and updated web page providing an overview of known current Health Informatics education opportunities can be provided within a 6-8 week period. The survey requires a careful questionnaire design, execution and data analysis requiring around 6 months. The final report is dependent upon the completion of other deliverables.

4.4 COST ESTIMATE

Total estimated cost is \$100,000

Initiation, consultation and interim report	\$10,000
Survey development, implementation and analysis	\$60,000
Final report preparation and consultation	\$30,000

5 ONTOLOGY OF HEALTH INFORMATICS

This work identifies the skills, overlaps and relationships between the different skills, professions and jobs in the health care industry.

This activity requires identification of the components of Health Informatics (which is informed by other components of the strategy), testing, describing and building a full ontology that can be used both to describe the domain, but also to assist in confirming the core components of different professional groups.

5.1 OBJECTIVE

To clearly explain the skills, relationships and professional groupings of the health care industry and health informatics domain to support the development of competencies, a career structure and professional acknowledgement

5.2 METHODOLOGY

The activity has the following components:

- Identification of concepts to be included and definition of scope
- Identification of relationships between these concepts
- Ontology development, aimed at fully definitional descriptions using appropriate ontology development tools.

5.3 COST ESTIMATE

Total estimated cost is \$5,000

Development of ontology including survey based testing on content	\$3,000
Final report preparation and consultation	\$2,000

6 MARKETING THE HEALTH INFORMATICS DISCIPLINE

The health informatics discipline is poorly understood by the population at large. One aspect of a successful national e-Health implementation strategy is for everyone to have a much clearer view of the value of a suitably educated workforce. Community realization about its value promotes the uptake of health informatics education. All project deliverables will either provide content to be used for marketing purposes and/or require the adoption of a marketing strategy to ensure widespread stakeholder participation to ensure balanced results are achieved.

6.1 OBJECTIVE

To advance the understanding by the health industry of the profession of health informatics and the skills relevant to health IT projects.

6.2 METHODOLOGY

There are two deliverables for this project. First, the project draws on stakeholder resources to:

1. Implement ad hoc marketing projects on stakeholder-linked Internet sites, and
2. Leverage national marketing strategies in a local context

Ad hoc projects can commence immediately. Other project deliverables include but are not limited to advertisements for seminars or research opportunities, video footage, photographs and descriptions of Health Informatics implementations in a range of contexts).

Second, leverage deliverables from Projects 3, 4, 7, 10 and 11 to devise a marketing strategy that increases awareness of Health Informatics and the way

- 1) It differs from related disciplines, such as information technology and bio-informatics.
- 2) Health Informatics professionals are uniquely qualified to meet looming Australian health workforce shortages in the socio-technical e-Health context.

The project will be integrated with the survey stages of projects 4 and 7.

The project depends on professional public relations and marketing expertise to maximise the efficacy of expenditure on project deliverables. The marketing strategy will define the discipline, the unique qualification of Health Informatics professionals, describe and stratify potential markets for Health Informatics Education, the benefits of the Health Informatics profession and defines a marketing method (advertise, social networking tools, Internet marketing, direct marketing, and public relations or a combination of strategies). It will also evaluate stakeholder initiatives (see above). Deliverables include a gap analysis of the project and implementation of a national roll out of the marketing strategy. It will require ongoing evaluation and amendment but only the first iteration of such is outlined here.

6.3 BENEFITS AND OUTCOMES

- Increase awareness and an understanding of the Health Informatics profession throughout government, business and the broader community.
- Increase HDR, undergraduate and post secondary awareness and demand for Health Informatics studies.
- Contribute a trained Health Informatics work force to underpin national e-Health initiatives.
- Raise awareness of Health Informatics and contribute an increased range of health sector resources to clinicians in both private and public practice

- Raise awareness of Health Informatics among curriculum developers with a view to developing specialised units as well as embedding some Health Informatics into other units.
Place Australia at the forefront of Health Informatics developments in the Asia-Pacific region.

6.4 TIMELINES

The project will commence when other projects 3, 4, 7, 10 & 11 are near completion. Data analysis and report writing are expected to be complex. Marketing strategies will be resource intensive (i.e. film and video equipment, computer facilities that support social networking tools)

6.5 COST ESTIMATE

Total estimated cost is \$180,000

Analysis and report writing	\$30,000
Resources	\$100,000
Stakeholder initiatives	\$10,000 (x 5 initiatives) = \$50,000

7 CORE HEALTH INFORMATICS COMPETENCY REQUIREMENTS: A REPORT

Anyone working in the health industry needs to have minimum core Health Informatics competencies. As health workers perform numerous roles in various service areas, minimum advanced competencies to suit these more specialized functions also need to be identified. This is a pre-cursor for project deliverable 4 and builds on the outcomes from project 3 as well as the results of the current survey being undertaken by the ANF to assess Nursing Informatics competency requirements and the results of HISA's most recent workforce survey including the following workforce/stakeholder categories:

- Health professionals, consumers, managers
- Specialisations – Health Informatics, health information management, health professional, terminologist and clinical informatician
- Information technology Health Informatician

7.1 OBJECTIVE

- To identify clear and agreed Health Informatics competencies for:
Health professionals, including providers, consumers and managers
Health Informatics Specialisations including:
Health Informatician,
Health Information Managers,
Health Profession and Clinical Informatician
Information Technology Health Informatician
- Evaluate the suitability of the draft competencies and national health informatics career framework.
- Map Australian Computer Society and Health Information Management competencies with Health Informatics Competencies.

7.2 METHODOLOGY

The outcomes from project deliverable 3 and 5 will assist with the identification of a first draft of minimum core HI relative to an agreed draft national health informatics career framework. Both the competencies and the framework can then be tested via an electronic survey of a reasonably large national representative sample of health workers. The sample needs to cover all health professional occupations, IT workers in the health industry, all health service areas and be representative of location types such as city, regional centres,

rural/remote. A national advertising campaign is needed to get health workers to participate in a web based survey to assess both desirability of stated competency requirements and actual workforce competency. The latter is dependent upon the completion of project 8. This will assist in promoting the Health Informatics profile, complements the marketing project and make use of stakeholders to distribute information. A report will be compiled based on these survey results in consultation with the AHIEC members. This activity includes mapping of Australian Computer Society and Health Information Management competencies with Health Informatics Competencies. The results of this project are needed to undertake a gap analysis (project 10)

7.3 TIMELINE

Identification and writing of draft set of core competencies based on availability of project deliverable 3 and 5 is expected to be provided within a 4 week period. Survey design, administration and analysis will take a further 6months, report writing another 4 weeks. Total time required 8 months.

7.4 COST ESTIMATE

Total estimated cost is \$68,000.

Draft set of core Health Informatics competency development	\$ 8,000
Survey design, administration and analysis	\$50,000
Report writing	\$10,000

8 WEB BASED SELF TEST AND RECOGNITION OF PRIOR LEARNING (RPL) TOOL

To support an individual to self assess their competencies and identify their educational needs. This could also be used to assist employers to understand their workforce educational requirements. This could be based upon the work of Nursing in the USA²¹ where it provides evidence for learning objectives and credentialing. Other health professional colleges are also known to have adopted this strategy to assess specialist competence. This project needs a marketing strategy to attract a large number of health workers willing to make use of this facility thus making a significant contribution to project 10. Existing programs internationally include: HL7 Global accreditation of HL7 skilled professionals – a program operational in Australia and recognised internationally, the HISA adoption of AusCHIP and other professional bodies self assessment mechanisms may also provide a basis to assist or harmonise this development. This project needs to be undertaken by suitably qualified educators experienced in the writing of competency assessment questions.

8.1 OBJECTIVE

- To provide self tested learning for self / employer assessment of skills or requirements, either through development or through linkage and/or support to appropriate existing or developing projects
- To provide the means of undertaking a workforce competency gap analysis (Project 10)

8.2 METHODOLOGY

Development of a web based self testing tool can be undertaken once competencies have been identified. It is anticipated that the following processes will be involved:

- Development of web based tool based upon competencies, using real world and theoretical knowledge as a base. This includes establishment of the web site as well as the IP of the material used.
- Writing competence evaluation or test questions suited to automated assessment strategies
- Trial of tool. The tool will be tested comparing actual skills and professional background of known participants with the results achieved. This process will incorporate a survey to identify the utility of the tool
- Report produced evaluating the tool and identifying on going maintenance and further development requirements.

8.3 TIMELINE

This activity would take approximately 4 months once Health Informatics competencies have been determined.

8.4 COST ESTIMATE

Total estimated cost is \$50,000.

Development of initial trial tool	\$30,000
Testing of the tool	\$15,000
Report evaluating the tool and identification of on ongoing maintenance requirements	\$ 5,000

²¹ Saba V.K, Skiba D.J, Bickford C 2004 Competencies and Credentialing: Nursing Informatics in: Hovenga E.J.S, and Mantas J Global Health Informatics Education, IOS Press, Amsterdam.

9 DRIVERS FOR HEALTH INFORMATICS EDUCATION WORKFORCE NEEDS: A

REPORT: EMPLOYERS AND E-HEALTH INITIATIVES, INDUSTRY ENGAGEMENT AND CAREER HEALTH INFORMATICS MANAGEMENT

An assessment of current and future Health Informatics system changes by any health industry employer groups is required to identify the key drivers for Health Informatics education workforce needs by health service and location type. There is a need to identify both workforce numbers and key minimum competencies for Health Informatics specialists and higher level specializations both in IT and clinical specialty areas relative to technology adoption and e-Health policy initiatives. A desired outcome is a map of skill sets and specializations competency requirements documented within the context of an agreed Health Informatics body of knowledge as well as an estimate of workload demand from which a desired workforce number per skill set/specialization can be estimated. Such information should ideally be collected annually and used for continuing Health Informatics workforce planning (refer project 12).

9.1 OBJECTIVE

- To identify drivers for Health Informatics Education and workforce numbers required based upon a review of existing knowledge available.
- To map skill sets and competency requirements relative to an estimate of workload demand.

9.2 METHODOLOGY

A survey of health industry employers to collect data about their current and immediate future plans of technology adoption and e-Health policy initiatives together with current and estimated workload predictions. An analysis of these data to ascertain specific Health Informatics knowledge and skills needs to successfully meet efficiency, effectiveness, patient safety, quality and demand needs. Follow up focus group discussions to reach stakeholder consensus about the findings. The results of this assessment will also be used as the foundations from which to develop a Health Informatics career structure – project deliverable 11 and for the conduct of project deliverable 10, a gap analysis and for project 12 workforce planning. Timeline

The development of a survey tool needs to be undertaken in consultation with stakeholders and is expected to require a time period of 4 months. Survey administration and analysis another 3-4 months, focus group discussions around the country will require at least 3 months, data analysis and the preparation the report a further 8 weeks.

9.3 COST ESTIMATE

Total for this project is \$135,000

Survey tool development, administration and data analysis	\$30,000
Focus Group discussions time and travel	\$35,000
Further data analysis and report preparation	\$30,000
Annual cost after first cycle	\$40,000

10 A NATIONAL HEALTH WORKFORCE HEALTH INFORMATICS EDUCATION IMPLEMENTATION STRATEGY

Project deliverables 7 & 9 will result in knowledge about Health Informatics workforce skill sets and knowledge needs for all health workers in all health industry service areas and locations based on known e-Health technology adoption and policy initiatives' drivers. This project is about the identification of available Health Informatics workforce skills and knowledge followed by the conduct of a gap analysis between required and available Health Informatics workforce characteristics. A significant outcome from this deliverable is a national health workforce Health Informatics education program strategy. This project has two distinct parts, 1) a gap analysis, 2) integrating Health Informatics into learning and teaching in clinical professions.

10.1 OBJECTIVE

- To develop a strategy for Health Informatics education for the Australian health care workforce, covering all areas of that workforce.
- To identify new career opportunities

10.2 PART 1 OBJECTIVE

- To identify the gap between required and available Health Informatics workforce characteristics.

10.2.1 METHODOLOGY

A survey of health workers to determine their Health Informatics knowledge and skills using the set of core competency requirements as developed in project deliverable 7. It is proposed that this survey adopts a Recognition of Prior Learning (RPL) protocol testing competency via on-line random question generation using the tool developed for project 8. Once developed this competency testing methodology can continue to be used for RPL, self assessment and credentialing purposes. Once this information plus the results of project deliverable 9 is available a gap analysis can be undertaken from which a workforce Health Informatics education strategy can be developed in consultation with stakeholders. The latter needs to make use of the results from project deliverable 7. This could be undertaken on an annual basis to evaluate and monitor workforce Health Informatics capacity. The RPL Tool may be used by individual employer groups or a State or Territory Government as a pilot, or by a professional group as a pilot to test the tool's suitability to meet their credentialing requirements. Survey participants can be recruited via stakeholder groups and a national advertising strategy.

10.2.2 TIMELINE

Part 1: Survey preparation, administration and analysis is expected to require 3-4 months, the gap analysis another month. Consultation and Health Informatics education strategy development will require a further 3 months.

10.2.3 COST ESTIMATE

Total for Part 1 of this project is \$90,000

Survey preparation, administration and analysis, incl. pilot	\$50,000
Gap analysis	\$10,000
Stakeholder consultation and strategy development	\$30,000

10.3 PART 2 INTEGRATING HEALTH INFORMATICS INTO LEARNING AND TEACHING IN CLINICAL PROFESSIONS.

10.3.1 OBJECTIVE

- To ensure that all new health professional graduates obtain the necessary Health Informatics competencies to enable them to deliver efficient, effective and safe health services.

In addition to the development of specialist informaticians, the entire health workforce needs Health Informatics competence to work effectively and efficiently within a technology enabled healthcare system.

Health Informatics learning, training and education opportunities must be provided for entry-level clinicians in all healthcare professions, as well as for those whose careers are more advanced but who require continuing professional development to maintain and update skills - including in dentistry, dietetics, medicine, midwifery, nursing, occupational therapy, paramedics, pharmacy, physiotherapy, psychology, radiography, social work.

But we know little about effective, efficient and equitable ways provide these opportunities to accord with Australian or international requirements, to embed them in curriculum and CPE approved by professional boards, to relate them to patient-centred inter-professional practice, or to design them for learning in workplaces or for independent study.

10.3.2 METHODOLOGY

1 Review and align formal Health Informatics competence statements or specifications where these have been set by professional bodies for entry-level clinical practitioners, as currently documented in Australian and international university curricula and in other qualification and registration standards.

2 Write case studies of a representative cross-section of educational programs in Australian clinical professions, at vocational through to postgraduate and CPE levels, which describe good practices in learning and teaching of Health Informatics competence.

3 Draft high-level guidelines and resources for teaching and assessment that are relevant across all clinical professions; undertake formative evaluation and piloting overseen by a review panel of AHIEC; revise and publish.

4 Run a series of national implementation workshops for professional development of educators and trainers in all clinical professions, targeting teaching and placement coordinators, curriculum developers and approvers, members of professional education and training interest groups.

5 Establish a health informatics discipline community via the Australian Learning and Teaching Council's Exchange website and work with the Australasian Interprofessional Practice and Education Network (AIPPEN) as part of their Learning and Teaching for Interprofessional Practice, Australia (L-TIPP, Aus) project. This component needs to be managed by an Institution listed in Table A and Table B of the Higher Education Support Act (2003) or another approved higher education provider receiving places under the Commonwealth Grants Scheme. Outcomes / Deliverables: for Reports, Learning and teaching resources and guidelines, workshops, scholarly publications, or a standing special interest / experts group.

10.3.3 TIMELINE

This project could be seen as a second phase project in the overall workplan, if the emphasis is to prioritise education of specialist informaticians, however it relates directly to issues of health workforce shortages and technological transformation of the healthcare system. It would need to allow at least 24 months: 6 months for each stage.

10.3.4 COST ESTIMATE

Total cost for Part 2 of this Project is \$40,000, principally for research services and associated communication and publication costs.

Costed as time release at academic level C or equivalent – would double if paying commercial consulting rates.

1 Review and align formal Health Informatics competence statements.	\$10,000
2 Write case studies.	\$10,000
3 Draft guidelines.	\$10,000
4 Run national implementation workshops.	\$10,000 *

*Full implementation activities un-costed, e.g. processes of educational change in each clinical profession.

This project could seek funding via an Australian Learning and Teaching Council Priority Projects grant.

11 HEALTH INFORMATICS CAREER STRUCTURE

Any recognized occupation consists of a set of jobs whose main tasks are characterized by a high degree of similarity at various skill and knowledge levels and for numerous specializations within that occupation. Collectively this describes a career structure as people entering the occupation are able to progress to higher levels of responsibility and/or greater specialization. Work in this area is being undertaken in Canada, our existing excellent relationships with professionals in that country should allow us to review and incorporate, where appropriate their learning.

11.1 OBJECTIVE

- To establish a Health Informatics career structure that allows for core skills within professional groups to improve the understanding of the professionals and skills required for specific tasks within the health industry.
- To prepare position descriptions by matching job titles with core competency requirements and educational qualifications.
- To develop recommendations for new ANZSCO codes.

11.2 METHODOLOGY

It is proposed that the outcomes of project deliverables 3, 4, 5, 7, 9 & 10 are used as the basis for the development of a Health Informatics professional career matrix and generic role based knowledge and skills competency requirements of all health workers. Develop a Health Informatics professional career matrix in accordance with the structural requirements of the Australian and New Zealand Standard Classification of Occupations (ANZSCO) 1st edition catalogue. This includes the need to develop generic job descriptions complete with suggested position titles, indicative skill and knowledge level requirements as these apply to the Australian Qualifications Framework based on common tasks to be performed. This then forms the basis for the development of an education program accreditation framework and a health worker Health Informatics credentialing framework. This work needs to be undertaken in consultation with the Health Workforce Australia program of activities.

11.3 BENEFITS AND OUTCOMES

- The availability of such information will enable the formal recognition of Health Informatics as an occupation with national and international portability.
- Be included in the ANZSCO catalogue in a future edition.
- Once coded, it will be possible to routinely collect Health Informatics workforce data to monitor trends and future needs to enhance workforce planning.
- HR Managers in the health industry will have clear guidance to develop suitable job descriptions and assess appropriate remuneration for individual job occupants.
- Employers and Health Informatics education providers will be better placed to develop suitable staff development strategies.
- Health Informatics Education providers will be better placed to identify their target student group and design curricula accordingly.
- a framework for educational program accreditation

- a framework for Health Informatics workforce credentialing
- a framework and ethical requirement for mentoring within the professional area

11.4 TIMELINE

This project can start once other projects are near completion. Data analysis, consultation and report writing activities are seen as complex and time consuming tasks estimated to require around 3-4 months.

11.5 COST ESTIMATE

Data analysis, consultations and report writing	\$50,000
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12 WORKFORCE PLANNING PROCESS IMPLEMENTATION STRATEGY

Based upon the experience of the Australian Computer Society the strategy for workforce planning process implementation focuses on clearly defined professional groupings related to demand. These professional groupings are established in the ontology (5) and the career structure (11) projects. This activity is also informed by the experiences of existing workforce planning processes within the stakeholder community. There is a need to establish an agreed minimum data set for the collection of de-identified client level data relating to services provided by Health Informaticians in public and privately funded health, aged care and community settings in all States/Territories for the purpose of health workforce planning. Nationally consistent data collection of this type will support ongoing development of the Health Informatician roles, provide data to inform future policy development and provide a basis for the future development of research and evaluation methodologies related to Health Informatician's roles and functions.

12.1 OBJECTIVE

- To develop a strategy for implementation of the processes and recommendations identified in the workforce planning projects.
- To develop an agreed METeOR compliant minimum data set for the collection of de-identified client level data relating to services provided by Health Informaticians for the purpose of health workforce planning and to meet jurisdiction workforce planning, policy and health service research needs about Health Informatician services.
- Model future workforce demand.

12.2 METHODOLOGY

- It is proposed that the outcomes of project deliverables 3, 4, 5, 7, 9 & 10 are used as the basis for the development of a Health Informatics workforce planning implementation strategy
- Once job descriptions are available and the skill ontology is fully understood a review of the inhibitors and motivators for change will be undertaken and suggested strategic directions identified. These directions will be focused to specific job groups, and will engage with the appropriate professional and stakeholder community groups.
- This work needs to be undertaken in consultation with the Health Workforce Australia program of activities to ensure the proposed minimum data set fits with other health workforce planning data collection processes.

12.3 TIMELINE

This project can start once the background governance, professional and strategic projects are complete. These projects will each provide input to this activity which will begin as a discussion on governance and process begin and is estimated to require around 18 months.

12.4 COST ESTIMATE

Data analysis, consultations and report writing	\$60,000
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13 PROFESSIONAL HEALTH INFORMATICS EDUCATION GOVERNANCE STRATEGY

It is not possible at this stage of development to identify how such accrediting and credentialing may be accomplished, but the existing processes used by stakeholders will be considered with the objective of developing a coordinated and cohesive approach to professional recognition and educational quality. This approach will recognise not only the domains of Health Informatics, but also the continuum from skill training, to tertiary education and ongoing professional development, all of which are seen as components of a healthy professional environment.

This project consists of two parts, 1) the development of educational program accreditation standards and an implementation process and 2) the development of suitable competency assessment processes for potential professional registration and/or credentialing.

13.1 OBJECTIVE

Develop a Professional Health Informatics Governance strategy Once we have established a sustainable and collaborative governance infrastructure for the Health Informatics discipline resulting from project deliverable 1 the documentation and implementation process needed to support program accreditation and workforce credentialing processes can be developed based on all previous project deliverables under the guidance of the AHIEC. This needs to be undertaken in consultation with the other organisations identified in the Framework. It is important to have a map of the ACS ICT Profession body of knowledge as well as the HIMAA's accreditation standards relationship with the Health Informatics body of knowledge to ensure that the proposed Health Informatics accreditation standards are distinctive and do not overlap with these existing accreditation processes. A proposed program accreditation process needs to be designed to ensure that this can be undertaken with the minimum of ease and at the lowest possible cost. This builds upon the development of the Health Informatics ontology (project 5).

For those areas where AHIEC will have an accrediting role, AHIEC will need to establish the required internal governance processes in accordance with the Professions Australia's Standards for professional accreditation processes.²² This will include description of:

- AHIEC and its mission, roles and responsibilities
- the legal and registration framework in which the accreditation system operates
- the power of the AHIEC to undertake its assessing and accrediting roles
- the governance structure for AHIEC; terms of reference and membership requirements, including the requirement for the profession to be represented on the accrediting body, and for membership by other specified stakeholder groups
- the bodies which assess programs acting with AHIEC's policies and procedures and
- AHIEC's communication processes and mechanisms for stakeholder and community communication.

13.2 PART 1: ESTABLISHMENT OF IMPLEMENTATION AND GOVERNANCE PROCESSES.

13.2.1 OBJECTIVE

- To develop agreed Health Informatics educational program and delivery standards for the purpose of accreditation by AHIEC.

²² Professions Australia's Standards for professional accreditation processes June 2008, Prepared by Theanne Walters (Australian Medical Council) and members of the Professions Australia Accreditation Forum.
http://www.professions.com.au/Files/Standards_for_Professional_Accreditation_Processes.pdf

- To develop an agreed process for accrediting educational programs.

13.2.2 METHODOLOGY

This project will make use of the role of AHIEC identified in Project 1 and the frameworks developed for educational program accreditation and Health Informatics workforce credentialing as well as the RPL work undertaken for project deliverable 5 and the HIMAA and ACS ICT Profession body of knowledge to develop the necessary sets of documentation to be made available via the AHIEC website. Consultation with the ACS to establish suitable implementation and governance processes. Consultation with Health Workforce Australia needs to be undertaken prior to the development of the Health Informatics workforce credentialing process.

13.2.3 TIMELINE

It is estimated that around 8 weeks is required to undertake this work.

13.2.4 COST ESTIMATE

Preparing documentation, web content, implementation processes and consult \$33,000

13.3 PART 2 ASSESSMENT PRACTICES, STANDARDS AND QUALITY

13.3.1 OBJECTIVE

- Develop an agreed process for the assessment of competency to assist health informatics education providers and to meet potential requirements for Professional registration/credentialing

There is no certainty of competence without assessment of competence. Assessment of Health Informatics competence must address key questions about assessment that are common to all aspects of professional competence²³:

Who should do the assessing and who will assess the assessors? What powers of regulation in assessment agencies and levels of certification of individual assessors will be sufficient to make Health Informatics assessment processes reputable and Health Informatics credentials sought after? How will the decisions of assessors be made transparent and auditable?

What different assessment methods and what mix of methods should be used to appropriately demonstrate different types of Health Informatics competencies: declarative knowledge and theoretical understanding; clinical and technological components of practical skills; professional attitudes and behaviours?

Is there a need for a single, summative assessment board examination at some point/s in certifying Health Informatics competence, and if so, how could this best be constructed, validated and administered? Alternatively, what reporting and review measures would be required to ensure quality assurance and quality improvement in the range of assessment methods that may be used by different Health Informatics education and training providers?

How should assessment be managed? When and how will an individual be able to get feedback and certification based on a board examination, on online self-assessment or based on the compilation of a professional portfolio? Will certified practitioners be required to undergo periodic assessment,

²³ [CAC] Citizen Advocacy Center. (2004). Maintaining and improving health professional competence: Citizen Advocacy Center road map to continuing competency assurance. Washington DC: CAC.

either routinely or randomly, to ensure that they are keeping up core competencies; and in what form will they be able to link such assessment results with professional indemnity insurance or industry workplace standards?

What lessons can assessment of Health Informatics competence draw from the Australian and international experience of maintaining assessment standards and practices of clinical professions, and also those of information science, management and technology professions?

Answers to these questions about approaches to assessment need to be adapted to different conceptual models of competence which some or all AHIEC stakeholder groups may choose to adopt.

For example:

- an educational input model of competence where “standards of competence are derived from the content and learning outcomes of the curriculum and an individual is not deemed competent unless she/he has completed the required learning programme”²⁴
- an outcomes-based model of competence where “qualifications are separated from standards, so there can be more than one educational and training route to occupational competence, and standard can be used for other purposes such as job descriptions, evaluations and appraisals”²⁵
- A developmental model of competence: “stages of increasing competence are defined and used for intervention, resourcing and policy development shifts the emphasis in testing and assessment. A test score, for instance, signals where to start intervention for development, not the end point of instruction. An item or criterion level skills audit can provide the student with a detailed report on development. [...] Intervention is therefore based on a generalised development, not on a specific item-based interpretation of learning (or lack of learning). When this is done, intervention can be linked to appropriate provision of resources and this in turn leads to informed curriculum and learning policy”.²⁶

13.3.2 METHODOLOGY

1. Review international good practice in principles and processes for assessment and assurance of Health Informatics competence.
2. Report back to Australian Health Informatics education and training providers, and to providers of other health education and training in which Health Informatics is integrated.
3. Collect descriptions, documentation and evidence of various Health Informatics competence assessment and assurance methods currently in use by these education and training providers.
4. Summarise and analyse methods, in terms of comparative reliability, validity, scalability, transparency, efficiency and other quality and safety factors.

²⁴ Harrison, R., & Mitchell, L. (2006). Using outcomes-based methodology for the education, training and assessment of competence of healthcare professionals. *Medical Teacher*, 28, 165-170

²⁵ Harrison, R., & Mitchell, L. (2006). Using outcomes-based methodology for the education, training and assessment of competence of healthcare professionals. *Medical Teacher*, 28, 165-170

²⁶ Griffin, P. (2007). The comfort of competence and the uncertainty of assessment. *Studies in Educational Evaluation*, 33, 87-99.

5. Produce principles, standards, recommendations, options and implementation guidelines (including professional development for educators / trainers) for assessment and assurance of Health Informatics by Australian education and training providers. (Either provide options in relation to a variety of models of competence that may be desired in the Health Informatics education and training community, or make specific recommendations in relation to a defined shared model of competence agreed by the community.)
6. Implement and evaluate demonstration projects, refine (5) and disseminate.
7. Determine a schedule for full implementation and project-manage initial cycle.

13.3.3 OUTCOMES / DELIVERABLES:

Outcomes include reports, tools and instruments, exemplars, workshops, recognition schemes for individuals and organisations, scholarly publications, a standing special interest / experts group.

13.3.4 TIMELINE

This project should proceed as a priority project. It would need to allow at least 24 months: 12 months for stages (1) through (4); 6 months for stage (5) and a further 6 months for stage (6) and beyond for stage (7).

13.3.5 COST ESTIMATE:

\$80,000, principally for research services and associated communication and publication costs. Costed as time release at academic level C or equivalent – would double if paying commercial consulting rates.

1. Review international good practice	\$5,000
2. Report back / dissemination	\$5,000
3. Collect Australian evidence	\$5,000
4. Summarise and analyse	\$5,000
5. Produce standards	\$20,000
6. Demonstration projects	\$20,000
7. Project manage one full implementation cycle	\$20,000*

*Full implementation activities uncoded, e.g. assessor / learner time and related processes

14 RESEARCH AND EVALUATION FUNDING STRATEGY

Beyond the life of the workplan projects outlined in previous sections, focused funding is required to support ongoing in-depth research and evaluation in two broad areas:

A program of research into the contributions that education, training and organisational learning make to the development of Health Informatics as a discipline and a profession in Australia, including research into andragogy, curriculum design, teaching, resources and assessment, flexible learning and elearning, professional staff development, and attendant issues of educational access, efficiency and effectiveness.

A suite of postgraduate scholarships, fellowships and grants that can be used to provide research training and supervised research experience for the proportion of practitioners and coursework students who choose to proceed into Health Informatics research careers in academic and other organisations and who will provide the higher education teaching, research and leadership of the future in the field of Health Informatics; their research projects concerning all aspects of information and communication technologies in health will contribute a stronger Australian perspective to new knowledge in the field of Health Informatics.

Health Informatics is not yet clearly identifiable as a field of knowledge in Australia's research classification systems. Historically it has proven extremely difficult (low success rate) to secure national competitive funding for such Health Informatics research in Australia, through sources such as ARC, NHMRC or the Australian Learning & Teaching Council and its predecessors.

Health Informatics in Australia requires an open and rigorously developed knowledge base to support continuing professional development and applied learning; active publication of the types of research described above in open peer-reviewed conferences and journals will support retention of corporate memory and strengthen the historical and philosophical bases of the field of Health Informatics within Australia. Many of the e-Health and ICT initiatives undertaken in the last few decades, such as studies undertaken into user access control, were not undertaken in an open research environment and much of the learning from them is very poorly known and little discussed. This loss of opportunities for the disciplinary and professional community to build upon that knowledge is an ongoing risk to sustainable development of e-Health in Australia.

14.1.1 OBJECTIVE

To identify alternative mechanisms for focused funding of relevant e-Health research in Australia including:

- Identification of potential funding models
- Identification of research priorities and mechanisms for ongoing review and update of those priorities
- Understanding of research as an imperative and motivator for universities to engage in Health Informatics educational activities
- Promoting the dissemination of Australian e-Health R&D

14.1.2 METHODOLOGY

1. Review international approaches to research acceleration and funding models, including specification of requirements and identification of initiatives that may lead to improved opportunities for and recognition of Australian Health Informatics research Report back to Australian Health Informatics education and training providers, and to providers of other health education and training in which Health Informatics is integrated to determine additional issues or potential solutions.
2. Collect descriptions, document research project evaluation criteria to be used to support project selection for support. Confirm strategy

3. Determine strategy evaluation criteria

Following development of the strategy ongoing action will be necessary to Implement and evaluate research program.

14.1.3 OUTCOMES / DELIVERABLES

Research support strategy including:

- Research & evaluation requirements and processes including funding model
- Report to AHIEC on current state and options.
- Strategy for Research into Health Informatics Education
- Strategy for the Training of Health Informatics Researchers
- Research strategy evaluation criteria.

14.1.4 TIMELINE:

This project should proceed as a priority project. It would need to allow at 9 months for stages (1) through (4)

14.1.5 COST ESTIMATE

\$35,000, principally for research services and associated communication and publication costs. Costed as time release at academic level C or equivalent – would double if paying commercial consulting rates.

1. Review of international approaches, including skills sets, funding models	\$5,000
2. Report back / dissemination	\$5,000
3. Health Informatics Research & Evaluation Strategy Preparation	\$10,000
4. Research strategy evaluation criteria	\$5,000
5. Project management	\$10,000*

*Full implementation activities uncoded, e.g. assessor / learner time and related processes

APPENDIX 1 – STAKEHOLDER COMMUNITY

The stakeholder community includes a wide range of professional, industry and educational organizations as demonstrated in Figure 5. The current stakeholder community is made up of organisations contacted by ACHI in initial discussions, they included members of ACHI, organisations listed as having Health Informatics education programs, known groups involved in Health Informatics, government (national, state and institutes acting in the Health Informatics area), Potential employers of health informatician and members of the health industry – identified through participation in Health Informatics fora such as Standards Australia Health Informatics Committee (IT14), Clinical colleges and consumer organisations. In addition AHIEC have asked organisations such as the Health Informatics Society of Australia, the Medical Software Industry Association, HL7 Australia and HIMAA to for circulation to their members and to the HISA community including the Coalition for e-Health

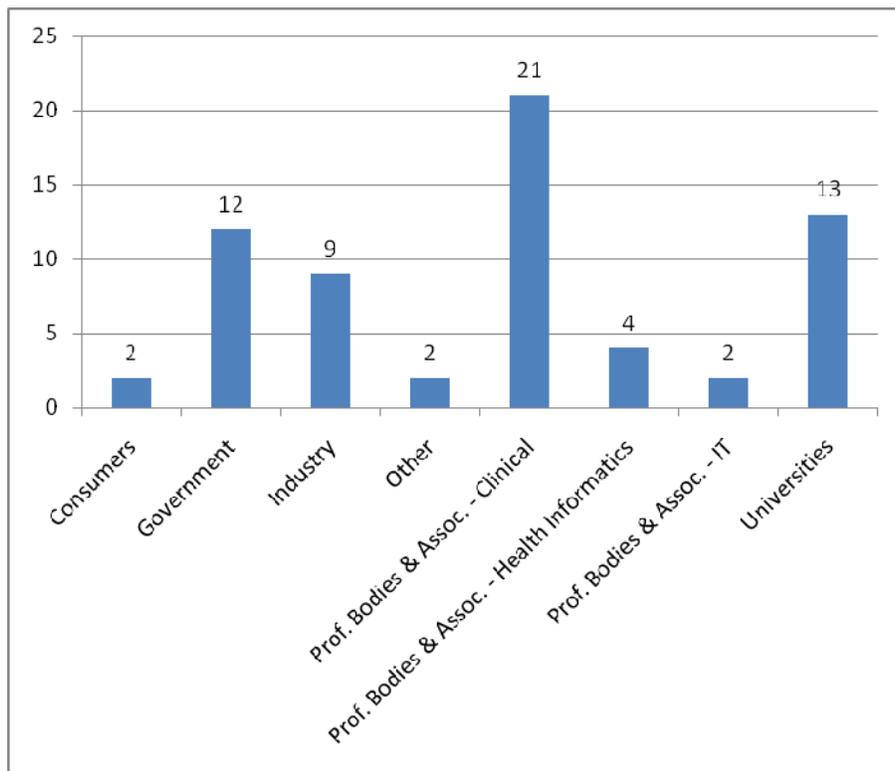


FIGURE 5 CURRENT STAKEHOLDER COMMUNITY DISTRIBUTION

It is hoped that more organisations will proffer their assistance in the work of the Australian Health Informatics Education Council. Those wishing to be included should contact the secretary of the Australian College of Health Informatics on secretariat@achi.org.au.

In addition to the organizations in the current stakeholder community who have been involved in development of this workplan, the actual stakeholder organisations approached are more numerous, as detailed in Table 3 below.

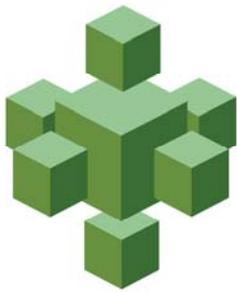
TABLE 3 STAKEHOLDER LIST

Though it is recognised that additional stakeholders exist and are welcome, the list below indicates the current distribution list.

Australian and New Zealand College of Anaesthetists
Australian Association for Exercise and Sports Science
Australian Association of Occupational Therapists
Australian College of Dermatologists
Australian College of Emergency Medicine
Australian College of Health Informatics - all members
Australian Computer Society
Australian Council for Safety and Quality in Health Care
Australian Council of Healthcare Standards
Australian Diabetes Educators Association
Australian General Practice Network
Australian Healthcare and Hospitals Association
Australian Institute of Health and Welfare
Australian Nursing Federation
Australian Osteopathic Association
Australian Physiotherapy Association
Australian Privacy Foundation
Chiropractors Association of Australia
Coalition of e-Health (through request to HISA)
Consumer Health Forum
CSIRO
Curtain University
Deakin University
Department of Health - NSW
Department of Health - South Australian
Department of Health - Western Australia
Department of Health and Ageing
Department of Human Services - Tasmania
Department of Human Services - Victoria
Dieticians Association of Australia
Health Informatics Society of Australia
Health Information Management Association of Australia
Health Level 7 Australia
Intel
iSoft
Joint Faculty of Intensive Care Medicine (Australian and New Zealand College of Anaesthetists)
La Trobe University
Medical Software Industry Association
Monash University
National Centre for Classification in Health

National E-Health Transition Authority
Peninsula Health - Victoria
Queensland Health
Queensland University of Technology
Royal Australian and New Zealand College of Ophthalmologists
Royal Australian and New Zealand College of Psychiatrists
Royal Australian and New Zealand College of Radiologists
Royal Australian College of General Practice
Royal Australian College of Medical Administrators
Royal Australian College of Physicians
Royal Australian College of Surgeons
South Eastern Sydney and Illawarra Area Health Service
Southern Cross University
Standards Australia
The Royal Australian and New Zealand College of Obstetrics and Gynaecology
The Royal College of Pathologists of Australia
University of Adelaide
University of Melbourne
University of New South Wales
University of Sydney
University of Tasmania
University of Western Sydney
University of Wollongong
Victoria University

APPENDIX 2 – TERMS OF REFERENCE (DRAFT)



Australian
Health
Informatics
Education
Council

Terms of Reference

The role of the Australian Health Informatics Education Council (formerly known as the National Health Informatics Education Committee) is to provide national professional leadership via the provision of Health Informatics educational standards, guidelines and accreditation/endorsement services, under the auspices of the Australian College of Health Informatics (ACHI), to facilitate collaboration between HI educators and meet health industry eHealth workforce capacity needs.

Health Informatics skill and knowledge education is needed both as an addition to the education of all health professional education programs and as purpose specific programs to develop health informatics professionals.

In consultation with the wide range of health informatics stakeholders initiate and accelerate the development and adoption of a coordinated national effort to drive a greater awareness of the benefits to be realised for Governments, employers, healthcare consumers, health professionals and the health industry as a whole via an improved eHealth workforce capability.

AHIEC will:

- Establish an ongoing strategy for advancement of health informatics education in Australia.
- Recognise the Australian framework which is based upon the IMIA scientific map that scopes the health informatics (HI) discipline.
- Maintain and further evolve the Australian HI Educational Framework using IMIA's educational recommendations and ACS as a guide to reflect knowledge development and needs.
- Promote the Australian HI Educational Framework as the basis for establishing HI educational program accreditation/endorsement standards, recognising existing and related accreditation programs.
- Coordinate the implementation of a national educational HI program accreditation/endorsement service.
- Contribute to the international work now underway to define a suitable HI career structure and to the development of an international HI competency database that enables the evaluation of graduate outcomes and/or the eHealth workforce capability status.
- Advise on national HI educational priorities and desired minimum competency requirements for the Australian eHealth workforce.
- Oversee collaborative initiatives, engaging with the various professional and industry organisations, including educational providers in the domain of health informatics.

---- End ----