

## Final Report on IMIA-BCS-CHIRAD Knowledge Base Project

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The IMIA Knowledge Base was accepted as an IMIA endorsed document at the 2009 IMIA General Assembly in Hiroshima, Japan. The IMIA Knowledge Base spreadsheet is downloadable from the IMIA Endorsed Documents section of the IMIA website.

### Contributing to IMIA's Strategic Plan

Work on this project was identified as an early part of contributing to IMIA's Strategic Plan, 'Towards IMIA2015'. The core vision and conceptual framework for the IMIA Strategic Plan place knowledge at the core of IMIA's activities, and lead to a realisation of the need to update the 2001 IMIA Scientific Content Map. Building on, in part, the Otley outputs, a second phase of work is being jointly funded by IMIA and BCSHIF to develop the knowledge core for IMIA, and the wider international health informatics community.

This Final Report summarises the key points of the process and the outputs, which have been additionally described in other publications and conference presentations (e.g 1, 2, 3).

### A brief history of the project

The project built on work that had previously been undertaken by the British Computer Society Health Informatics Forum (BCSHIF). The 2005 Otley 'Education Steps' workshop (retrospectively termed Phase 1) brought together a group of health informatics experts (including international members of IMIA) in work to identify the elements of the discipline of health informatics. The outputs of the Otley meeting have been presented and reported elsewhere.

In June 2006, the IMIA Board approved funding (matching further BCSHIF funding) to support Phase 2 of the project, ie to widen the project to provide the Knowledge Base. An International Advisory Board was established in October 2006 to oversee and advice on the methodology of the project, including the current IMIA President, current and pasts leaders of the IMIA Education WG, and other expert educators with IMIA links.

Phase 2 of the project included:

- an extensive electronic search of the published, peer-reviewed and grey literature; this was taken to be a valid proxy for such expertise;
- an analysis of available electronic literature, using established and novel indexing and analysis techniques, and document and discourse analysis software and methods, examined the emerging themes and high level descriptors;
- the method was similar to that used by Lorenzi to develop the original IMIA Scientific Map, but made use of materials and methods not available at that time, and through the work of a team of people, and a series of iterative calls for input, has been able to explore a wider corpus of materials.

The CHIRAD research team collected as much as possible of the electronically available health informatics literature (in CD-ROM format and available via the Internet), including conference proceedings (e.g. Medinfo, AMIA, MIE), journal articles and textbooks. We collated a corpus of more than 7,000 articles, items and chapters, most of which are in PDF format and comprise a total of 2GB of files. A saturation point was reached in respect of identifying themes from only a small portion of this corpus.

Search methods included keyword searches with Google Scholar, Reference Manager and PubMed,

using 'medical informatics', 'health informatics' and 'clinical informatics'. Citations and full papers were retrieved, and the CD-ROM proceedings of health informatics conferences were extracted. A range of indexing tools were used to index and search the full-text articles (including Google Desktop, Copernic and ASK). Some 10,000 different words were produced. These were given to a team of informatics experts at a workshop in London in January 2007. The group reduced this list to 444 words that seemed to be associated with the areas of health informatics

The resulting spreadsheet was sent to the Advisory Panel in the first instance to look for concordance and then to the Chairs of all the IMIA Working Groups to seek their views. The revised spreadsheet also went through several other iterations of refinement, and was made available to the full IMIA general Assembly in May 2008 for input. Validation and revision of, and consensus on, the emerging themes were elicited by several other mechanisms, including a workshop at MIE2005 in Geneva, and a further 24 hour workshop in Belfast in March 2006, which focused specifically on refining the technical and computing themes.

We believe that a robust methodology has been used to triangulate and retest the data gathered, and that all IMIA colleagues have been given repeated opportunities to input to the development of the Knowledge Base.

## Conclusion

The final draft version was reviewed by Nancy Lorenzi, Past President and author of the original IMIA Scientific Map on which this work. She approved the work and thanked the team.

Although we therefore consider this project 'complete', we do not see what has been developed as a static entity. The nature of our discipline of health and biomedical informatics is continually changing, as its interrelationship with other emerging disciplines; it is incumbent on IMIA to take account of these changes, and so we view the IMIA Knowledge Base as an evolving entity, and hope that IMIA and others will explore ways of revising it so that it remains up to date and reflects the ever-changing nature of the discipline in which we work.

Early stage work from the project has already influenced several developments:

- the development of a BSc in bioinformatics course in London (4);
- the development of an MSc Health Informatics course in Ulster;
- the IMIA Bioinformatics mapping project, being lead by Peter Elkin.

## References

1. Murray P, Betts H, Roberts J, Richardson G, Ward R, Wright G. Report of the Education Steps Project – the Otley meeting. Swindon: The British Computer Society Health Informatics Forum.
2. Murray P. Is it a duck, is it a pond? Can healthcare informatics fly? BJHC&IM 2005; 22(4): 12.
3. Wright G. The IMIA Knowledge Base. HISA2008 keynote address. Durban, South Africa.
4. Pritchard-Copley A, de Lusignan S, Raply A, Robinson J. Towards a benchmarking statement for biomedical informatics. In: Bryant J, editor. Current Perspectives in Healthcare Computing 2006. Proceedings of HC2006; 2006 Mar 20-22; Harrogate, UK. Swindon: BCSHIF; 2006. p.221-9.

This report is a minimally edited version of that submitted to the IMIA Board at its Dublin (April 2009) meeting and the IMIA General Assembly at its Hiroshima (November 2009) meeting.