Health Level 7 - Working Group Meeting Report

Memphis, Tennessee, September 7 – 12, 2003

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Executive Summary

1. HL7 US is now more Internationally focussed.
2. Version 2.5 is complete – released end Septermber.
3. Version 2.6 planned for May 2004 but scope of changes to be tightly controlled
4. Orders and Observations Technical Committee restructured with multiple parallel sub-committees at future meetings. This may have significant implications for effective future Australian representation.
5. IHE European group to implement V2.6 pathology messages. Co-operation with Australia in this endeavour is planned.
6. British Columbia (Canada) to implement V 3 pathology messages by 1.Apr.2005. Australian early cooperation with this project may ensure a cost-effective introduction and implementation here.
7. Version 3 LAB messages are unlikely to pass ballot (and become a standard) until mid 2004 at the earliest.
8. Arden Syntax (Clinical Decision support language standard) enhanced to support Object programming constructs.
9. Missing pieces in the Clinical Decision Support jigsaw were partially resolved - Virtual Medical Record (vMR), Clinical Context Object Workbench (CCOW), Event notification

Introduction

This is a report of my involvement in the HL7 Working Group Meeting held in Memphis, Tennessee between the 7th and 12th September 2003.

My travel and accommodation expenses were supported by HL7 Australia, as the nominee of SA-IT-14-6-5, under an arrangement with the Commonwealth Department of Health and Ageing, Quality Use of Pathology Program (QUPP). McCauley Software Pty Ltd however, was the principal sponsor of this trip covering the time involved.

This is the first HL7 Working Group Meeting that I have attended.

This report is intended to fulfil the requirements of the travel grant guidelines of HL7 Australia to report on the meeting within 6 weeks of return including transferring information to the appropriate Standards Australia working groups.

An interim report was distributed to the HL7 list on 12th Spetember 2003. This final report will be placed on the HL7 Australia website and presented to meetings of HL7 Australia as well as at the SA-IT-14-6-5 meeting on 7th November 2003.

The USA is heavily focused at present on addressing potential Biological Warfare (as well as other terrorist threats) and early detection of emerging Public Health Issues (e.g. SARS). A number of plenary sessions were focussed on plans by the Centre for Disease Control (CDC) and WHO to upgrade reporting and surveillance systems to permit early detection and response to such threats. It is proposed to fast track improvements to these systems which will be based on HL7 messages and should provide significant impetus to version 3.0 roll-out of the Lab messages.

A summary report of all Australian attendees is available at:
http://www.hl7.org.au/HL7_Working_Meetings.htm

Scope of Participation

486 registrants including 92 Internationals from 19 countries (Canada: 24, Australia: 12/NZ: 2, UK: 13, The Netherlands: 11) attended 31 Technical Committees and Special Interest Groups and 17 other meetings. The program and descriptions of the purpose of each meeting with the agendas can be found at:
http://www.hl7.org/events/memphis092003/index.asp

Reflecting the activity in pathology informatics in Australia I participated in the following HL7 Technical Committees (TC) and Special Interest Groups (SIG):

- Orders and Observations (OO) TC
- Arden Syntax SIG
- Clinical Guidelines SIG
- Clinical Decision Support (CDS) TC
- HL7-IHE Joint Interoperability Demonstration Workshop
- IEEE 1073 Committee
- International Meeting
- Plenary meeting

I also attended a tutorial 'Tools training for HL7 V3' which focussed on turning HL7 message models into XML and the current state of the toolset to do this.

Outcomes of Meeting

1. General

Version 2.5 has finally been published and will be ready for delivery end of September 2003. V2.5 includes resolution of the Australian major negatives for pharmacy. All other Australian input to this version has been included.

Version 3 ballot resolution continues, with more ballot cycles expected. A number of trial implementations are in progress in the UK, Canada, The Netherlands, Japan, etc. Australia participated actively and was one of the major balloters of V3, to ensure that the design concepts and technical detail is compatible with Australian requirements.

The group of HL7 Affiliates has been further enhanced with the admission of Spain and Ireland as new Affiliates; Poland and France are in the process of applying. The HL7 Board made further steps to balance the HL7 Affiliates with the USA realm.
Klaus Veil (Chairman HL7 Australia), having served the maximum 2 terms as the Representative of the HL7 Affiliates, was re-elected by the general HL7 membership to the HL7 Board.

Grahame Grieve was elected as a Co-chair of the Control/Query Technical Committee, a core V2.x/V3 Committee.
Peter MacIsaac was elected as a Co-chair of the Medical Information Special Interest Group (formerly known as the Pharmacy SIG)

2. Orders and Observations (OO) Technical Committee (TC)

The Orders and Observations Technical Committee has carriage of the HL7 message types most directly related to pathology. The work of this committee was split into three areas (i) HL7 Version 2 (ii) HL7 Version 3 (iii) Joint meetings with other HL7 Technical Committees and Special Interest Groups with regards to Common Message Elements (CMETs)

Committee Restructure
The work of this TC had been falling behind plan, especially in relation to completing the LAB V3 messages. Hence a restructure of the committee was propoased and accepted.

- Each initiative will be represented by a SIG, task force, sub-committee or project (correct structure for each initiative to be determined) with a dedicated group of volunteers and leadership.
- If there are no volunteers or leadership for a particular initiative, work will not occur.
- Each SIG will run in parallel at future meetings
- In between working group meetings the leadership of each initiative drives the progress in preparation for the next working group meetings.

For Lab, specifically, this means it will be moved into a SIG so it can receive dedicated attention as other areas do, while other new initiatives are not hampered by undue Lab time/focus in the general OO meetings.

Two new initiatives were discussed that would fit in this approach: Blood Bank and Implantable Devices. Both will be pursued as projects initially and may turn into SIGs if necessary.

The potential areas of interest are (those listed in italics already have an interest group):

- General Clinical Observations/Procedures
    - ***Implantable Devices***
    - ***Assessments (about to start)***
    - Vital Signs
    - Therapies
    - Interventions

- Order Sets
- ***Medication Info***
- ***Laboratory***
    - Micro
    - ***Lab Automation***
    - ***Point of Care Devices***
- ***Imaging***
- Dietary
- Supply/DME
- ***Blood, Tissue, Organ***
- Non-Clinical Services
- General Clinical History
    - Observation
    - Medication
    - Procedure

The initial membership of the proposed LAB SIG was determined as:

Gunther Schadow gunther@aurora.regenstrief.org
Michael van Campen michael.vancampen@tntglobal.ca
Austin Kreisler austin.kreisler@mckesson.com
Diego Kaminker dkaminker@velocom.com.ar
Vincent McCauley vincem@mccauleysoftware.com
Karen Sieber ksieber@cerner.com

Version 2

HL7 USA is focussing primarily on finalising version 3. However, it is recognised that there is an on-going need for version 2 message development. In order for version 2 issues not to hold back version 3, but be able to be carried forward in parallel, it was decided that proposals for next version (2.6) would only be considered in the following areas:

- Fix data types
- Fix data lengths
- Create or fix examples
- Add existing segments into existing messages
    - This will require that the proposals must include the V 3 equivalent proposal.
- Fix description/definitions/synchronization with other chapters.
- Perform table maintenance such as adding new values to existing tables.

It was agreed not to address the following types of proposals, unless a specific realm's regulatory requirement must be met:

- New fields in existing segments
- New segments
- New messages

Lastly, proposals to make things more consistent but that were not broken to begin with, will not be considered.

It was agreeed to start the V2.6 ballot no earlier then after the May 2004 working group meeting, to allow for V2.6 proposals resulting from the IHE work schedule (see below) to be done up to that point in Europe.

Version 3
A considerable amount of time was spent resolving the remaining issues raised in the last OO ballot (over 6 months previously). New messages were scoped to specifically support Blood Bank, Tissue Typing and Organ donation. Joint meetings were held with multiple groups (Pharmacy, Clinical Research, Patient Administration, EHR) to specify and harmonize re-usable common message elements (CMETs) such as patient, medications etc.

IHE (Integrating the Health Enterprise) - Lab Initiative in Europe

Charles Parisot provided background on IHE overall progress to date for Europe.

- IHE in Radiology well underway, particularly with DICOM.
- IHE in Cardiology starting in about a month.
- IHE in Laboratory already started.

Profiles have been defined (MPI, User authentication, Browser Display information, Consistent time), a connect-a-thon for testing is scheduled with the goal to check integration and go to major shows (US, Europe, Japan, etc.).

The current objectives is to use V2.3.1 for ADT and 2.5 for Lab. When further progress is made a decision may be required to change V2.3.1 to V2.5.

It was decided to wait until at least May timeframe to move forward with V2.6 to enable feedback from the Connectathon to be part of V2.6 and close the feedback loop between IHE and HL7.

IHE were to look at the current Australian Lab message (V2.3.1) as input to this initiative and requested a cooperative approach with the Australian work in this area (IT14-6-5).

Canadian/BC HL7 Initiative

British Columbia (BC) is in the process of establishing a provincial lab information system that enables communication between providers and lab systems. The mandate is: "To develop a patient centred lab service system for British Columbians that is accountable for high quality, affordable and accessible service and which will be sustainable into the future. To coordinate and implement a renewed clinical laboratory system for British Columbians." HL7 V3 is the preferred standard to move forward with.

To that end BC is interested to review and enhance the work done to date on HL7 V3 in the Lab space to address the broad scope of the BC messaging needs.

The Canadian need to accelerate V3 for Lab is very opportune with the need of OO to get dedicated attention to Lab. The objective is therefore to integrate the Canadian initiative with the OO Lab initiative.

The goal will be to have ballotable material immediately following the January, 2004, meeting and not exclude submitting material in November, 2003, for comment with final implementation in place by April 1, 2005. The system is to include pathology ordering, results and decision support. Whilst British Columbia will be used as the initial scope, it is planned to extend this across Canada (LABNET) if successful.

The Canadians will be liasing with IT14-6-5 (I am on the initial working group) as this proposal moves forward. The Canadian and British Columbian governments have already committed resources to this project. By early involvement, Australia should be able to “piggyback” on this process.

3. Arden Syntax Special Interest Group and Clinical Decision support

Arden Syntax is the HL7 standard language for encapulating medical knowledge in a computable form. It is designed to form part of Clinical Decision Support Systems. Robert Jenners, who initially developed this language (and SIG Chairman), attended the recent HL7 Australia Clinical Decision Support workshop.
At this meeting proposals were put forward and accepted to enhance Arden Syntax to be Object Oriented and to be expressible in XML. In addition, a number of proposals to link Arden Syntax to an Electronic Health Record (EHR) were discussed and firm proposals are to be presented to the next meeting in January, 2004 for balloting.

A possible Public Domain Arden compiler was also identified (from Sweden), which it is hoped can be incorporated into future projects in Australia.

The latest work on a competing decision support expression language (GELLO) was also presented. This language was interesting as its datatypes are the HL7 V3.0 RIM datatypes, however it was clear that a number of roadblocks in its further development have been reached, and at this stage it was unlikely to be usable in real-world implementations.
It was clear that the same issues that had been identified at the recent HL7 Australia Decision Support workshop were current issues for HL7 (as well as a raft of software suppliers of Clinical decision support systems).The USA currently has an US$18 million research project (SAGE) in this area which has been rolled out to two hospital enviroments. This work has been focussed on the test case of appropriate immunisation for inpatients.
The principle issues identified that need to be addressed were:

a) A standard interface to the clinical record (a Virtual Medical Record or vMR)

b) Trigger events for decision support

c) Nomenclature issues (e.g. for medication, diagnosis etc.)

d) Consistent and computer processable representation of Therepeutic Guidelines and other references such as Pathology ordering guidelines.

I was co-opted to a Working Group established to further scope and define the vMR. Sam Heard in his role as Co-Chair of the EHR SIG, attended a joint meeting with Decision Support and his plans for EHR and the primacy of the relationship between EHR and decision support were well received. There was general agreement that the concept of archetypes would help address many of the nomenclature issues.

4. Clinical Context Object Workbench (CCOW)

Each year HL7 holds an interoperability demonstration where vendors are given clinical scenarios and use HL7 standards to connect disparate systems to achieve the stated goals. The next of these events will be held in San Diego in January and will be a HL7-IHE Joint Interoperability Demonstration Workshop.
I was able to attend the planning day for this event and was able to see for the first the HL7 CCOW standard in operation. This standard makes it possible for different software systems running on a single computer (or multiple computers connected by the Internet) to appear as a single coordinated software suite. For example separate software programs to perform Patient medical records, prescription writing and pathology ordering/result management can interoperate sharing the patient context. This ability to "componentise" the medical desktop allows deployment of "best of breed" applications and ensures interoperability.

The demonstration by 10 vendors was impressive, and the CCOW standard, since its introduction in 2001, has now been implemented by more than 40 medical software vendors in the USA and Canada. The only implementation in the Australia/New Zealand market, that I am aware of, is by Orion.

CCOW formed the basis of a number of clinical decision support systems that were part of the interoperability demonstration.

Evaluation of Benefits and Difficulties of Continued Participation

Attending HL7 US is a daunting prospect. On this occasion it involved a 23 hour flight in each direction. On most days there were more than 10 parallel streams of meetings, not to mention numerous meetings over breakfast, lunch and dinner. Much of the actual work of implementing proposals is done each day after the formal meetings have completed. The time zone difference made contact with Australia difficult. I received one phone call from HIC (Australia) at 1:00 am local time – I was still up preparing work for the next day! My absence from the workplace (apart from e-mail) for nearly 2 weeks, inevitably had a significant impact.

The meetings are run on the basis that you can only vote on proposals if you actually attend the meeting. Decisions are binding and in general will not be revisited. It is vital that proposals are championed and explained by someone at the meeting. Very few non-trivial proposals were accepted without such support. HL7 is a very democratic organisation – however, if they do not understand a proposal or the local needs, it will inevitably be found "non-persuasive". Having a co-chair from Australia gives our interests great weight.

Whilst some work continues between meetings via telephone conference calls they are usually scheduled to start between 1:00- 2:00 am EST making it generally impractical to participate, other than by e-mail "after the event". Either Australia needs to participate in the initial standard setting process, or spend large amounts of time adapting the US standard to cater for local needs as has been the case in the past with IT14-6-5. This has been a major factor in delaying standards development in the Australian context.

Contact with the people who have great knowledge of version 3 was invaluable in furthering my understanding of the goals, pitfalls and current roadbloacks in this endeavour. The knowledge as to how and when decisions are taken, will be very useful in future planning in my roles in IT14-6-5 and IT14-6-6. If I had attended previously, I would have been in a better position to try and influence the restrictions that have now been placed on Version 2.6. Only after this decision had taken place, did it become clear that the proposed REF message final implementation by IT14-6-6 will involve changes outside of the new guidelines.

Partnering with Canada, UK and Europe, as they move to implement HL7, will be substantially cheaper and faster than attempting to change the standards "after the fact". Canada has a similar level of representation to Australia but is actually less influential. This is a reflection of the technical excellence of the Australian participants.

Recommendations and Actions

A. Increased representation

With the new structure of the Orders and Observations Technical Committee there will be upwards of 5 parallel streams at future meetings dealing with LAB, Blood bank, Radiology etc. It will be impossible for a single representative to effectively cover these.

In addition it will be invaluable to track the Clinical Decision Support group to be able to import ideas and tools for the on-going efforts in Australia in this area, particular in relation to pathology ordering and result interpretation.
I believe a minimum of two representatives will be required.

B. International Co-operation
Both the European (IHE) group and the Canadians have significant funding and are looking for partners to help them with a rapid move to HL7 implementation. They have identified the Australian expertise in pathology messaging as a potentially valuable resource. This partnership should be explored at a government to government level.

C. Training of the Health Informatics Workforce in V3
HL7 version 3 and its implementation in XML will be one subject of the next HL7 Australia workshop (early next year). The current Australian workforce that understands version 3 from conception to implementation can probably be counted on the fingers of one hand. This will need to be addressed before the major benefits of version 3 can be realised. There will need to be government strategies in place to aid in achieving this.

D. Promotion of CCOW as a desktop and system-wide interoperabilty standard
I believe that dissemination of this standard in the Australian context would help address some of the current medical software issues including vendor market imbalance, market fragmentation, barriers to market entry, inaccessibilty of data (vendor lock-in) and software interoperability. A government initiative to partner with HL7 Australia, and the medical software industry to achieve this, is likely to have major long-term benefits.

Vincent McCauley, 10/Oct/2003