Proposed Workitem: Remote Read for Imaging Workflow Definition

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2. The Problem

Cross-Enterprise or Community Diagnostic Image Sharing Repositories is a growing service internationally and has proven effective for sharing of previously acquired images and reports. The current IHE XDS-I.b infrastructure effectively supports this. IHE PCC eReferral specifies a Workflow Definition (WD) for community referral. This WD does manage patient referrals for imaging. eReferral does not address the remote reading of images outside of the initial referral or sharing of priors. Currently, to meet this need, HCIT suppliers have built proprietary systems with non-standard methods for managing this workflow. Proprietary methods limit the solution extensibility.

Cross-enterprise image sharing, beyond the initial step, has the capability to attain efficiencies and reduce cost at a macro-scale level:

* Improve throughput of radiology depts by allowing any radiologist in the community to read and report a study
* Align the number of resources (staff, equipment) with the needs of the community as opposed to considering individual hospitals only
* Facilitate assignment of studies to physicians that are best qualified to read them (e.g., a SPECT expert may be leveraged across the community)
* Provide off-hours coverage by sharing radiologists' services off peak hours

3. Key Use Case

The primary use case is workload sharing read.

For a workload sharing example, the ***specialty read*** of SPECT images is desacribed:

The community hospital has a NM acquisition system fully capable of acquiring SPECT Images, but lacks a credentialed NM Radiographer to read SPECT. Per the institutional business rules, all SPECT images will require a NM credentialed Radiologist to perform the read. The regional image sharing network has NM credentialed Radiologists. Based on the institutional business rules, this study meets the criteria for Remote Read.

The workflow document steps, then, could be:

1. **Remote Read Request:**The Remote Read Requester, usually the Radiology department scheduler, is triggered by an HL7 Order with a procedure code for SPECT. The Remote Read Requester will automatically collect relevant clinical documents, including Manifest of Acquired Images, Tech Notes, Clinical Summaries, and, will create the Remote Read Request and a workflow document containing the tasks to be performed. The set of documents will be pushed to the regional image sharing network for processing.
2. **Schedule Remote Read:** Once the document set is received by the image sharing network, the Remote Read Scheduler evaluates the Remote Request Request and assigns a reader(s) who are NM credentialed Radiologist. The assignment is encapsulated in an HL7 procedure scheduled message to the Remote Reader's RIS/PACS. The Workflow document is updated.
3. **Remote Read:** The Remote Reader's RIS/PACS receives the procedure scheduled message and initiates the Remote Read Task. The Final Report and any evidence documents are the output of this task. Note that this task may be partitioned into several subtasks to perform the read. These subtasks are out of scope for this profile but are listed for understanding. The additional subtasks are as follows:
   1. **Prep for Read:** If step is necessary, the Remote Read Preparer
      1. Creates Patient in local database
      2. Retrieves remote images and relevant priors to local cache.
   2. **Ready for Read:** SPECT Read is placed on the Remote Reader(NM credentialed Radiologist) reading worklist
   3. **Preliminary Read:** Remote Reader(NM credentialed Radiologist) releases unsigned report
   4. **Final Read:** Remote Reader(NM credentialed Radiologist) releases Final Report to the Regional Image Sharing Network
4. **Read Complete:** The Remote Read Requester retrieves the Report and completes the Workflow. Billing system is notified (out-of-scope). Final Report distributed to patient's care team(out-of-scope).

Workload sharing use cases can include:

* **Specialty Read**(SPECT example)
* **Site Loading** (time-to-read exceeds threshold example)
* **Off hours coverage**

Other specialized cases to consider include:

* **Double Read**(mammography example)
* **Consult**(inconclusive read example)
* **Blind Read**(VIP example)

**Initiating the Remote Read Request**

* Note that the remote read request can be done automatically based on local business rules:
  + all studies acquired after certain time
  + carrying certain procedure code (note that unifying procedure codes is out of scope)
  + Include a certain urgency code (codes defined by HL7)
  + Peer review
  + Remote Locum read
  + VIP read (pseudo-anonymous)
  + Double Read
* or manually:
  + Excessive read workload -for a site
  + Specialty Consultant/Second read – directed to a person or specialty pool

**Read Request Linkage**

* All Output documents linked via Accession Number and Accession Assigning Authority
* study needs to be removed from local reading list

**Other 'ologies'**

* Remote Read Workflow shall be extensible to other 'ologies' beyond Radiology

**Specifically out of scope:**

* Unifying procedure codes across institutions
* Protocoling study acquisitions

4. Standards and Systems

**Systems**

* **RIS**
* **PACS**
* **VNA**
* **Community Image Sharing Network**

**Standards**

* **XDS/XDS-I** for hosting Images and reports
* **XDW** underlying workflow profile framework
  + Compatible with XDS/XDS-I architecture
  + XDW currently does not support Cross community (XCA/XCA-I))
    - Workflow is all within the same affinity domain
    - This will be addressed in context with IHE ITI community
* **XBeR-WD** Workflow Definition
  + Sufficient for Image Referral
* **XDR/XDR-I** for point to point
  + As necessary
* **DSUB** for Notifications
  + D-SUB can act as a notification mechanism for XDW results available/completed -OR- could be a trigger to receptionist to call preferring Dr.

5. Technical Approach

**Existing actors**

• To be determined

**New actors**

• To be determined, see ppt

**Existing transactions**

• None impacted, Content profile

**New transactions (standards used)**

• None – Content profile

**Impact on existing integration profiles**

None – New Profile is proposed.

**New integration profiles needed**

**Imaging Read Workflow Definition (IRWD):** A content profile based on the Workflow Definition Template. This content profile captures, in a document, the Imaging Read Workflow definition for remote reading. The document is intended for use by the Cross-Enterprise Document Workflow Integration profile. See ppt

6. Support & Resources

Canada Infoway SCWG-10 has led the unitial development of this proposal and intends to continue to collaborate with IHE with the development of the Remote Read Workflow Definition. As Canada currently has a large scale XDS/XDS-I deployment, introducing the RR-WD/XDW with the existing infrastructure is the intent. Canada deployment of IHE Image sharing technologies are of the largest and most mature globally. Other regional deployment groups which have XDW and XDI.b deployed have expressed interest in this proposal.

7. Risks

*<List technical or political risks that will need to be considered to successfully field the profile.>*

[[edit](http://wiki.ihe.net/index.php?title=Remote_Reporting_for_Imaging_(TeleRadiology)_-_Proposal&action=edit&section=17)]8. Open Issues

*<Point out any key issues or design problems. This will be helpful for estimating the amount of work and demonstrates thought has already gone into the candidate profile.>*

[[edit](http://wiki.ihe.net/index.php?title=Remote_Reporting_for_Imaging_(TeleRadiology)_-_Proposal&action=edit&section=18)]9. Tech Cmte Evaluation

*<The technical committee will use this area to record details of the effort estimation, etc.>*

Effort Evaluation (as a % of Tech Cmte Bandwidth):

* 35% for ...

Responses to Issues:

*See italics in Risk and Open Issue sections*

Candidate Editor:

TBA