IHE Resting ECG Workflow Profile Meeting Minutes

8-October-2009

Present

Paul Seifert (Agfa), Rich Fronek (Cardiac Science), Mark Brinton (Cardiac Science), Mary Schneider (GE), Barry Brown (Mortara)

Absent

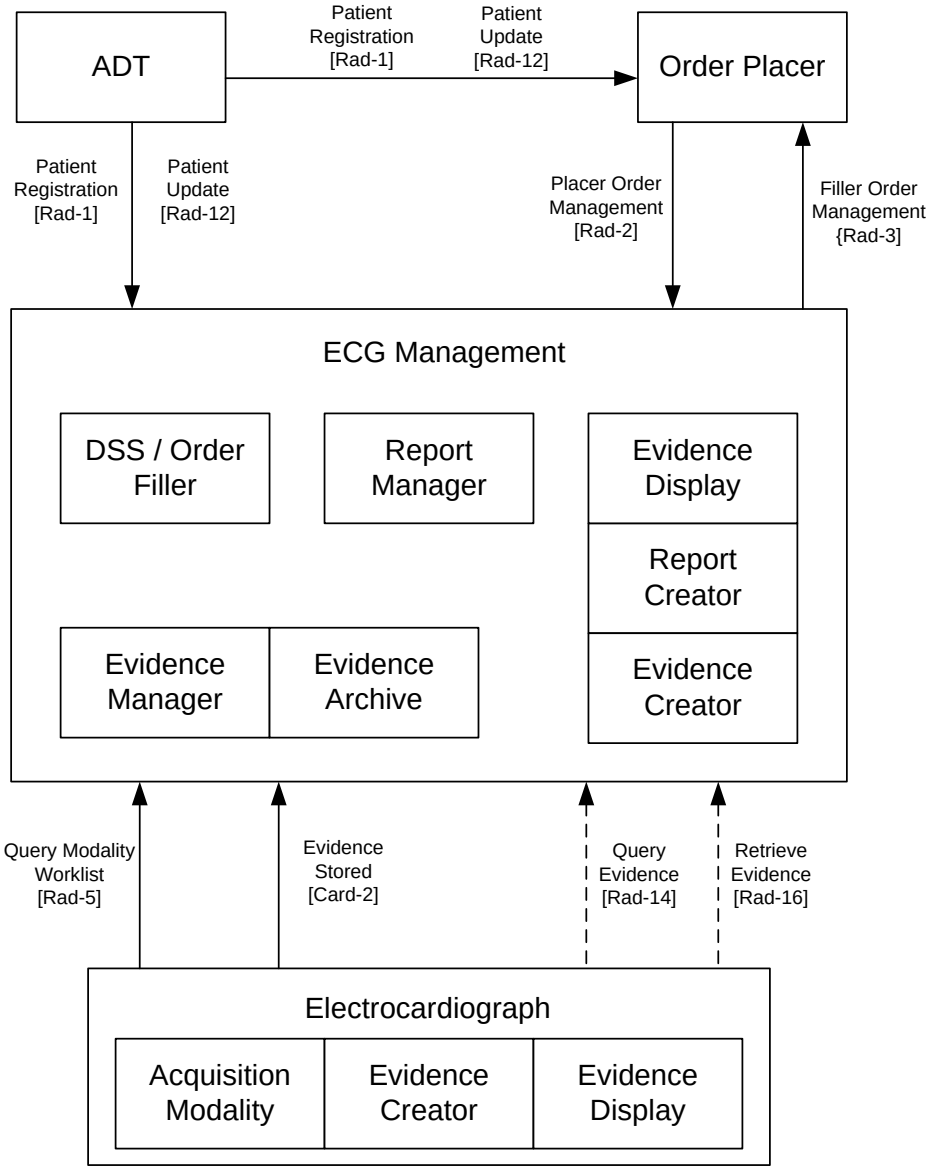
Glenn Guillemette (Philips)

Discussions

This was the first meeting of the ECG Workflow working group since ACC pulled its support for IHE Cardiology in April, 2008. The group reviewed the scope of the profile and agreed it will cover the workflow for resting ECGs. Resting ECGs are diagnostic tests that are generally ordered by physicians, performed by clinicians, and reported on by cardiologists. The tests are generally 10-second recordings of 12, 15, or 16 leads. The patient is at rest, and the electrodes are generally placed in traditional positions (e.g. limb electrodes on the limbs).

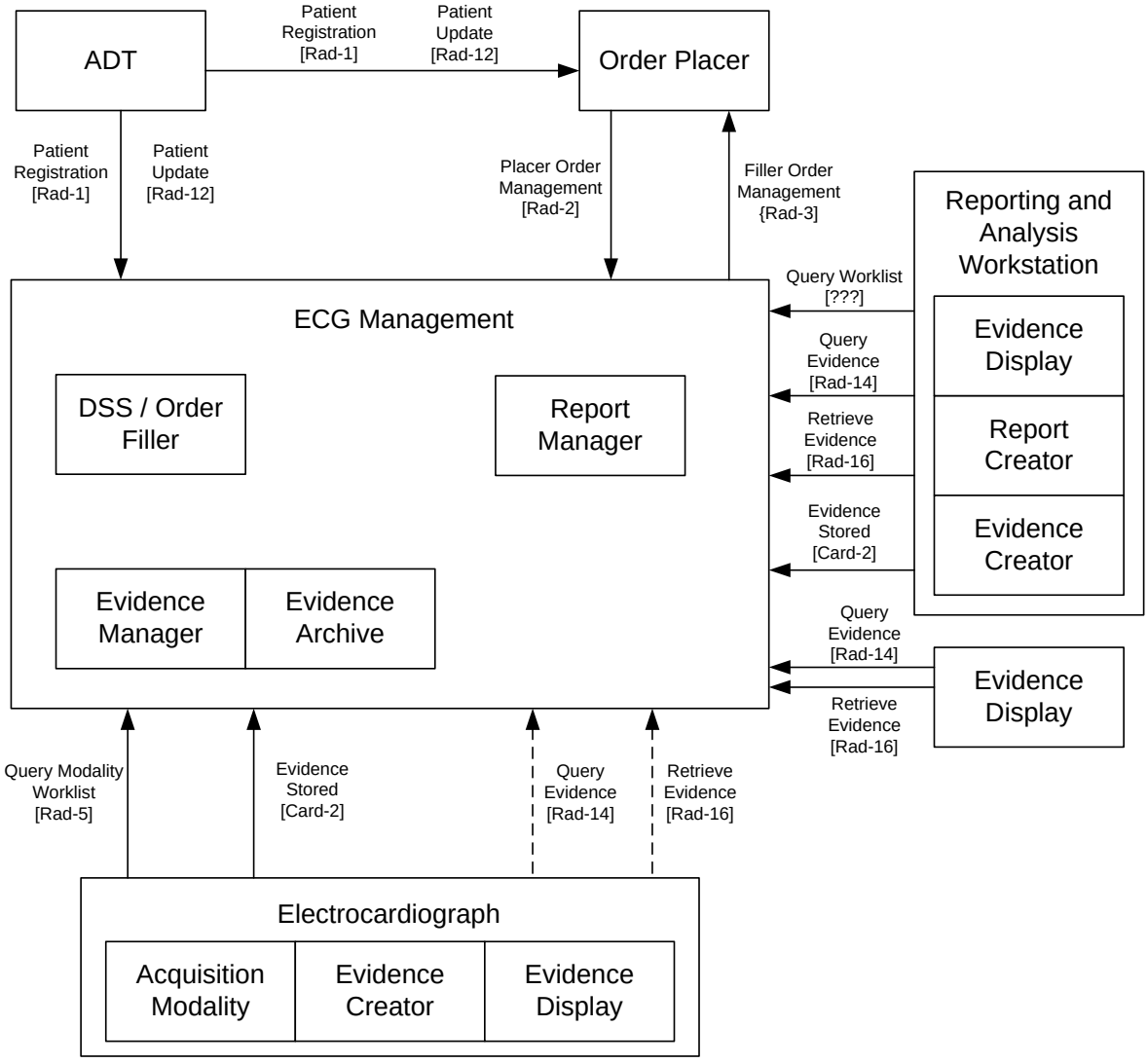
There was discussion if the scope of the profile should be limited to ordering and acquisition only, or if reporting was also a necessary part. The group decided that reporting was an important part of resting ECG workflow, so reporting will be included in the scope.

The group reviewed the following diagram:



After more discussion, it was decided that the block of display / reporting actors (Evidence Display, Report Creator, and Evidence Creator) inside the "ECG Management" box should be separated from the rest of the actors. The profile will include the specification of transactions between the archive / report manager, and the display / reporting actors. This will allow interoperability between archives and workstations from different vendors. The archives tend to be general purpose for all modalities, and the workstations tend to have modality specific functionality.

The following diagram is closer to what the profile will encompass:



Next the group reviewed the choice of standards, especially DICOM for communications with the electrocardiographs. Paul dug up a survey of ECG standards that was done by a group within NEMA about 6 years ago. They reviewed DICOM, SCP-ECG, MFER, HL7 v2, and HL7 v3. That group had decided that displayable ECGs were the top priority, and IHE took care of that with the Retrieve ECG for Display profile. Paul wasn't sure if the group formed a unanimous opinion about which standard was best for device communications, but his own analysis gave top marks to DICOM, with SCP-ECG in second.

The group discussed the strengths and weaknesses of DICOM, SCP-ECG, MFER, HL7 v2 and v3. Cardiac Science had the most experience with SCP-ECG and also had experience with DICOM in stress. They had to add their own extensions to SCP-ECG to facilitate network communications and to retrieve orders. Interoperability, in their opinion, was much stronger with DICOM than SCP-ECG. MFER only specifies how to encode waveforms. It leaves metadata and communications up to different standards (like DICOM and HL7). DICOM already has a waveform encoding scheme, and the group didn't think another

one was needed. Barry presented the weaknesses of HL7 v3 Annotated ECG (optimized for clinical research, file-only implementations, lacking healthcare features, etc.). In the end, there was unanimous support for moving forward with DICOM for the electrocardiograph communications.

Although DICOM is the strongest standard available, IHE may need to propose some enhancements as this group works through the details. Mary has already been reviewing the SR template TID 3700 for ECG and thinks we may need to propose updates. The 12-lead ECG Waveform object limits the number of leads to 13, so we'll have to use one of the other DICOM objects (ambulatory, or general), or propose that DICOM increase the number of leads so 15 and 16-lead ECGs can be supported.

Mark brought up some related activities going on in the Patient Care Devices domain. PCD is working on periodic and real-time reporting of ECG parameters and waveforms. Although there is overlap between that and what this group is doing, it was decided that the workflows and use cases were completely different. Encoding ECG parameters and waveforms is relatively simple and it doesn't matter if different encoding schemes are used for diagnostic ECG workflow and patient monitoring. Mark agreed to keep a watchful eye on the PCD activities and let the group know if there anything it should pay closer attention to.

Paul mentioned that Radiology is making revisions to the related workflow and reporting profiles. They may be moving to HL7 v2.5 messages that support more features needed by IHE. Paul agreed to keep an eye on Radiology and let this group know of relevant activities.

The recommendation of the group back to the technical and planning committees is that this profile will require a *medium* amount of work (using a low-medium-high scale). The scope is well understood, much can be pulled from existing IHE profiles, and there are several motivated parties ready to work on it. It is just a matter of working through the details and making sure everything is covered, or that DICOM has a solid change proposal for adding the missing features.

The next IHE Cardiology Technical Committee meeting is Thursday October 15th, 9:00am CDT. Barry will send out a poll for scheduling another ECG meeting in that Wednesday – Thursday – Friday timeframe.