Minutes

Discrete Positioning and Delivery Workflow (DPDW)

Conference Call

April 23, 2014

11:00am – 13:00pm EST

DPDW Subgroup Chair:

Ulrich Busch, Varian Medical Systems  
([ulrich.busch@varian.com](mailto:ulrich.busch@varian.com))

IHERO Task Force Co-Chairs

Dick Fraass, Ph.D., FAAPM, FASTRO, FACR

John Buatti, MD

**Mission Statement:** *The American Society for Radiology Oncology (ASTRO) has formed a multi-society Task Force to undertake an initiative to promote the Integration of the Healthcare Enterprise (IHE) – Radiation Oncology (RO), fostering seamless connectivity and integration of radiotherapy equipment and the patient health information systems. The Task Force will include members from ASTRO, RSNA, American Association of Physicists in Medicine (AAPM), the American College of Radiology (ACR) and the Medical Imaging and Technology Alliance (MITA). In addition, members of the International community have also been invited to participate in IHE-RO. The IHE-RO Task Force, in close collaboration with radiotherapy product manufacturers, will develop appropriate integration profiles for radiation therapy and setup a demonstration of seamless communication among the full array of radiotherapy products.*

**In Attendance:**

Ulrich Busch (Varian)

Thomas Schwere (Varian)

Sanjay Bari (Elekta)

Martin Vonach (Brainlab)

Harold Beunk (ITC)

Bruce Curran (Brown Univ. / ASTRO)

Stephen Phillips (Varian)

# Call to Order

The meeting was started at 11:10 EST.

The Chair expressed his appreciation to Stephen Vastagh, who provided conferencing facility on short notice. Stephen is ready to do it again - anyways this group is a joint venture with the Patient Positioning and Workflow subgroup of WG-07.

Still we should be able to spare DICOM resources. The Chair is looking for a permanent solution for the conferencing facility.

## Approval of Minutes

The Minutes of the TCon of March 21, 2014 have been approved.

## Approval of Agenda

Then agenda of this meeting has been approved.

# Status of Documents

## Transactions

3 Members have provided new content on Transactions:

* Chris Pauer: RO-DPD-211: Worklist Query for Positioning Registration
* Martin Vonach: RO-DPD-200: Worklist Query for Positioning Acquisition
* Thomas Schwere: RO-DPD-218: Create Positioning Acquisition and Positioning Registration UPS

## Notification Service Proposal

Thomas Schwere has distributed a Memo on a Proposal for a new Service for active and efficient notification of devices participating in the treatment session workflow (mail of April 7, 2014 to the group).

# Review of Transaction Assignments

## Review of Transaction RO-DPD-211

The group went through RO-DPD-211: Worklist Query for Positioning Registration, provided by Chris Pauer.

The remaining section to be reviewed yet was 5.211.4.1.3 Expected Actions. It was noted, that this section should get more details about what should happen after the reception of the UPS: The expected input data are already specified in the message semantics section. However, the section 'Expected Actions' should tell how the Registration will use those, and eventually what it will do when the inputs are not available as specified.

ACTION: Chris Pauer to complete that section.

In the course of that review, the section 5.211.4.1.2 Message Semantics was reviewed again. The chair noted that the Table on Query and Return Key Requirements will be moved to an Appendix (as noted by Chris). It will include that part of the specification, which are applicable to all UPS Queries issued by the components to TSM.

These considerations generated further discussion about general design aspects, the management of UPS and nature of UPS queries.

The main part of the TCon was spent on those topics. The following sections summarize the discussion and list the open questions.

## Query of UPS

The TSM knows at any time which UPS is supposed to be executed. A component should get exactly this UPS (typically one). Therefore a general Query of a component to get all UPS (e.g. along Workitem codes) is not useful, since there may be several UPS having the same workitem code since e.g. more than one plan is to be imaged. Therefore the UPS to be exposed in the C-FIND needs to be the exactly the one to be executed at the point in time of the query.  
  
The best approach to retrieve this specific UPS is to query the UPS by UID from the component. To communicate the UPS UID, the new service proposed by Thomas Schwere could be used. IN this case, no additional matching keys would be needed other than the UID itself. The station name though could be used as an additional channel to allow the TSM to check, that the intended component is querying.

The table of matching key requirements in the document is preliminary and subject to change.

## Getting the UPS content

To get the content of the UPS, two options exist:

A. Query the UPS and adding all required information as return key to the query.

B. Query the UPS by a lightweight C-FIND; and afterwards perform and N-GET to retrieve the information

By this time the group assumes, approach A. is perceived as sufficient and a separate N-GET as in B. is not needed.

## Scheduling of procedures and assigned component (devices)

There are situations, where a machine does not have just 'an imager'. One example is, when 2 kind of imagers are present: Those which are mounted to the gantry (often even two imagers: MV and KV) and those which are wall-mounted. In such cases, the user wants to pre-define per patient case (respective treatment area, plan characteristics etc.) what imagers to use. Similar situations could be, when several PPRS are available, which may be optimized for certain cases (one of the very explicit requests through the DPDW Profile development was to split out the PPRS from the PPAS exactly for such situations).

In such cases, the UPS has to carry the information about the device to be used. The Scheduled Station Name Code is the facility to identify the devices which should execute an UPS. However, the question is then how the TSM can perform a query against the TMS, which should retrieve all UPS for a certain 'machine' (in informal terms). Preferably, that query will go against a station name code identifying the machine, but the result will include all UPS for all associated devices. This will however prevent the scheduling of UPS for specific devices.

This question is not solved yet.

## Local State machine of TSM and components

When the TSM retrieves the UPS from the TMS they are set in progress to take ownership of the UPS by the TSM. When the component retrieves the UPS from the TSM, preferable the same DICOM state machine of UWL should be used. That would allow that those devices can use their UWL implementation in various context beyond the RT treatment situation.

This state machine could be a local one, which works on the same UPS as retrieved from the TMS: The state visible to the TMS is not affected by the local component state machine, since during the local process handle by the TSM there is no involvement of the TMS. The final state of the local component state machine will be set as final state in the TMS not before any local proceedings of that UPS are finished.

However, another approach would be to copy the UPS locally within the TSM. That would naturally decouple the state machine. However it requires an additional level of UPS management in the TSM, which may not have any additional value, since the local state is never visible to outside during the treatment session.

An alternative would be to handle the local states by a new service (in the context of the service proposed by Thomas Schwere). However, this would require 2 different services to be implemented by those components, which work within the context of radiotherapy treatment sessions and within other context (e.g. imagers may be used otherwise as well).

## Wrap-up

The walkthrough on transactions reveals general questions like the ones above. That is indeed one of the expected outcomes when working on the detailed specification of transactions (besides getting the transactions specified as such). The group stated, that those questions are important and relevant and therefore will continue to have some priority over the transactions reviews itself.

# Process / TCons / Meetings

## Next DPDW TCon

* Tuesday, May 28, 2014  
  11:00am – 13:00pm EST.  
  The conferencing infrastructure is not determined yet.

## Face to Face Meeting

A face to face meeting will be useful at some point. At this time a proposal not determined.

# Adjournment

The meeting was adjourned at 13:00 EST.

Appendix A: Location and Handling of Documents

Documents are published at the following locations. If you have problems in accessing the document, please contact the Chair ([ulrich.busch@varian.com](mailto:ulrich.busch@varian.com)).

## Process of Authoring:

Steps:

1. Download a local copy of the document from locations below
2. Open this copy and remove all change bars
3. Ensure, that Changes Bars are switched on
4. **Make your changes**
5. Provide the updated version to the Chair

## DPDW

The DPDW Profile is an IHE-RO document. The current versions of the profiles are always available in the IHE-RO Org Wiki.

<http://www.ihe-ro.org/>

Please see the current document here:

<http://www.ihe-ro.org/doku.php?id=doc:profiles>

## Supp 160

DICOM Supplement 160 (Patient Positioning and Workflow) in s DICOM WG-07 document. It is available at the DICOM ftp server:

<ftp://d9-workgrps@medical.nema.org/MEDICAL/Private/Dicom/WORKGRPS/WG07/Supp160>

Appendix B: Administrative Information

## Mailing List

The mailing list for the DPDW subgroup is:

[iherodpdw2014@mail.aapm.org](mailto:iherodpdw2014@mail.aapm.org)

Appendix C: Task Assignments

Per end this TCon (2014-02-13).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **TX / Area** | **Old Number** | **Title** | **Group** | **Owner** |
| ./. | ./. | Use Case Delivery-Device Independent Imaging |  | David Wikler |
| RO-DPD-200 | RO-DPD-01 | Worklist Query for Positioning Acquisition | Acquisition | Martin Vonach |
| RO-DPD-201 | RO-DPD-02 | Retrieve Device Position Information | Acquisition | Martin Vonach |
| RO-DPD-202 | RO-DPD-03 | Request RT Patient Position Correction | Correction | Martin Vonach |
| RO-DPD-203 | RO-DPD-04 | Store RT Patient Position Modification Instruction | Correction | Martin Vonach |
| RO-DPD-204 | RO-DPD-05 | Store RT Repositioning Results to Object Storage | Correction | Martin Vonach |
| RO-DPD-205 | RO-DPD-06 | Worklist Query for Repositioning | Correction | Martin Vonach |
| RO-DPD-206 | RO-DPD-07 | Notify on Radiation Delivery Status Change | Delivery | Thomas Schwere, Sanjay Bari |
| RO-DPD-207 | RO-DPD-08 | Retrieve RT Patient Position Correction Instruction | Correction | Martin Vonach |
| RO-DPD-208 | RO-DPD-09 | Subscribe/Unsubscribe to Treat UPS Status | UPS Notification | Thomas Schwere |
| RO-DPD-209 | RO-DPD-10 | Notify on Radiation State | Delivery | Thomas Schwere, Sanjay Bari |
| RO-DPD-210 | RO-DPD-11 | Retrieve Positioning Acquisition Results | Registration | Chris Pauers |
| RO-DPD-211 | RO-DPD-12 | Worklist Query for Positioning Registration | Registration | Chris Pauers |
| RO-DPD-212 | RO-DPD-13 | Worklist Query for Position Monitoring | Monitoring | Andrea Morgan |
| RO-DPD-213 | RO-DPD-16 | Store Monitoring Results to Object Storage | Monitoring | Andrea Morgan |
| RO-DPD-214 | RO-DPD-17 | UPS Final Update at Session Termination | Framework | Thomas Schwere, Sanjay Bari |
| RO-DPD-215 | RO-DPD-18 | UPS Completed / Cancelled at Session Termination | Framework | Thomas Schwere, Sanjay Bari |
| RO-DPD-216 | RO-DPD-19 | Indicate Ready for Monitoring | Monitoring | Andrea Morgan |
| RO-DPD-217 | RO-DPD-20 | Notify Device to start UPS | UPS Notification | Thomas Schwere, Sanjay Bari |
| RO-DPD-218 | RO-DPD-21 | Create Positioning Acquisition and Positioning Registration UPS | Workflow | Thomas Schwere |
| RO-DPD-219 | RO-DPD-22 | Create Treat UPS and Radiation Delivery Instruction for Continuation | Workflow | Thomas Schwere |
| RO-DPD-220 | RO-DPD-23 | Notify Treatment Session Actors on Starting Session | UPS Notification | Thomas Schwere, Sanjay Bari |
| RO-DPD-221 | RO-DPD-24 | Notify Device to stop UPS | UPS Notification | Thomas Schwere, Sanjay Bari |
| RO-DPD-222 | RO-DPD-25 | UPS Progress Update for Discrete non-Treatment Steps | UPS Notification | Thomas Schwere, Sanjay Bari |
| RO-DPD-223 | RO-DPD-26 | Worklist Query for Positiong Correction Reconciliation | Registration | Chris Pauers |
| RO-DPD-224 | RO-DPD-27 | External Verification | External Verification | Sanjay Bari |
| RO-DPD-225 | ./. | Notify Device to resume UPS | Monitoring | Andrea Morgan |
| RO-DPD-226 | ./. | Create new Positioning UPS | Monitoring | Andrea Morgan |