

20/20
Integration
Guide

March 15

2013

A guide to Modality Work List and Spectacle-Link



20/20 Integration Guide

Overview

Within medical imaging there are two common interfaces or integrations that most practices find helpful if not necessary. This guide is designed to help you understand these options. It is our intent to empower you with the knowledge to coordinate the deployment of these interfaces with your information system (IS) provider (Practice Management, Electronic Medical Record, or Electronic Health Record).

20/20 Imaging provides the following options for IS integration.

- Modality Work List (MWL) – This is a DICOM service that bridges your information system and your modality (x-ray) together. The purpose of this is to provide patient demographic information directly to the modality to eliminate the need for manual data entry. By doing this, the probability of having a typographic error of the patient’s demographic information is greatly reduced. Additionally, by eliminating the time required for manual data entry, the acquisition process becomes significantly more efficient.
- Spectacle-Link – This is the process of embedding a hyperlink into your information system that will trigger direct access to the exam(s) within the PACS. This logic can be hardcoded in the third party information system or sent in an HL7 MDM message.

The information contained within this document allows you to implement the above mentioned functions without the need for specialized or custom HL7 message development and their associated costs. If you and your third party information system will follow these guidelines and parameters implementation will incur no additional or hidden costs from 2020 Imaging.

MODALITY WORK LIST

Before getting into the configuration details for MWL, let’s first look at how it works and what variables there may be. MWL is a service that is part of the DICOM standard. This service is generally part of what is referred to as an MWL Server or MWL Broker. It provides DICOM modalities such as digital x-ray systems a list of patients that are to have an exam and in some cases what specific exam has been ordered. This information is provided to the MWL service from one of two types of HL7 messages that are sent from your information system.

The first and most common message type is an HL7 SIU message. This message contains basic patient demographic information and schedule date. This message is generally sent or triggered by the patient arrival status in your information system. This helps to keep the list of patients clear of no show or irrelevant patients.

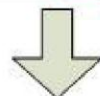
The second and less frequent message type is an HL7 ORM message. This message contains the same basic information that in the SIU, but with the added details of what type of x-ray exam has been ordered by the physician. Since most physicians order the x-ray at the bedside, the exam is generally not entered into the information system until after the exam is performed and thus the information is not available at the time that the exam is rendered.

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EHR / EMR / PM

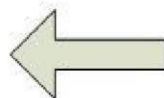
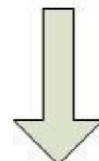
ELECTRONIC ORDER ENTRY VIA
INFORMATION SYSTEM



| Patient ID | Name | DOB | Gender | Referring Physician | Referring Department | Referring Location | Referring Date | Referring Time | Referring Source | Referring Method | Referring Status | Referring Reason | Referring Notes |
|------------|----------|------------|--------|---------------------|----------------------|--------------------|----------------|----------------|------------------|------------------|------------------|------------------|-----------------|
| 100000001 | John Doe | 12/12/1980 | M | Dr. Smith | Internal Medicine | 100000001 | 12/12/2010 | 10:00 | 100000001 | 100000001 | 100000001 | 100000001 | 100000001 |
| 100000002 | Jane Doe | 01/01/1985 | F | Dr. Smith | Internal Medicine | 100000001 | 12/12/2010 | 11:00 | 100000001 | 100000001 | 100000001 | 100000001 | 100000001 |



DICOM MWL SERVER



DELL





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The 2020 Imaging MWL Server is preconfigured to accept either a standard SIU or ORM message that meets the message parameters outlined in this document. Please provide a copy of this document to your information system vendor to have them configure their side of the interface.

MWL In-Bound Interface Parameters:

- IP Address: Variable and is assigned to the server at install
- Inbound HL7 Port Number: 10004

The following are the required fields needed in order to provide the Modality Work List. We will use the following segments and fields listed for the configuration and they cannot be edited by 20/20. Edits will have to be performed by the EMR/ EHR.

SIU MESSAGE

| Configuration Segment | Description | value |
|-----------------------|---------------------------------|--|
| PID.2 | Patient id external | Unique number / ID for each patient |
| PID.5 | Patient Name | Last Name ^ First Name ^ Mi |
| PID.7 | DOB | Data (19460610) |
| PID.8 | Gender | F/M |
| PV1-8 | Code ^ Referring Physician Name | Dr Code^ Last Name ^ First Name^ Mi Name |
| OBR.7 | Schedule date and time | Date and time [20090423142500] |
| OBR-31 | Reason for the exam | Text |
| ORC- 21 | Office name / Institution name | |



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SAMPLE SIU MESSAGE

```
MSH|^~\&|GPMS|CTX||MED2000|200803060953||SIU^S12|20080306953450|P|2.3|||||
SCH|00331839401||||58||HLCK^HEALTHCHECK ANY AGE|20|MIN|^^^200803061000
||||JOHN||||VALERIE||||ARRIVED|
PID|1||489671|0|SMITH^MICHAEL^||20080205|F||176215TH STREET^HOUSTON^TX^77306||(832)795
-8259||S||999999999|||||
PV1|1|O||||HHR^NGUYENSUSAN MD|^|||||
RGS|1|||
AIL|1||HHR^FPCS NGUYEN, MD|||||
NTE|1||1MONTH HLCK^^|
AIP|1||PBN^LISAPORTER|50|||||
```

ORM MESSAGE

| Configuration Segment | Description | value |
|-----------------------|---------------------------------|--|
| PID.2 | Patient id external | Unique number / ID for each patient |
| PID.5 | Patient Name | Last Name ^ First Name ^ Mi |
| PID.7 | DOB | Data (19460610) |
| PID.8 | Gender | F/M |
| PV1-8 | Code ^ Referring Physician Name | Dr Code^ Last Name ^ First Name^ Mi Name |
| ORC-2 OBR-2 | Accession Number | Unique number for each exam |
| OBR.4 | Exam Name /Study description | Exam Code^ description (one exam per order) |
| OBR.24 | Modality | Resource Name / Modality name |
| OBR.7 | Schedule date and time | Date and time [20090423142500] |
| ORC – 18 | Scheduled Station | CR, MR, NM etc or CR1, CR2,MR1, MR2 etc |
| OBR-31 | Reason for the exam | Text |
| ORC- 21 | Office name / Institution name | |



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SAMPLE ORM MESSAGE

```

MSH|^~&|OPAL-RIS|Viztek Inc|ISPL PM||20070726||ORM^O01|7262007155320687|P|2.3|||||
PID|1|7312|CACL7316||test1^test2||20020221120000|F||0|12 Power
Ave^^Jacksonville^FL^32217|Jacksonville|1234567890||0|0|0|CACL7316|^0^20070720120000|||||||
PV1|1|O|||||3^Rad^Name|440^RefName^RefName|||||||EN10503|||||||2007072016000
0|||||||
ORC|NW|EX13494|EX13494|||^20070720160000||20070726|5^Tech Name|||||||
OBR|1|EX13494|EX13494|822^71020 - X-RAY CHEST, 2 VIEWS, FRONTAL &
LATERAL|||20070723154003|20070723154006|||||||CR|||^20070720160000|||^ICD|||200707201
60000|||||||

```

Please note:

- that all received messages should be wrapped as follows: CHAR (11) + Message + CHAR (28) + CHAR (13)
- Each segment of the message needs to be separated by CHAR (13).
- We will use the same format on our outbound messages.
- We will send ACK for all successfully processed messages.
- We will send an NACK for all errors

Spectacle-Link

Spectacle-Link is a feature that allows for the images from your PACS to be viewed from your information system. In actuality exam images are not really viewed in your IS, rather they are launched or triggered from there. This is accomplished through the use of html hyperlinks or URL's. This URL can be placed in your information system by having your information system vendor embedding the URL logic into their application or by receiving the URL via an HL7 message.

Once the URL has been established, the URL can be used invoke two types of triggers:

- Opening of Specific Study – This launches the PACS viewer and displays a specific exam.
- Opening/Displaying a Study List for a patient – This launched a patient specific list of all exams that a specific patient has had. From this list you can then select the exam that you wish to review.

The URL logic also allows for the return of XML data to your information system.

- Return all study information in XML format for a patient.
- Return all study information in XML format for a given study status.



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DICOM Image Viewer

Opal viewer needs to be installed on the computer prior to activation of a URL link. The viewer can be installed by logging directly onto the web portal of the PACS server. Once logged onto the PACS, you will be prompted to download and install the Opal-Viewer application.

PACS Logon where "OPALSRV" is the IP address or hostname of the PACS server.

<http://OPALSRV/OpalWeb>

URL Logic for embedding into a Third Party Application

By providing your information system vendor with this information, they should be able to embed the logic into their application. Below you will find several variations of the URL. In each, your vendor is only required to populate one segment of the string with variable data.

OPENING STUDY:

To Open a Specific study one of the following is required:

- DICOM study_uid [information generated by modality]
- DICOM study_id [information provided to modality by MWL and/or technician]
- Accession Number [Information provided to modality by MWL and/or technician]

It is required for the third party vendor to open following URL in Internet explorer (or internet explorer control); where OPALSRV is IP address or hostname of the PACS Server. The segment in red indicates the variable.

Study_UID Template:

<http://OPALSRV/OpalWeb/IntegrationProcessor.aspx?CMD=OPENSTUDY&SUID=<studyuid>>

Study_UID Example: _

<http://demo.viztek.net/opalweb/IntegrationProcessor.aspx?CMD=OPENSTUDY&SUID=1.2.840.113564.19216825458.2010111615155065649>

Study_id Template:

http://OPALSRV/OpalWeb/IntegrationProcessor.aspx?CMD=OPENSTUDY&STUDY_ID=<studyid>

Study_id Example: _

http://demo.viztek.net/opalweb/IntegrationProcessor.aspx?CMD=OPENSTUDY&STUDY_ID=72

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Accession Number Template:

<http://OPALSRV/OpalWeb/IntegrationProcessor.aspx?CMD=OPENSTUDY&ACCESSION=<accession>>

Accession Number Example: _

<http://demo.viztek.net/opalweb/IntegrationProcessor.aspx?CMD=OPENSTUDY&ACCESSION=48815>

URL Link Results:



DISPLAYING THE STUDY LIST:

To open a list of study for a specific patient, patient id is required. From the list the user can select a particular study to open by double clicking the row on the list.

It is required for the third party application to open following URL in Internet explorer (or internet explorer control):

Studylist Template:

http://opalsrv/OpalWeb/IntegrationProcessor.aspx?CMD=STUDYLIST&PATIENT_ID=<patientid>

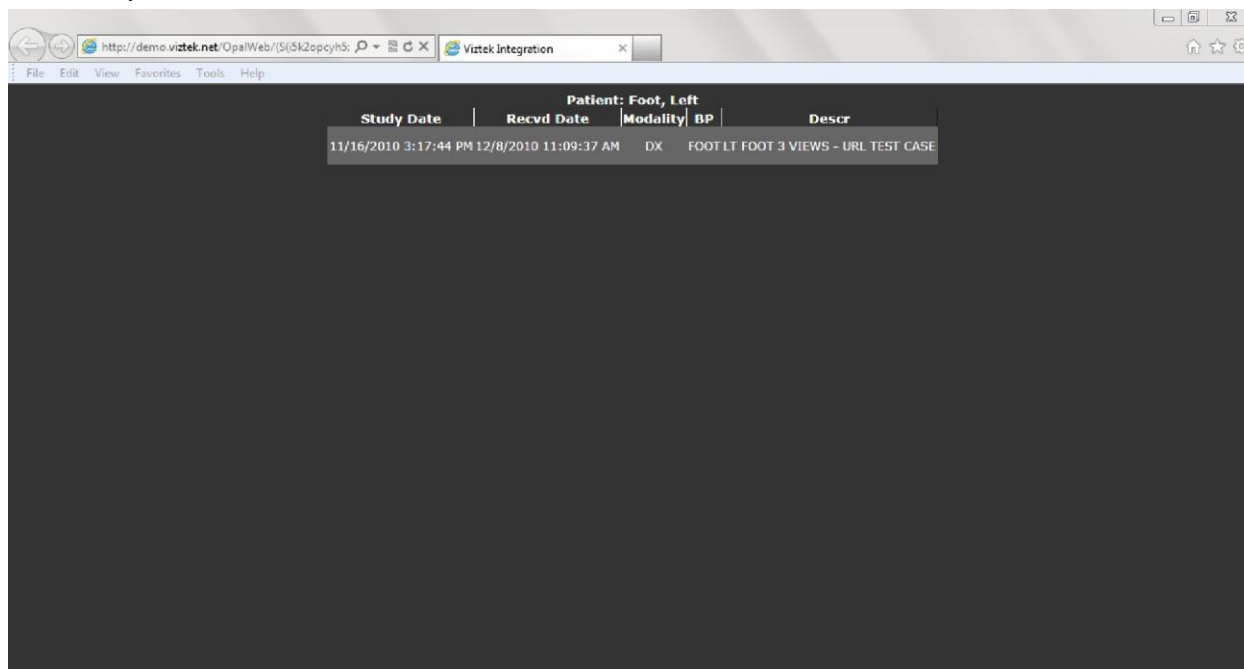
Studylist Example: _

http://demo.viztek.net/OpalWeb/IntegrationProcessor.aspx?CMD=STUDYLIST&PATIENT_ID=20201234



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URL Studylist Results:



RECEIVE STUDY DATA as XML:

To receive all the studies information for a particular patient in an xml format, patient id is required. Using the following URL the third party vendor can retrieve the xml data.

XML Study Data Template:

http://opalsrv/OpalWeb/IntegrationProcessor.aspx?CMD=STUDYLIST_XML&PATIENT_ID=<patientid>

XML Study Data Example: _

http://demo.viztek.net/OpalWeb/IntegrationProcessor.aspx?CMD=STUDYLIST_XML&PATIENT_ID=20201234



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XML Data Returned:

```
<?xml version="1.0"?>
-<opal> -<study> <STUDY_ID_DICOM/>
<STUDY_UID>1.2.840.113564.19216825458.2010111615155065649</STUDY_UID>
<ACCESSION_NUMBER>2020411</ACCESSION_NUMBER> <STUDY_DATETIME>2010-11-16T15:17:44-
08:00</STUDY_DATETIME> <STUDY_DESCRIPTION>LT FOOT 3 VIEWS - URL TEST
CASE</STUDY_DESCRIPTION> <MODALITY>DX</MODALITY> <READING_PHYSICIAN>,
VIZTEK</READING_PHYSICIAN>
<READING_PHYSICIAN_DICOM_NAME>^VIZTEK^^</READING_PHYSICIAN_DICOM_NAME>
<REFERRING_PHYSICIAN_NAME/>
<REFERRING_PHYSICIAN_DICOM_NAME>^^^</REFERRING_PHYSICIAN_DICOM_NAME>
<DEPARTMENT/> <STATION>DRX1</STATION> <STAT>0</STAT>
<PATIENT_ID_DICOM>20201234</PATIENT_ID_DICOM> <PATIENT_NAME>Foot,
Left</PATIENT_NAME> <PATIENT_NAME_DICOM>Foot^Left^^</PATIENT_NAME_DICOM>
<BIRTH_DATE>1955-01-23T00:00:00-08:00</BIRTH_DATE> <GENDER>F</GENDER>
<BP_ID>265</BP_ID> <BP_NAME>FOOT</BP_NAME> <INSTITUTION_ID>563</INSTITUTION_ID>
<INSTITUTION_NAME>20/20 Imaging</INSTITUTION_NAME>
<STATUS_NAME>TRANSCRIBED</STATUS_NAME> <FACILITY/> <STUDY_RECVD_DATETIME>2010-12-
08T11:09:37.547-08:00</STUDY_RECVD_DATETIME> <Series_Count>4</Series_Count>
<Image_Count>4</Image_Count> <Notes_Count>>false</Notes_Count>
<PATIENT_STUDY_COUNT>1</PATIENT_STUDY_COUNT> <KEY_IMAGES>1</KEY_IMAGES>
<TranscriptionExists>>true</TranscriptionExists> <DictationExists>>true</DictationExists>
<Is_Peer_Reviewed>>false</Is_Peer_Reviewed> <reading_id>2</reading_id>
<SortOrder>100</SortOrder> <FAX_STATUS>NO</FAX_STATUS> <PATIENT_AGE>55y</PATIENT_AGE>
<reading_physician_id>335</reading_physician_id>
<study_recvd_from>OPALIMPORT</study_recvd_from> <FLAG/> <TRANSCRIPTION_DATETIME>2012-
02-03T14:32:49.737-08:00</TRANSCRIPTION_DATETIME> <VALIDATE_DATETIME>2011-02-
23T10:08:26.183-08:00</VALIDATE_DATETIME> <tat>-1</tat>
<study_id_encrp>4D5459334F413D3D</study_id_encrp> </study> -<Table1>
<RECORDCOUNT>1</RECORDCOUNT> <STATCOUNT>0</STATCOUNT>
<TOTALCOUNT>795</TOTALCOUNT> <STATCOUNT1>0</STATCOUNT1>
<STATCOUNT2>0</STATCOUNT2> <STATCOUNT3>0</STATCOUNT3>
<STATCOUNT4>0</STATCOUNT4> <STATCOUNT5>0</STATCOUNT5> <TAT0>0</TAT0>
<TAT1>0</TAT1> <TAT2>0</TAT2> <TAT3>0</TAT3> </Table1> </opal>
```



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MDM Message with URL Linking:

MDM:

MSH|^~\&|PACS|VIZTEK|RECVSRC|RECVAPP|20091023101718||MDM^T02|20091023101718125|P|2.3|||AL|||

EVN|T02|20091023101718 PID|1|52175|52175|57908-2023001|Test^Patient^M||19960309|F|||||||57908-2023001|||||||

PV1|1|O||||^Not Real MD^^|||||||||||||||||||||||||||||||||^|^|

TXA|1|XR||20091023101552|^Not Real MD^^|||||254818|194829-1||DO|

OBX|1|ST|IMAGE_REF||<http://Demo.viztek.net/OpalWeb/IntegrationProcessor.aspx?CMD=OPENSTUDY&SUID=1.3.6.1.4.1.11157.2009.10.23.10.9.3.544>^Finger x-ray, 2+ views|||||F||20091023