ImageQube PACS

HL7 INTEGRATION SPECIFICATION

Version 10.9

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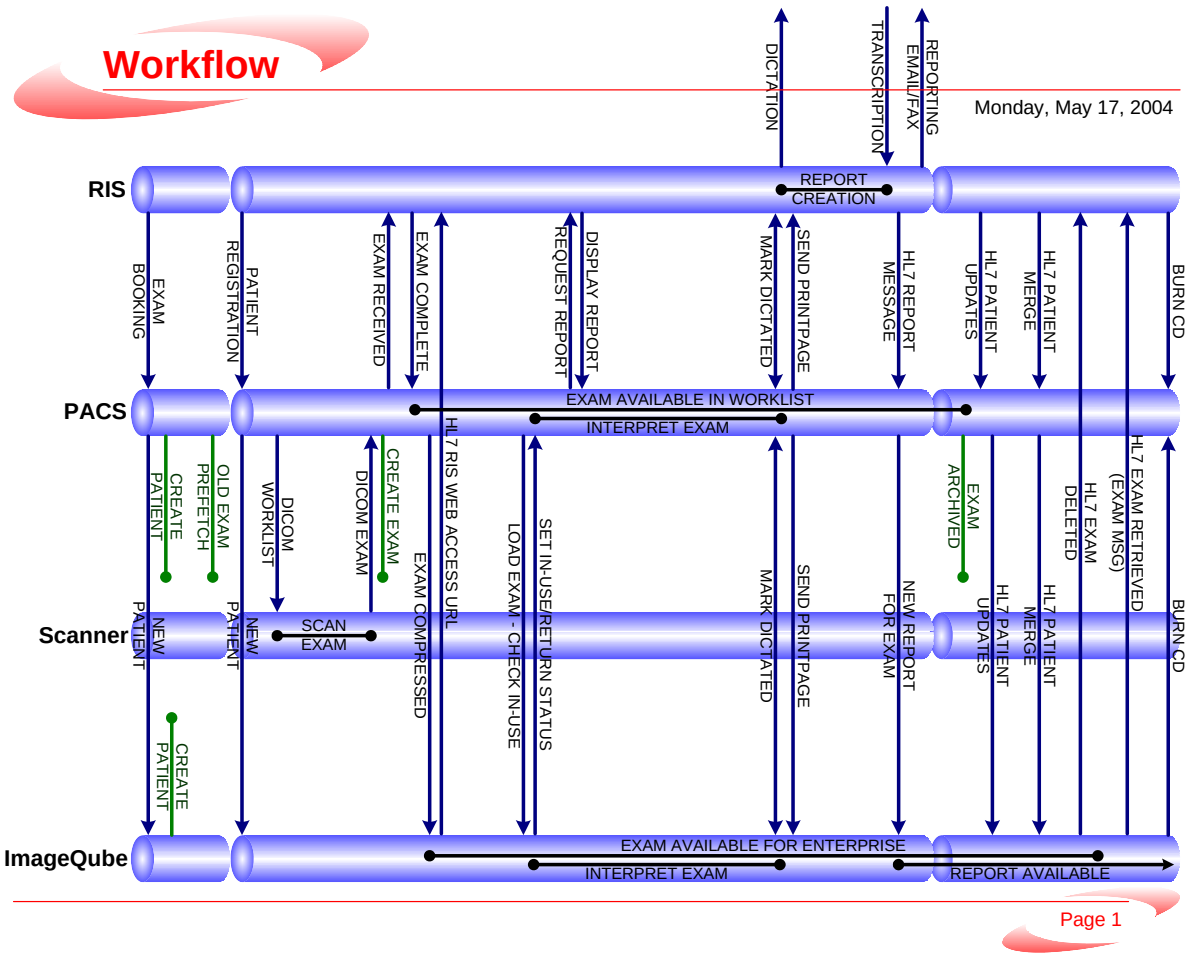
RIS Connectivity

1. SUMMARY

This document will describe the workflow between the RISQube, ImageQube and the Rational Imaging PACS system. The inter-system messaging is based on standard HL7 recommendations, and will use IHE standards and proprietary messages as necessary to accomplish the workflow illustrated below.



2. OVERVIEW OF HL7

The HL7 standard (Health Level 7) has been developed by a committee of healthcare providers, vendors, and consultants in order to standardize and make more efficient the communication of data between devices. The RIS system is a messaging system that stores and transfers related patient, dictated reports.

"The HL7 standard currently addresses the interfaces among various systems that send or receive patient admissions/registration, discharge or transfer (ADT) data, queries, resource and patient scheduling, orders, results, clinical observations, billing, master file update information, medical records, scheduling, patient referral, and patient care. It does not try to assume a particular architecture with respect to the placement of data within applications but is designed to support a central patient care system as well as a more distributed environment where data resides in departmental systems. HL7 serves as a way for inherently disparate applications and data architectures operating in a heterogeneous system environment to communicate with each other."

Please note that HL7 messages are divided into fields. To separate each field from its peers a "|" has been used. The "|" symbol is found at the end of each field. So, a three-field message would look like this:

Field1|Field2|Field3|

Along with this, the "^" is used to designate sub fields. For example, "Field1^subfield1|" would represent a single field with one associated sub field. As an example, patient name might be specified in a segment with the following syntax: "…|Smith^John^M|…". These standards are found in all HL7 messages to allow you to easily read through any unaltered HL7 message.

The following sample documents have been included to provide a more thorough view of the mechanics of the HL7 interface.

RIlink.orm- sample ORM scheduling/prefetch message containing data

RIlink.oru- sample ORU report message containing data

3. ASSUMPTIONS/LIMITATIONS

The capabilities outlined within this document are confidential, proprietary, and are provided as a working draft. The following sections define the integrated messaging between the RISQube and the PACS.

The scope of this document is to define operational message structures, and will defer HL7 basics to the HL7 documentation.

4. LICENSING:

RIS connectivity requires a separate license in addition to the normal diagnostic applications.

These can be obtained from the Intuitive Imaging website: www.IntuitiveImaging.com. Obtain a license for "RIS connectivity package" for the desired host.

5. MESSAGE DEFINITIONS

5.1. SCHEDULE EXAM (BOOKING) RIS → PACS

This message should be sent when the exam is scheduled, and before the day of the exam so that prefetching of old exams can occur.

MsgType=**ORM^O01**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

PID| | |MRN| |Last^First^M| |DOB|Sex| | | | | | |Married| | |SSN|DL|

OBR| |AccNo| |ServiceID|Priority| | | | | | | | | | | | | | | | | | | | | | | | | | | | |Reason|PrinInterp| | | |SchedDate|

III| | |Modality|ExamDesc|BodyPart|Scanner|

5.2. CANCEL PATIENT EXAM RIS → PACS

This message should be sent when the exam is canceled.

MsgType=**ADT^A38**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

PID| | |MRN| |Last^First^M| |DOB|Sex| | | | | | |Married| | |SSN|DL|

OBR| |AccNo|

5.3. PATIENT REGISTRATION RIS → PACS

This message should be sent when the patient registers at the front desk for the particular exam.

MsgType=**ADT^A04**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

PID| | |MRN| |Last^First^M| |DOB|Sex| | | | | | |Married| | |SSN|DL|

OBR| |AccNo| |ServiceID|Priority| | | | | | | | | | | | | | | | | | | | | | | | | | | | |Reason|PrinInterp| | | |SchedDate|

III| | |Modality|ExamDesc|BodyPart|Scanner|

5.4. CANCEL REGISTRATION RIS → PACS

This message should be sent if the exam scheduled has been canceled before it is performed.

MsgType=**ADT^A11**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

PID| | |MRN| |Last^First^M| |DOB|Sex| | | | | | |Married| | |SSN|DL|

OBR| |AccNo|

5.5. EXAM AVAILABLE ON PACS PACS → RIS

This message will be sent 5 minutes after the last image has been received from the scanner. This delay will help ensure that the entire exam is complete. If additional reconstructions are added later than 5 minutes, then this notification may be misleading. Hence, the tech should mark the exam complete on the RIS, and this message will be used to determine when to begin interpretation (see next message).

MsgType=**III^EA1**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

PID| | |MRN| |Last^First^M| |DOB|Sex| | | | | | | | | |SSN|DL|

OBR| |AccNo|

III|PatKey|ExamKey|

5.6. EXAM COMPLETE RIS → PACS

This message should be sent when the technologist marks the exam complete on the RIS. This should only be done when all reconstructions and post-processed images are complete and available on the PACS.

MsgType=**III^EC1**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

PID| | |MRN| |Last^First^M| |DOB|Sex| | | | | | | | | |SSN|DL|

OBR| |AccNo |

5.7. EXAM AVAILABLE ON IMAGEQUBE IQ → RIS

This message will be sent after the exam is available on the ImageQube. The exam must be marked complete first, and then processing will commence (approx 1-2 minutes per exam).

MsgType=**III^EA2**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

PID| | |MRN| |Last^First^M| |DOB|Sex| | | | | |Married| | |SSN|DL|

OBR| |AccNo|

III|PatKey|AccNo|Modality|Description|BodyPart|||||||||||||||URL|

5.8. REQUEST REPORT PACS/IQ ↔ RIS

This interface will consist of a browser request for a predefined report URL. No HL7 messaging is required in Phase 1 unless performance issues arise.

5.9. EXAM DICTATED PACS → RIS

This message will be sent when the reading radiologist marks the exam dictated on the PACS. This message will include the reading radiologists information "Radiologist".

MsgType=**III^ED1**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

PID| | |MRN| |Last^First^M| |DOB|Sex| | | | | | |Married| | |SSN|DL|

OBR| |AccNo| | | | | | | | | | | | | | | | | | | | | | | | | | | | |PrinInterp| | | | |

III|PatKey|ExamKey| | | | | |Radiologist|

5.10.EXAM PRINTPAGE PACS → RIS

This message will be sent when new printpages have been created.

MsgType=**III^EP1**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

PID| | |MRN| |Last^First^M| |DOB|Sex| | | | | | |Married| | |SSN|DL|

OBR| |AccNo|

III|PatKey|ExamKey| | | | |JpegFileName|Radiologist|PrintPageNo|

5.11.REPORT AVAILABLE RIS → PACS

This message will include the report and will be sent at the end of transcription and at the end of verification by the radiologist. The ObxStat designates the report as preliminary or signed.

MsgType=**ORU^R01**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

PID| | |MRN| |Last^First^M| |DOB|Sex| | | | | | |Married| | |SSN|DL|

OBR| |AccNo| |ServiceID|Priority| | | | | | | | | | | | | | | | | | | | | | | | |Reason|PrinInterp| | | |SchedDate|

OBX| |ObxType|ObxID| |Report| | | | | |ObxStat|

5.12.DELETE EXAM FROM PACS PACS → RIS

This message should be sent when the exam has been archived and removed from the on-line database tables.

MsgType=**III^DE1**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

PID| | |MRN| |Last^First^M| |DOB|Sex| | | | | | |Married| | |SSN|DL|

OBR| |AccNo|

III|PatKey|ExamKey|

5.13.PATIENT UPDATE RIS → PACS

This message should be sent when a demographic change has occurred for a patient. Both the MRN and AccNo are used for matching an exam to update. If multiple exams need to be changed for a patient name change, then multiple messages need to be sent.

MsgType=**ADT^A08**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

PID| | |MRN| |Last^First^M| |DOB|Sex| | | | | | |Married| | |SSN|DL|

OBR| |AccNo| | |Priority| | | | | | | | | | | | | | | | | | | | | | | | | | |PrinInterp|

5.14. PATIENT MERGE RIS → PACS

This message should be sent when two MRN numbers are merged into one. All exams associated with these MRN values will be merged.

MsgType=**ADT^A40**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

PID| | |MRN| |Last^First^M| |DOB|Sex| | | | | | |Married| | |SSN|DL|

OBR| |AccNo|

MRG|OldMRN|||patientID|| Last^First^M

5.15. DELETE EXAM FROM IMAGEQUBE IQ → RIS

This message should be sent when the exam has been deleted from the ImageQube.

MsgType=**III^DE2**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

PID| | |MRN| |Last^First^M| |DOB|Sex| | | | | | |Married| | |SSN|DL|

OBR| |AccNo|

III|PatKey|ExamKey|

5.16. EXAM RETRIEVED TO IMAGEQUBE IQ → RIS

The format of this message would be the same as when the exam becomes available on the ImageQube (specified previously).

MsgType=**III^EA2**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

PID| | |MRN| |Last^First^M| |DOB|Sex| | | | | | |Married| | |SSN|DL|

OBR| |AccNo|

III|PatKey|ExamKey|

5.17. ADD PHYSICIAN RIS → PACS

This message should be sent when the RIS adds a new radiologist. A new user will be added to the clinical database. They will still need to manually given permissions to the rilogin database at this time.

MsgType=**III^AP1**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

OBR| | | | | | |Radiologist| | | | | | |UserName|Address|Email|Phone|Fax|

5.18. DELETE PHYSICIAN RIS → PACS

This message should be sent when the RIS deletes a radiologist or makes them inactive. This will make the physician inactive in the PACS database (any user matching the UserName field). The username is still maintained as unique and will not be allowed to be used by other new users.

MsgType=**III^DP1**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

OBR| | | | | | |Radiologist| | | | | | |UserName|

5.19. ADD REFERRING RIS → PACS

This message should be sent when the RIS adds a referring physician. The referring information will be added to the PACS database.

MsgType=**III^AR1**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

OBR| | | | | | |Radiologist| | | | | | |UserName|Address|Email|Phone|Fax|

5.20. DELETE REFERRING RIS → PACS

This message should be sent when the RIS deletes a referring physician. The referring physician will be made inactive in the PACS database database (any user matching the UserName field). The physician will not be deleted and the username will remain unique and unusable by other new physicians.

MsgType=**III^DR1**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

OBR| | | | | | |Radiologist| | | | | | |UserName|

5.21. SYNCHRONIZE EXAM INFO IN DISPLAY PACS → RIS

This message should be sent by the PACS to update the exam information in the RIS information display.

MsgType=**III^ES1**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

PID| | |MRN| |Last^First^M| |DOB|Sex| | | | | | | | | |SSN|DL|

OBR| |AccNo |

III|PatKey|ExamKey| | | | |Radiologist| |IPaddress

additional III segment field

10) IPaddress: Ip address where the desktop application is running

5.22. ADD BURN CD RIS → PACS

This message should be sent by the RIS to request a CD of an exam.

MsgType=**III^CA1**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

PID| | |MRN| |Last^First^M| |DOB|Sex| | | | | | | | | |SSN|DL|

OBR| |AccNo |

III|PatKey|ExamKey| | | | | | | |Priority|compressFactor|Dicom|Ncopies|Instructions^With^LineFeeds^As^CarotChar|

additional III segment fields

11) Priority (values = 1-9 where 1 is highest priority)
12) compressFactor: (values = 0-200 where 0=Lossless)
13) DICOM: Include DICOM images (values = Y/N)
14) nCopies: Number of discs to burn (values > 0)
15) Instructions – Delivery instructions specific to site (Line Feeds specified by ^ within the two vertical separators).

5.23. DELETE BURN CD RIS → PACS

This message should be sent by the RIS to delete a request for a CD of an exam.

MsgType=**III^CD1**

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

PID| | |MRN| |Last^First^M| |DOB|Sex| | | | | | | | | |SSN|DL|

OBR| |AccNo |
III|PatKey| AccNo |

5.24. DETAIL FINANCIAL TRANSACTIONS RIS → BILLINGBROKER

This message will include the report and insurance segments and will be sent by email on a daily basis to the billing broker.

MsgType=**DFT^P03**

BHS| EncodeChar|SendApp |SendApp |hl7||DateTime||BatchId||BatchID

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

EVN|P03| Timestamp|TimeStamp||User

PID| | |MRN| |Last^First^M| |DOB|Sex| | | | | | |Married| | |SSN|DL|

PV1||PatientCategory||||||Referral||||||||||||BillingClass|

FT1||Id||TransDate|PostingDate|CG| ExamDesc |||1||||||CLR|D||ICD |Radiologist|||||CPT||

IN1|setid|plan|Payor|PayorAddress|PayorContactAgent|Phone|PolGrp||||PolEffDayr|PolEndDate|AuthId|PlanType|InsurerLast^First^M|Relationship|InsuredDOB||||||||||||||PolicyNo|

ACC||AccDate||Employer|||||AccidentDetails
BTS|MsgCount|BatchId|AmtTotal

6. APPENDIX A – MSH FIELDS

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac|DateTime| |MsgType|CtrlID|ProcID|Version|

1) **Field Separator:** First '|' character.

2) **EncodeChar**: This field contains the four characters in the following order: the component separator, repetition separator, escape character, and subcomponent separator. Recommended values are ^~\&

3) **SendApp**: This field uniquely identifies the sending application among all other applications within the network enterprise. The network enterprise consists of all those applications that participate in the exchange of HL7 messages within the enterprise. Entirely site-defined.

4) **SendFac**: This field contains the address of one of several occurrences of the same application within the sending system. Absent other considerations, the Medicare Provider ID might be used with an appropriate sub-identifier in the second component. Entirely user-defined.

5) **RecvApp**: This field uniquely identifies the receiving application among all other applications within the network enterprise. The network enterprise consists of all those applications that participate in the exchange of HL7 messages within the enterprise. Entirely site-defined.

6) **RecvFac**: This field identifies the receiving application among multiple identical instances of the application running on behalf of different organizations. See comments: *MSH-4-sending facility*. Entirely site-defined.

7) **DateTime**: This field contains the date/time that the sending system created the message. If the time zone is specified, it will be used throughout the message as the default time zone. (Format: YYYYMMDDHHMMSS)

9) **MsgType**: This field contains the message type and trigger event for the message. The first component is the message type edited by *HL7 table 0076 - Message type*; second is the trigger event code edited by *HL7 table 0003 - Event type*. The receiving system uses this field to know the data segments to recognize, and possibly, the application to which to route this message.

10) **CtrlID**: This field contains a number or other identifier that uniquely identifies the message. The receiving system echoes this ID back to the sending system in the Message acknowledgment segment

11) **ProcID**: This field is used to decide whether to process the message as defined in HL7 Application (level 7) Processing rules. The first component defines whether the message is part of a production, training, or debugging system (refer to *HL7 table 0103 - Processing ID* for valid values). The second component defines whether the message is part of an archival process or an initial load (refer to *HL7 table 0207 - Processing mode* for valid values). This allows different priorities to be given to different processing modes.

12) **Version**: Version of message structure.

7. APPENDIX B – PID FIELDS

PID| | |MRN| |Last^First^M| |DOB|Sex| | | | | | |Married| | |SSN|DL|

3) **MRN**: This field contains the primary identifier, or other identifiers used by the facility to identify a patient uniquely. (PACS supports 12 characters through version 7.2)

5) **Last^First^M**: This field contains the legal name of the patient. It is ordered by Last Name with the First Name and Middle Initial being subsequent sub fields.

7) **DOB**: This field contains the patient's date and time of birth. (Format: YYYYMMDD)

8) **Sex**: This field contains the patient's sex.

16) **Married**: Married status

19) **SSN**: This field contains the patient's Social Security Number.

20) **DL**: Drivers License

8. APPENDIX C – OBR FIELDS

OBR| |AccNo| |ServiceID|Priority| | | | | | | | | | | | | | | | | | | | | | | |Reason|PrinInterp| | | |SchedDate|

2) **AccNo**: This is the exam unique accession number that all data will be associated with. (PACS supports 32 characters through version 7.2).

4) **ServiceID**: Exam requested. This field is the identifier code for the requested observation/test/battery. This can be based on local and/or "universal" codes. (Format ###^Description).

5) **Priority**: Exam priority.

13) **Relevant Clinical Info**

16) **Referring Physician** (Format: ###^Last^First^Middle where ### is the UPIN physician number)

17) **Referring Physician Phone**

18) **Referring Physician email**

19) **Referring Physician address**

20) **Referring Physician fax**

31) **Reason**: Brief patient history for the exam.

32) **PrinInterp**: This field identifies the physician or other clinician who interpreted the observation and is responsible for the report content. (Format: ###^Last^First^Middle where ### is the RIS unique physician number)

36) **SchedDate**: This field is the date/time the filler scheduled an observation. (Format: YYYYMMDDHHMMSS)

9. APPENDIX D – OBX FIELDS

OBX| |ObxType|ObxID| |Report| | | | |ObxStat|

2) **ObxType**: This field contains the format of the observation value in OBX.

3) **ObxID**: This field contains the observation ID.

5) **Report**: Field containing the main report. The report text must not contain the field separator '|'.

11) **ObxStat**: Order Status. This defines whether the report has been signed or is still the preliminary report.

10. APPENDIX E – III FIELDS

III|PatKey|ExamKey|Modality|ExamDesc|BodyPart|Scanner|JpegFileName|Radiologist|PrintPageNo|

1) **PatKey**: Unique sequential identification number for the PACS patient table. (numeric)

2) **ExamKey**: Unique sequential identification number for the PACS exam table. (numeric)

3) **Modality**: DICOM modality (2 characters).

4) **ExamDesc**: Exam description. (Length of ExamDesc should not exceed 28 characters). This field includes the ServiceID from the OBR and any modifiers which will provide differentiation of the acquisition protocols requested. (Format: ###^Description).

5) **BodyPart**: DICOM body part examined.

6) **Scanner**: Scanner ID. (32 characters)

7) **JpegFileName**: NFS filename for printpage in Jpeg format (/net/host/img/PrintPage###).

8) **Radiologist**: Radiologist or Referring number and name (format: UPIN^Last^First^Middle).

9) **PrintPageNo**: Unique number for each printpage (1-n). Overwrite if already exists since modifications could have been made.

10) **IP Address**: IP address of host displaying exam

11) **Priority**: (values = 1-9 where 1 is highest priority)

12) **compressFactor**: (values = 0-200 where 0=Lossless)

13) **DICOM**: Include DICOM images (values = Y/N)

14) **nCopies**: Number of discs to burn (values > 0)

15) **Instructions**: Delivery instructions specific to site (Line Feeds specified by ^ within the two vertical separators).

16) **Radiologist Username**: Radiologist or Referring username (must be unique for all radiologists and referring physicians)

17) **Radiologist Address:** Address for Radiologist or Referring (^ is line feed)

18) **Radiologist Email**: Email address for Radiologist or Referring

19) **Radiologist Phone:** Phone number for Radiologist or Referring

20) **Radiologist Fax:** Fax number for Radiologist or Referring

21) **Radiologist pw**

22) **ImageURL:**https:<IQ_HTTPS_server>/IQBase/api?pa=<medical_report_number>&pb=<accession_key>&pc=<exam_key>&pd=<facility_id>

11. APPENDIX F – FT1 MESSAGES

2)	**Transaction Id**:	Invoice line item reference
3)	**Transaction Batch Id**	Invoice No
4)	**Transaction Date**	Procedure service date YYYYMMDD
5)	**Transaction Posting**	Invoice approval date YYYYMMDD
6)	**Transaction Type**	Always CG for Charge
7)	**Transaction Code**	Procedure Code
10)	**Transaction Quantity**	Number of Units
16)	**Facility Code**	
17)	**Price List**	
19)	**ICD9**	Diagnosis format (code^description^I9)
20)	**Radiologist**	format: UPIN^Last^First^Middle
25)	**Procedure CPT**	format (code^description)
26)	**Procedure Code Modifier**	

12. APPENDIX G – IN1 MESSAGES

1)	**Set ID**:	1 primary,2 secondary ,3 tertiary
2)	**Insurance Plan**	
4)	**Insurance Company**	format (code^name)
5)	**Insurance Company Address**	format (address^city^state^zip)
6)	**Insurance Company Contact**	
7)	**Insurance Company Phone**	
8)	**Insurance Plan Group No**	
12)	**Insurance Plan Effective From**	format (YYYYMMDD)
13)	**Insurance Plan Expiry Date**	format (YYYYMMDD)
14)	**Authorization Id**	
15)	**Insurance Plan Description**	
16)	**Name of Insured**	Last^First^Middle
17)	**Patients relationship to Insurers**	SELF,SPOUSE,CHILD,OTHER

18) **Insured DOB** format (YYYYMMDD)

19) **Insured Address**

36) **Insurance Policy No**

43) **Insured Sex**

13. APPENDIX H – PV1 MESSAGES

Accident Segment

2) **Patient Category**: O Outpatient

3) **Patient Tracking**

8) **Referral** UPIN^ Last^First^Middle

16) **VIP indicator**

20) **Visit no** Patient visit no

21) **Billing Class** Billing

14. APPENDIX I – ACC MESSAGES

Accident Segment

2) **Accident Date**: This field contains the date/time of the accident

4) **Employer**

9) **Accident Details**

15. APPENDIX J – EVN MESSAGES

2) **Event Code**: Always P03

3) **Date** Timestamp (YYYYMMDDHH24MISS)

5) **User** Staff Name

16. APPENDIX K - ACK MESSAGES

Acknowledge messages are not required, but are available by configuration. The received message CtrlID is returned in the MSA segment to acknowledge receipt of the message. The ACK response is sent directly following reception of the message.

MSH|EncodeChar|SendApp|SendFac|RecvApp|RecvFac| | |MsgType|CtrlID|ProcID|Version|

MSA|AA|CtrlID|