American College of Radiology™
Data Science Institute

Assess-AI

Ingest Specification

Version 2.1 | Oct. 16, 2024

DOCUMENT REVISION HISTORY			
Revision #	**Revision Description**	**Author**	**Effective Date**
1.0	Initial version	B. Bialecki	July 1, 2024
1.1	Add retrieving algorithm result csv via HTTP	B. Bialecki	Aug. 7, 2024
1.2	Add requirements that only reports with 'FINAL' status are sent to interface	B. Bialecki	Aug. 13, 2024
1.3	Add schema updates for algorithms which produce multiple results	B. Bialecki	Aug. 16, 2024
1.4	Add reporting physician information to report schema	B. Bialecki	Aug. 23, 2024
1.5	Clarify DICOM transfer communication and timeout	B. Bialecki	Aug. 28, 2024
1.6	Add Appendix for Assess-AI Compliant Systems	B. Bialecki	Aug. 30, 2024
2.0	Updates to multiple AI Results, AI Result schema, and clarifications throughout. Add Powerscribe360 Utility support and DICOM SR support based on IHE AIR. Include Data Dictionary as an Appendix.	B. Bialecki	Sept. 12, 2024
2.1	Platform added to AI Result Data Dictionary with mappings	B. Bialecki	Oct. 16, 2024

Table of Contents

Note

This is a working document and describes features that may be under development, please refer to heading for those mechanisms not currently supported in the current release.

Purpose

The purpose of this specification is to list the acceptable ingestion interfaces, along with schema requirements for data to be used for submission to the American College of Radiology® (ACR®) National Radiology Data Registry (NRDR®) for Assess-AI.

The Assess-AI Registry provides monitoring of algorithm performance in clinical practice by capturing real-world data during clinical use. Assess-AI combines specific information related to an algorithm's effectiveness reported by radiologists at the point of care, as well as specific metadata related to the exam as specified in Define-AI use cases. Metadata includes information such as equipment manufacturer, magnetic field strength or number of CT detectors and other relevant examination parameters, as well as relevant demographic data about the patient.

Scope

The ACR Assess-AI Registry will capture algorithm results, report text and DICOM metadata to measure algorithm performance in real-world settings. This will be used to provide feedback to the clinical users as well as provide data for benchmarking. Data will be submitted via the Assess-AI app on ACR Connect. ACR Connect supports manual upload, as well as providing HL7v2, FHIR and DICOM interfaces.

Patient IDs, Accession Numbers and Physician ID use ACR Connect's Master Patient Index (MPI) Service to deidentify values prior to submission. Only the submitting site has the ability to access the mapping information.

Report text is processed within the Assess-AI application and ACR Connect platform prior to submission. Detected patient health information (PHI) is removed through data obfuscation.

Algorithm Results

The preferred method of capture of algorithm results will be via interface with the algorithm vendor or its hosting platform. ACR also prefers that results are encoded as common data elements (CDEs) when communicated. (https://www.radelement.org/)

AI results shall contain the following items at a minimum:

- Patient Identifier — The ID for the patient for the DICOM study which was evaluated.
- Accession Number — The accession number for the DICOM study which was evaluated.
- Study Date — The date of the imaging study for which the AI result is provided.
- Result Indicator — The unique name for the use case or indication of a particular output provided by an algorithm.

- AI Result — The result(s) output from the algorithm after evaluation of the DICOM study
- Manufacturer — The algorithm or platform manufacturer.
- Model — The unique name which represents the algorithm to the platform or manufacturer.
- Software Version — The algorithm software version at instantiation for the inference request for this result.
- Platform — Name of system which hosts the algorithm if it is not the algorithm manufacturer itself, in cases where the host and manufacturer are the same this value will duplicate the manufacturer value.
- Inference Date — The date in which the inference was initiated.

AI result may additionally contain the following items which would be extracted based on the ingestion method selected.

- Age — The patient age at the time of the exam.
- Sex — Patient sex at birth.
- Race — Code from FHIR US Core Rave Value Set or HL7 Race table 0005.
- Ethnicity — Code from FHIR US Core Ethnicity Value Set or HL7 Ethnic Group table 0189.
- Exam Name — Study description of imaging study performed.
- Modality — The DICOM imaging modality code(s) on which the study was acquired
- Body Part Examined — The body part from the DICOM defined term table which corresponds to the exam performed (https://dicom.nema.org/medical/dicom/current/output/chtml/part16/chapter_l.html).
- Contrast Indication — Boolean (yes/no) whether contrast was used during image acquisition.

CSV Submission

CSV submissions will be done either through manual upload in the Assess-AI app on ACR Connect or by configuring an HTTP endpoint within the app for recurrent collection. In either scenario, the schema remains.

Manual CSV Submission

This can be accomplished via drag and drop window or browsing of local or network resources for objects. ACR Connect can also be configured with a “hot” folder within the ACR Connect app where the application will check for new files to process. Files will only be processed from the root folder. The interval default is 15 minutes but is configurable in the ACR Connect app as well.

HTTP CSV Retrieval

For HTTP retrieval ACR Connect will be configured with a start date, retrieval interval not less than daily, a filename stub to be used, and a GET endpoint. The producer will place the CSV at the endpoint at the appropriate intervals appended with the date in YYYYMMDD format and shall keep at a minimum the last ten (10) csv's available for reprocessing as needed by ACR Connect. The HTTP endpoint will allow for and index search as well as direct download. See example below for further clarification.

Schema

Patient Identifier,Accession Number,Study Date,Result Indicator,AI Result,Manufacturer,-Model,Software Version,Platform,Inference Date,Age,Sex,Race,Ethnicity,Exam Name, Modality,Body Part Examined,Contrast Indication

Note: When multiple results are produced as the result of inference using a particular model a unique row will be created for each Result Indicator.

HTTP Configuration and File Naming

ACR Connect Configuration:

- Start Date — 7-Aug-2024
- Interval — Weekly – Wednesday
- Filename Stub — AssessAI_PlatformXYZ_
- GET Endpoint — https://platformxyz.hospitala.org/outputs/

Valid files on 9-Sept-2024:

- AssessAI_PlatformXYZ_20240807.csv
- AssessAI_PlatformXYZ_20240814.csv
- AssessAI_PlatformXYZ_20240821.csv
- AssessAI_PlatformXYZ_20240828.csv
- AssessAI_PlatformXYZ_20240904.csv

The endpoint shall provide an index return for 'GET https://platformxyz.hospitala.org/outputs/'

```
[
{"name": "AssessAI_PlatformXYZ_20240807.csv"},
{"name": "AssessAI_PlatformXYZ_20240814.csv"},
{"name": "AssessAI_PlatformXYZ_20240821.csv"},
{"name": "AssessAI_PlatformXYZ_20240828.csv"},
{"name": "AssessAI_PlatformXYZ_20240904.csv"}
]
```

To download an individual file the endpoint shall support:

'GET http://platformxyz.hospitala.org/outputs/AssessAI_PlatformXYZ_20240904.csv'

Examples

CDE Encoded Algorithm Result Example – Single Output

- Patient Identifier — PID-123-ABC
- Accession Number — AN123456
- Study Date — 20240624
- Result Indicator — Presence
- AI Result — RDE421.0
- Manufacturer — Company B
- Model — Pneumothorax Triage
- Software Version — 44.1.2.3
- Platform — PlatformXYZ
- Inference Date — 20240624

```
PID-123-ABC,AN123456,20240624,presence,RDE421.0,Company B,Pneumothorax Triage,44.1.2.3,
PlatformXYZ,20240624
```

CDE Encoded Algorithm Result Example – Multiple Outputs

- Patient Identifier — PID-123-ABC
- Accession Number — AN123456
- Study Date — 20240624
- Result Indicator — Presence
- AI Result — RDE421.0
- Result Indicator — side
- AI Result — RDE423.1
- Result Indicator — Size
- AI Result — RDE424.2
- Manufacturer — Company B
- Model — Pneumothorax Triage
- Software Version — 44.1.2.3
- Platform — PlatformXYZ
- Inference Date — 20240624

```
PID-123-ABC,AN123456,20240624,presence,RDE421.0,Company B,Pneumothorax Triage,44.1.2.3,
PlatformXYZ,20240624

PID-123-ABC,AN123456,20240624,side,RDE423.1,Company B,Pneumothorax Triage,44.1.2.3,
PlatformXYZ,20240624

PID-123-ABC,AN123456,20240624,size,RDE424.2,Company B,Pneumothorax Triage,44.1.2.3,
PlatformXYZ,20240624
```

Non-CDE Encoded Algorithm Result Example – Single Output

- Patient Identifier — PID-123-ABC
- Accession Number — AN123456
- Study Date — 20240624
- Result Indicator — Presence
- AI Result — Present
- Manufacturer — Company B
- Model — Pneumothorax Triage

- Software Version — 44.1.2.3
- Platform — PlatformXYZ
- Inference Date — 20240624

```
PID-123-ABC,AN123456,20240624,presence,Present,Company B,Pneumothorax Triage,
44.1.2.3,PlatformXYZ,20240624
```

Non-CDE Encoded Algorithm Result Example – Multiple Outputs

- Patient Identifier — PID-123-ABC
- Accession Number — AN123456
- Study Date — 20240624
- Result Indicator — Presence
- AI Result — Present
- Result Indicator — Side
- AI Result — Right
- Result Indicator — Size
- AI Result — Large
- Manufacturer — Company B
- Model — Pneumothorax Triage
- Software Version — 44.1.2.3
- Platform — PlatformXYZ
- Inference Date — 20240624

```
PID-123-ABC,AN123456,20240624,presence,Present,Company B,Pneumothorax Triage,
44.1.2.3,PlatformXYZ,20240624

PID-123-ABC,AN123456,20240624,side,Right,Company B,Pneumothorax Triage,
44.1.2.3,PlatformXYZ,20240624

PID-123-ABC,AN123456,20240624,size,Large,Company B,Pneumothorax Triage,
44.1.2.3,PlatformXYZ,20240624
```

HL7v2 Submission

HL7v2 submissions will be accepted via an interface configured in the Assess-AI app on ACR Connect.

Schema

Required:

Patient Identifier — PID 3.1 (Patient Identifier List) Value 1

Accession Number — ORC 3.1 (Filler Order Number)

Study Date — OBX 5 where OBX 2 (Value Type) = DT and OBX 3 (Observation Identifier) = StudyDate

Result Indicator — OBX 3 (Observation Identifier)

AI Result — OBX 5 (Observation Value)

Platform — OBX 15.2 (Producer's ID.Text) where OBX 15.1 (Producer's ID.Identifier) = Platform

Manufacturer — OBX 18.3 (Equipment Instance Identifier.Universal ID) Value 3 where OBX 18.4 (Equipment Instance Identifier.Universal ID Type) = L

Model — OBX 18.3 (Equipment Instance Identifier.Universal ID) Value 2 where OBX 18.4 (Equipment Instance Identifier.Universal ID Type) = M

Software Version — OBX 18.3 (Equipment Instance Identifier.Universal ID) Value 1 where OBX 18.4 (Equipment Instance Identifier.Universal ID Type) = N

Inference Date — OBX 14 (Date/Time of the Observation)

Message Header Requirements:

MSH 3 (Sending Application) = Name of the Platform as in OBX 15.2

MSH 5 (Receiving Application) = ACR Assess-AI Data Registry

Optional:

Race — PID 10 (Race)
Ethnicity — PID 22 (Ethnic Group)
Sex — PID 8 (Administrative Sex)

Note: When multiple results are produced as the result of inference using a particular model a unique OBX segment will be created for each Result Indicator.

Examples

CDE Encoded Algorithm Result Example – Single Output

- Patient Identifier — PID-123-ABC
- Accession Number — AN123456
- Study Date — 20240624
- Result Indicator — Presence
- AI Result — RDE421.0
- Manufacturer — Company B
- Model — Pneumothorax Triage
- Software Version — 44.1.2.3
- Platform — PlatformXYZ
- Inference Date — 20240624
- Race — 2106-03 (White)
- Ethnicity — N (Not Hispanic or Latino)
- Sex — M (Male)

```
MSH|^~\&|PlatformXYZ||ACR Assess-AI Data Registry||202406241056||ORU^R01|6182847|P|2.5
PID|||PID-123-ABC||JONES^JAMES||19651220|M||2106-3||||||||||||N
ORC|||AN123456
OBX|1|DT|StudyDate||20240624||||||F
OBX|2|ST|presence||RDE421.0||||||P|||202406241055|Platform^PlatformXYZ|||^^44.1.2.3^N~^^Pneu-
mothorax Triage^M~^^Company B^L
```

CDE Encoded Algorithm Result Example – Multiple Outputs

- Patient Identifier — PID-123-ABC
- Accession Number — AN123456
- Study Date — 20240624
- Result Indicator — Presence
- AI Result — RDE421.0
- Result Indicator — Side
- AI Result — RDE423.1
- Result Indicator — Size
- AI Result — RDE424.2
- Manufacturer — Company B
- Model — Pneumothorax Triage
- Software Version — 44.1.2.3
- Platform — PlatformXYZ
- Inference Date — 20240624
- Race — 2106-03 (White)
- Ethnicity — N (Not Hispanic or Latino)
- Sex — M (Male)

```
MSH|^~\&|PlatformXYZ||ACR Assess-AI Data Registry||202406241056||ORU^R01|6182847|P|2.5
PID|||PID-123-ABC||JONES^JAMES||19651220|M||2106-3||||||||||||N
ORC|||AN123456
OBX|1|DT|StudyDate||20240624||||||F
OBX|2|ST|presence||RDE421.0||||||P|||202406241055|Platform^PlatformXYZ|||^^44.1.2.3^N~^^Pneu-
mothorax Triage^M~^^Company B^L
OBX|3|ST|side||RDE423.1||||||P|||202406241055|Platform^PlatformXYZ|||^^44.1.2.3^N~^^Pneumo-
thorax Triage^M~^^Company B^L
OBX|4|ST|size||RDE424.2||||||P|||202406241055|Platform^PlatformXYZ|||^^44.1.2.3^N~^^Pneumo-
thorax Triage^M~^^Company B^L
```

Non-CDE Encoded Algorithm Result Example – Single Output

- Patient Identifier — PID-123-ABC
- Accession Number — AN123456
- Study Date — 20240624
- Result Indicator — Presence
- AI Result — Present
- Manufacturer — Company B
- Model — Pneumothorax Triage
- Software Version — 44.1.2.3
- Platform — PlatformXYZ
- Inference Date — 20240624
- Race — 2106-03 (White)
- Ethnicity — N (Not Hispanic or Latino)
- Sex — M (Male)

```
MSH|^~\&|PlatformXYZ||ACR Assess-AI Data Registry||202406241056||ORU^R01|6182847|P|2.5
PID|||PID-123-ABC||JONES^JAMES||19651220|M||2106-3||||||||||||N
ORC|||AN123456
OBX|1|DT|StudyDate||20240624||||||F
```

```
OBX|2|ST|presence||present||||||P|||202406241055|Platform^PlatformXYZ|||^^44.1.2.3^N~^^Pneu-
mothorax Triage^M~^^Company B^L
```

Non-CDE Encoded Algorithm Result Example – Multiple Outputs

- Patient Identifier — PID-123-ABC
- Accession Number — AN123456
- Study Date — 20240624
- Result Indicator — Presence
- AI Result — Present
- Result Indicator — Side
- AI Result — Right
- Result Indicator — Size
- AI Result — Large
- Manufacturer — Company B
- Model — Pneumothorax Triage
- Software Version — 44.1.2.3
- Platform — PlatformXYZ
- Inference Date — 20240624
- Race — 2106-03 (White)
- Ethnicity — N (Not Hispanic or Latino)
- Sex — M (Male)

```
MSH|^~\&|PlatformXYZ||ACR Assess-AI Data Registry||202406241056||ORU^R01|6182847|P|2.5
PID|||PID-123-ABC||JONES^JAMES||19651220|M||2106-3||||||||||||N
ORC|||AN123456
OBX|1|DT|StudyDate||20240624||||||F
OBX|2|ST|presence||present||||||P|||202406241055|Platform^PlatformXYZ|||^^44.1.2.3^N~^^Pneu-
mothorax Triage^M~^^Company B^L
OBX|3|ST|side||right||||||P|||202406241055|Platform^PlatformXYZ|||^^44.1.2.3^N~^^Pneumothorax
Triage^M~^^Company B^L
OBX|4|ST|size||large||||||P|||202406241055|Platform^PlatformXYZ|||^^44.1.2.3^N~^^Pneumothorax
Triage^M~^^Company B^L
```

FHIR Submission

FHIR submissions will be accepted via an interface configured in the Assess-AI app on ACR Connect. The format for AI results in FHIR will be an HL7 FHIR compliant observation resource. (https://build.fhir.org/observation.html)

Schema

Patient Identifier — Observation.subject.identifier.value

Accession Number — Observation.derivedFrom.identifier.value

Category — Observation.category = “text”: “Assess AI Data Registry”

Study Date — Observation.effectiveDateTime

Result Indicator

- CDE Encoded — Observation.code.coding = “code”: “*Radelement.org Set ID*” and Observation.component.code = “*Radelement.org Element ID*”
- Non-CDE Encoded — Observation.code = “text”: “AI Result”

AI Result

- CDE Encoded — Observation.component.value where Observation.component.code = “*Radelement.org Element ID*”
- Non-CDE Encoded — Observation.valueString

Model — Observation.component.valueString where Observation.component.code = “67716-1” (LOINC Vendor Device Model)

Manufacturer — Observation.component.valueString where Observation.component.code = “74719-6” (LOINC Manufacturer)

Software Version — Observation.component.valueString where Observation.component.code = “LP35922-1” (LOINC Vendor Software Version)

Platform — Observation.device.identifier.value

Inference Date — Observation.issued

Note: When multiple results are produced as the result of inference using a particular model, the AI result values shall be sent as individual observation resources when they are non-CDE encoded or when CDEs are from differing RadElement Sets. When these are CDE encoded and the RDE Codes are part of the same RadElement Set, they shall be listed as individual components in the observation.

Examples

CDE Encoded Algorithm Result Example – Single Output

- Patient Identifier — PID-123-ABC
- Accession Number — AN123456
- Study Date — 20240624
- Result Indicator — Presence
- AI Result — RDE421.0
- Manufacturer — Company B
- Model — Pneumothorax Triage
- Software Version — 44.1.2.3
- Platform — PlatformXYZ
- Inference Date — 20240624


```
{
    “resourceType”: “Observation”,
    “status”: “preliminary”,
    “category”: [
        {
            “text”: “Assess AI Data Registry”
```

```
    }
    ],
"code": {
    "coding": [
        {
        "system": "http://radelement.org",
        "code": "RDES44",
        "display": "Pneumothorax"
        }
    ]
},
"subject": {
    "type": "Patient",
    "identifier": {
        "type": {
            "coding": [
                {
                "system": "http://terminology.hl7.org/CodeSystem/v2-0203",
                "code": "PI",
                "display": "Patient internal identifier"
                }
            ]
        },
        "value": "PID-123-ABC"
    }
},
"effectiveDateTime": "2024-06-24T12:33:22Z",
"issued": "2024-06-24T12:44:11Z",
"device": {
    "type": "Device",
    "identifier": {
        "type": {
            "coding": [
                {
                "system": "http://terminology.hl7.org/CodeSystem/v2-0203",
                "code": "LR",
                "display": "Local Registry ID"
                }
            ]
        },
        "value": "PlatformXYZ"
    }
},
"derivedFrom": {
    "type": "ImagingStudy",
    "identifier": {
        "type": {
            "coding": [
                {
                "system": "http://terminology.hl7.org/CodeSystem/v2-0203",
                "code": "ACSN",
                "display": "Accession ID"
                }
            ]
        },
        "value": "AN123456"
    }
},
"component": [
    {
        "code": {
            "coding": [
```

```
                    {
                    "system": "http://radelement.org",
                    "code": "RDE421",
                    "display": "Presence"
                    }
                ]
            },
            "valueCodeableConcept": {
                "coding": [
                    {
                    "system": "http://radelement.org",
                    "code": "RDE421.0",
                    "display": "present"
                    }
                ]
            }
        },
        {
            "code": {
                "coding": [
                    {
                    "system": "http://loinc.org",
                    "code": "74719-6",
                    "display": "Manufacturer"
                    }
                ]
            },
            "valueString": "Company B"
        },
        {
            "code": {
                "coding": [
                    {
                    "system": "http://loinc.org",
                    "code": "67716-1",
                    "display": "Vendor Device Model"
                    }
                ]
            },
            "valueString": "Pneumothorax Triage"
        },
        {
            "code": {
                "coding": [
                    {
                    "system": "http://loinc.org",
                    "code": "LP35922-1",
                    "display": "Vendor Software Version"
                    }
                ]
            },
            "valueString": "44.1.2.3"
        }
    ]
}
```

CDE Encoded Algorithm Result Example – Multiple Outputs

- Patient Identifier — PID-123-ABC
- Accession Number — AN123456
- Study Date — 20240624
- Result Indicator — Presence
- AI Result — RDE421.0
- Result Indicator — Side
- AI Result — RDE423.1
- Result Indicator — Size
- AI Result — RDE424.2
- Manufacturer — Company B
- Model — Pneumothorax Triage
- Software Version — 44.1.2.3
- Platform — PlatformXYZ
- Inference Date — 20240624


```
{
    "resourceType": "Observation",
    "status": "preliminary",
    "category": [
        {
            "text": "Assess AI Data Registry"
        }
        ],
    "code": {
        "coding": [
            {
            "system": "http://radelement.org",
            "code": "RDES44",
            "display": "Pneumothorax"
            }
        ]
    },
    "subject": {
        "type": "Patient",
        "identifier": {
            "type": {
                "coding": [
                    {
                    "system": "http://terminology.hl7.org/CodeSystem/v2-0203",
                    "code": "PI",
                    "display": "Patient internal identifier"
                    }
                ]
            },
            "value": "PID-123-ABC"
        }
    },
    "effectiveDateTime": "2024-06-24T12:33:22Z",
    "issued": "2024-06-24T12:44:11Z",
    "device": {
        "type": "Device",
        "identifier": {
            "type": {
                "coding": [
                    {
                    "system": "http://terminology.hl7.org/CodeSystem/v2-0203",
                    "code": "LR",
```

```
                    "display": "Local Registry ID"
                    }
                ]
            },
            "value": "PlatformXYZ"
        }
    },
    "derivedFrom": {
        "type": "ImagingStudy",
        "identifier": {
            "type": {
                "coding": [
                    {
                    "system": "http://terminology.hl7.org/CodeSystem/v2-0203",
                    "code": "ACSN",
                    "display": "Accession ID"
                    }
                ]
            },
            "value": "AN123456"
        }
    },
    "component": [
        {
            "code": {
                "coding": [
                    {
                    "system": "http://radelement.org",
                    "code": "RDE421",
                    "display": "Presence"
                    }
                ]
            },
            "valueCodeableConcept": {
                "coding": [
                    {
                    "system": "http://radelement.org",
                    "code": "RDE421.0",
                    "display": "present"
                    }
                ]
            }
        },
        {
            "code": {
                "coding": [
                    {
                    "system": "http://radelement.org",
                    "code": "RDE423",
                    "display": "side"
                    }
                ]
            },
            "valueCodeableConcept": {
                "coding": [
                    {
                    "system": "http://radelement.org",
                    "code": "RDE423.1",
                    "display": "right"
                    }
                ]
            }
        },
```

```
        {
            "code": {
                "coding": [
                    {
                    "system": "http://radelement.org",
                    "code": "RDE424",
                    "display": "size"
                    }
                ]
            },
            "valueCodeableConcept": {
                "coding": [
                    {
                    "system": "http://radelement.org",
                    "code": "RDE424.2",
                    "display": "large"
                    }
                ]
            }
        },
        {
            "code": {
                "coding": [
                    {
                    "system": "http://loinc.org",
                    "code": "74719-6",
                    "display": "Manufacturer"
                    }
                ]
            },
            "valueString": "Company B"
        },
        {
            "code": {
                "coding": [
                    {
                    "system": "http://loinc.org",
                    "code": "67716-1",
                    "display": "Vendor Device Model"
                    }
                ]
            },
            "valueString": "Pneumothorax Triage"
        },
        {
            "code": {
                "coding": [
                    {
                    "system": "http://loinc.org",
                    "code": "LP35922-1",
                    "display": "Vendor Software Version"
                    }
                ]
            },
            "valueString": "44.1.2.3"
        }
    ]
}
```

Non-CDE Encoded Algorithm Result Example

- Patient Identifier — PID-123-ABC
- Accession Number — AN123456
- Study Date — 20240624
- Result Indicator — Presence
- AI Result — Present
- Manufacturer — Company B
- Model — Pneumothorax Triage
- Software Version — 44.1.2.3
- Platform — PlatformXYZ
- Inference Date — 20240624


```
{
    “resourceType”: “Observation”,
    “status”: “preliminary”,
    “category”: [
        {
            “text”: “ Assess AI Data Registry “
        }
        ],
    “code”: {
        “text”: “present”
    },
    “subject”: {
        “type”: “Patient”,
        “identifier”: {
            “type”: {
                “coding”: [
                    {
                    “system”: “http://terminology.hl7.org/CodeSystem/v2-0203”,
                    “code”: “PI”,
                    “display”: “Patient internal identifier”
                    }
                ]
            },
            “value”: “PID-123-ABC”
        }
    },
    “valueString”: “YourAiResultValue”,
    “effectiveDateTime”: “2024-06-24T12:33:22Z”,
    “issued”: “2024-06-24T12:44:11Z”,
    “device”: {
        “type”: “Device”,
        “identifier”: {
            “type”: {
                “coding”: [
                    {
                    “system”: “http://terminology.hl7.org/CodeSystem/v2-0203”,
                    “code”: “LR”,
                    “display”: “Local Registry ID”
                    }
                ]
            },
            “value”: “PlatformXYZ”
        }
    },
```

```
    "derivedFrom": {
        "type": "ImagingStudy",
        "identifier": {
            "type": {
                "coding": [
                    {
                    "system": "http://terminology.hl7.org/CodeSystem/v2-0203",
                    "code": "ACSN",
                    "display": "Accession ID"
                    }
                ]
            },
            "value": "AN123456"
        }
    },
    "component": [
        {
            "code": {
                "coding": [
                    {
                    "system": "http://loinc.org",
                    "code": "74719-6",
                    "display": "Manufacturer"
                    }
                ]
            },
            "valueString": "Company B"
        },
        {
            "code": {
                "coding": [
                    {
                    "system": "http://loinc.org",
                    "code": "67716-1",
                    "display": "Vendor Device Model"
                    }
                ]
            },
            "valueString": "Pneumothorax Triage"
        },
        {
            "code": {
                "coding": [
                    {
                    "system": "http://loinc.org",
                    "code": "LP35922-1",
                    "display": "Vendor Software Version"
                    }
                ]
            },
            "valueString": "44.1.2.3"
        }
    ]
}
```

DICOM Submission — Not Supported in Current Version

In alignment with those who have implemented the Integrating the Healthcare Enterprise (IHE) AI Results (AIR) profile, DICOM submissions will be accepted via an interface configured in the Assess-AI app on ACR Connect. ACR Connect shall accept the following DICOM SR SOP Class UIDs to convey AI results:

- Basic Text SR — 1.2.840.10008.5.1.4.1.1.88.11
- Enhanced SR — 1.2.840.10008.5.1.4.1.1.88.22
- Comprehensive SR — 1.2.840.10008.5.1.4.1.1.88.33

Report Text

The preferred method of capture of the report text will be via interface with the radiology reporting system or EHR.

Report text shall additionally include the following items at a minimum:

- Patient Identifier — The ID for the patient for the DICOM study which was evaluated.
- Accession Number — The accession number for the DICOM study which was evaluated.
- Study Date — The date of the imaging study for which the AI result is provided as YYYYMMDD.
- Physician ID — The ID number of the physician responsible for the report.
- Report Text — The impressions, findings, conclusions and recommendations reported by the radiologist at the time of interpretation.

Conditionally as specified in schemas the following information shall also be included:

- Age — The patient age at the time of the exam.
- Sex — Patient sex at birth.
- Race — Code from FHIR US Core Rave Value Set or HL7 Race table 0005.
- Ethnicity — Code from FHIR US Core Ethnicity Value Set or HL7 Ethnic Group table 0189.
- Exam Name — Study description of imaging study performed.
- Modality — The DICOM imaging modality code(s) on which the study was acquired.
- Body Part Examined — The body part from the DICOM defined term table which corresponds to the exam performed (https://dicom.nema.org/medical/dicom/current/output/chtml/part16/chapter_l.html).
- Contrast Indication — Boolean (yes/no) whether contrast was used during image acquisition.

Only reports with a status of 'FINAL' shall be submitted to the Assess-AI registry. Assess-AI will only process the first report it receives, duplicates will be ignored. For example, in FHIR submissions, only transmit reports where DiagnosticReport.status = final or in HL7v2 messages, only transmit ORU messages where the Observation Result Status Code = F. When using the Nuance/Microsoft API, only reports with a status of Corrected or Final will be processed.

Document Submission — Not Supported in Current Version

Document submissions will be done through manual upload in the Assess-AI app on ACR Connect. The Assess-AI app will accept PDF, TXT, RTF, DOC and DOCX file formats only, where the report text is contained within the document itself. This can be accomplished via drag and drop window or browsing of local or network resources for objects. ACR Connect can also be configured with a “hot” folder within the ACR Connect app where the application will check for new files to process. Files will only be processed from the root folder. The interval default is 15 minutes but is configurable in the ACR Connect app as well.

Schema

System Identifier.Patient Identifier.Accession Number.Study Date,PhysicianID.(file format)

Example

- Patient Identifier — 12345
- Accession Number — AN123456
- Study Date — 20240624
- Physician ID — 9876

```
12345.AN123456.20240624.9876.pdf
```

CSV Submission

CSV submissions will be done through manual upload in the Assess-AI app on ACR Connect. This can be accomplished via drag and drop window or browsing of local or network resources for objects. ACR connect can also be configured with a “hot” folder within the ACR Connect app where the application will check for new files to process. Files will only be processed from the root folder. The interval default is 15 minutes but is configurable in the ACR Connect app as well.

Schema

Patient Identifier,Accession Number,Study Date,Physician ID,Report Text,Age,Sex,Race,Ethnicity,Exam Name,Modality,Body Part Examined,Contrast Indication

Example

Patient Identifier — 12345
Accession Number — AN123456
Study Date — 20240624
Physician ID — 9876
Report Text — CT Head...Findings...Impressions...Radiologist

```
Report_Generator,12345,AN123456,20240624,9876,CT Head…Findings…Impressions…Radiologist
```

HL7v2 Submission

HL7v2 submissions will be accepted via an interface configured in the Assess-AI app on ACR Connect.

Schema

Required:

- Patient Identifier — PID 3.1 (Patient Identifier List)
- Accession Number — ORC 3.1 (Filler Order Number)
- Study Date — OBX 5 where OBX 2 (Value Type) = DT and OBX 3 (Observation Identifier) = StudyDate
- Physician ID — OBX 16.1 (Id Number)
- Report Text — OBX 5 (Observation Value) - OBX 1- OBX 9 will be used

Message Header Requirements:

- MSH 5 (Receiving Application) = ACR Assess-AI Data Registry

Optional:

- Race — PID 10 (Race)
- Ethnicity — PID 22 (Ethnic Group)
- Sex — PID 8 (Administrative Sex)

Example

- Patient Identifier — 12345
- Accession Number — AN123456
- Physician ID — 9876
- Study Date — 20110101
- Race — 2106-03 (White)
- Ethnicity — N (Not Hispanic or Latino)
- Sex — M (Male)
- Report Text — Clinical Information - Right ... Findings - Evaluation ... Impression - 1. Prominent ...

```
MSH|^~\&|Report_Generator||ACRConnect|NRDR|20110101||ORU^R01|6182847|P|2.5
PID|||12345||JONES^JAMES||19550505|M||2106-3||||||||||||N
ORC|||AN123456
OBX|1|DT|StudyDate||20110101||||||F
OBX|2|TX|Clinical Information||Right arm weakness. Difficulty expressing thoughts in writing
beginning about 4-5 months ago. COMPARISON No comparison. CONTRAST 16 cc of MultiHance admin-
istered without complication. TECHNIQUE Sagittal and … brain were obtained. Following gadolin-
ium administration axial and coronal T1-weighted images were obtained||||||F|||201101011643|^
RAD7|9876^SMITH
OBX|3|TX|Findings||Evaluation of the brain demonstrates a prominent bilobed right and espe-
cially left-sided paramedial extra-axial mass centered overlying the posterior frontal and
anterior parietal lobes. The mass demonstrates … cells and the right and left antrum with a
hyperplastic polypoid component along the floor. No air-fluid levels are noted. The nasal cavity
appears unremarkable. The nasopharynx is symmetric||||||F|||201101011643|^RAD7|9876^SMITH
OBX|4|TX|Impression||1. Prominent bilobed paramedial extra-axial mass along the convexity cen-
tered at the level of the posterior frontal and anterior parietal lobes with prominent … Oth-
```

```
er less likely considerations include extra-axial dural based metastasis, lymphoma and less
likely solitary fibrous tumor. 3. Discussed with Dr. REFERRING at 1630 hrs||||||F|||2011010116
43|^RAD7|9876^SMITH
```

FHIR Submission — Not Supported in current version

FHIR submissions will be accepted via an interface configured in the Assess-AI app on ACR Connect. The format for report text in FHIR will be an HL7 FHIR compliant DiagnosticReport resource. (https://build.fhir.org/diagnosticreport.html) For implementation guide details, please refer to US Core Implementation guide, published by HL7 International/Cross-Group Projects. (https://build.fhir.org/ig/HL7/US-Core/DiagnosticReport-chest-xray-report.json.html)

Schema

Patient Identifier — DiagnosticReport.subject.identifier.value

Accession Number — DiagnosticReport.study.identifier.value

Study Date — DiagnosticReport.effectiveDateTime

Report Text —

- In referenced Observation — DiagnosticReport.result.reference (Observation.valueString)
- In presentedForm — DiagnosticReport.presentedFrom.data

Physician ID — In referenced performer — DiagnosticReport.performer.reference (Practioner.identifier.value)

Examples

Referenced Observation Report Text Example

- Patient Identifier — 12345
- Accession Number — AN123456
- Study Date — 20110101
- Physician ID — 9876
- Report Text — Findings — Evaluation ... Impression — 1. Prominent ...

```
{
  “resourceType”: “DiagnosticReport”,
  “contained”: [
    {
    “resourceType”: “Observation”,
    “id”: “ob1finding”,
    “status”: “final”,
    “category”: [
      {
       “coding”: [
        {
         “system”: “http://terminology.hl7.org/CodeSystem/observation-category”,
         “code”: “imaging”,
         “display”: “Imaging”
```

```
        }
       ],
       "text": "Imaging"
      }
     ],
    "code": {
      "coding": [
       {
        "system": "http://loinc.org",
        "code": "18782-3",
        "display": "Radiology Study observation (narrative)"
       }
      ],
      "text": "Findings"
     },
    "subject": {
      "type": "Patient",
      "identifier": {
        "type": {
          "coding": [
            {
            "system": "http://terminology.hl7.org/CodeSystem/v2-0203",
            "code": "PI",
            "display": "Patient internal identifier"
            }
          ]
        },
        "value": "12345"
      }
    },
        "valueString": "Evaluation of the brain demonstrates a prominent bilobed right and
especially left-sided paramedial extra-axial mass centered overlying the posterior frontal
and anterior parietal lobes. The mass demonstrates … cells and the right and left antrum with
a hyperplastic polypoid component along the floor. No air-fluid levels are noted. The nasal
cavity appears unremarkable. The nasopharynx is symmetric"
        },
        {
        "resourceType": "Observation",
        "id": "ob2impression",
        "status": "final",
        "category": [
            {
              "coding": [
                {
                  "system": "http://terminology.hl7.org/CodeSystem/observation-category",
                  "code": "imaging",
                  "display": "Imaging"
                }
              ],
              "text": "Imaging"
            }
          ],
        "code": {
            "coding": [
              {
```

```
                "system": "http://loinc.org",
                "code": "19005-8",
                "display": "Radiology Imaging study [Impression] (narrative)"
              }
            ],
            "text": "Impression"
        },
        "subject": {
            "type": "Patient",
            "identifier": {
                "type": {
                    "coding": [
                        {
                        "system": "http://terminology.hl7.org/CodeSystem/v2-0203",
                        "code": "PI",
                        "display": "Patient internal identifier"
                        }
                    ]
                },
                "value": "12345"
            }
        },
        "valueString": "1. Prominent bilobed paramedial extra-axial mass along the convexity centered at the level of the posterior frontal and anterior parietal lobes with prominent … Other less likely considerations include extra-axial dural based metastasis, lymphoma and less likely solitary fibrous tumor. 3. Discussed with Dr. REFERRING at 1630 hrs"
        },
        {
        "resourceType": "Practitioner",
        "id": "practitioner1",
        "identifier": [
            {
                "value": "9876"
            }
        ]
        }
    ],
    "status": "final",
    "category": [
      {
        "coding": [
          {
            "system": "http://loinc.org",
            "code": "LP29684-5",
            "display": "Radiology"
          }
        ],
        "text": "Radiology"
      }
    ],
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "24587-8",
          "display": "MR Brain WO and W contrast IV"
        }
      ],
      "text": "MRI BRAIN WITH AND WITHOUT CONTRAST"
    },
    "subject": {
        "type": "Patient",
        "identifier": {
            "type": {
                "coding": [
```

```
                    {
                    "system": "http://terminology.hl7.org/CodeSystem/v2-0203",
                    "code": "PI",
                    "display": "Patient internal identifier"
                    }
                ]
            },
            "value": "12345"
        }
    },
    "effectiveDateTime": "2011-01-01T12:33:22Z",
    "issued": "2011-01-01T16:43:30.000+05:00",
    "performer" : [
        {
            "reference": "#practitioner1"
        }
    ],
    "result": [
      {
        "reference": "#ob1finding",
        "display": "Findings"
      },
      {
        "reference": "#ob2impression",
        "display": "Impression"
      }
    ],
    "study": [
        {
        "type": "ImagingStudy",
        "identifier": {
            "type": {
                "coding": [
                    {
                    "system": "http://terminology.hl7.org/CodeSystem/v2-0203",
                    "code": "ACSN",
                    "display": "Accession ID"
                    }
                ]
            },
            "value": "AN123456"
            }
        }
    ]
}
```

presented Form Report Text Example

- Patient Identifier — 12345
- Accession Number — AN123456
- Study Date — 20110101
- Physician ID — 9876
- Report Text — Findings — Evaluation ... Impression — 1. Prominent ...

```
{
    "resourceType": "DiagnosticReport",
    "contained": [
      {
        "resourceType": "Practitioner",
        "id": "practitioner1",
        "identifier": [
```

```
        {
            "value": "9876"
        }
    ]
  }
],
"status": "final",
"category": [
  {
    "coding": [
      {
        "system": "http://loinc.org",
        "code": "LP29684-5",
        "display": "Radiology"
      }
    ],
    "text": "Radiology"
  }
],
"code": {
  "coding": [
    {
      "system": "http://loinc.org",
      "code": "24587-8",
      "display": "MR Brain WO and W contrast IV"
    }
  ],
  "text": "MRI BRAIN WITH AND WITHOUT CONTRAST"
},
"subject": {
    "type": "Patient",
    "identifier": {
        "type": {
            "coding": [
                {
                "system": "http://terminology.hl7.org/CodeSystem/v2-0203",
                "code": "PI",
                "display": "Patient internal identifier"
                }
            ]
        },
        "value": "12345"
    }
},
"effectiveDateTime": "2011-01-01T12:33:22Z",
"issued": "2011-01-01T16:43:30.000+05:00",
"performer" : [
    {
        "reference": "#practitioner1"
    }
],
"study": [
    {
    "type": "ImagingStudy",
    "identifier": {
        "type": {
            "coding": [
                {
                "system": "http://terminology.hl7.org/CodeSystem/v2-0203",
                "code": "ACSN",
                "display": "Accession ID"
                }
            ]
```

```
            },
            "value": "AN123456"
            }
        }
    ],
    "presentedForm": [
        {
            "contentType": "text/plain",
            "data": "SW1hZ2luZyBDZW50ZXIgDQoxMjMgTWFpbiBTdHJlZXQgQW55d2hlcmUsIFVTQSAwM-
TIzNCBQaG9uZSAxMjMuNDU2Ljc4OTAgRmF4IDEyMy40NTYuNzg5MCANClBBVElFTlQ6ICBKT0hOIFNNSVRIICAN-
CkRPQjogIDUvNS8xOTU1ICANCkZJTEUgIzogIDEyMzQ1ICANClBIWVNJQ0lBTjogIFJFRkVSUklORyAgDQpFWEF-
NOiAgTVJJIEJSQUlOIFdJVEggQU5EIFdJVEhPVVQgQ09OVFJBU1QgIA0KREFURTogIDEvMS8yMDExICANCg0KQ0x-
JTklDQUwgSU5GT1JNQVRJT04gUmlnaHQgYXJtIHdlYWtuZXNzLiBEaWZmaWN1bHR5IGV4cHJlc3NpbmcgdGhvdW-
dodHMgaW4gd3JpdGluZyBiZWdpbm5pbmcgYWJvdXQgNC01IG1vbnRocyBhZ28uIENPTVBBUklTT04gTm8gY29tcG-
FyaXNvbi4gQ09OVFJBU1QgMTYgY2Mgb2YgTXVsdGlIYW5jZSBhZG1pbmlzdGVyZWQgd2l0aG91dCBjb21wbGljYX-
Rpb24uIFRFQ0hOSVFVRSBTYWdpdHRhbCBhbmQgYXhpYWwgVDEtd2VpZ2h0ZWQgaW1hZ2VzLCBheGlhbCBGTEFJUiBpb-
WFnZXMsIGF4aWFsIGRpZmZ1c2lvbiB3ZWlnaHRlZCBzZXF1ZW5jZXMsIGF4aWFsIFQywq0NCndlaWdodGVkIGltYWdl-
cyBhbmQgY29yb25hbCBncmFkaWVudCBlY2hvIHNlcXVlbmNlcyBvZiB0aGUgYnJhaW4gd2VyZSBvYnRhaW5lZC4gRm9s-
bG93aW5nIGdhZG9saW5pdW0gYWRtaW5pc3RyYXRpb24gYXhpYWwgYW5kIGNvcm9uYWwgVDEtd2VpZ2h0ZWQgaW1hZ-
2VzIHdlcmUgb2J0YWluZWQuIA0KRklORElOR1MgRXZhbHVhdGlvbiBvZiB0aGUgYnJhaW4gZGVtb25zdHJhdGVzIGEg-
cHJvbWluZW50IGJpbG9iZWQgcmlnaHQgYW5kIIGVzcGVjaWFsbHkgbGVmdC1zaWRlZCBwYXJhbWVkaWFsIGV4dHJhL-
WF4aWFsIG1hc3MgY2VudGVyZWQgb3Zlcmx5aW5nIHRoZSBwb3N0ZXJpb3IgZnJvbnRhbCBhbmQgYW50ZXJpb3IgcG-
FyaWV0YWwgbG9iZXMuIFRoZSBtYXNzIGRlbW9uc3RyYXRlcyBoZXRlcm9nZW5lb3VzIHNpZ25hbCBidXQgaG9tb2dlb-
mVvdXMgZW5oYW5jZW1lbnQgd2l0aCBtaWxkbHkgaXJyZWd1bGFyIGJ1dCBzbW9vdGggY29udG91cnMuIFRoZSBtYX-
NzIG1lYXN1cmVzIGFwcHJveGltYXRlbHkgNS44IHggNTggeCA0LjIgQ00gKGFudGVyaW9yIHBvc3RlcmlvciBieSB-
0cmFuc3ZlcnNlIGJ5IHN1cGVyaW9yLWluZmVyaW9yKS4gVGhlIG1hc3MgZW5jYXNlcyB0aGUgZmFseCBhbmQgdGhlIG-
FkamFjZW50IHN1cGVyaW9yIHNhZ2l0dGFsIHNpbnVzIHdpdGggZXZpZGVuY2Ugb2YgbWFyZ2luYWwgZHVyYWwgdGh-
pY2tlbmluZywgZXNwZWNpYWxseSBleHRlbmRpbmcgcG9zdGVyaW9ybHkgaW4gdGhlIG1pZGxpbmUgc3BsYXlpbmcg-
dGhlIHVwcGVyIGxlYXZlcyBvZiB0aGUgZmFseCB0aHJvdWdoIHRoZSBsZXZlbCBvZiB0aGUgdXBwZXIgb2NjaXBp-
dGFsIGxvYmUuIA0KUHJvbWluZW50IHJlYWN0aXZlIGNoYW5nZXMgbm90ZWQgaW52b2x2aW5nIHRoZSBwZXJpdmVudH-
JpY3VsYXIgYW5kIHN1YmNvcnRpY2FsIHdoaXRlIG1hdHRlciBvZiB0aGUgbGVmdCBmcm9udGFsIGFuZCANClJlcG9yd-
CBhcHByb3ZlZCBvbiANCk5hdGlvbmFsUmFkIHwgSGVhZHF1YXJ0ZXJlZDogRmxvcmlkYSB8IERpYWdub3N0aWMgSW1h-
Z2luZyBTZXJ2aWNlczogTmF0aW9ud2lkZSB8IDg3Ny43MzQuNjY3NCB8IHd3dy5OYXRpb25hbFJhZC5jb20gDQpQY-
WdlIDIgb2YgMiANCnBhcmlldGFsIGxvYmVzIHdpdGggYSBzbWFsbCBhbW91bnQgYWxzbyBpbnZvbHZpbmcgdGhlIH-
JpZ2h0IHBvc3RlcmlvciBmcm9udGFsIGxvYmUuIFRoZXJlIGlzIGFkamFjZW50IG1hc3MgZWZmZWN0IA0Kd2l0aG91d-
CBzaWduaWZpY2FudCBsYXRlcmFsIHNoaWZ0IGFuZCBubyBoZXJuaWF0aW9uLiBBIHNtYWxsZXIgZW5oYW5jaW5nIG-
V4dHJhLWF4aWFsIG1hc3MgbW9yZSBzdWdnZXN0aXZlIG9mIF0eXBpY2FsIG1lbmluZ2lvbWEgaXMgc2VlbiBvdmVy-
bHlpbmcgdGhlIHJpZ2h0IG1pZCB0ZW1wb3JhbCBsb2JlIG1lYXN1cmluZyAxLjMgeCAwLjYgQ00uIChBeGlhbCBzZX-
JpZXMgMTIgaW1hZ2UgMjYpLiANClRoZXJlIGlzIG5vIHNpZ25pZmljYW50IGVuZCB2ZXNzZWwgaXNjaGVtaWMgc21h-
bGwgdmVzc2VsIGRpc2Vhc2UuIA0KVGhlcmUgaXMgbm8gYWN1dGUgaW5mYXJjdCBzZWVuLiBObyBpbnRyYWNyYW5pY-
WwgaGVtb3JyaGFnZSBpcyByZWNvZ25pemVkLiANClRoZXJlIGlzIG5vIHBhcmVuY2h5bWFsIG1hc3Mgb3IgbWFzcy-
BlZmZlY3QuIA0KQSBkZXZlbG9wbWVudGFsIHZlbm91cyBhbm9tYWx5IGlzIHN1Z2dlc3RlZCB3aXRoaW4gdGhlIGx-
lZnQgcGFyaWV0YWwgbG9iZS4gDQpUaGUgdmVudHJpY2xlcywgc3VsY2kgYW5kIGJhc2FsIGNpc3Rlcm5zIGFwcGVh-
ciB1bnJlbWFya2FibGUuIA0KVGhlIHZlcnRlYnJhbCBhbmQgaW50ZXJuYWwgY2Fyb3RpZCBhcnRlcmllcyBkZW1vbn-
N0cmF0ZSBleHBlY3RlZCBmbG93IHZvaWRzIGluZGljYXRpbmcgdGhlaXIgcGF0ZW5jeS4gDQpUaGUgY2VudHJhbCBza-
3VsbCBiYXNlIGFuZCB0ZW1wb3JhbCBib25lcyBhcmUgaW50YWN0LiBUaGUgY2FsdmFyaXVtIGFwcGVhcnMgdW5yZW1h-
cmthYmxlLiBUaGUgb3JiaXRzIGFyZSANCnVucmVtYXJrYWJsZS4gVGhlIHBhcmFuYXNhbCBzaW51c2VzIGRlbW9u-
c3RyYXRlIG11Y29zYWwgdGhpY2tlbmluZyBwYXJ0aWFsbHkgb3V0bGluaW5nIGFudGVyaW9yIGFuZCBwb3N0ZXJp-
b3IgZXRobW9pZCBhaXIgY2VsbHMgDQphbmQgdGhlIHJpZ2h0IGFuZCBsZWZ0IGFudHJ1bSB3aXRoIIGEgaHlwZXJwb-
GFzdGljIHBvbHlwb2lkIGNvbXBvbmVudCBhbG9uZyB0aGUgZmxvb3IuIE5vIGFpci1mbHVpZCBsZXZlbHMgYXJlIG-
5vdGVkLiBUaGUgbmFzYWwgY2F2aXR5IGFwcGVhcnMgdW5yZW1hcmthYmxlLiBUaGUgbmFzb3BoYXJ5bnggaXMgc3ltb-
WV0cmljLiBJTVBSRVNTSU9OIA0KMS4gDQpQcm9taW5lbnQgYmlsb2JlZCBwYXJhbWVkaWFsIGV4dHJhLWF4aWFsIG1h-
c3MgYWxvbmcgdGhlIGNvbnZleGl0eSBjZW50ZXJlZCBhdCB0aGUgbGV2ZWwgb2YgdGhlIHBvc3RlcmlvciBmcm9udGF-
sIGFuZCBhbnRlcmlvciBwYXJpZXRhbCBsb2JlcyB3aXRoIHByb21pbmVudCBwb3N0ZXJpb3IgZHVyYWwgdGFpbCBhb-
mQgb2NjbHVzaW9uIG9mIHRoZSBhZGphY2VudCBzdXBlcmlvciBzYWdpdHRhbCBzaW51cy4gUHJvbWluZW50IHN1cnJ-
vdW5kaW5nIHJlYWN0aXZlIGVkZW1hLCBsZWZ0IGdyZWF0ZXIgdGhhbiByaWdodC4gTWlsZCBsYXRlcmFsIHNoaWZ0I-
GJ1dCBubyBoZXJuaWF0aW9uLiBTbWFsbGVyIGV4dHJhYXhpYWwgbWFzcyBvdmVybHlpbmcgdGhlIHJpZ2h0IG1pZCB-
0ZW1wb3JhbCBsb2JlLiANCg0KMi4gDQpBdHlwaWNhbCBtZW5pbmdpb21hIGluY2x1ZGluZyBoZW1hbmdpb3BlcmljeX-
RvbWEgb3IgdmFyaWFudCBvciBtYWxpZ25hbnQgc3Vic2lkZW5jZSBvZiBtZW5pbmdpb21hLiBPdGhlciBsZXNzIGx-
pa2VseSBjb25zaWRlcmF0aW9ucyBpbmNsdWRlIGV4dHJhLWF4aWFsIGR1cmFsIGJhc2VkIG1ldGFzdGFzaXMsIGx5bX-
Bob21hIGFuZCBsZXNzIGxpa2VseSBzb2xpdGFyeSBmaWJyb3VzIHR1bW9yLiANCg0KMy4gDQpEaXNjdXNzZWQgd2l0aC-
```

```
BEci4gUkVGRVJSSU5HIGF0IDE2MzAgaHJzLiANCg0KDQpbTmF0aW9uYWxSYWQgTmV1cm9yYWRpb2xvZ2lzdF0gQm9hc-
mQgQ2VydGlmaWVkIFJhZGlvbG9naXN0IA0KVEhJUyBSRVBPUlQgV0FTIEVMRUNUUk9OSUNBTExZIFNJR05FRCANClJlc-
G9ydCBhcHByb3ZlZCBvbiANCk5hdGlvbmFsUmFkIHwgSGVhZHF1YXJ0ZXJlZDogRmxvcmlkYSB8IERpYWdub3N0aWMg-
SW1hZ2luZyBTZXJ2aWNlczogTmF0aW9ud2lkZSB8IDg3Ny43MzQuNjY3NCB8IHd3dy5OYXRpb25hbFJhZC5jb20g"
        }
    ]
}
```


DICOM Submission — Not supported in Current Version

DICOM submissions will be accepted via an interface configured in the Assess-AI app on ACR Connect. The report text will be contained within the DICOM SR itself. ACR Connect shall accept the following DICOM SR SOP Class UIDs to convey report text:

- Basic Text SR — 1.2.840.10008.5.1.4.1.1.88.11
- Enhanced SR — 1.2.840.10008.5.1.4.1.1.88.22
- Comprehensive SR — 1.2.840.10008.5.1.4.1.1.88.33

Schema

- Patient Identifier — (0010,0020) PatientID
- Accession Number — (0008,0050) AccessionNumber
- Study Date — (0008,0020) StudyDate
- Physician ID — (0008,0100) Code Value where Code Meaning is Verifying Observer ID in Verifying Observer Identification Code Sequence
- Report Text — SR Document Content Module
- Exam Name — (0008,1030) StudyDescription
- Sex — (0010,0040) PatientSex
- Modality — (0008,0061) ModalitiesInStudy
- Ethnicity — (0010,2160) EthnicGroup
- Age — (0010,1010) PatientAge

Example

- Patient Identifier — 12345
- Accession Number — AN123456
- Study Date — 20110101
- Physician ID — 9876
- Report Text — Findings — Evaluation ... Impression — 1. Prominent ...
- Exam Name — MR BRAIN
- Sex — M

Attribute	Tag	Value
Instance Creation Date	(0008,0012)	20110101
SOP Class UID	(0008,0016)	1.2.840.10008.5.1.4.1.1.88.22
SOP Instance UID	(0008,0018)	2.16.840.1.114274.1818.20078690608232232322.9
Study Date	(0008,0020)	20110101
Content Date	(0008,0023)	20110101
Accession Number	(0008,0050)	AN123456
Modality	(0008,0060)	SR
Manufacturer	(0008,0070)	Report_Generator
Study Description	(0008,1030)	MR BRAIN
Patient's Name	(0010,0010)	JONES^JAMES
Patient ID	(0010,0020)	12345
Patient's Birth Date	(0010,0030)	19550505
Patient's Sex	(0010,0040)	M
...		
Verifying Observer Sequence	(0040,a073)	
%item		
Verifying Organization	(0040,a027)	RAD7
Verification DateTime	(0040,a030)	20110101121212
Verifying Observer Name	(0040,a075)	SMITH^^^^^
Verifying Observer Identification Code Sequence		
%item		
Code Value	(0008,0100)	9876
Coding Scheme Designator	(0008,0102)	99WUHID
Code Meaning	(0008,0104)	Verifying Observer ID
...		
%item		
Relationship Type	(0040,a010)	CONTAINS
Value Type	(0040,a040)	CONTAINER
Concept Name Code Sequence	(0040,a043)	
%item		
Code Value	(0008,0100)	121070
Coding Scheme Designator	(0008,0102)	DCM
Code Meaning	(0008,0104)	Findings
%enditem		
%endseq		
Continuity Of Content	(0040,a050)	SEPARATE
Content Sequence	(0040,a730)	
%item		
Relationship Type	(0040,a010)	CONTAINS
Value Type	(0040,a040)	TEXT
Concept Name Code Sequence	(0040,a043)	

%item		
Code Value	(0008,0100)	121071
Coding Scheme Designator	(0008,0102)	DCM
Code Meaning	(0008,0104)	Finding
%enditem		
%endseq		
Text Value	(0040,a160)	Evaluation of the brain demonstrates a prominent bilobed right and especially left-sided paramedial extra-axial mass centered overlying the posterior frontal and anterior parietal lobes. The mass demonstrates ... cells and the right and left antrum with a hyperplastic polypoid component along the floor. No air-fluid levels are noted. The nasal cavity appears unremarkable. The nasopharynx is symmetric
Content Sequence	(0040,a730)	
%item		
...		
%item		
Relationship Type	(0040,a010)	CONTAINS
Value Type	(0040,a040)	CONTAINER
Concept Name Code Sequence	(0040,a043)	
%item		
Code Value	(0008,0100)	121072
Coding Scheme Designator	(0008,0102)	DCM
Code Meaning	(0008,0104)	Impressions
%enditem		
%endseq		
Continuity Of Content	(0040,a050)	SEPARATE
Content Sequence	(0040,a730)	
%item		
Relationship Type	(0040,a010)	CONTAINS
Value Type	(0040,a040)	TEXT
Concept Name Code Sequence	(0040,a043)	
%item		
Code Value	(0008,0100)	121073
Coding Scheme Designator	(0008,0102)	DCM
Code Meaning	(0008,0104)	Impression
%enditem		
%endseq		
Text Value	(0040,a160)	1. Prominent bilobed paramedial extra-axial mass along the convexity centered at the level of the posterior frontal and anterior parietal lobes with prominent ... Other less likely considerations include extra-axial dural based metastasis, lymphoma and less likely solitary fibrous tumor. 3. Discussed with Dr. REFERRING at 1630 hrs
Content Sequence	(0040,a730)	
%item		

Nuance/Microsoft API — In Development

ACR Connect supports the use of the PowerScribe Web Service API to extract report text for a given list of accession numbers. User will use the Assess-AI app to import a CSV which will be used to extract the report text for the given list of accession numbers for ingestion to Assess-AI.

The report identifier is used to fetch the individual report instances. This is the internal identifiers in the PowerScribe database, as returned from the Explorer Service methods. For example, to retrieve a report for a particular accession number, the service must first use Explorer Service's SearchByAccessionEx method to retrieve the metadata, which includes the reportID.

GetReport fetches detailed information about a report, excluding its orders.

Schema

Patient Identifier — SearchByAccessionExResult.OrderDataEx.PatientMRN

Accession Number — SearchByAccessionExResult.OrderDataEx.Accession

Study Date — SearchByAccessionExResult.OrderDataEx.OrderDate

Physician ID — GetReportResult.Signer.Identifier

Report Text — GetReportResult.ContentText as well as GetReportResult.Findings.ReportFindings. FieldName|FieldValue|FindingsCode

Sex — SearchByAccessionExResult.OrderDataEx.PatientGender

Age — SearchByAccessionExResult.OrderDataEx.PatientAgeInDays

Exam Name — SearchByAccessionExResult.OrderDataEx.ProcedureDesc

Response Schema

SearchByAccessionEx

```
<SearchByAccessionExResponse xmlns="http://nuance.com/commissure/webservices/explor-
er/2010/06">
<SearchByAccessionExResult>
    <OrderDataEx>
        <OrderID>int</OrderID>
        <VisitID>int</VisitID>
        <ReportID>int</ReportID>
        <PatientID>int</PatientID>
        <SiteID>int</SiteID>
        <Site>string</Site>
        <Location>string</Location>
        <Accession>string</Accession>
        <OrderDate>dateTime</OrderDate>
        <Procedures>string</Procedures>
        <ProcedureDesc>string</ProcedureDesc>
        <OrderStatus>None or Scheduled or Completed or Temporary or Cancelled or DictatedExt
or Entered1</OrderStatus>
        <ProviderPhysician>string</ProviderPhysician>
        <Priority>int</Priority>
        <Locked>boolean</Locked>
        <TATDeadline>dateTime</TATDeadline>
        <PlacerField1>string</PlacerField1>
```

```
        <PlacerField2>string</PlacerField2>
        <FillerField1>string</FillerField1>
        <FillerField2>string</FillerField2>
        <PatientLastName>string</PatientLastName>
        <PatientMiddleName>string</PatientMiddleName>
        <PatientFirstName>string</PatientFirstName>
        <PatientMRN>string</PatientMRN>
        <PatientDeptNumber>string</PatientDeptNumber>
        <PatientMPI>string</PatientMPI>
        <PatientClass>Unknown or Inpatient or Outpatient or PreAdmit or Emergency or Recur-
ringPatient or Obstetrics</PatientClass>
        <PatientGender>Unknown or Female or Male</PatientGender>
        <PatientAgeInDays>int</PatientAgeInDays>
        <PatientDOB>dateTime</PatientDOB>
        <ReportStatus>None or WetRead or Draft or PendingCorrection or CorrectionRejected or
Corrected or PendingSignature or SignRejected or Final</ReportStatus>
        <SignerLastName>string</SignerLastName>
        <SignerMiddleName>string</SignerMiddleName>
        <SignerFirstName>string</SignerFirstName>
        <DictatorLastName>string</DictatorLastName>
        <DictatorMiddleName>string</DictatorMiddleName>
        <DictatorFirstName>string</DictatorFirstName>
        <EditorLastName>string</EditorLastName>
        <EditorMiddleName>string</EditorMiddleName>
        <EditorFirstName>string</EditorFirstName>
        <IsAddendum>boolean</IsAddendum>
        <ReportLastModifiedDate>dateTime</ReportLastModifiedDate>
        <ReportLastSignDate>dateTime</ReportLastSignDate>
        <ReportLastPrelimDate>dateTime</ReportLastPrelimDate>
        <ReportLastCorrectedDate>dateTime</ReportLastCorrectedDate>
        <ReportTransferStatus>None or NotReady or Ready or Sent or Rejected or Failed or Held
or Queued or ForceSend</ReportTransferStatus>
        <IsFinalExported>boolean</IsFinalExported>
        <IsImported>boolean</IsImported>
    </OrderDataEx>
</SearchByAccessionExResult>
```

GetReport

DICOM Metadata

The preferred method of extraction of DICOM metadata is through receipt and parsing of the DICOM image files themselves. DICOM submissions will be accepted via an interface configured in the Assess-AI app on ACR Connect. The Assess-AI app will provide DICOMweb and DIMSE endpoints. Assess-AI will act as a DICOM SCP for C-STORE, C-MOVE, C-ECHO and STOW-RS. Assess-AI will act as an SCU for C-FIND, C-GET, C-ECHO and WADO-RS.

DICOM metadata will be extracted from received DICOM images. To ensure complete study transmission, the Assess-AI App will wait 10 minutes from the last image received before processing. Images received after 10 minutes will be considered duplicates and ignored. The use of a single association per study is the preferred method of transfer.

Schema

- Patient Identifier — (0010,0020) PatientID
- Accession Number — (0008,0050) AccessionNumber

DICOM SCP

DIMSE Services

The following table shows the Assess-AI app configuration parameters relevant to DICOM communication.

Parameter	Configurable (Yes/No)	Default Value
Listening Port	Yes	104
Maximum number of simultaneous Associations	Yes	5 (Configurable)
Time-out waiting for A-ASSOCIATE RQ on open TCP/IP connection (ARTIM timeout)	No	30s
Accepted Called AETs	Yes	ACR

DICOMweb Services — Not Supported in This Version

DICOMweb submissions will be accepted via an interface configured in the Assess-AI app on ACR Connect. The format for STOW-RS requests shall be as follows:

- Resource
  - {SERVICE}/studies[/{StudyInstanceUID}], where
    - {SERVICE} is the base URL for the service. This may be a combination of scheme (either HTTP or HTTPS), host, port, and application.
    - {StudyInstanceUID} (optional) is the study instance UID for a single study. If not specified, instances can be from multiple studies. If specified, all instances shall be from that study; instances not matching the StudyInstanceUID shall be rejected.
- Method
  - POST
- Headers
  - Content-Type — The representation scheme being posted to the RESTful service. The types allowed for this request header are as follows:
    - multipart/related; type=application/dicom; boundary={messageBoundary}
    - multipart/related; type=application/dicom+xml; boundary={messageBoundary}

DICOM SCU – Not supported in Current Version

C-FIND Requests

The Assess-AI Query/Retrieve SCU C-FIND has five tags which can be used in its service.

Level Name Attribute Name	Tag	VR
Patient Level		
Patient Name	0010,0010	PN
Patient ID	0010,0020	LO
Study Level		
Study Date	0008,0020	DA
Accession Number	0008,0050	SH
Series Level		
Modality	0008,0060	CS

WADO-RS Requests

The specific services resource to be used for the retrieve study action by Assess-AI shall be as follows:

- Resource
  - {SERVICE}/studies/{StudyInstanceUID}, where
    - {SERVICE} is the base URL for the service. This may be a combination of protocol (either http or https), host, port and application.
    - {StudyInstanceUID} is the study instance UID for a single study.
- Method
  - GET
- Headers
  - Accept — A comma-separated list of representation schemes, in preference order, which will be accepted by the service in the response to this request. The types allowed for this request header are as follows:
    - multipart/related; type=application/dicom; [transfer-syntax={TransferSyntaxUID}]
    - multipart/related; type=application/octet-stream
    - multipart/related; type={MediaType}

Appendix A: Assess-AI Compliant Systems

Vendor A

Provides ...

AI Results

Algorithm Name	FHIR	HL7v2	CSV	Uses CDE
PEdetectPlus	Y	Y	N	Y

Configuration Notes

Setting A must ...

Radiology Reports

Document	CSV	HL7v2	FHIR	DICOM

DICOM

C-STORE	C-FIND	STOW	WADO-RS

Vendor B

Provides ...

AI Results

N/A

Radiology Reports

N/A

DICOM

C-STORE	C-FIND	STOW	WADO-RS

Appendix B: Data Dictionary Mappings

AI Results


```
{
"projectName": {
    "info" : "Required, populated by ACR Connect",
    "value" : "Assess AI Data Registry"
},
"projectElement" : {
    "info" : "Required, populated by ACR Connect",
    "value" : "AI Result"
},
"organization" : {
    "facilityId" : {
        "info" : "Required if faciltyID is mapped and available from NRDR, otherwise leave
null, populated by ACR Connect",
        "value" : ""
    },
    "corporateID" : {
        "info" : "Required, populated by ACR Connect by mapping install location to connect-
NodeID",
        "value" : ""
    },
    "connectNodeID" : {
        "info" : "Required, populated by ACR Connect",
        "value" : ""
    }
},
"patient" : {
    "acrId" : {
        "info" : "Required, populated by ACR Connect using MPI service",
        "mapping" : "csv=Patient Identifier|HL7=PID 3.1 Value 1|FHIR=Observation.subject.iden-
tifier.value",
        "value" : ""
    },
    "datavantId" : [{
        "info" : "Optional, there can be one or more tokens that need to travel with the ob-
ject",
        "value" : ""
    }],    "age" : {
        "info" : "Optional",
        "mapping" : "csv=Age",
        "value" : ""
    },
    "sex" : {
        "requirement" : "Optional",
        "mapping" : "csv=Sex|HL7=PID 8",
        "value" : "M|F|O"
    },
    "ethnicity" : {
        "requirement" : "Optional",
        "mapping" : "csv=Ethnicity|HL7=PID 22",
        "value" : ""
    },
    "race" : {
        "requirement" : "Optional",
        "valueType" : "csv=Race|HL7=PID 10",
        "value" : ""
    }
},
"exam" : {
    "accessionNumber" : {
```

```
        “requirement” : “Required”,
        “mapping” : “csv=Accession Number|HL7=ORC 3.1|FHIR=Observation.derivedFrom.identifier.
value”,
        “value” : “”
    },
    “name” : {
        “requirement” : “Optional”,
        “mapping” : “csv=Exam Name”,
        “value” : “”
    },
    “date” : {
        “requirement” : “Required”,
        “valueType” : “csv=Study Date|HL7=OBX 5 where OBX 2 = DT and OBX 3 = StudyDate|F-
HIR=Observation.effectiveDateTime”,
        “value” : “”
    },
    “modalitiesInStudy” : {
        “requirement” : “Optional”,
        “mapping” : “csv=Modality”,
        “value” : “”
    },
    “bodyPartExamined” : {
        “requirement” : “Optional”,
        “mapping” : “csv=Body Part Examined”,
        “value” : “”
    },
    “contrast” : {
        “requirement” : “Optional”,
        “mapping” : “csv=Contrast Indication”,
        “value” : “yes|no”
    }
},
“aiResult” : {
    “result” : {
        “requirement” : “Required”,
        “mapping” : “csv=AI Result|HL7=OBX 5|FHIR=CDE Encoded:Observation.component.value
where Observation.component.code = ‘Radelement.org Element ID’, Non-CDE Encoded:Observation.
valueString”,
        “value” : “”
    },
    “platform” : {
        “requirement” : “Optional”,
        “mapping” : “csv=Platform|HL7=OBX 15.2 where OBX 15.1=Platform|FHIR= Observation.de-
vice.identifier.value”,
        “value” : “”
    },
    “manufacturer” : {
        “requirement” : “Required”,
        “mapping” : “csv=Manufacturer|HL7=OBX 18.3 Value 3 where OBX 18.4 = L|FHIR=Observa-
tion.component.valueString where Observation.component.code = 74719-6”,
        “value” : “”
    },
    “model” : {
        “requirement” : “Required”,
        “mapping” : “csv=Model|HL7=OBX 18.3 Value 2 where OBX 18.4 = M|FHIR=Observation.com-
ponent.valueString where Observation.component.code = 67716-1”,
        “value” : “”
    },
    “swVersion” : {
        “requirement” : “Required”,
        “mapping” : “csv=Software Version|HL7=OBX 18.3 Value 1 where OBX 18.4 = N|FHIR=Obser-
```

```
vation.component.valueString where Observation.component.code = LP35922-1",
        "value" : ""
    },
    "resultIndicator": {
        "requirement" : "Required",
        "mapping" : "csv=Result Indicator|HL7=OBX 3|FHIR=CDE Encoded:Observation.code.cod-
ing='code':'Radelement.org Set ID' and Observation.component.code='Radelement.org Element
ID', Non-CDE Encoded:Observation.code='text':'Result Indicator'",
        "value" : ""
    },
    "inferenceDate": {
        "requirement" : "Required",
        "mapping" : "csv=Inference Date|HL7=OBX 14|FHIR=Observation.component.issued",
        "value" : ""
    }
}
}
```

Radiology Report

```
{
"projectName": {
    "info" : "Required, populated by ACR Connect",
    "value" : "Assess AI Data Registry"
},
"projectElement" : {
    "info" : "Required, populated by ACR Connect",
    "value" : "Radiology Report"
},
"organization" : {
    "facilityId" : {
        "info" : "Required if faciltyID is mapped and available from NRDR, otherwise leave
null, populated by ACR Connect",
        "value" : ""
    },
    "corporateID" : {
        "info" : "Required, populated by ACR Connect by mapping install location to connect-
NodeID",
        "value" : ""
    },
    "connectNodeID" : {
        "info" : "Required, populated by ACR Connect",
        "value" : ""
    }
},
"patient" : {
    "acrId" : {
        "info" : "Required, populated by ACR Connect using MPI service",
        "mapping" : "csv=Patient Identifier|HL7=PID 3.1 Value 1|FHIR=DiagnosticReport.subject.
identifier.value|DICOM=(0010,0010) PatientID",
        "value" : ""
    },
    "datavantId" : [{
        "info" : "Optional, there can be one or more tokens that need to travel with the ob-
ject",
        "value" : ""
    }],
    "age" : {
        "info" : "Optional",
        "mapping" : "csv=Age|DICOM=(0010,1010) PatientAge",
```

```
        "value" : ""
    },
    "sex" : {
        "requirement" : "Optional",
        "mapping" : "csv=Sex|HL7=PID 8|DICOM=(0010,0040) PatientSex",
        "value" : "M|F|O"
    },
    "ethnicity" : {
        "requirement" : "Optional",
        "mapping" : "csv=Ethnicity|HL7=PID 22|DICOM=(0010,2160) EthnicGroup",
        "value" : ""
    },
    "race" : {
        "requirement" : "Optional",
        "valueType" : "csv=Race|HL7=PID 10",
        "value" : ""
    }
},
"exam" : {
    "accessionNumber" : {
        "requirement" : "Required",
        "mapping" : "csv=Accession Number|HL7=ORC 3.1|FHIR=DiagnosticReport.study.identifier.
value|DICOM=(0008,0050) AccessionNumber",
        "value" : ""
    },
    "name" : {
        "requirement" : "Optional",
        "mapping" : "csv=Exam Name|DICOM=(0008,1030) StudyDescription",
        "value" : ""
    },
    "date" : {
        "requirement" : "Required",
        "valueType" : "csv=Study Date|HL7=OBX 5 where OBX 2 = DT and OBX 3 = StudyDate|F-
HIR=DiagnosticReport.effectiveDateTime|DICOM=(0008,0020) StudyDate",
        "value" : ""
    },
    "modalitiesInStudy" : {
        "requirement" : "Optional",
        "mapping" : "csv=Modality|DICOM=(0008,0061) ModalitiesInStudy",
        "value" : ""
    },
    "bodyPartExamined" : {
        "requirement" : "Optional",
        "mapping" : "csv=Body Part Examined",
        "value" : ""
    },
    "contrast" : {
        "requirement" : "Optional",
        "mapping" : "csv=Contrast Indication",
        "value" : "yes|no"
    }
},
"radiologyReport" : {
    "reportText" : {
        "requirement" : "Required",
        "mapping" : "csv=Report Text|HL7=OBX 1 through OBX 9 for all included OBX segments|F-
HIR=In referenced Observation-DiagnosticReport.result.reference (Observation.valueString) or
In presentedForm-DiagnosticReport.presentedFrom.data|DICOM=SR Document Content Module",
        "value" : ""
    },
    "physicianId" : {
```

```
        "requirement" : "Optional",
        "mapping" : "csv=Physician ID|HL7=OBX 16.1|FHIR=In referenced performer-DiagnosticReport.performer.reference (Practioner.identifier.value)|DICOM=(0008,0100) Code Value where Code Meaning is Verifying Observer ID in Verifying Observer Identification Code Sequence",
        "value" : ""
    }
}
}
```

DICOM

```
{
"projectName": {
    "info" : "Required, populated by ACR Connect",
    "value" : "Assess AI Data Registry"
},
"projectElement" : {
    "info" : "Required, populated by ACR Connect",
    "value" : "Radiology Report"
},
"organization" : {
    "facilityId" : {
        "info" : "Required if faciltyID is mapped and available from NRDR, otherwise leave null, populated by ACR Connect",
        "value" : ""
    },
    "corporateID" : {
        "info" : "Required, populated by ACR Connect by mapping install location to connectNodeID",
        "value" : ""
    },
    "connectNodeID" : {
        "info" : "Required, populated by ACR Connect",
        "value" : ""
    }
},
"patient" : {
    "acrId" : {
        "info" : "Required, populated by ACR Connect using MPI service",
        "mapping" : "TagNumber=00100020, Keyword=PatientId, VR=LO",
        "value" : ""
    },
    "datavantId" : [{
        "info" : "Optional, there can be one or more tokens that need to travel with the object",
        "value" : ""
    }],
    "age" : {
        "info" : "Optional",
        "mapping" : "TagNumber=00101010, Keyword=PatientAge, VR=AS, //note: last character removed",
        "value" : ""
    },
    "sex" : {
        "requirement" : "Optional",
        "mapping" : "TagNumber=00100040, Keyword=PatientSex, VR=CS",
        "value" : "M|F|O"
    },
    "ethnicity" : {
        "requirement" : "Optional",
```

```
        "mapping" : "TagNumber=00102160, Keyword=EthnicGroup, VR=SH",
        "value" : ""
    }
},
"exam" : {
    "accessionNumber" : {
        "requirement" : "Required",
        "mapping" : "TagNumber=00080050, Keyword=AccessionNumber, VR=SH",
        "value" : ""
    },
    "name" : {
        "requirement" : "Optional",
        "mapping" : "TagNumber=00081030, Keyword=StudyDescription, VR=LO",
        "value" : ""
    },
    "date" : {
        "requirement" : "Required",
        "mapping" : "TagNumber=00080020, Keyword=StudyDate, VR=DA",
        "value" : ""
    },
    "modalitiesInStudy" : {
        "requirement" : "Optional",
        "mapping" : "TagNumber=00080061, Keyword=ModalitiesInStudy, VR=CS",
        "value" : ""
    },
    "bodyPartExamined" : {
        "requirement" : "Optional",
        "mapping" : "TagNumber=00180015, Keyword=BodyPartExamined, VR=CS",
        "value" : ""
    },
    "contrast" : {
        "requirement" : "Optional",
        "mapping" : "TagNumber=00180010, Keyword=ContrastBolusAgent, VR=LO //note: no, null
or absent = no; any other value in any series = yes",
        "value" : "yes|no"
    }
},
"dicomSeriesIndex" : [{
    "modality" : {
        "requirement" : "Optional",
        "moodalityConstraint" : "All",
        "mapping" : "TagNumber=00080060, Keyword=Modality, VR=CS",
        "value" : ""
    },
    "stationName" : {
        "requirement" : "Optional",
        "moodalityConstraint" : "All",
        "mapping" : "TagNumber=00081010, Keyword=StationName, VR=SH",
        "value" : ""
    },
    "softwareVersion" : [{
        "requirement" : "Optional",
        "moodalityConstraint" : "All",
        "mapping" : "TagNumber=00181020, Keyword=SoftwareVersions, VR=LO",
        "value" : ""
    }],
    "deviceSerialNumber" : {
        "requirement" : "Optional",
        "moodalityConstraint" : "All",
        "mapping" : "TagNumber=00181000, Keyword=DeviceSerialNumber, VR=LO",
        "value" : ""
    },
```

```
"lastCalibration" : [{
    "requirement" : "Optional",
    "moodalityConstraint" : "All",
    "mapping" : "TagNumber=00181200, Keyword=DateOfLastCalibration, VR=DA",
    "value" : ""
}],
"spatialResolution" : {
    "requirement" : "Optional",
    "moodalityConstraint" : "All",
    "mapping" : "TagNumber=00181050, Keyword=SpatialResolution, VR=DS",
    "value" : ""
},
"manufacturer" : {
    "requirement" : "Optional",
    "moodalityConstraint" : "All",
    "mapping" : "TagNumber=00080070, Keyword=Manufacturer, VR=LO",
    "value" : ""
},
"modelName" : {
    "requirement" : "Optional",
    "moodalityConstraint" : "All",
    "mapping" : "TagNumber=00081090, Keyword=ManufacturerModelName, VR=LO",
    "value" : ""
},
"lossyImageCompression" : [{
    "requirement" : "Optional",
    "moodalityConstraint" : "All",
    "mapping" : "TagNumber=00282110, Keyword=LossyImageCompression, VR=CS",
    "value" : "00|01"
}],
"imageType" : [{
    "requirement" : "Optional",
    "moodalityConstraint" : "All",
    "mapping" : "TagNumber=00080008, Keyword=ImageType, VR=CS",
    "value" : ""
}],
"laterality" : {
    "requirement" : "Optional",
    "moodalityConstraint" : "All",
    "mapping" : "TagNumber=00200060, Keyword=Laterality, VR=CS",
    "value" : "R|L"
},
"imageLaterality" : [{
    "requirement" : "Optional",
    "moodalityConstraint" : "All",
    "mapping" : "TagNumber=00200062, Keyword=ImageLaterality, VR=CS",
    "value" : "R|L|U|B"
}],
"contrastBolusAgent" : {
    "requirement" : "Optional",
    "moodalityConstraint" : "All",
    "valueType" : "string|TagNumber=00180010, Keyword=ContrastBolusAgent, VR=LO",
    "value" : ""
},
"sliceThickness" : [{
    "requirement" : "Optional",
    "moodalityConstraint" : "CT|MR|NM|PT",
    "mapping" : "TagNumber=00180050, Keyword=SliceThickness, VR=DS",
    "value" : ""
}],
"patientPosition" : {
    "requirement" : "Optional",
```

```
        "moodalityConstraint" : "CT|MR",
        "mapping" : "TagNumber=00185100, Keyword=PatientPosition, VR=CS",
        "value" : ""
    },
    "convolutionKernel" : [{
        "requirement" : "Optional",
        "moodalityConstraint" : "CT|NM|PT",
        "mapping" : "TagNumber=00181210, Keyword=ConvolutionKernel, VR=SS",
        "value" : ""
    }],
    "scanningSequence" : [{
        "requirement" : "Optional",
        "moodalityConstraint" : "MR",
        "mapping" : "TagNumber=00180020, Keyword=ScanningSequence, VR=CS",
        "value" : "SE|IR|GR|EP|RM"
    }],
    "acquisitionType" : [{
        "requirement" : "Optional",
        "moodalityConstraint" : "MR",
        "mapping" : "TagNumber=00180023, Keyword=MRAcquisitionType, VR=CS",
        "value" : "2D|3D"
    }],
    "temporalResolution" : [{
        "requirement" : "Optional",
        "moodalityConstraint" : "MR",
        "mapping" : "TagNumber=00200110, Keyword=TemporalResolution, VR=DS",
        "value" : ""
    }],
    "receiveCoilName" : [{
        "requirement" : "Optional",
        "moodalityConstraint" : "MR",
        "mapping" : "TagNumber=00181250, Keyword=ReceiveCoilName, VR=SH",
        "value" : ""
    }],
    "transmitCoilName" : [{
        "requirement" : "Optional",
        "moodalityConstraint" : "MR",
        "mapping" : "TagNumber=00181251, Keyword=TransmitCoilName, VR=SH",
        "value" : ""
    }],
    "magneticFieldStrength" : [{
        "requirement" : "Optional",
        "moodalityConstraint" : "MR",
        "mapping" : "TagNumber=00180087, Keyword=MagneticFieldStrength, VR=DS",
        "value" : ""
    }],
    "scanOptions" : [{
        "requirement" : "Optional",
        "moodalityConstraint" : "MR",
        "mapping" : "TagNumber=00180022, Keyword=ScanOptions, VR=CS",
        "value" : "PER|RG|CG|PPG|FC|PFF|PFP|SP|FS"
    }],
    "patientOrientation" : [{
        "requirement" : "Optional",
        "moodalityConstraint" : "All",
        "mapping" : "TagNumber=00200020, Keyword=PatientOrientation, VR=CS",
        "value" : ""
    }],
    "outputPower" : [{
        "requirement" : "Optional",
        "moodalityConstraint" : "US",
        "mapping" : "TagNumber=00185000, Keyword=OutputPower, VR=SH",
```

```
        “value” : “”
    }],
    “transducerType” : [{
        “requirement” : “Optional”,
        “moodalityConstraint” : “US”,
        “valuemappingType” : “TagNumber=00186031, Keyword=TransducerType, VR=CS”,
        “value” : “SECTOR_PHASED|SECTOR_MECH|SECTOR_ANNULAR|LINEAR|CURVED LINEAR|SINGLE
CRYSTAL|SPLIT XTAL CWD|IV_PHASED|IV_ROT XTAL|IV_ROT MIRROR|ENDOCAV_PA|ENDOCAV_MECH|ENDOCAV_
CLA|ENDOCAV_AA|ENDOCAV_LINEAR|VECTOR_PHASED”
    }],
    “transducerData” : [{
        “requirement” : “Optional”,
        “moodalityConstraint” : “US”,
        “mapping” : “TagNumber=00185010, Keyword=TransducerData, VR=LO”,
        “value” : “”
    }],
    “viewPosition” : [{
        “requirement” : “Optional”,
        “moodalityConstraint” : “CR|DR”,
        “mapping” : “TagNumber=00185101, Keyword=ViewPosition, VR=CS”,
        “value” : “”
    }],
    “radiopharmaceutical” : [{
        “requirement” : “Optional”,
        “moodalityConstraint” : “NM|PT”,
        “mapping” : “TagNumber=00180031, Keyword=Radiopharmaceutical, VR=LO”,
        “value” : “”
    }],
    “radionuclideTotalDose” : [{
        “requirement” : “Optional”,
        “moodalityConstraint” : “NM|PT”,
        “mapping” : “TagNumber=00181074, Keyword=RadionuclideTotalDose, VR=DS”,
        “value” : “”
    }]
}]
}
```

Developer Information Notes — Not For Public Distribution

AI Results

- CSV submission should allow for any item in the data dictionary to be submitted, even if not required.
- Any data in a CSV not expected should be ignored, for example, all required column headers exist and there are additional columns, just ingest those in the template and ignore those that are not.
- A manually submitted or uploaded CSV should have the same rules and processing applied.
- File naming in the ingestion documentation is to ensure unique file names. The file names should be noted by the ingestion service only to determine if the particular file has been ingested before. No matter what the name is, as long as it has not been processed prior, it should be processed. It is the contents that matter, not the name.
- HL7 messages may have segments included that are not part of the schema, the data in these segments should be ignored.
- For AI results, each OBX segment in the ORU is to be treated like a unique row in a CSV, although the PID and ORC segments will have to be reused for each data dictionary object created.
- For AI results, the status of the OBX segment is not to be considered, only that the message type is an ORU.
- In HL7 messages ensure to note the codes that are tied to manufacturer, model and software version of the algorithm for mapping purposes.
- In FHIR messages ensure to note the codes that are tied to the manufacturer, model and software version of the algorithm for mapping purposes.
- For FHIR AI Results which are coded as CDEs, note that each RDE coded component is equivalent to a row in the CSV, other values will need to be reused for each data dictionary object created.
- Note that not all items in data dictionary are mapped for each submission type due to the information available in that object, although required items have a mapping for each.

Radiology Reports

- Physician ID is PHI and needs to use the MPI service.
- When extracting text for HL7 reports, values from OBX1-9 for all OBX segments in the message should be extracted and processed through DeID other that the OBX segment used to communicate Study Date.
- HL7 reports should be validated as ORU messages with an OBX result status = ‘F’ which should be checked for a segment other than the one to communicate Study Date.
- In FHIR reports referencing Observation resources, the value string for all Observations should be extracted and processed through DeID.