Medical Imaging AI - Data Standards

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We expect increasing numbers of AI algorithms in medical imaging. We collectively face challenges related to being **safe** and **effective**.

How do we:

- Ensure many data sources integrate with many data consumers (**interoperability**)
- Ensure the source/provenance of AI results is accurately recorded/tracked (**traceability**)
- Ensure any vetting of AI results by humans is recorded/communicated (**verification**)
- Database AI results and drive CDS and automated workflows (**machine readability**)
Open international data standards are a sensible, effective approach.

Some are established:

- **DICOM Images**
  - *the infrastructure radiology is built on*

- **DICOM SR**
  - *already supported in many imaging products and servers*

- **DICOMweb services**
  - *supported in significant number of products*
  - WADO-RS – retrieve DICOM data using HTTP
  - STOW-RS – store DICOM data using HTTP

- **AIM - Annotation and Image Markup**
  - *transcoding defined in DICOM Part 21*

- **Codesets** – **SNOMED, LOINC, RSNA RadLex, ACR *-RADS**
  - *Already leveraged in DICOM, HL7, CDA, FHIR*
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Others are newly published:

- **FHIR ImagingStudy**
  - indexes RESTful DICOMweb image resources

- **Simplified JSON encoding of DICOM SR**
  - published for Trial Implementation

- **IHE AI Results (Profile)**
  - implementation guide for standardized storage and presentation
  - Public comment during March 2020

- **IHE AI Workflow for Imaging (Profile)**
  - implementation guide for managing execution and coordinating inputs/outputs
  - Public comment during March 2020

- **Radiology Common Data Elements (CDE) – (ACR & RSNA)**
  - Codes for AI Results and AI Analysis Procedures