

## **Virtual Hospital - FHIR Medical Imaging Exam Workflow**

### **Abstract**

Medical imaging examination is one of the most important aspects in a hospital, so this process must have a smooth and efficient workflow. Recently, both DICOM and HL7 have published web specifications, DICOM web and HL7 Fast Healthcare Interoperability Resources (FHIR), which is easier to be adopted by IT system developers and sharing medical images or related data across departments. This journal plans to develop a more integrated and standardized system for the whole medical image examination workflow using the implementation of FHIR standard.

FHIR has different types of resource that can be used to exchange and/or store data in order to solve a wide range of healthcare related problems, both clinical and administrative. One of the resources used in our system is the FHIR ImagingStudy. FHIR ImagingStudy provides information related to DICOM images, including its study, series, and instance UID. A set of medical images are retrieved using WADO protocol and shown in a web-based image viewer. The viewer could be used for marking annotations on medical images, the annotation is stored in SVG format. According to the specification of FHIR Observation resource, the annotations would be XML formatted and could be stored in FHIR server. After marking annotation, physicians will describe the finding which is also stored in FHIR Observation. In the end, the physician will write a report and store it into FHIR DiagnosticReport. The FHIR Observation annotations could be referenced by FHIR Observation image findings. And the FHIR Observation image findings could be referenced by FHIR DiagnosticReport. Using FHIR as a standard for a more clinically integrated system in the field of radiology would be easier for implementation, understanding, and management.