

Case Studies – Imaging Pipeline Ingestion Framework



Development of Imaging Platform for Secondary Analysis

Client Requirement

Client is a leading Pharmaceutical company powered by technology leadership in R&D, world-class drug commercialization, global access and data science. Client wanted to standardize the ingestion pipeline for DICOM and non-DICOM images acquired from external sources

Client wanted CitiusTech to conceptualize and implement image acquisition, storage, data visualization and annotation workflow solutions by setting up a data management imaging pipeline in their environment

Value Delivered

- Reduce time and effort in acquiring images from external parties
- Powerful search providing quick access to data on one enterprise platform
- Metadata management and cataloging using FHIR standard for better image exchange
- Data preparation at scale for machine learning algorithms

CitiusTech Solution

- Setting up ingestion pipeline for DICOM and non-DICOM native data formats
- Standardizing metadata using sponsor defined taxonomy and structured codes
- Extraction of metadata from DICOM and non-DICOM images and mapping it to FHIR resources to create a systematic approach to metadata cataloging and management
- Automation in Quality control and deidentification of image and metadata
- Design UX/UI to facilitate data browsing and viewing through robust search on the platform
- Orchestration of Radiologist workflow for image access through 3rd part viewer and performing necessary annotation
- Exchanging annotated data internally and externally to build cohort for machine learning

SUV Measurements in Image Viewer

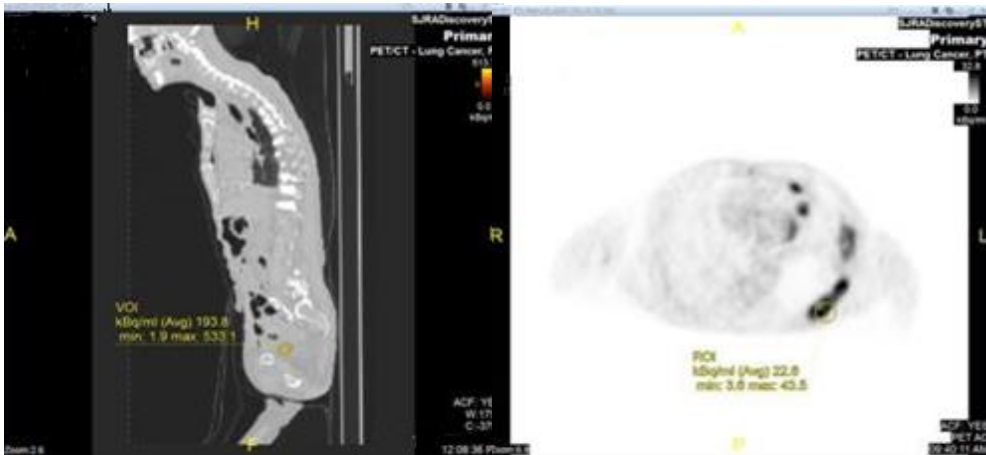
Client Requirement

- Calculate SUV (Standardized Uptake Value) for PET images based on user preferences (Body mass, Surface area, etc.)
- Calculate SUV for the selected ROI from the image or 3D reconstruction
- Customized calculations based on the source PACS
- Ensure that the calculations were aligned with existing PET applications in the product suite

CitiusTech Solution

- Worked closely with Clinicians and global PET SMEs to establish and implement the calculation algorithms
- Validated the algorithms with Clinical application specialists
- Added support for preserving and restoring values in presentation state objects
- Successfully demonstrated the feature at RSNA

Solution Schematic



Value Delivered

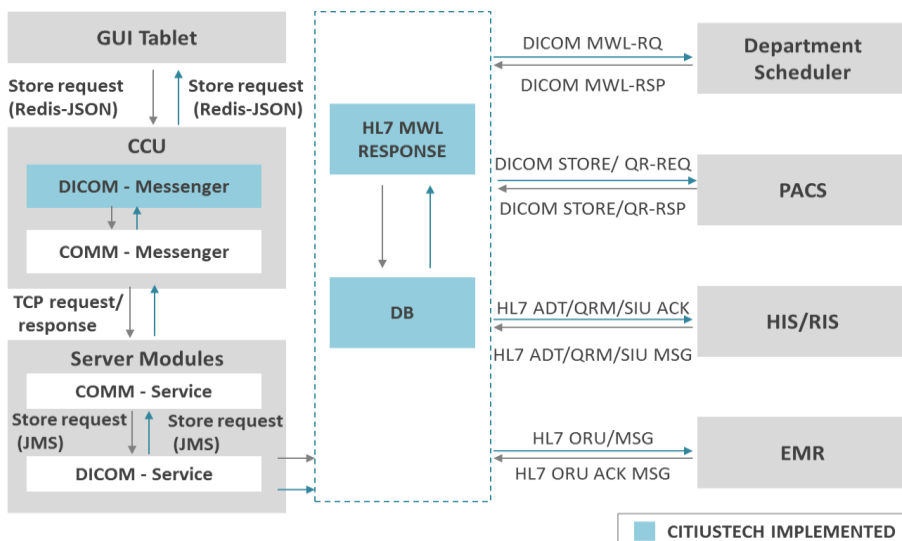
- Advanced oncology clinical measurements are now part of existing Radiology Viewer with standard SUV calculations
- Clinical measurement toolbar controls and image overlay controls have similar user experience as specialized oncology image viewer

Interoperability for Imaging Devices

Client Requirement

Client is a global medical device company and a leader in providing solutions for orthopaedics. Client wanted to achieve interoperability between its image management solutions and RIS, PACS and other hospital applications. CitiusTech was selected for its expertise in interoperability and standards-based messaging using DICOM and HL7

Solution Schematic



CitiusTech Solution

CitiusTech established a team of interoperability professionals with expertise in interface design and development. CitiusTech's services included:

- Integration of image management solution with RIS, PACS and hospital systems in DICOM and HL7 standards using InterSystems Ensemble
- Provision of a platform for communication in JSON, TCP, JMS and XML formats between applications
- Image conversion using DCMTK open source imaging library

Value Delivered

- Developed a standards-based solution to enable extensibility to other applications
- Leveraged CitiusTech's expertise to provide interoperability between client applications and RIS, PACS, and other hospital information systems