

# DICOM's Standardization in Histo-Pathology

**Type of article: Conference abstract**

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## **Abstract:**

**Background:** The Digital Imaging and Communications in Medicine (DICOM) standard helps to represent, store, and to exchange healthcare images associated with its data. DICOM develops over time and is continuously adapted to match the rigors of new clinical demands and technologies. An uphill battle in this regard is to conciliate new software programs with legacy systems.

**Methods:** This work discusses the essential aspects of the standard and assesses its capabilities and limitations in a multisite, multivendor healthcare system aiming at Whole Slicing Image (WSI) procedures. Selected relevant DICOM attributes help to develop and organize WSI applications that extract and handle image data, integrated patient records, and metadata. DICOM must also interface with proprietary file formats, clinical metadata and from different laboratory information systems. Standard DICOM validation tools to measure encoding, storing, querying and retrieval of medical data can verify the generated DICOM files over the web.

**Results:** This work investigates the current regulations and recommendations for the use of DICOM with WSI data. They rely mostly on the EU guidelines that help envision future needs and extensions based on new examination modalities like concurrent use of WSI with in-vitro imaging and 3D WSI.

**Conclusion:** A DICOM file format and communication protocol for pathology has been defined. However, adoption by vendors and in the field is pending. DICOM allows efficient access and prompt availability of WSI data as well as associated metadata. By leveraging a wealth of existing infrastructure solutions, the use of DICOM facilitates enterprise integration and data exchange for digital pathology. In the future, the DICOM standard will have to address several issues due to the way samples are gathered and encompassing new imaging technologies.

**Keywords:** DICOM, Whole Slide Imaging, Cytology, Histology Standards, Theragnostics, Tissue Studies.

## **1. Conflict of interest statement**

This article is a conference abstract presented at the International Congress on Health Sciences and Medical Technologies, Tlemcen Algeria 5-7 December 2019, ICHSMT'19.

## **2. Authors' biography**

No Biography.

## **3. References**

No references