Ultrasound DICOM Image Support   
NBIA 5.1

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Document Approvals

The list contains the name and contact information for the core project team and any key stakeholders who have an interest in the success of the project. An “S” identifies persons responsible for approval from the stakeholder groups. Sign off of the document would be required when a decision is made not to take action for defined gaps.

|  |  |  |
| --- | --- | --- |
| S | Name | Role |
| S | Robert Shirley | NCICBIIT |
| S | Peter Yan |  |
|  | Eric Kascic | Technical Lead |
|  |  |  |

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# Introduction

The purpose of this document is to describe the scope for the tasks related to the support of ultrasound DICOM images in NBIA applications.

# Objectives

There are three objectives for this feature:

#### Allow a user to submit ultrasound DICOM images using CTP.

#### Allow a user to search for ultrasound DICOM images in the local and remote nodes by ultrasound specific search criteria.

#### Allow a user to view ultrasound images in thumbnail and multi-frame ultrasound images in a slide show.

#### Allow a user to retrieve ultrasound images through the NBIA web application.

# Out of Scope

This task is based on the assumption that CTP is capable of extracting ultrasound images stored in the DICOM files. The NBIA team will depend on John Perry to test and upgrade CTP to create the thumbnail images on varieties of images types stored in ultrasound DICOM files.

# Deliverables

* NBIA Database adapter software that support ultrasound DICOM file submission.
* NBIA web application software that allows search and retrieval of ultrasound DICOM files..
* NBIA grid software allows search and retrieval of ultrasound DICOM files.

# Risks

* The NBIA team does not have the subject matter expertise to come up with a set of useful search criteria for ultrasound image and to map the specific DICOM tag to the set of predefined search criteria. This means that the schedule is dependent upon external resources that the NBIA team doesn’t “control”. These resources include:
* End users who help to define the set of search criteria.
* A radiologist who is specialized in ultrasound image and familiar with the DICOM tag.
* CTP server/client which is used for image submission is developed by a third party and currently does not fully support the generation of thumbnail images based on the compressed images stored in ultrasound DICOM files. Again, this means that fully support of ultrasound DICOM files is dependent upon external resources that the NBIA team doesn’t “control”. These resources include: The developer of CTP: John Perry

# High-level Requirements

#### 1. Data Submission using CTP

#### 1.1. A user shall be able to submit an ultrasound DICOM files to NBIA through CTP.

#### 1.2. CTP should be able to handle both DICOM files with uncompressed single frame ultrasound image and DICOM files with uncompressed multi-frame images.

#### 1.3. Submissions should be indexed to allow for fast searching.

#### 2. Searching and Retrieval (webapp)

#### 2.1. A user shall be able to search for patients based upon fields in ultrasound DICOM files. These fields shall include:

#### 2.1.1. Color data present

#### 2.1.2 Single frame or Multi-frame

#### 2.1.3. Ultrasound image Mode

2.2. A user shall only be able to retrieve associated info that he is authorized to READ.

2.3. A user shall only be able to drill down from patient search to retrieve associated study and series info that he is authorized to READ.

2.4. A user shall be able to view multi-frame ultrasound image in a slide show.

2.5. A user shall be able to select one or multiple patient/study/series and add to data basket and the selected data should be highlighted to indicate the selection status.

2.6. A user shall be able to save the search criteria, retrieve it later and resubmit the saved criteria.

3. Remote Seacrching (grid)

#### 3.1. A grid client shall be able to search for patients in other grid nodes based upon fields specific in ultrasound DICOM files. These fields shall include:

#### 3.1.1. Color data present

#### 3.1.2 Single frame or Multi-frame

#### 3.1.3. Ultrasound image Mode

#### 3.2. The grid service shall only return info that a client is authorized to READ from. If unsecured grid instance, this means only PUBLIC collection//sites. If secured grid instance, then this will depend on client’s X.509 credentials.

3.3. The 5.1 grid service shall be able to retrieve image info that includes ultrasound specific field if matching image is an ultrasound image.

3.4. The grid service which supports retrieval of ultrasound image shall also support the grid client in 4.5 and 5.0

3.5. The grid service shall support retrieval of available search terms associate with ultrasound images from grid nodes which support 5.1 NBIA grid service.