Digital Imaging and Communications in Medicine (DICOM)

Supplement 255: Mutually Exclusive Microscopy Bulk Annotations

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Open issues

1	Are there issues migrating from Microscopy Bulk Simple Annotations to Microscopy Bulk Enhanced Annotations Storage SOP Class?
2	Are there issues with leaving the number of mutually exclusive concepts that can be defined within a group unconstrained?
3	Are there issues during implementation?

Closed Issues

4	Can mutual exclusion be defined across SOP Instances? Annotation group sequences that exhibit mutual exclusivity are defined by setting the annotation group sequence elements Mutual Exclusivity Group UID (006A,XXX1) tag to a common Value. Conceptually, annotation mutual exclusivity could be described across multiple SOP instances. This proposal requires mutually exclusivity concepts to be entirely self contained within a SOP Instance. Rational for limiting mutual exclusion concepts to a single SOP Instance: ● Simplifies understanding of the annotation for consumers of the annotation. All concepts required to understand an annotation are fully self contained within the annotation.

	• The ability to extend annotations with arbitrary concepts greatly complicates the interpretation of measurements encoded within the annotation group sequence's Measurement Sequence (0066,0121). The addition of mutually exclusive annotations through sister SOP instances could alter the meaning of the overall annotation so as to render measurements embedded within the original source annotation invalid.
5	Meaning of measurements on mutually exclusive annotations? Annotations can optionally contain embedded measurements. For mutually exclusive annotations the assumption is the measurements will be made in reference to the annotation after the application of mutual exclusive constraints. Assuming, mutually exclusive concepts are self-contained within the SOP Instance this is straightforward.
6	Mechanism through which mutual exclusion is communicated? The proposal utilizes annotation ordering to describe mutual exclusion. This method was chosen as it is: 1) backwards compatible with the existing Bulk Microscopy Simple Annotation, 2) is compact, space efficient, and 3) has relatively low complexity and can be easily implemented using existing software libraries. *Alternative Approaches Considered* • Radiotherapy Annotations: DICOM Radiotherapy annotations provide mechanisms to use constructive solid geometry (CSG) operations to describe complex annotation concepts from a collection of virtually described shapes using union, difference, and intersection operations. This was rejected due to 1) a lack of general lack of compatibility with the existing Bulk Microscopy Simple Annotations, 2) the complexity required during annotation creation and interpretation, and 3) that it would require greater data storage sizes to communicate the same concepts when compared to the proposed mechanism. • *XOR:* During proposal drafting the proposal was considered to alternatively describe voids within annotations by describing the void using an additional nested annotation within the annotation group. Conceptually annotations within a group could then be composited using a XOR operation. Conceptually this is advantageous in that the concept of annotation order is no longer required as voids within annotations are described within the annotation. However, this concept was rejected because it would greatly increase the data storage sizes for annotations with describing nested concepts, e.g., heatmap, because it would require duplicate annotation of the contour of each nested concept.

	• *Implicit determination of annotation order on position within the group sequence:* This concept was rejected because it could greatly increase the total DICOM file size by requiring an enormous number of annotation groups to represent each novel annotation ordering.

Scope and Field

Overview

This document creates the Microscopy Bulk Enhanced Annotation SOP Class to extend the capabilities of the existing bulk Microscopy Bulk Simple Annotation Module. This adds annotations that define overlapping vector graphics with mutually exclusive meaning. Examples of annotations that this proposal will enable include: quantized heatmap regions, holes/voids, and other nested mutually exclusive concepts, e.g., tumor tissue contained within healthy tissue.

Background

The Microscopy Bulk Simple Annotation SOP Class and IOD (Supplement 222) were added to the DICOM Standard to provide a mechanism to efficiently encode machine learning (ML) and human generated vector graphics annotations for slide microscopy imaging. The Microscopy Bulk Simple Annotation IOD supports vector graphic definitions of points, lines, polylines, rectangles, ellipses, and polygons. The SOP Class has been successfully tested by WG 26 in the 2024, 2025, and 2026 connectathons. Examples of annotations encoded using the SOP Class are available from Imaging Data Commons and the 2024, 2025, and 2026 DICOM WG-26 connectathon archives.

The Microscopy Bulk Simple Annotation SOP Class does not provide a mechanism to encode mutually exclusive overlapping regions. Examples of such concepts are: 1) quantized heat map regions and 2) hole(s)/void(s) within a closed polygon tissue region. Supplement 222 explicitly excluded the definition of holes/voids within an annotation and forbade the use of polygon “key holeling” to describe holes. The absence of a mechanism to describe vector graphic annotation with mutually exclusive regions significantly limits the type of annotations which can be described using the SOP Class.

This supplement introduces a new SOP Class, Microscopy Bulk Enhanced Annotation and adds tags to the existing Microscopy Bulk Simple Annotation Modules that are conditional on the definition of Microscopy Bulk Enhanced Annotation SOP Class.

Annotation mutual exclusivity is communicated by defining a set of annotation groups across which mutual exclusivity is exhibited. Mutually exclusive relationships are defined by setting the Mutual Exclusivity Group UID (006A,XXX1) tag, within the annotation group of mutually

exclusive annotation groups to the same Value. Annotations with different Mutual Exclusivity Group UID Values or undefined Values are not mutually exclusive with each other.

The semantics of dimensionally overlapping mutually exclusive annotations is determined by annotation ordering. The order of annotations is defined using either Mutually Exclusive Annotation Group Order (006A,XXX2) or Mutually Exclusive Annotation Order (006A,XXX3) tags. The annotation with the greatest order value takes precedence and determines the meaning. Conceptually mutual exclusivity could also be used to simplify stored annotation geometry for cases where complex annotations overlap at an annotation edge.

Mutually exclusive concepts do not apply when annotations do not overlap.

DICOM PS 3.2 Conformance

Add SOP Class to Table A.1-2

UID Value		Category
UUU1	Microscopy Bulk Enhanced Annotations Storage SOP Class	Transfer

DICOM PS 3.3: Information Object Definitions

Modify to Table C.37.1-2. Microscopy Bulk Simple Annotations Module Attributes adding tags to Annotation Group Sequence (006A,0002); Annotation Group Sequence.

Table C.37.1-2. Microscopy Bulk Simple Annotations Module Attributes

Attribute Name	Tag	Type	Attribute Description
Annotation Group Sequence	(006A,0002)	1	Groups of Annotations sharing common characteristics, such as graphic type, properties or measurements. One or more Items shall be included in this Sequence.
…			
>Annotation Group Algorithm Identification Sequence	(006A,0008)	1C	The algorithms used to create the Annotations in this group. One or more Items shall be included in this Sequence. Required if Annotation Generation Type (006A,0007) is AUTOMATIC or SEMIAUTOMATIC.
>Mutual Exclusivity Group UID	**(006A,XXX1)**	**1C**	**Identifies the mutual exclusivity group that this annotation group is a member of.** **Annotation groups that share the same value of Mutual Exclusivity Group UID (006A,XXX1) are mutually exclusive with each other.** **See C.37.1.2.1.X Mutual Exclusivity,**

			Maybe present only if SOP Class UID (0008,0016) is UUU1.
>Mutually Exclusive Annotation Group Order	**(006A, XXX2)**	**1C**	**A single unsigned integer value that assigns the same mutually exclusive order to all annotations within this Annotation Group.** **See C.37.1.2.1.X Mutual Exclusivity.** **Required if Mutual Exclusivity Group UID (006A,XXX1) is present and Mutually Exclusive Annotation Order (006A,XXX3) is not present.**
>Mutually Exclusive Annotation Order	**(006A, XXX3)**	**1C**	**An array of unsigned integer values that assign a mutually exclusive order to each individual annotation in this Annotation Group.** **There shall be Number of Annotations (006A,000C) Values in this Attribute.** **See C.37.1.2.1.X Mutual Exclusivity.** **Required if Mutual Exclusivity Group UID (006A, XXX1) is present and Mutually Exclusive Annotation Order (006A,XXX3) is not present.**
…			
>>>Floating Point Values	(006A, 0011)	1C	For image-relative coordinates, specifies whether coordinates are to be interpreted relative to the individual Frame pixel origins, or relative to the Total Pixel Matrix origin (see Section C.8.12.4.1.4). Required if Annotation Coordinate Type (006A,0001) is 2D. Enumerated Values: FRAME relative to individual Frame VOLUME relative to Total Pixel Matrix Note The use of the term "VOLUME" to refer to the Total Pixel Matrix is historical and inherited from Pixel Origin Interpretation (0048,0301) use in Presentation States and Structured Reports, and is equivalent to "MATRIX" for Bounding Box Annotation Units

			(0070,0003), and does not refer to 3D coordinates. **Annotation measurements values generated for UUU1 SOPClass must be generated with respect to all applicable mutually exclusive concepts.**

Modify section C.37.1.2.1.2 Measurements to append the paragraph.

C.37.1.2.1.2 Measurements

For each Annotation Group, optionally one or more measurements may be defined, either for every Annotation or a subset of Annotations. Measurements are described by coded type and unit.

When there is a measurement for every Annotation, then Floating Point Values (0066,0125) contains the corresponding values for each of the Annotations. When there are measurements for only a subset of Annotations, then Floating Point Values (0066,0125) contains measurement values for the Annotations that are referenced in Annotation Index List (006A,0011).

More than one Measurements Sequence (0066,0121) Item may be used, for example to encode different types of measurements, or to encode different components of a measurement that is a tuple.

Within one Annotation Group the types of measurements are the same for all Annotations within that group.

Annotation measurements reported for UUU1 SOPClass must be reported with respect to all applicable annotation mutually exclusive concepts.

Append C.37.1.2.1.X Mutual Exclusivity in section C.37.1.2.1 and figures: C.37.1.2.1.X-1, C.37.1.2.1.X-2, & C.37.1.2.1.X-3

C.37.1.2.1.X Mutual Exclusivity

Bulk simple annotations use vector graphic primitives to define properties of imaging regions. In regions where multiple annotation groups overlap, by default, the properties of all overlapping annotation groups apply. Mutually exclusive annotations are introduced here to allow specified properties to supersede, "shadow", other overlapping properties. Examples of this include: tissue properties (Tumor, Stroma, Necrosis), cellular components (Nucleus, Cytoplasm, Membrane), specimen properties (tissue, void, hole), and AI results (e.g., quantized probabilities). Examples of mutual exclusivity are illustrated in Figure C.37.1.2.1.X-1.

Annotation groups defined with the same Value of Mutual Exclusivity Group UID (006A,XXX1) are mutually exclusive with each other. Mutual exclusivity is relevant where two or more mutually exclusive annotations overlap (Figure C.37.1.2.1.X-2). For overlapping mutually exclusive annotations, the properties of the annotations with the greatest ordering apply to the region of overlap (Figure C.37.1.2.1.X-2-E). Due to mutual exclusivity, the properties of the annotations with the same Value of Mutual Exclusivity Group UID (006A,XXX1) and lower order do not apply.

Mutually exclusive annotation order is defined using either the Mutually Exclusive Annotation Group Order (006A, XXX2) tag or the Mutually Exclusive Annotation Order (006A,XXX3) tag. Multiple annotation groups may share the same ordering. If this occurs the properties defined by the annotation groups sharing the same ordering apply at regions of overlap (Figure C.37.1.2.1.X-2-G). Mutual exclusivity does not alter annotation meaning outside the regions of mutual exclusive annotation overlap (Figure C.37.1.2.1.X-3).

Mutual exclusive relationships do not apply for:

- **Annotations with different Mutual Exclusivity Group UID (006A,XXX1) Values or no defined Mutual Exclusivity Group UID (006A,XXX1) Value.**
- **Mutually exclusive annotations that do not overlap (Figure C.37.1.2.1.X-2-A and C.37.1.2.1.X-2-B).**
- **Mutually exclusive annotations with equal annotation ordering (Figure C.37.1.2.1.X-2-C, Figure C.37.1.2.1.X-2-D, and Figure C.37.1.2.1.X-2-G).**

The meaning of additional overlapping annotations that are not part of a Mutual Exclusivity Group UID (006A,XXX1) apply, subject to their own mutual exclusivity constraints (Figure C.37.1.2.1.X-2-F).

Mutual Exclusivity Group UID (006A,XXX1) is local in scope to the SOP Instance.

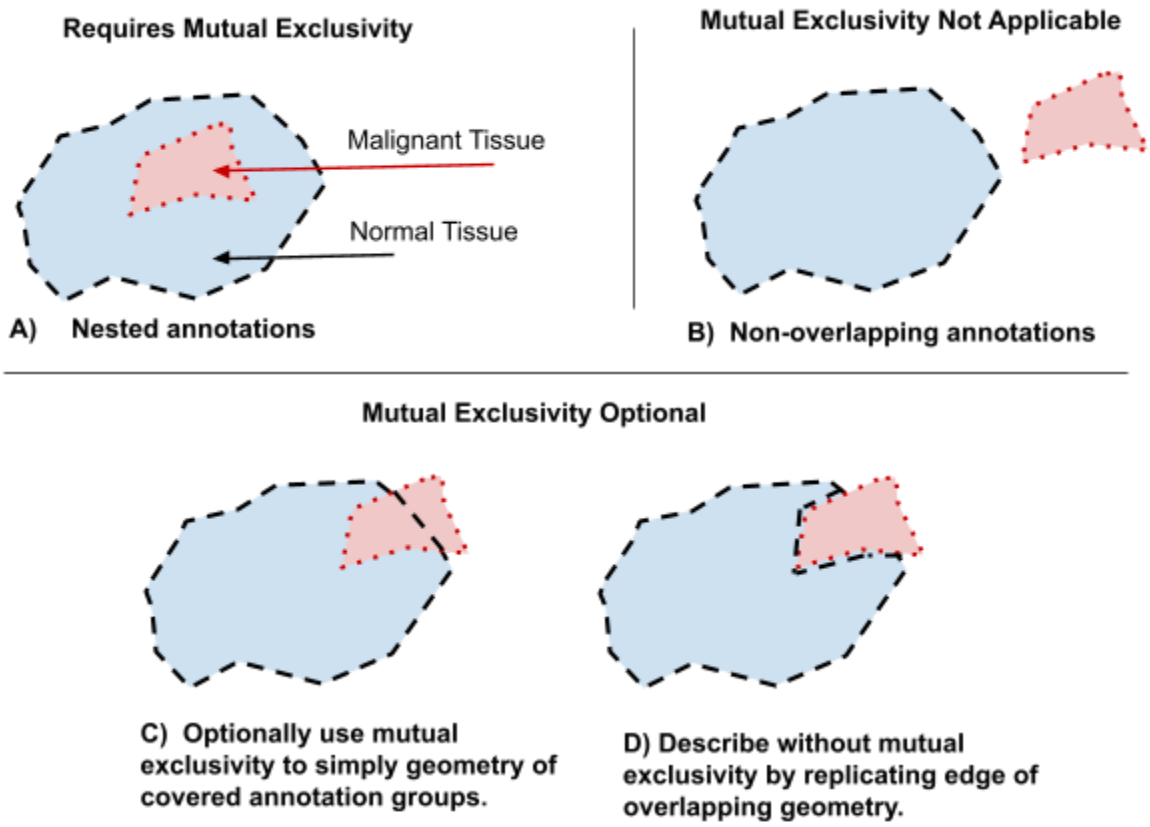


Figure C.37.1.2.1.X-1: Cartoon example illustrating the utility of mutual exclusivity for annotation groups that define discrete properties: A) Mutual exclusivity is required to define nested discrete concepts; B) Mutual exclusivity is not required to discrete concepts that do not overlap; Mutual exclusivity may be beneficial when defining partially overlapping concepts with discrete meaning: C) mutually exclusivity could be used to simplify masked object geometry, but D) is not required.

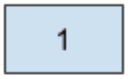
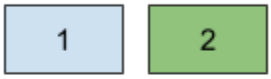
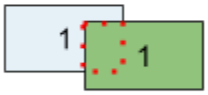
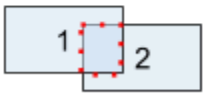
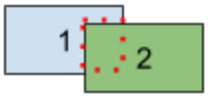
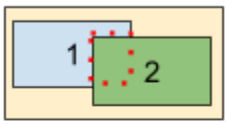
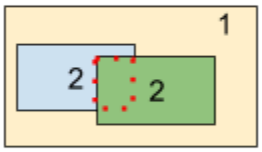
Description	Graphic	Properties of region of overlap (perimeter defined by red dots)
A) Single annotation		NA
B) Non-overlapping annotations		NA
C) Overlapping mutually exclusive annotation with equal order		Green and blue have same order both apply.
D) Overlapping mutually exclusive annotations from the same annotation group		Overlapping annotations are both blue, order doesn't matter.
E) Overlapping mutually exclusive annotations with different order		Green annotation has greater annotation ordering
F) Overlapping mutually exclusive annotations with a different order and a non-mutually exclusive annotation		Green has greatest ordering. Yellow is not not a mutually exclusive annotation and applies everywhere it is defined.
G) Overlapping mutually exclusive annotations with equal and different orders		Green and blue annotations both have greatest annotation ordering.

Figure C.37.1.2.1.X-2: Example properties of overlapping annotations. Colors defines annotation groups. Rectangles define annotation geometry. Annotation mutually exclusive ordering is defined by the number within the box. Annotations with mutually exclusive ordering define the same Value for Mutual Exclusivity Group UID (006A,XXX1). Unnumbered boxes are not mutually exclusive (Mutual Exclusivity Group UID does not equal, the UID value in the numbered annotation groups or is not defined).

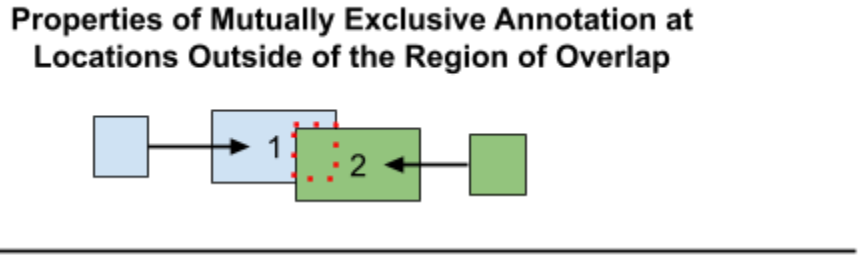


Figure C.37.1.2.1.X-3: Mutually exclusive annotations define properties at regions not subject to mutual exclusivity constraints.

DICOM PS 3.4: Service Class Specification

Amend DICOM PS 3.4 Annex B.5 Standard SOP Classes as follows:

Table B.5-1. Standard SOP Classes

SOP Class Name	SOP Class UID	IOD Specification (defined in PS3.3)
Microscopy Bulk Enhanced Annotations Storage	**UUU1**	**Microscopy Bulk Enhanced Annotations IOD**

DICOM PS 3.6: Data Dictionary

Amend DICOM PS 3.6 – Data Dictionary – Section 6 Registry of DICOM Data Elements as follows:

Table 6-1. Registry of DICOM Data Elements

Tag	Name	Keyword	VR	VM	
(006A,XXX1)	**Mutual Exclusivity Group UID**	**MutualExclusivityGroup UID**	**UI**	**1**	
(006A,XXX2)	**Mutually Exclusive Annotation Group Order**	**MutuallyExclusiveAnnotationGroupOrder**	**UL**	**1**	
(006A,XXX3)	**Mutually Exclusive Annotation Order**	**MutuallyExclusiveAnnotationOrder**	**OL**	**1**	

Amend DICOM PS 3.6 - Data Dictionary - Annex A - Registry of DICOM Unique Identifiers (UIDs) as follows:

Table A-1. UID Values

UID Value	UID Name	UID Type	Part
…	…	…	…
UUU1	**Microscopy Bulk Enhanced Annotations Storage**	**SOP Class**	**PS 3.4**
…	…	…	…

DICOM PS 3.15: Security and System Management Profiles

Amend: C.2 Creator RSA Digital Signature Profile:

Amend: E1 Application Level Confidentiality Profiles:

Table E.1-1. Application Level Confidentiality Profile Attributes

Attribute Name	Tag	Retd. (from PS3.6)	In Std. Comp. IOD (from PS 3.3)	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Mutual Exclusivity Group UID	**(006A, XXX1)**	**N**	**Y**	**K**		**K**								
Mutually Exclusive Annotation Group Order	**(006A, XXX2)**	**N**	**Y**	**K**										**K**
Mutually Exclusive Annotation Order	**(006A, XXX3)**	**N**	**Y**	**K**										**K**

DICOM PS 3.17: Explanatory Information

Item: Insert the following section and figures immediately following section VVVV and before section WWWW

VVVX.1 Microscopy Bulk Enhanced Annotation Introduction

The Microscopy Bulk Enhanced SOP Class extends the capabilities of the Microscopy Bulk Simple Annotation to enable the definition of vector graphics annotations that encode mutual exclusive properties. Mutual exclusive properties are spatially nested, overlapping annotations that describe concepts that do not overlap (Figure VVVX.2-1 and VVVX.2-2).

VVVX.2 Microscopy Bulk Enhanced Annotation Encoding Examples

Example 1: Tissue Classification

An example of a digital pathology annotation which requires mutually exclusive annotation is shown in Figure VVVX.2-1. The annotations shown describe concepts where tissue is defined as belonging to at most one category (*e.g.,* membrane, cytoplasm, nuclei, or etc.) and the concepts are spatially nested.

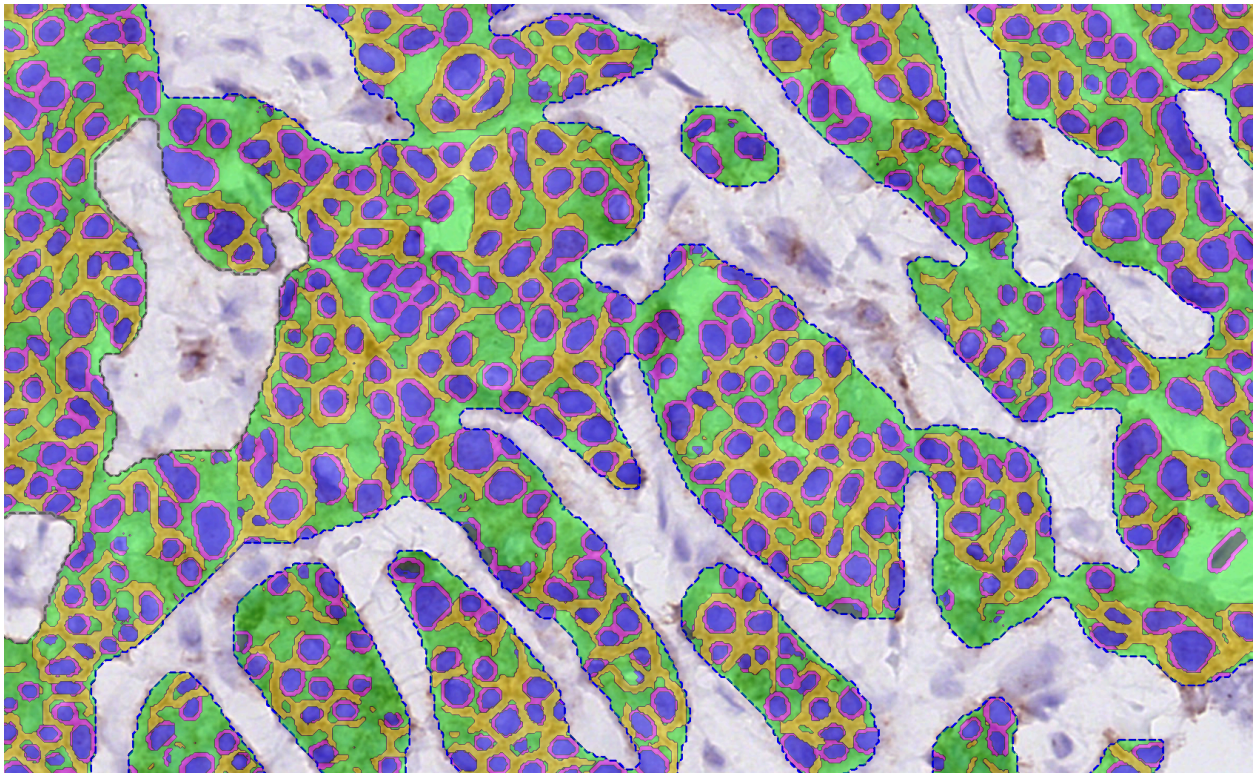


Figure VVVX.2-1: Example real-world annotation of digital pathology concept exhibiting mutual exclusivity, tissue defined as being in one class (membrane, cytoplasm, nuclei, etc.).

Using the Bulk Microscopy Enhanced SOP Class, regardless of complexity, the annotations like Figure VVVX.2-1 could be defined using one annotation group per classification. For simplicity the concept is illustrated as a two class problem in Figure VVVX.2-2. Figure VVVX.2-2 illustrates an annotation that describes the spatial location of normal and malignant tissue.

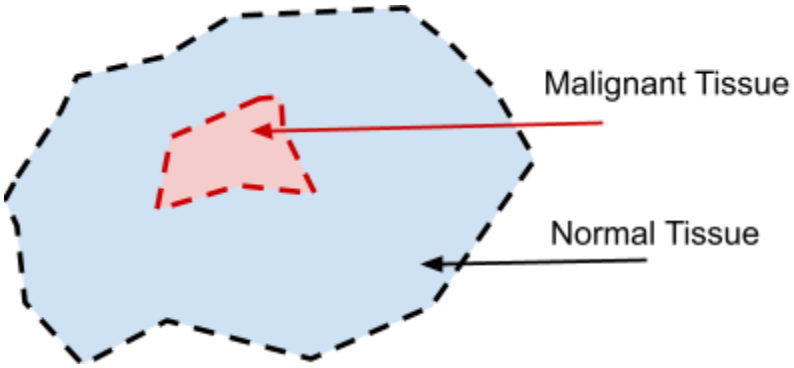


Figure VVVX.2-2: Example conceptual annotation of digital pathology concept exhibiting 2-class mutual exclusivity, tissue defined as being either malignant or normal.

This section illustrates the usage of the Section C.37.1.2 Microscopy Bulk Simple Annotations Module in PS3.3 using Microscopy Bulk Enhanced Annotation Storage SOP Class in PS3.4 to define a mutually exclusive annotation that describes Figure VVVX.2-2.

The example, Table VVVX.2-1, defines the annotation using two annotation group sequence elements to describe the annotation shown in Figure VVVX.2-2. Annotation group sequence element 1 describes the location of normal tissue. Annotation group sequence element 2 describes the location of malignant tissue. The two annotations are mutually exclusive, the malignant tissue annotation falls spatially within the boundaries of normal tissue bit is not normal tissue. To indicate that normal tissue, group sequence element 1, and malignant tissue, group sequence element 2, are mutually exclusive they both have the Mutual Exclusivity Group UID (006A,XXX1) set to the same Value, 1.2.3.254.3434.5334.

The spatial order of the two annotations is described using the MutuallyExclusiveAnnotationGroupOrder (006A,XXX2) tag. In the example, normal tissue, group sequence element 1, surrounds malignant tissue so it has a lower MutuallyExclusiveAnnotationGroupOrder (006A,XXX2) Value, 1, than malignant tissue, group sequence element 2, 2.

Table VVVX.2-1 shows the encoding of the Microscopy Bulk Enhanced Annotations Module for the example 1 above.

Name	Tag	Value	Comment

SOP Class UID	(0008,0016)	UUU1	Microscopy Bulk Enhanced Annotation SOPClass UID
...			
Frame of Reference UID	(0020,0052)	1.2.3.254.97824…	
...			
Annotation Coordinate Type	(006A,0001)	2D	
Annotation Group Sequence	(006A,0002)		
Annotation Group Sequence Element 1			
>Annotation Group Number	(0040,A180)	1	
>Mutual Exclusivity Group UID	(006A,XXX1)	1.2.3.254.3434.5334	UID match Making annotations mutually exclusive
>Mutually Exclusive Annotation Group Order	(006A,XXX2)	1	
>Point Coordinates Data	(0066,0016)	0.66675, 0.032, 0.6665, 0.03225, 0.6665, 0.03275, 0.66675, 0.033, 0.66725, 0.033, 0.66725, 0.03275, 0.6675, 0.0325, 0.6675, 0.03225, 0.66725, 0.032, ...	
>Long Primitive Point Index List	(0066,0040)	0x00000001	
>Annotation Group UID	(006A,0003)	1.2.3.255.9782.4…	

>Annotation Group Label	(006A,0005)	NormalTissue	
>Annotation Group Description	(006A,0006)	Normal tissue detected on H&E	
>Number Of Annotations	(006A,000C)	1	
…	…	…	,,,
>Graphic Type	(0070,0023)	POLYGON	
Annotation Group Sequence Element 2			
>Annotation Group Number	(0040,A180)	2	
>Mutual Exclusivity Group UID	(006A,XXX1)	1.2.3.254.3434.5334	UID match Making annotations mutually exclusive
>Mutually Exclusive Annotation Group Order	(006A,XXX2)	2	Precedence over normal tissue
>Point Coordinates Data	(0066,0016)	0.0001, 0.0003, 0.0001, 0.0005, 0.0009 ...	
>Long Primitive Point Index List	(0066,0040)	0x00000001	
> Annotation Group UID	(006A,0003)	1.2.3.255.9782.5…	
>Annotation Group Label	(006A,0005)	MalignantTissue	
>Annotation Group Description	(006A,0006)	Malignant tissue detected on H&E	
>Number Of Annotations	(006A,000C)	1	
…	…	…	…
>Graphic Type	(0070,0023)	POLYGON	

Example 2: Quantized probability (e.g., vector graphics heatmap)

Another real world example of a digital pathology annotation which requires mutually exclusive annotation is shown in Figure VVVX.2-3. The annotations shown illustrate a vector graphic quantized heatmap that describes the predicted probabilities of a finding (e.g., tumor likelihood).

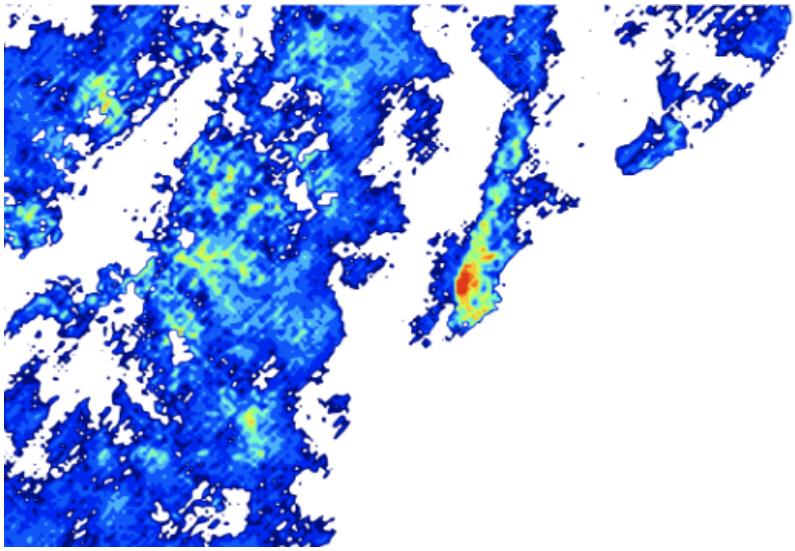


Figure VVVX.2-3: Example of vector graphic represented as a quantized heatmap.

Using the Bulk Microscopy Enhanced SOP Class, regardless of complexity, the annotation could be defined using one annotation group sequence dataset per quantized probability. For simplicity the concept is illustrated for figure VVVX.2-4 which represents an example of an annotation of overlapping two classes (low and high probability) described across two independent regions.

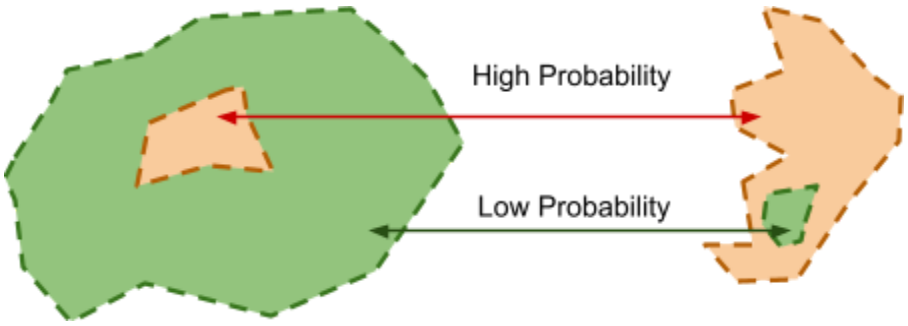


Figure VVVX.2-4: Example quantized vector graphics heat map exhibiting two regions of 2-class mutual exclusivity, tissue defined as being either high or low likelihood of an outcome, across two disconnected regions.

The example, Table VVVX.2-2, defines the annotation using two annotation group sequence elements to describe the annotations illustrated in Figure VVVX.2-4. Annotation group sequence Element 1 describes the location of tissue at low probability

using two polygons. Annotation group sequence element 2 describes tissue at high probability using two polygons. The annotations are mutually exclusive and to indicate this both elements have the Mutual Exclusivity Group UID (006A,XXX1) set to the same Value, 1.2.3.254.3434.5335.

The ordering of the low probability annotations is defined at the polygon level to enable the low probability annotations to be defined using a single group sequence element above and below the high probability annotations as shown in Figure VVVX.2-4. To do this the low probability annotation, group sequence element 1, defines annotation order at the polygon level using the Mutually Exclusive Annotation Order (006A,XXX3) tag and sets it to encode values 1 and 3. The ordering of the two high probability annotation polygons is set to the same Value, 2, using the Mutually Exclusive Annotation Group Order (006A,XXX2) tag.

Table VVVX.2-2 shows the encoding of the Microscopy Bulk Enhanced Annotations Module for the example above.

Name	Tag	Value	Comment
SOP Class UID	(0008,0016)	UUU1	Microscopy Bulk Enhanced Annotation SOPClass UID
...			
Frame of Reference UID	(0020,0052)	1.2.3.254.97829…	
...			
Annotation Coordinate Type	(006A,0001)	2D	
Annotation Group Sequence	(006A,0002)		
Annotation Group Sequence Element 1			

>Annotation Group Number	(0040,A180)	1	
>Mutual Exclusivity GroupUID	(006A,XXX1)	1.2.3.254.3434.5335	UID match Making annotations mutually exclusive
>Mutually Exclusive Annotation Order	(006A,XXX3)	1, 3	Left, then right annotations
>Point Coordinates Data	(0066,0016)	0.66675, 0.032, 0.6665, 0.03225, 0.6665, 0.03275, 0.66675, 0.033, 0.66725, 0.033, 0.66725, 0.03275, 0.6675, 0.0325, 0.6675, 0.03225, 0.66725, 0.032, ...	
>Long Primitive Point Index List	(0066,0040)	0x00000001, 0x0000001A	
> Annotation Group UID	(006A,0003)	1.2.3.255.9782.7…	
>Annotation Group Label	(006A,0005)	LowProb	
>Annotation Group Description	(006A,0006)	Low probability of finding.	
>Number Of Annotations	(006A,000C)	2	
…	…	…	,,,
>Graphic Type	(0070,0023)	POLYGON	
Annotation Group Sequence Element 2			
>Annotation Group Number	(0040,A180)	2	
>Mutual Exclusivity Group UID	(006A,XXX1)	1.2.3.254.3434.5335	UID match Making annotation

			s mutually exclusive
>Mutually Exclusive Annotation Group Order	(006A,XXX2)	2	Set all polygons to common level
>Point Coordinates Data	(0066,0016)	0.0001, 0.0003, 0.0001, 0.0005, 0.0009 ...	
>Long Primitive Point Index List	(0066,0040)	0x00000001, 0x00000015	
> Annotation Group UID	(006A,0003)	1.2.3.255.9782.8…	
>Annotation Group Label	(006A,0005)	HighProb	
>Annotation Group Description	(006A,0006)	High probability of finding	
>Number of Annotations	(006A,000C)	2	
…	…	…	…
>Graphic Type	(0070,0023)	POLYGON	