

Working with annotations

PMA.core supports three types of annotations PMA.core annotations, native annotations, and 3rd party annotations.

Annotation type	Origin	Format	Read/Write
Pathomation	PMA.studio; SDK	WKT	Read/write
Native	Vendor-specific viewer; Panoramic viewer; ImageScope	Embedded in the vendor file format	Read-only
Third-party	Indica Labs HALO; Definiens; Visiopharm	.Annotation XML; .XML; .MLD (binary)	Read-only

Internal storage

PMA.core uses its own internal format with the following structure:

- Geometry: based on WKT ([Well-known text](#)). Supports the following shapes *Polygon*, *Linestring*, *Point* and *Multipoint*
- Color: the outline color in [html format](#)
- Fill Color: the fill color(if any), only valid for closed shapes like polygon
- Classification: A text specifying the classification of an annotation like tumor, necrosis etc.
- Notes: Free text notes and additional information you want to store for every annotation

PMA.core supports 3rd party annotations from the following vendors **Visiopharm**, **Indica Labs** and **Aperio**. Each of this format is supported via parsing the respective vendor specific file:

- Visiopharm *.mld*
- Indica Labs *.annotations*
- Aperio *.xml*

Creating and saving

PMA.core annotations

For reading the PMA.core annotations for a slide you can use the API call [GetAnnotations](#), that returns all PMA.core annotation in json format.

All other PMA.core annotations functionality is provided via the [SaveAnnotations](#) API call. This call can create new, update and delete many annotations in one API call. PMA.core also provides the functionality to get the length and/or the surface area for already saved annotations via the [GetAnnotationDistance](#) and [GetAnnotationSurfaceArea](#) API calls.

3rd Party annotations

PMA.core can leverage the use of 3rd party annotations via the External Files interface and the associated API calls. These API associates a number of files containing any known 3rd party annotations with a slide (see previous paragraph). To associate external files with a slide you have to

use the API call [SetExternalAnnotationFiles](#). This takes an array of tuples containing the *Name* and *Path* for each associated 3rd party annotations file. For *Name* you can use any text to differentiate from other annotations and the *Path* needs to be a *virtual path* to the file containing the annotations. You can get the previously set external annotations files for a slide via the [GetExternalAnnotationFiles](#) API call, which returns the array of *Name/Path* tuples for each file associated with any slide

Exporting and format conversion

PMA.core provides a very powerful API to export and convert all known annotations formats to each other, either it is a PMA.core annotations, 3rd party annotation or native annotations. The API call [ExportAnnotations](#) can convert any known source of annotations (*PMA.core annotations*, *Native annotations*, *Visiopharm*, *Indica Labs*, *Aperio*) to each of the 3rd party formats (*Visiopharm*, *Indica Labs*, *Aperio*). This call also supports two more very useful formats for use outside of PMA.core i.e. the CSV and WKT (Well-Known text) formats. PMA.core will try to convert each format as flawlessly as possible but some shapes are not compatible to shapes in other formats. If the source and destination formats are the same PMA.core will not perform any conversion, it will output the original file.

More background

Did you know that PMA.core is actually a great tool to integrate different annotations originating from different sources? For more background, have a look at the [Pathomation ANotation subset of functionality](#) in the API.

We have [a blog article on annotations and how to handle them](#), not just within PMA.core, but throughout the entire Pathomation software platform.

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