

# Educational treasures in Radiology: Annotate – creating interactive teaching files

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## ABSTRACT

This article focuses on *Annotate* ([www.annotate.org](http://www.annotate.org)) – an online program for image editing and creation of interactive teaching files. This program is free to use, does not need any installation or plugin and can be used from any workstation with internet access. Multiple tools and preferences allow a customization of the program to the user needs.

## TECHNICAL/IT & INNOVATIVE

### EDUCATIONAL TREASURES IN RADIOLOGY

In this new series "Educational treasures in Radiology" we introduce the Radiology community to interesting and useful educational resources which can be found on the Internet. The World Wide Web (WWW) offers a plenitude of educational tools, programs and other resources. It becomes more difficult for the individual user to find the "best" resources and to separate the good from the less helpful ones. In each article of this series we present a selected online resource, which we think should be made aware to the Radiology community.

This article focuses on *Annotate*, an online program for creating interactive teaching files.

Annotation allows a direct connection between imaging and abstract findings. Image annotation – appending images with graphical explanations and textual information – is a determining factor for learning success (1). Nevertheless, the "interactive" image annotation - a potential advantage of digital media over printed media - is not being sufficiently used, particularly not in online media (2-4).

For this reason, *Annotate* (5) has been developed. *Annotate* is online available and provides tools for easily creating interactive teaching files. No program installation is necessary. The ability to create the annotations online makes it available from any workstation with internet access and at any time. Because no installation or plugin is necessary, the usage of *Annotate* is possible even on protected workstations with limited user rights (e.g. at institution workstation).

Most common image file types are accepted, including the medical DICOM standard. Image editing for de-identification or cropping is also possible. The annotations can be made as text or graphic annotations. Multiple graphic modes allow a great flexibility in presenting the teaching files (Fig. 1).

What makes *Annotate* so special is that the annotations, layers and structures are automatically linked to the text and color coded as soon as they are created (Fig. 2). The necessary source code and URL is automatically provided by the program.

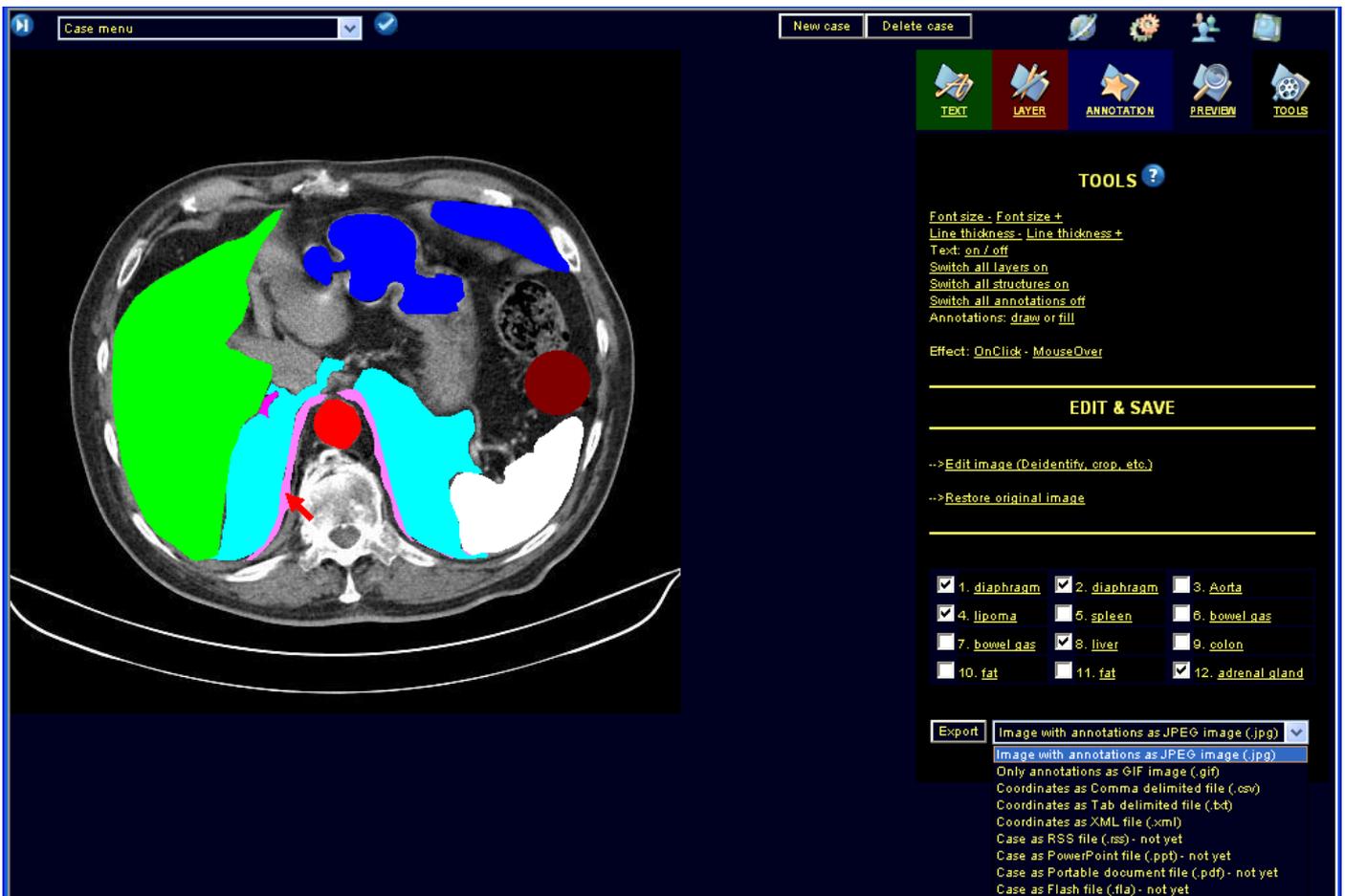
Especially for medical educators in anatomical sciences the association of annotations with anatomical structures from an included medical database are very appreciated (Fig. 3). Multiple preferences allow author and user to display customized and user tailored teaching files on an individual basis to satisfy the individual's needs.

A dedicated export section allows exporting selected annotations in multiple image and text formats for either integration into e.g. PowerPoint lectures or even into third party programs. Further integration into the previously introduced international Radiology community *Radiolopolis* (6,7) is currently in process, which will allow the presentation of shared cases in an interactive way to increase their educational value.

*Radiolopolis* is funded by the non-profit organization *EduRad* (8) and is free to use.

*Do you have a potential topic for "Educational treasures in Radiology"? Then please contact journals@edurad.org.*

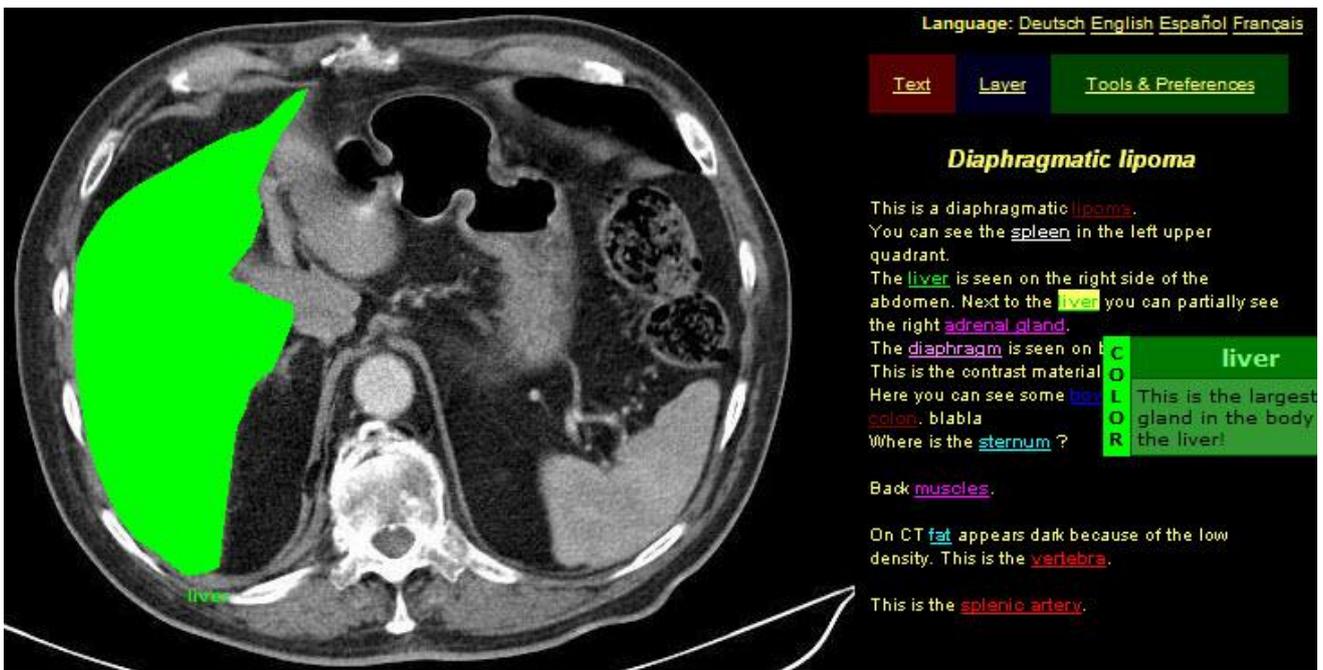
FIGURES



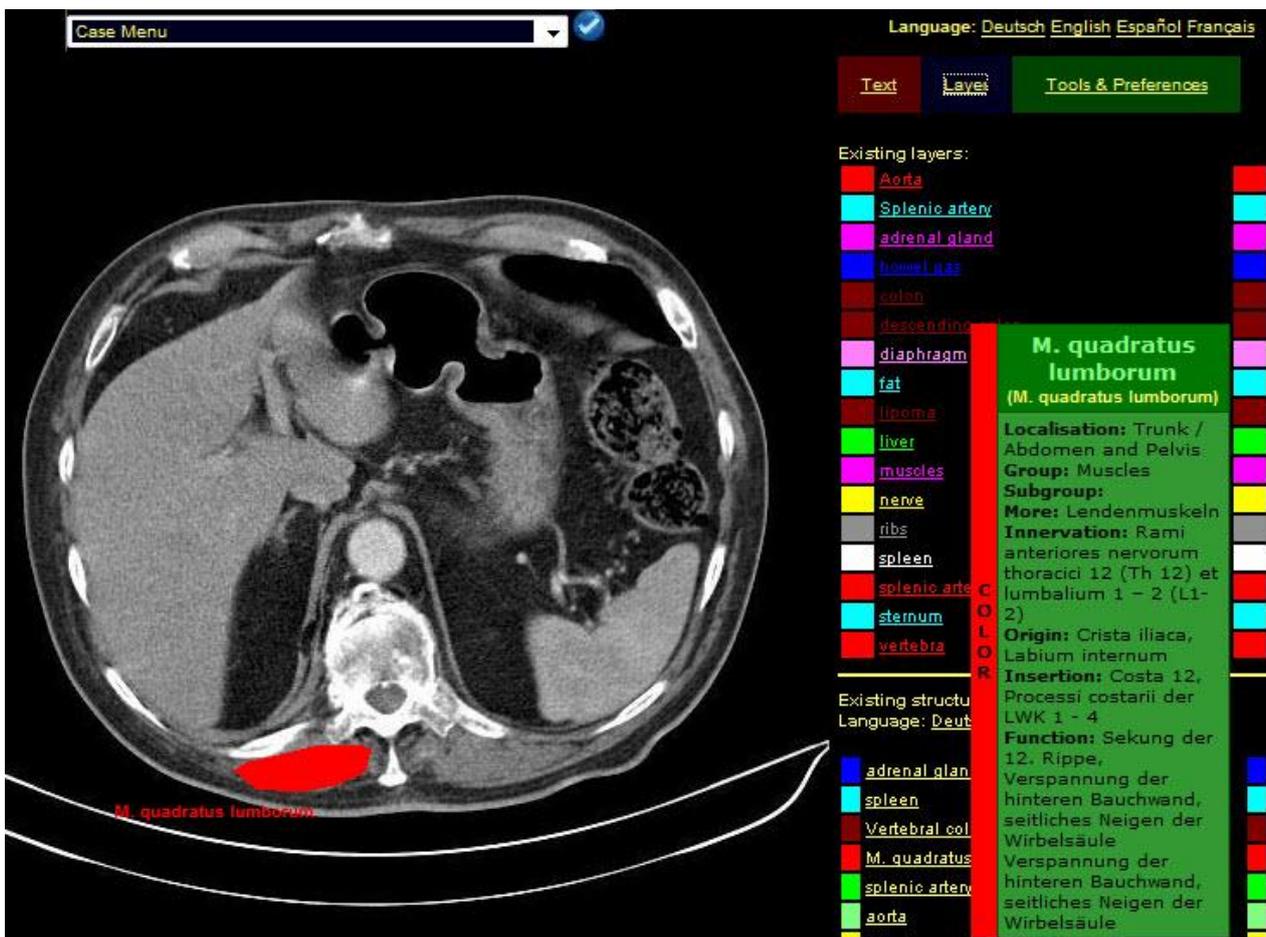
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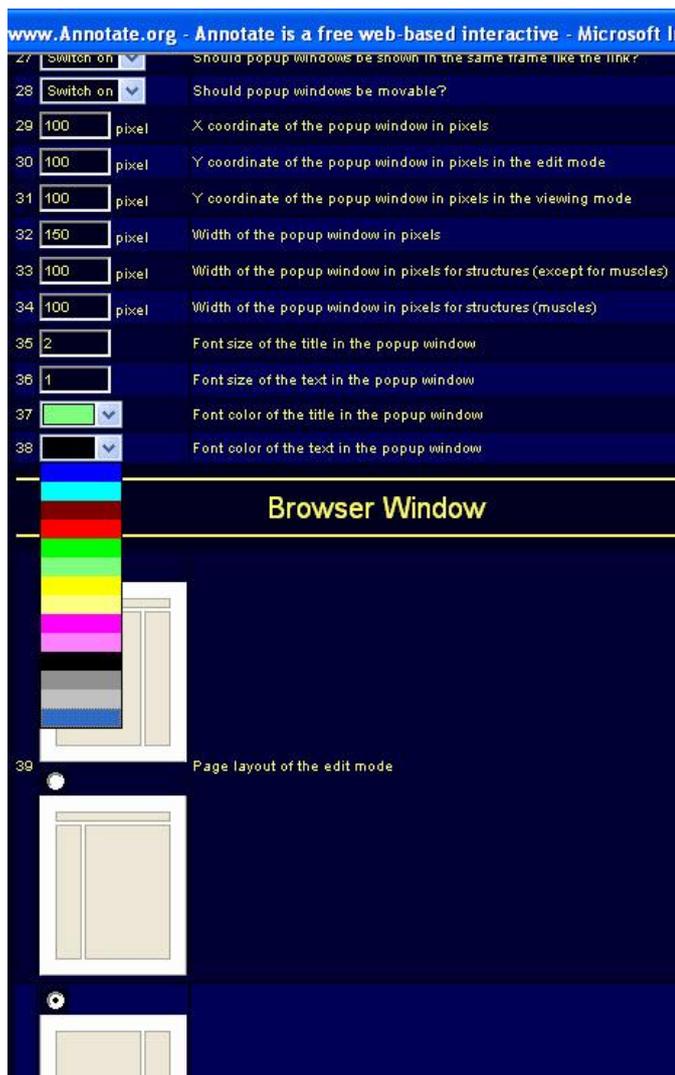
**Figure 1:** Editor site. *Annotate* provides multiple tools for on-demand presentation of the annotations, preferences for customization of the program itself and export functions for utilization of the image or text information in third party programs.



**Figure 2:** User site. The annotations are automatically cross-linked to the text and also color coded. Optional info boxes allow providing separate information for specific annotations. This way, the overall text is not overwhelming to the user but still comprehensive and targeted information can be provided on demand.



**Figure 3:** User site. An index anatomicus database with most anatomical structures can be connected to the annotations with literally one mouse click. The information displayed in the info box (right side of figure) is automatically extracted from the database. The author does not need to enter any information for this. Display in multiple languages is also offered.



**Figure 4:** *Annotate* offers multiple preferences for author and user to display customized and user tailored teaching files to satisfy the individual's needs.

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KEYWORDS

Annotation, interactive, teaching files

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