

Standardisation and Virtual Microscopy

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Virtual microscopy is a new technique that allows the complete digitisation of a microscopic slide. The digitised slide or virtual slide can then be analysed using a computer, simulating in a reliable manner the analysis with an optical microscope. The three promising application domains of virtual microscopy are education, remote expertise and external quality assurance.

The interest of virtual slide lies in the possibility to add to the images additional information called associated data. This information can be for instance, the contours of cellular elements or qualitative or quantitative evaluations such as cellular type, area or perimeter.

Acquisition of high quality virtual slides implies substantial resources in terms of equipment, time and storage capacities. Moreover, associated data requires the intervention of an expert and additional time for input and storage of the data. At last, though, the utilisation of virtual slides differs from the various application domains, they could benefit of common virtual slides databanks and normalised interfaces. In consequence, there is a strong need to exchange and share virtual slide information. This implies the definition of standards for the storage, access and transfer of images and associated data. So we have evaluated the feasibility of standardisation developments that could improve the interoperability of virtual microscopy systems and applications concerning in particular:

- the format and referencing of virtual images
- the data model for associated data and possible implementation
- the interfacing of virtual slides databanks

Benefits of standardisation for EQA would be:

- simplified and easy communications between the virtual microscopy users community
- reduced development effort for the various application domains of virtual microscopy to EQA such as dermatology, histopathology or cytology
- re-use of EQA virtual slide for educational programs or postgraduate information
- better exchanges and expertise sharing at the international level especially in the developing countries

Therefore an effective definition and use of standards implies a consensus among the players in the EQA domain within the framework of a European working group.