Digital Pathology in the Actual Consultancy Space

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Abstract

The interest towards digital pathology has rapidly expanded within the previous couple of years within the private consultancy space. Many purchasers requested additional digital services associated with more complex cancer research programs, but also the consultancy within the diagnostic environment became modified with shorter deadlines and fewer time period . The consultant had no other option than to extend his/her digital knowledge and skills so as to manage whole-slide imaging systems. In 2016, the National Society of Histotechnology (NSH) started together with the Digital Pathology association (DPA), to develop a replacement online self-paced certificate program that might improve professional competency within the digital pathology and whole-slide imaging. As a consultant recently certified in digital pathology, it supported my career advancement. Also, so as to adapt to their specific needs, digital consultancy services were asked to extend their collaborations with new partners, like whole slide imaging platform(s), image analysis software(s), deep learning, and digital educational tools. The classical static pathology consultancy setting became a true dynamic digital cockpit offering the art of pathology, combined with digital expertise. The daily routine of a digital pathology consultant switched suddenly to an exciting digital pathology journey. Digital pathology has grown dramatically within the last 10 years and has created opportunities to not only support the triaging of inauspicious cases among specialists within a corporation , but also enable remote pathology consultations with external organizations across the planet . This study investigated one organization's need for a vendor agnostic Digital Pathology Consultation workflow solution that overcomes the challenges related to the transfer of huge studies across an area area network or across the web . The organization investigated may be a large multifacility healthcare organization that consists of 20 hospitals spread across a good geographic area . The organization has one among the most important academic pathology departments within the USA, with quite 100 diagnostic anatomic pathologists. This organization developed a group of web-based tools to support the workflow of digital pathology consultations and permit the viewing of whole slide images. The challenges and practical implementations of two different use cases are addressed: the occasional user (professional or patient) requesting a second opinion and therefore the external laboratory or hospital trying to find a longtime consultative relationship with an

outsized volume of casee. The organization investigated may be a large multifacility healthcare organization that consists of 20 hospitals and 400 outpatient sites spread across a worldwide geographic area which has one among the most important academic pathology departments within the USA, with quite 100 diagnostic anatomic pathologists. This organization has been using digitized pathology slides, including whole slide images (WSI), for over a decade to support the interior triaging of inauspicious pathology cases to appropriate experts and to supply remote pathology consultations to external organizations across the planet [1–3]. WSI are accurate, high-resolution images captured from traditionally prepared histopathology and cytopathology specimens (glass slides), where many individual microscopic image fields are quilted together to make a seamless image product. WSI are similar in structure and size to geospatial imagery, and a corollary are often drawn to products like Google Earth™. Due to the dimensions of the info involved, the organization was faced with many challenges like the power to transfer these large imaging studies across the web during a timely manner. Also critical was the power to integrate the range of imaging solutions available on the market, as different vendors offer unique benefits to support various pathology subspecialties. a standard viewing solution was desired so as to maximise user software familiarity and promote peer acceptance of the workflow. As the telepathology business was expanding, both for internal use and to support external clients, there was a growing got to create a group of user-friendly tools that might facilitate standardized implementations and clinical workflow. These software tools needed to be flexible with reference to vendor integration so as to not restrict an organization's imaging equipment choices for specific vendor solutions. Pathology facilities aren't always "rich" in terms of data technology (IT) expertise or infrastructure, therefore the ultimate solution had to be practical and straightforward to deploy and manage. the answer presented during this study addresses the challenges related to the distribution of huge images and therefore the lack of established imaging standards, while providing for a convenient and secure portal for pathologist report entry and distribution. Current generation WSI scanning systems are comprised of software-controlled robotic hardware platforms that employment consistent with similar principles as traditional compound microscopes. A glass pathology slide is loaded into the scanner and moved continuously at high speed under a microscope objective lens. because the histopathology

specimen features a tissue section of known thickness, real-time focusing adjustments determined by software algorithms are utilized to stay the resulting images focused . the target lens determines the output resolution of the image and also the general speed of capture, with higher resolution leading to smaller fields of view and longer scan times .

The resulting image is represented in full color (typically 24 bits per pixel) with a dimension of many thousands of pixels in both width and height. Due to the data size, the image is often stored in a pyramid-like structure organized into layers, each of different resolution, to facilitate efficient viewing via specialized vendor-supplied software. A typical pathology case may contain multiple WSI images, where each image can be in the hundreds or thousands of megabytes on disk .

Biography

Dr. Elizabeth Neyens is graduated from the University of Utrecht in the Netherlands as DVM, & Veterinary Pathologist. During her European residency she was rewarded twice for her research in Oncology and was recognized as best Junior lecturer in Pathobiology. She started her career as a Toxicological Pathologist in Charles River Preclinical Services and continued as Preclinical Head of the Pathology department in Baxter, Austria. A few years later, she decided to return back to Canada in order study for her Boards in Toxicology while assuming different roles as Senior Pathologist in various CRO's and. In 2015, she passed successfully her American Board in Toxicologist and accepted the role of Scientific Advisor for leading CRO in Israel. In 2017, she certified in Digital Pathology and she decided to build her own Consultancy Firm in Europe with offices in Flanders, Belgium and Vancouver, Canada in order to support her international clients with excellence.

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