

Precision Pathology - Integrated Solutions

Visiopharm is a world leader in AI-driven digital precision pathology solutions, creating comprehensive and accurate tissue mining tools that integrate into digital pathology workflows. Our scalable software solution features the latest technology in image analysis that seamlessly plugs into laboratory workflows via the IMS, LIS or PACS systems already installed in the lab.

		Streaming	DICOM Storage	DICOMweb Streaming	Workflow Integrated	Receive Results	Display Overlay
PACS	Pathcore (web/Sedeen)	✓	✓	÷	✓	✓	✓
	Neagen (neaLINK)	✓ ³	✓	✓	✓	✓	✓ ²
	CareStream (vuePACS)	✓ ³	✓	÷	✓	✓	✓ ²
	Sectra (IDS7)	✓ ¹	÷	÷	✓ ¹	✓ ¹	✓ ^{1,2}
	Philips (IntelliSite)	✓	÷	÷	✓	÷	÷
VNA	Hyland (NilRead)	✓ ⁴	✓	÷	÷	÷	÷
IMS	Proscia (Concentriq for Research)	✓	÷	÷	✓	✓	✓
	Corista (DP3)	✓	✓	÷	✓	✓	✓
	Hamamatsu (NDP.serve)	✓	÷	÷	✓	÷	÷
	Leica (Digital Image Hub)	✓	✓	÷	÷	÷	÷
	Leica (eSlideManager)	✓	÷	÷	✓	÷	÷
	Leica (Slidepath)	✓	÷	÷	÷	÷	÷
	Phillips/PathXL (Xplore)	✓	÷	÷	✓	÷	÷
	Olympus (WebImage)	✓	÷	÷	÷	÷	÷
LIS/LIMS	Tieto (LifeCare)	✓ ⁴	✓	÷	✓	✓	✓ ²
	Tieto (QPati)	✓	÷	÷	✓	✓	✓ ²
	Tieto (Sympathy)	✓	÷	÷	✓	✓	✓ ²
	CGI (Patologisystemet)	✓	÷	÷	✓	✓	✓ ²

Streaming	Streaming to VIS is an efficient and fast way to transfer images one field of view at a time.
DICOM Storage	Many workflow platforms only use DICOM for storage and not streaming. VIS supports native and DICOM files.
DICOMweb	Support of streaming to VIS by DICOMweb.
Workflow Integrated	Launch VIS from within the workflow platform.
Receive Results	VIS is capable of returning results to the originating workflow platform, allowing central access.
Display Overlay	The transfer of results including numbers and overlays, some workflow platforms can display both.

References

- 1) Under development
- 2) Through VIS Viewer
- 3) DICOM wrap: Native format wrapped in DICOM header
- 4) Hamamatsu DICOM converter

VIS: Visiopharm's image analysis platform
 NDPI: Hamamatsu scanner
 SVS: Aperio scanner
 SCN: Leica scanner
 MRXS: Mirax and 3DHitech scanner

ISyntax: Philips scanner
 BTIFF: Roche/Ventana scanner

Experience

Over the last 8 years we have had the privilege of being part of implementing diagnostic digital pathology solutions at around 35 pathology labs in Scandinavia.

For most labs, going digital is a major and even disruptive exercise. The first choice to make is between enterprise solution providers, combining best-of-breed components into a full solution or consortium delivery, essentially combining both solutions.

Components

Slide Scanners: Slide scanners have become fast, robust, and capable of delivering images that are fully adequate in quality for diagnostic purposes. The different scanners come with a proprietary file format, which will likely be the case for several years to come. In a time with multi-lab consolidation, telepathology, and the need for pathologists to collaborate and share/exchange cases digitally, it is important that systems are compatible with all these different file formats, including convergence towards DICOM which will become a requirement over time.

Storage: Storage is a service that is usually delivered and/or maintained by the Hospital IT-department. The importance of involving the IT-department early in the process cannot be overstated. The specification of backup rules, latency, uptime, access speed and regulatory compliance all have an impact on the choice of a storage solution. It should also be noted that the lack of Information Lifecycle Management (ILM) recommendations for digital pathology, leaves legal interpretation as to when and for how long to store digitized slides, to the individual lab.

Image Management Systems (IMS): IMS is a good example of a solution component that can be exchanged when deploying and scaling digital pathology. In the early stages, relatively simple and low-cost image management systems will suffice. The deployment is fast and simple, they are easy to use, and the capacity surprisingly high. In the later stages of adoption, when transforming the lab into full digitization, it may become necessary to replace the simple image management system with a full-fledged pathology PACS or VNA, depending on the local preferences.

Vendor Neutral Archive (VNA) vs Picture Archiving and Communications System (PACS): Image management is not just about the PACS anymore. For more than a decade, the VNA has solidified its market share, shifting the way facilities and practices store and handle patient data. Many long-time PACS vendors now offer VNA-like products, and there is a growing number of solely VNA vendors. The emphasis of PACS has been workflow improvement, while VNAs focus on back-up and archives.

Lab Information Systems (LIS): LIS systems are a central part of an end-to-end solution. Local LIS systems represent the outcome of a decade-long dialectic process between pathologists, system architects, IT specialists and software developers, drawing on interdisciplinary knowledge and experiences. Seen in that perspective, local LIS systems is the organic and living outcome of an intellectual sedimentation process that manifest itself as layers of practical technical implementations, designs and decisions; as layers of technology.

Slide Viewer (and monitor): The slide viewer is the focal-point of a diagnostic digital pathology workflow, where all information and capabilities of the system must converge. The pathologist spends a significant part of his / her time reading slides and making diagnostic decisions within the viewer. Every company develop their own, quite similar, viewer. There are however key differences, such as vendor

Image analysis: Many pathologists will readily state that image analysis is one of the key benefits of digital pathology. When used correctly, image analysis has demonstrated the capacity to significantly improve data quality for decision support, as well as productivity & throughput. The journey towards true adoption of image analysis, however, requires an understanding of objections and concerns at a rather profound level, and genuine solutions to those objections and concerns.