

Brochure

Digital pathology: A pivotal moment of opportunity



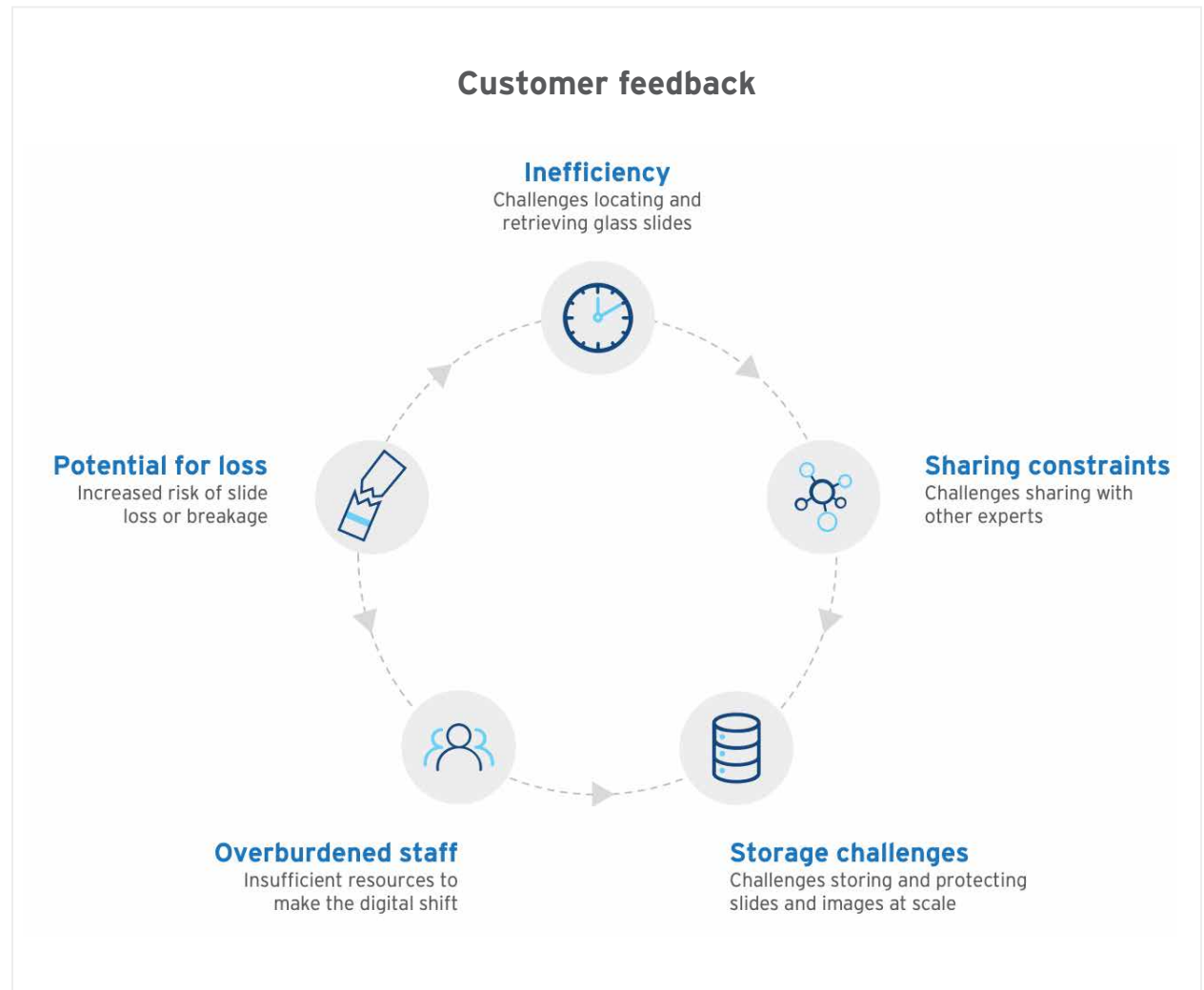
Pathology is vital to the study of human disease. It is the foundational step in research and educational settings that aim to tackle chronic diseases. As such, pathology has an outsized impact on advancing human health.

That's why improving pathology to support human health, deepen knowledge, and prevent chronic diseases has such far-reaching impacts. Digital pathology, an innovative way to streamline and enhance pathology, is doing just that.

Prepare your organization to stay competitive in a fast-approaching future where artificial intelligence (AI), automated workflows, and timely collaboration will be standard practice.

Pathology challenges

As pathologists, clinicians, lab managers, and students know, traditional pathology is fraught with inherent challenges. As demand grows, the number of pathologists is simultaneously decreasing, creating a shortage of pathology services and overburdening staff. In addition, the physical glass slides used in pathology also incur challenges such as the potential for loss or breakage, difficulties locating and retrieving the slides, and complexities in sharing and storing slides.



Digital pathology. Why now?

Digital pathology advancements have arrived just in time. As a concept, digital pathology emerged several decades ago. However, advancements in whole slide image (WSI) scanners, software, and storage were accelerated by the global COVID-19 pandemic.

Today, digital pathology has progressed and is poised to revolutionize pathology at large. In addition, digital pathology can extend the reach of pathology services into underserved and under-resourced geographic regions. However, having ample pathologists in the workforce is a hurdle.

The proportionate decrease in young and middle-aged (<60 years of age)¹ pathologists

signals there is an insufficient number of pathologists to replace the older pathologists as they age out of practice, according to a new study published by Health Affairs Scholar.² As this gap between available pathologists and demand widens, AI and digital technology are vital to improving productivity, lab workflow, and research.

Digital pathology is here, creating a pivotal moment of opportunity.

Digital pathology use cases

Iron Mountain helps customers using WSIs in education and research settings.

What if you could?

- Access digital images quickly and minimize physical slide handling
- Enable effective digital image sharing across your organization, students, and for grand rounds
- Securely and cost-effectively manage and scale your digital image library

Hospitals, laboratories, and research facilities can revolutionize possibilities with end-to-end digital pathology capabilities—improving education, research, and consultations via secure collaboration.

Iron Mountain Digital Pathology solutions



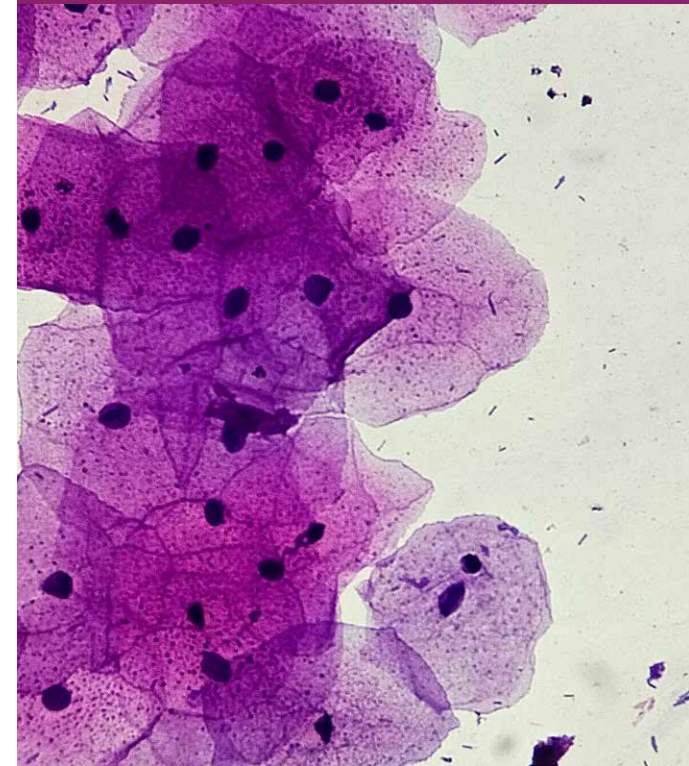
Research

Empower institutions to share their archival pathology images for biomedical research.



Education

Use immersive learning and training to advance pathology educators, residents, and pathologists



Research

Use cases:

- › Cohort creation
- › AI model training and validation
- › Asset monetization

Benefits of digital pathology:



Enhanced research accuracy and consistency (real-time analysis identifies patterns and correlations)



Improved profitability



Increased research efficiency (real-time feedback on model evaluation for faster iterations) and collaboration

Case study:

Technology startup for AI model training

A profit-driven technology startup needed help building cohorts of de-identified patient data to sell to biotech firms for AI model training. The startup required retrospective cohort scanning of thousands of slides, with plans to expand to 1.5 million slides. This volume was needed to deliver robust data sets for AI diagnostics and research.

Iron Mountain Digital Pathology services provided large-scale retrospective scanning services. Physical slides were converted into digital images suitable for aggregation and analysis.

Outcomes include:

- › **Handled massive data volumes** by scanning thousands of slides and preparing for the expansion to 1.5 million slides.
- › **Enabled AI training** by the customer through supplying biotech firms with high-quality, de-identified data sets.
- › **Facilitated innovation** through the development and training of advanced AI models for research.



Education

Use cases:

- > Student projects
- > Webinars
- > Grand rounds

Benefits of digital pathology:



Enhanced visualization



Interactive learning



Access to diverse cases (not geography or facility dependent)



Remote learning

Case study:

Cancer center with National Institute of Health (NIH) funding

A cancer center was at risk of losing NIH funding due to falling behind on its in-house scanning project. The inability to keep up with the volume of slides needing scanning threatened research, training, and funding.

Iron Mountain took on the overflow slide scanning responsibilities ensuring that all necessary slides were quickly digitized, promoting ease of access and use.

Outcomes include:

- > **NIH funding was secured** by helping the center meet project deadlines.
- > **Provided critical operational support** during a period of high demand.
- > **Enabled the center to continue** their important cancer research and education without interruption.



Iron Mountain Digital Pathology capabilities

Iron Mountain has crafted a holistic, end-to-end platform of capabilities, complete with partner plugins, to fully enable digital pathology for research and educational settings.

Iron Mountain's capabilities include:



Digitization

- › Scanner-agnostic digitization of slides - on demand, retrospective archival, or prospective day forward
- › Proprietary chain of custody tool for tracking physical to digital conversion



Storage

- › Multi-cloud digital storage options
- › Iron Cloud tiered digital cloud storage (US only)
- › Multiple digital file format support
- › Physical slide and block storage*



Data management

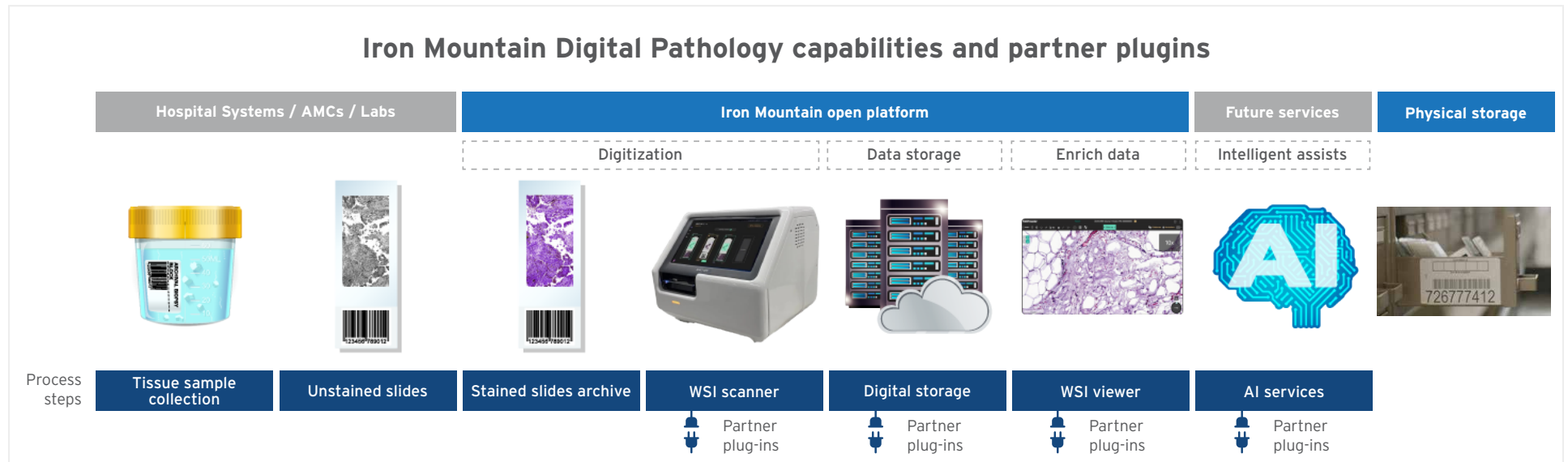
- › Proprietary data transfer tool
- › Whole slide image data enrichment



Services

- › Integrated pathology viewer
- › Proprietary lightweight Image Management System (IMS)
- › Positioned for AI/ML metadata extraction and knowledge graphs

Iron Mountain Digital Pathology capabilities and partner plugins



*Storage availability and requirements vary by country

For pathology labs that need to quickly access and efficiently manage slide storage and viewing, Iron Mountain Digital Pathology is an end-to-end service that improves collaboration with rapid, secure retrieval and sharing of digital images. The solution uniquely provides cost-effective, managed, long-term storage options while safeguarding customers' protected health information (PHI) and chain of custody.

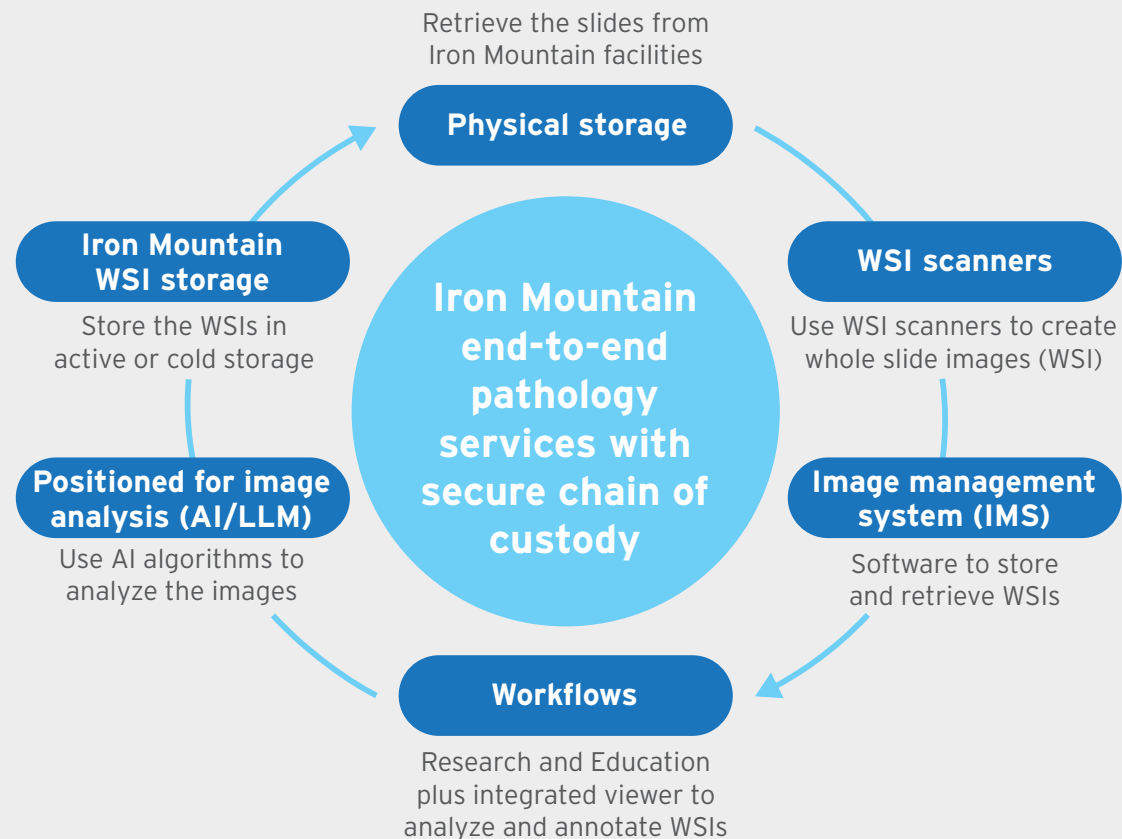
Iron Mountain leverages its unmatched and extensive experience in traditional pathology slide storage. It is managing over one billion slides and

blocks in more than 150 temperature-monitored facilities in North America while meeting the 2021 College of American Pathology (CAP) requirements. Additional pathology slide storage is available worldwide.

Iron Mountain offers holistic pathology services, starting from when the physical slide was created and spanning from physical to digital slide storage, covering the entire physical to digital pathology lifecycle.

Iron Mountain end-to-end digital pathology capabilities with secure chain of custody

Iron Mountain is the only company that provides end-to-end pathology services at scale. We archive physical pathology assets, including blocks and glass slides, digitize them in our facilities, manage and retrieve whole slide images (WSIs) using Iron Mountain-built software, enable interpretation of WSIs with an integrated viewer within the Iron Mountain infrastructure, and store WSIs in our digital pathology storage solution, all while maintaining a robust chain of custody.



Moving forward

Pathology is vital to tackling chronic disease, and digital pathology is vital to the field. As digital pathology opens up new possibilities, it helps to accelerate progress. Iron Mountain is excited about those possibilities and enables change through its end-to-end Digital Pathology portfolio. We stand ready to help you with your pathology needs and leverage digital pathology at this pivotal moment of opportunity.

Learn more about Iron Mountain Digital Pathology solutions at ironmountain.com/pathology

- 1 College of American Pathologists, [New Study Reveals Pathologists Workforce Undercounted by Nearly 40%](#), April 2024.
- 2 Health Affairs Scholar, [Re-evaluation of the methodology for estimating the US specialty physician workforce](#), March 2024.

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About Iron Mountain

Iron Mountain Incorporated (NYSE: IRM), founded in 1951, is the global leader for storage and information management services. Trusted by more than 225,000 organizations around the world, and with a real estate network of more than 85 million square feet across more than 1,400 facilities in over 60 countries, Iron Mountain stores and protects billions of information assets, including critical business information, highly sensitive data, and cultural and historical artifacts. Providing solutions that include secure storage, information management, digital transformation, secure destruction, as well as data centers, art storage and logistics, and cloud services, Iron Mountain helps organizations to lower cost and risk, comply with regulations, recover from disaster, and enable a more digital way of working. www.ironmountain.com for more information.

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