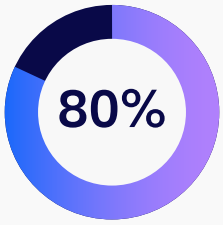
Flywheel

Executive Brief: *The Business Case for Investing in a Medical Imaging AI Platform*

Medical Imaging Data Challenges

According to the World Economic Forum, 97% of healthcare data is not utilized. With imaging data accounting for approximately 90% of all healthcare data, medical imaging data is particularly underutilized. As a result, health systems are missing a huge opportunity to advance innovation, improve patient care, and realize increased revenues.



of a data scientist's time is spent finding, curating, and organizing data.

At large academic medical centers, the issue is exacerbated by the need for dedicated IT resources to support small research teams' medical imaging data needs. With project backlogs and staffing shortages, these projects aren't always a top priority for hospital IT departments.

As a result, data growth outpaces an organization's ability to utilize the data effectively.

Further, the excitement to use AI to improve patient outcomes from early screening tools and other use cases is leading to uninformed purchases that can be quite expensive and do not meet expectations related to medical imaging data use.

For example, while health systems may have an AI strategy in place, it most likely uses inference models trained on unstructured data and lacks an imaging-first approach. Rather, imaging data is almost an afterthought at the mercy of solutions that do not fit its unique attributes.

Additionally, even those AI models purchased from third-party vendors trained on medical imaging data must first be validated on your patient population to ensure their value in your workflows and clinical approaches.

The Problem:
Inefficient Medical Imaging Data Workflows in Research and AI

The use of medical imaging data is ripe for process innovation that will accelerate research findings and the development of AI.

Here's a typical process:

- Go to PACS admin or enterprise IT and request to write an EXTRACT to pull a training dataset.
- Repeat for testing data sets.
- Work with a developer or research assistant to write data processing scripts in Python or another coding language.
- Transfer the data to cloud-based machine learning tools.
- Track different versions of data or models in spreadsheets.
- Share zipped data and model parameters or notebook versions with external collaborators and track the most current emails or file links.

Because the files stay within the user's system, labels and metadata are not updated in the research PACS for future searches, resulting in sunk costs and inefficient workflows that require redundant work for each new project.

Streamlining the data preparation is a game-changer and necessary to scale efficiencies in using medical imaging data for research and AI development.

The Solution:
End-to-End Medical Imaging AI Platform

Having a single source of truth for medical imaging data across the enterprise addresses many of the above-noted challenges, including:

- Making medical imaging data more usable, available, and accessible for various use cases, including identifying potential revenue opportunities such as increased grant submissions and clinical trial enrollments.
- Enabling the health system's data to be used for training AI models specific to the patient population.
- Reducing the burden on IT staff to write scripts to extract and transform data and make that imaging data available for downstream re-use.
- Supporting an organization's goal of attracting and retaining top staff and faculty to lead AI innovation.

Further, here are five ways an enterprise platform for medical imaging data can transform the inefficient process for current research and analysis:

1. Create a compliant, living repository with complete provenance to avoid versioning issues.
2. Establish ground truth data for training and validating models.
3. Enable sharing of curated data sets in multi-site trials.
4. Make and document image annotations.
5. Avoid knowledge loss and downtime that may result from internal staff turnover.

Find More Champions *for Expanded Clinical Use Cases*

Identifying clinical champions to elevate the importance and ROI of purchasing an enterprise technology solution for current and future work across the organization is table stakes for any large health system.

The best clinical champions have a vision for how to bridge the gap between research and clinical practice.

Specific to a medical imaging AI platform, the best clinical champions understand how to manage the integration from research to clinical practice.

Detailing how accelerated research and AI development can positively impact clinician workflows and improve patient care is essential to building a business case. Secure multiple clinical allies from various departments to drive the discussion around clinical use cases for the enterprise with the hospital's leadership.

According to a recent Sage Growth Partners survey healthcare C-suite executives identified the top clinical use cases for AI:

Clinical decision support systems

Imaging and imaging analysis

Predictive analytics

Diagnostic support

Additionally, the same study indicated interest in exploring AI in support of:

Patient risk stratification and triage

Clinical trials and research

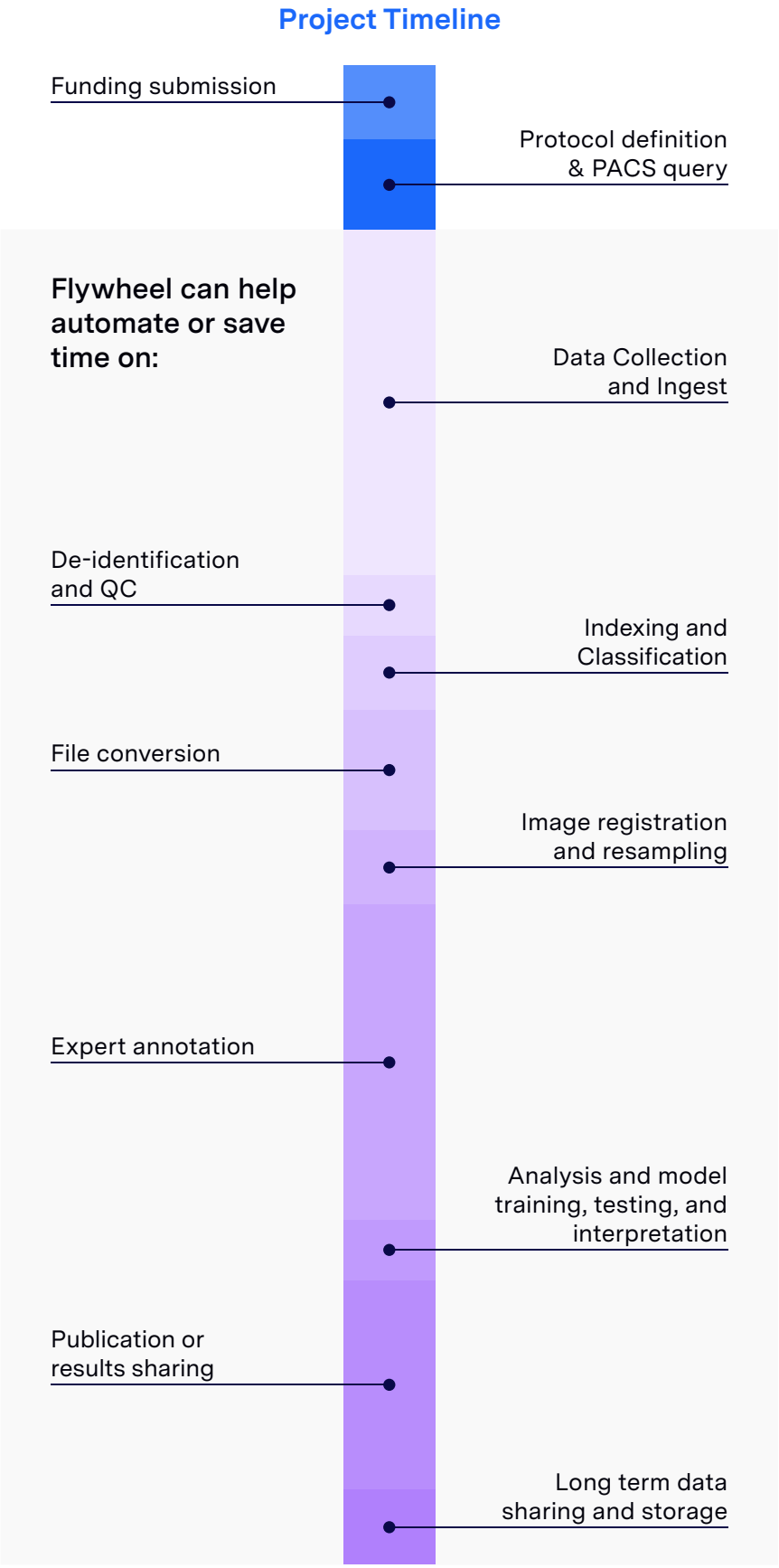
Oncology

Start with a Project Roadmap

To build the case for Flywheel's value, start with a roadmap of at least five projects.

The roadmap should include the following:

- Time frame for finding eligible imaging data and data processing required
- Data storage, curation, regulatory compliance, and communication work that must be done before, during, and after the project
- FTE hours from IT and other departments
- Third-party costs
- Dependencies and risks
- Related grant submissions, external collaborators or industry partners (if applicable)
- Duplicate and repetitive work that would be eliminated/ reduced with a medical imaging data management platform



Demonstrate Time-to-Value and ROI

With so many variables at play, the hard cost ROI of a technology purchase is difficult to calculate.

Here's how to approach the ROI conversation with key stakeholders:

- Lead with the project roadmap that details how much manual effort projects currently take
- Highlight where efficiencies will be realized and what the potential cost avoidance savings will be
- Reiterate the intangible benefits such as the ability to work with more third-party collaborators and attract and retain clinician and research talent

According to the Director of the Center for Data-Driven Discovery in Biomedicine at Children's Hospital of Philadelphia (CHOP), connecting an entity's data to external data sets can increase its value by up to **100x.**

Watch this video to learn more.

Detailing the time-to-value is a concrete way to supplement the ROI discussion.

Using the project roadmap as a reference tool, estimate how many more projects could be completed. For example, one Flywheel client generated two research papers during a six-month pilot period. With this information, he successfully made the case that within one and a half years, there would be enough projects completed to surpass the value of the platform.

Taking the cost avoidance approach, Columbia MR Research Center, with 142 investigators working at five research sites and using data from 18 magnetic resonance systems, calculated that using Flywheel cost their organization 60% less than building, staffing, and maintaining the hardware and software costs in-house.

Strategic Budget Tips

Securing funding for a technology purchase often extends beyond the use cases that will benefit a department and requires individuals to be strategic about how and when the purchase is proposed.

Here are four best practices to bolster the likelihood the technology purchase will be considered:

1. Time the request to coincide with the department and organization's budgeting cycles.

Department heads and service-line leaders have limited funds to authorize an unanticipated purchase throughout the year. Ideally, the purchase recommendation is submitted during the department's budget planning for the upcoming year. However, when nearing the end of the fiscal year, departments may have unused budget they are looking to spend—this is an ideal time to make a purchase request, and having your project roadmap and objections handler ready can accelerate the buy.

Pro-tip: Financials aren't the only budget cycles to consider. Connect with internal leaders managing cloud agreements to see how the Flywheel purchase can potentially help the organization meet its cloud consumption targets.

2. Align the request with organizational priorities.

If staffing shortages are the health system's top challenge, be sure to identify ways the technology purchase mitigates the issue rather than compounding it.

3. Get creative with who is paying for it.

Consider a cost-sharing arrangement between the departments most likely to benefit from a medical imaging AI platform, such as radiology, radiation oncology, cardiology, or neurology.

4. Calculate cost avoidance.

Specific to a medical imaging AI platform, detail current IT resources needed for projects versus anticipated reduction. Applying a dollar amount helps stakeholders understand the value beyond the immediate spend.

Tackle Potential Objections

Even though the technology purchase request may originate within informatics or another department, the nature of today's connected hospitals means the needs and concerns of various stakeholders must be considered.

Here are some potential objections that may be encountered during the purchase and how to address them.

CIO/IT lead: Expect that your CIO will have many questions and concerns. Here are two questions to be prepared for and how to answer them:

1 How does Flywheel fit into the larger health system IT strategy and vision?

In the short term, with the pressure to incorporate AI clinically, Flywheel enables health systems to access and utilize medical imaging data for AI model development and validation with minimal IT support. Additionally, Flywheel can also help alleviate some of a hospital's IT staffing challenges by avoiding the sunk costs of curating data for a single project that goes unused for future projects.

2 What is the expected ROI and value Flywheel will bring to the organization?

Answer this question with the estimated ROI from the project roadmap mentioned above. Focus on cost avoidance and potential time savings. Don't forget to highlight the soft cost value of maintaining AI based on your specific patient population and attracting top AI talent.

PACS Administrator: Prepare a comparison chart that details what a medical imaging AI platform can do that cannot currently be achieved using a research PACS or VNA.

		Flywheel	Research PACS
Data Discovery	Clinical, Research & Commercial Data	✓	✗
	Discover Patient Cohorts	✓	✗
	Reference in Place Without Copying Data	✓	✗
	Search All Metadata	✓	✗
Data Curation	Accelerate Collaboration Across Multicenter Studies	✓	✗
	Role-Based Permissions	✓	✗
Computation & AI Development	Integrated Processing and Computation	✓	✗
	Interoperable with Machine Learning Platforms	✓	✗
	Validated Instance with Full Provenance	✓	✗

Security and compliance: Security issues can be an immediate showstopper, so proactively identifying everyone who needs to weigh in is mission-critical. Stakeholders include those from the department using the software, support staff, cybersecurity teams, those monitoring the health system's cloud, and many more.

Once the appropriate stakeholders are identified, highlight the technology partner's commitment to mitigating risk for their health system customers, including the use of de-identification protocols, user access controls, data encryption, audit trails, data locking, and more.

With features to manage compliance with GCP, HIPAA, 21 CFR Part 11, GDPR, and SOC2, Flywheel's rigorous security and compliance program aligns with most health system's privacy and security requirements. Flywheel also offers a validated instance in a fully documented 21 CFR Part 11 compliant environment.

Flywheel Medical Imaging AI Platform

Flywheel Compliance	GCP	HIPAA	21 CFR Part 11	GDPR	SOC2
Flywheel Features	Data Governance	Access Controls	Access Controls	De-ID Features	Risk Management
	User Governance	Encryption	System Training	Review for PHI	Data Clasification
	Data Reporting	Secure Coding / Testing	Audit Trails	Remove PHI	Policies / Procedures
	QC Functionality	MFA	System Validation	Policies / Procedures	Access Controls
	Policies / Procedures	Segmented VPCs	Change Logs / Docs	FW Staff Training	Technical Safeguards
	FW Staff Training	BAAs	E-Signatures		Security Training
		FW Staff Training			Incident Response Policy
					BCD / DR

Revenue Potential

According to McKinsey, health system operating margins have yet to rebound relative to pre-pandemic levels, meaning budgets remain tight and technology solutions that contribute to increased revenues may be welcomed.

Through improved efficiencies that result in more research and AI projects being completed at an academic medical center, a medical imaging AI platform ensures the enterprise maximizes revenue opportunities from grant submissions, clinical trials and other sponsored studies.

Conclusion

What if you could double the number of projects this year without adding to your IT department's workload—and all in service of accelerating AI development, realizing operational efficiencies, and improving patient outcomes? Now you can.

Flywheel is a medical imaging AI platform that enables academic medical centers to accelerate and expand capacity while paving the way for future innovation and better patient care.

Schedule a demo today!

Flywheel