

Medical Imaging Platforms: Ending the Build vs. Buy Debate

Medical imaging and video data fuel pharma and medtech innovation—but a lack of standardization, restricted access and fragmented sources across the globe often keep their full potential locked away. That's where purpose-built medical imaging platforms make the difference—converting scattered, unstructured imaging data assets into harmonized, centralized, analysis-ready datasets that accelerate research and drive scientific breakthroughs.

Yet organizations face a pivotal decision: Rely on internal IT teams to build a platform from the ground up, or invest in a proven, ready-made solution. The wrong choice can lead to costly investments, years of delays and stalled progress.

So which one truly drives innovation forward—and which one keeps it stuck in park? It's time to end the debate.

8 Ways Medical Imaging Platforms Accelerate Drug Discovery and Development

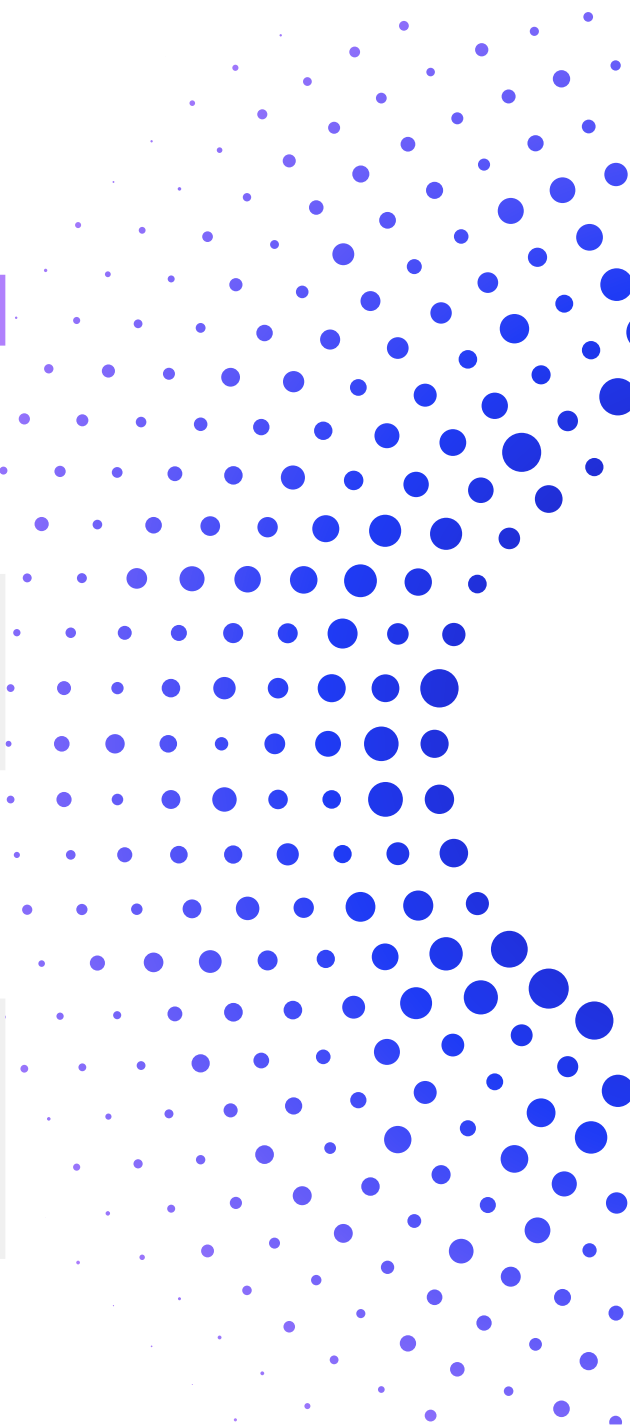
- 1 Simplify data harmonization
- 2 Eliminate data duplication
- 3 Enhance data traceability
- 4 Strengthen AI-driven analytics
- 5 Promote multi-site collaboration
- 6 Streamline regulatory compliance
- 7 Mitigate security and breach risks
- 8 Lower data maintenance costs

Why Companies Attempt to Build In-House Platforms— *And Why It Backfires*

The Myths of Building Homegrown Medical Imaging Platforms

At first glance, building a medical imaging platform in-house seems like a cost-effective way to streamline integration, ensure data security and speed up development. But, a closer look reveals that these appealing assumptions are actually myths, often leading to inefficient solutions that drive up costs and fail to deliver.

MYTH	REALITY
Internal teams can easily build medical imaging platforms in-house.	Expertise gaps: Building a platform in-house requires specialized IT and scientific expertise, and typically requires at least 2-3 years of development before becoming fully functional.
Building platforms in-house is cheaper to develop and maintain.	Costs add up: Ongoing maintenance, compliance, security updates and unexpected costs quickly drive expenses beyond initial budgets.
Homegrown platforms allow for faster internal integration into existing infrastructure.	Interoperability issues: Homegrown platforms often lack standardized APIs, creating compatibility challenges, slowing deployment and reducing the solution's impact.
Building in-house provides better security and control over data and users.	Building in-house increases compliance & security risks: Managing compliance, security and user permissions in-house is complex, demanding deep IT and regulatory expertise to mitigate vulnerabilities and compliance risks.



Beyond Cash—Why Homegrown Platforms Rarely Succeed

Building a medical imaging platform internally demands far more than financial investment. As development unfolds, unexpected hurdles frequently arise, pulling IT and research teams away from other core priorities. With their focus divided, essential research slows and scientific progress is delayed.

But why do homegrown imaging platforms so often miss the mark?

1. Medical imaging data is large, varied and complex

Medical imaging platforms aren't merely storage solutions—they include the computational power and tools necessary to process, standardize and analyze massive volumes of complex data while maintaining accessibility and performance.

While internal IT teams may have experience creating data management platforms, they often underestimate the challenges inherent to medical imaging, including:



Massive file sizes

A single high-resolution scan can range from gigabytes to petabytes, demanding purpose-built architecture to store, process and scale with ever-growing imaging file sizes and data volumes.



Multi-modal formats

DICOM, NIfTI, TIFF and other specialized formats introduce compatibility challenges, demanding advanced conversion capabilities for file standardization.



Metadata complexity

Imaging files contain both structured and unstructured metadata requiring harmonization for enhanced searchability, effective AI model training and reliable analytics.

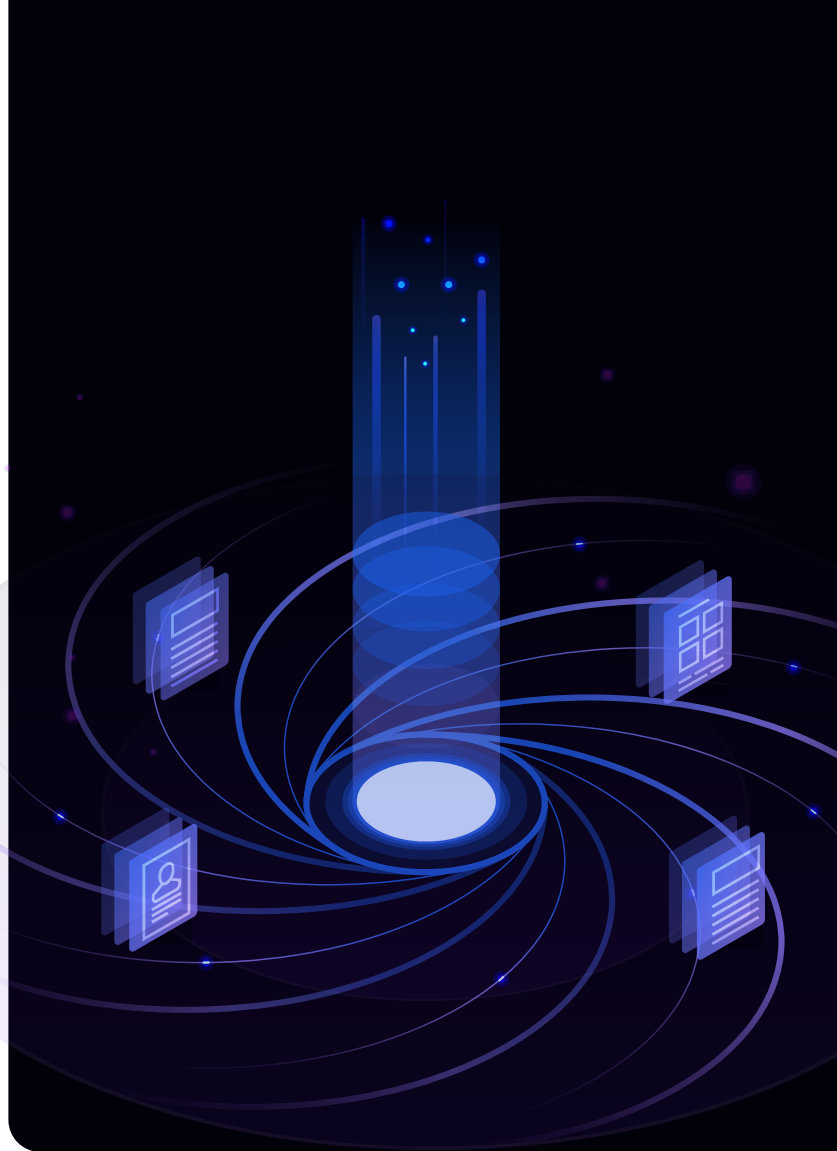
Without harmonized imaging data and a purpose-built infrastructure to support its complexity, homegrown solutions quickly become inefficient, unscalable, and a burden to internal teams and research workflows.

2. Medical imaging data is siloed and scattered

Medical imaging data is everywhere, spread across teams, systems and external partners. Building an in-house platform means IT teams must tackle the massive challenge of continuously consolidating ever-growing imaging data scattered across diverse sources, each with its own storage constraints and access limitations, such as:

- **Siloed legacy systems**
Isolated historical data are often locked in retired systems, preventing easy data retrieval and integration.
- **Disjointed internal data management systems**
Different teams, sites and business units use separate systems, delaying imaging data consolidation.
- **External sources with restricted access**
CROs, real-world data (RWD) partners and academic medical centers store imaging data in different compliance environments, slowing file sharing and centralization.

While centralizing data is already a heavy lift, a robust imaging platform must also continuously index and harmonize the steady stream of new medical imaging data. This often places a significant operational burden on internal teams and further diverts valuable time and resources from research.



3. Medical imaging data is governed by strict regulations

Medical imaging data is subject to strict regulatory standards to ensure data security, privacy and traceability. Building an in-house platform means organizations must develop and maintain systems that meet evolving compliance requirements, including:

- **HIPAA & GDPR**
Requiring strict access controls, encryption, audit trails and de-identification processes. Unlike tabular data, imaging files may contain protected health information (PHI) embedded in file headers or even within the image pixels themselves, making proper anonymization complex and essential to avoid regulatory breaches.
- **21 CFR Part 11**
Mandating validated data handling, electronic signatures and full traceability to ensure data integrity and regulatory compliance.
- **Region-specific data protection laws**
Imposing additional constraints on file storage and cross-site transfers.

Compliance isn't a one-time task; it's an ongoing challenge that requires continuous monitoring and adaptation. Many companies underestimate the complexity of building a robust platform that can meet current and future regulations.

Without dedicated regulatory support, maintaining an in-house imaging platform becomes unsustainable—often forcing organizations to abandon their efforts before deployment, with no way to recover lost time or financial investment.

Struggling to consolidate, secure and scale medical imaging data, companies turn to commercial solutions for faster deployment, built-in compliance and a reliable path to success.

A robust imaging platform requires:



Automated data anonymization protecting patient information without disrupting workflows.



Granular permissioning enforcing user-specific access based on roles and regulatory requirements.



Comprehensive audit logs capturing and tracking every data interaction for compliance verification.

The Real Cost of Failure, and Why Buying Early is the Best Path

Despite their best intentions, companies pursuing homegrown solutions find themselves trapped in a costly cycle of escalating investments, unforeseen challenges and high-stakes delays—only to realize that success is not guaranteed.

We estimate building a **homegrown system could cost organizations an average of \$10 million**, including initial build and ongoing maintenance.



Committing years to development—often without a functional product.



Investing millions of dollars—with no guaranteed return on investment (ROI).



Draining IT and research teams—with no guaranteed high-impact results.



Without a medical imaging data platform like Flywheel, scientists spend around **80% of their time finding and processing data**—and only **20% on analyzing data and advancing research**.

How Buying Early Helps Companies Expedite Discovery Workflows

While some organizations spend years struggling with infrastructure bottlenecks and compliance, those who invest in a commercially available imaging platform from the start allow their teams to safeguard valuable time—shifting focus from high-risk platform development to high-impact research activities.

Ready-made platforms allow IT and research teams to reclaim their time by:

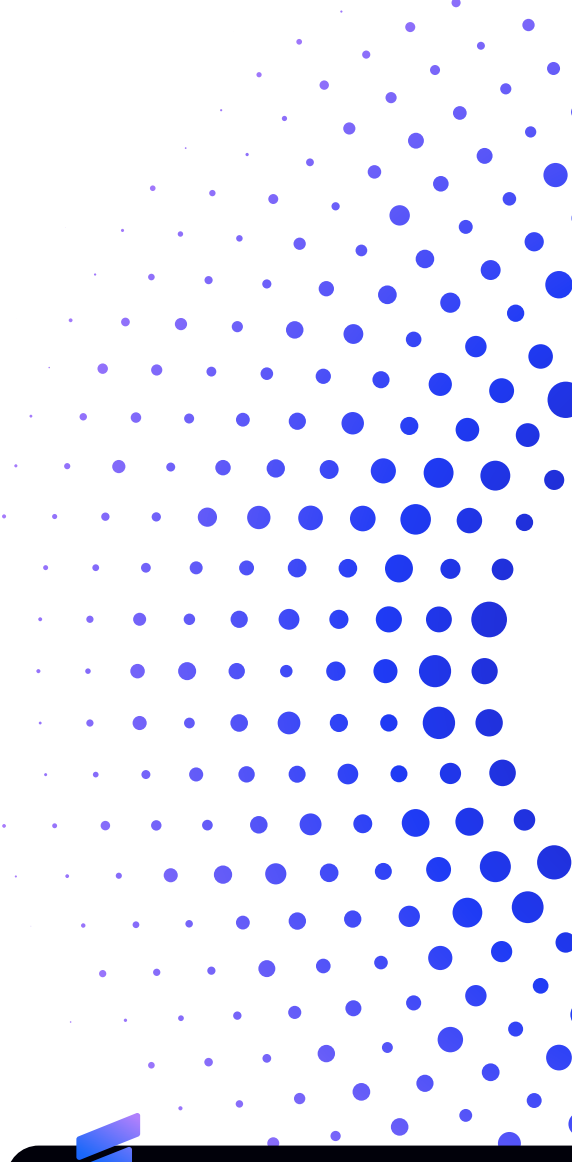
- **Minimizing manual data management**
Automated indexing, standardization and retrieval enables teams to spend less time organizing data and more time analyzing results.
- **Reducing IT burden and guaranteeing compliance**
Built-in regulatory adherence and automated system updates reduce maintenance overhead and mitigate security and legal risks.
- **Streamlining collaboration**
Built-in encryption and collaborative tools enables researchers, CROs and external partners to confidently access and share imaging data without security concerns or compatibility issues.

A commercial imaging platform helps teams avoid in-house development setbacks and contributes to accelerating R&D. However, not all ready-made platforms offer the same level of interoperability, flexibility and customization—keys for a seamless integration into existing systems and evolving research needs.

Medical Imaging and Video Data: *Flywheel's Cloud-Native Modular Platform*

With deep expertise in medical imaging, Flywheel delivers a modular, scalable platform that streamlines metadata processing, ensures compliance and supports seamless multi-site collaboration while easily integrating your existing data and workflows.

By removing the burden of building and maintaining custom infrastructure, we help your teams focus on what matters most: accelerating research and delivering better therapeutics to patients, faster.



Flywheel is purpose-built for drug discovery teams, academic medical centers and medical device companies that need more than a data management platform—and need it fast.

Flywheel Core vs. Homegrown Platform: *What's the Difference?*

	HOMEGROWN PLATFORM	FLYWHEEL CORE
DEPLOYMENT ROADMAP	3+ years to start being functional.	Plug and play in weeks.
AUTOMATION	Limited automation workflows requiring custom scripts.	Automated, reproducible workflows powered by containerized algorithms (aka Gears) —ready-built or custom.
REGULATORY COMPLIANCE	Requires continuous compliance monitoring and manual updates to ensure HIPAA, GDPR and 21 CFR Part 11 compliance.	Dedicated team handling Flywheel updates to ensure HIPAA, GDPR and 21 CFR Part 11 compliance at all times.
SCALABILITY	Often rigid and limited , requiring extensive development and/or integrations for large-scale workflows.	Ready to scale through pre-built AI algorithms, automation tools and an architecture built to handle petabytes of imaging data.
COLLABORATION AND SECURITY	Requires custom security frameworks to enable secure collaboration.	Built-in security frameworks , including granular permissions, institutional identity service and custom auth module for a secure, collaborative environment.
MAINTENANCE AND SERVICE	Requires manual updates often performed by unqualified internal teams.	Professional services team for system maintenance , ensuring regular updates, and offering personalized training and consultations.

2
Years
Saved

A global medical device company turned to Flywheel to accelerate its enterprise data and AI strategy—**saving two years of internal development time.** This allowed them to reallocate resources and rapidly onboard business units to an enterprise-wide cloud-based imaging data lake.



Cloud-native: *Access What You Need, Where You Want*

Flywheel's cloud-native platform provides a scalable, secure foundation for centralizing medical imaging across stakeholders—giving approved teams access to consistent and up-to-date data anywhere, anytime. Deployment options include leading public clouds (like Azure or AWS), hybrid configurations to leverage existing on-premises infrastructure, and flexible scaling across research sites.

With the Flywheel platform, you can streamline research workflows by:

- **Enabling easy access** to internal and external imaging and video data.
- **Consolidating file versions** and improving data consistency.
- **Minimizing data movement** by eliminating manual transfers and reducing file duplication.
- **Simplifying secure data sharing** and cross-site collaboration.
- **Leveraging built-in encryption**, access controls and audit trails.



Modular: *An End-to-End Solution With Everything You Need*

Whether you need a full-scale solution that grows with your research or specific tools to enhance existing workflows, Flywheel meets you where you are.

You can work with our team to identify the right combination of modules for your needs and ensure compatibility with your existing infrastructure and workflows—enabling a tailored platform build that supports your research goals.



Flywheel's Reader Studies Module and built-in viewer helped a large pharma company **cut annotation costs by 90%***—saving millions.

*Company estimate in one study



Automated: *Intelligent Data Curation for Seamless Use*

Flywheel's built-in automation Gears simplify one of the most time-consuming aspects of imaging workflows: turning raw, inconsistent data into structured, analysis-ready datasets.

Return valuable time to your teams by:

- **Automating data management and labeling**—minimizing burden and human mistakes.
- **Automating file formatting and harmonization**—enabling seamless dataset analysis, sharing and AI-driven workflows.
- **Automating workflows at scale**—accelerating research pipeline efficiency and time-to-market.

From Bottlenecks to Breakthroughs: How Automation Reduced Data Prep Time from Months to Days

A global pharmaceutical company used custom Flywheel Gears to automate imaging data curation and preparation— *transforming what was previously a months-long manual process into one that took just a few days.*

By streamlining this critical step, researchers were able to shift their focus from time-consuming data wrangling to advancing high-impact scientific work.



Adaptable: *Ready-made and Custom Gears*

Whether you opt for our ready-to-use Gears or want to integrate your own, Flywheel adapts to your workflows—not the other way around.

With built-in support for custom workflows, we make it easier to:

- **Track file and algorithm versions** for enhanced analysis, scientific reproducibility and regulatory compliance.
- **Restore prior data and algorithm version** to ensure results' integrity and reproducibility.
- **Simplify algorithm sharing across teams** for consistent, repeatable results.



With a modular, customizable and scalable medical imaging platform, Flywheel empowers scientists to spend less time managing infrastructure and more time driving research forward—without hidden costs.

The result? Faster, more efficient R&D workflows and a clear path to innovation.

Stop Reinventing the Wheel and *Move Your Project Faster*

The promise of imaging data is clear—but building an in-house platform to manage, curate and scale it is anything but. From unpredictable costs and years of development to consolidation bottlenecks and compliance burdens, homegrown solutions often fall short of the efficiency and reliability research needs. What starts as a cost-saving initiative can quickly become a drain on internal teams and resources—and a roadblock to progress.

Flywheel helps organizations cut through the complexity—and the debate—by delivering immediate value: automated

workflows, built-in compliance, scalable infrastructure and modular flexibility adapted to their needs. By choosing a proven, ready-to-use solution early, pharma and medical device organizations can refocus their teams' energy on high-impact research to accelerate discovery and development timelines—and bring lifechanging therapies to patients faster

[Contact us to request a demo](#)