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# Adopting a Platform Strategy:

## Simplify the deployment and management of medical imaging applications and AI algorithms

## eBook

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# Table of Contents

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# A CHANGING WORLD OF APPLICATIONS

The medical imaging applications landscape continues to dramatically evolve and expand. New applications are being introduced with increasing frequency, with many incorporating the latest artificial intelligence (AI) and machine learning algorithms. These new technologies are energizing the development of a new generation of clinical applications that will ultimately change the relationship between radiologists and the software they use.

AI is rapidly emerging as a technology that can enhance a radiologist's value proposition by improving productivity, efficiency, clinical confidence, and the decision-making process, particularly for more challenging clinical use cases. AI-powered applications have the ability to identify structures and patterns that may be too complex, subtle, or mundane for humans to recognize, and perform analyses very quickly, with a high degree of reliability and repeatability.

Like most medical imaging applications, AI applications require extensive testing and proper regulatory clearance. Since most new medical imaging AI applications are still in clinical testing and development, radiology groups and healthcare organizations should proceed mindfully, understanding that the variety and capabilities of these applications are evolving rapidly.

**"Development of an automated version of FerriScan that is powered by AI has allowed us to open our solution up to a wider market and make it available to more patient cohorts."**

Alison Laws, CEO
Resonance Health

Resonance Health has produced an AI powered version of its FerriScan program (called FerriSmart) that quantifies liver iron concentration and iron overload on MRI images.

As early AI-powered applications come to market with increasing frequency over the coming years, healthcare organizations are wise to perform their due diligence before investing in these software applications.

**"Sensitivity and specificity would need to be in the high 90th percentiles in order for a radiology group, in my opinion, to be willing to commit to a program for several years"**

Stephen Willis, CTO,
Canopy Partners

# Modern Technology, Legacy Deployment

Key challenges for healthcare organizations include how to understand, prioritize, and manage the adoption of these new applications in order to reduce the hidden costs and realize the full extent of their benefits.

Medical imaging software applications have historically been purchased and implemented one at a time – typically a long, drawn-out, and painstaking process involving a diverse cross-functional team. For every new application, this time-consuming acquisition cycle of activities has to be repeated, severely limiting the number of new applications that can reasonably be adopted by an organization.

## Key issues

The main challenges associated with deploying new medical imaging applications using a traditional approach fall into two broad categories:

### Business operations

The purchase and implementation of a new software application is a complex process that involves the healthcare organization's clinical, legal, IT, finance, procurement, senior administration, and potentially other departments. Even after the selection process is completed and a contract is negotiated and signed, all applications require detailed implementation, configuration, and testing.

In addition to the human capital and the financial resources required, there are also significant soft costs associated with the application process – the most significant being time. Time for the team to assess, compare, discuss, and learn ahead of the purchase; and then time to integrate, test, train, and support the software. It can take anywhere from nine months to several years from initial discussions with the application provider to "go live". All this time equates to a considerable financial cost to the organization, far beyond the cost of the application itself.

### Technical deployment

The deployment of an application is also associated with multiple technical challenges that require involvement from numerous departments that may have conflicting priorities. These challenges include software implementation, integration, configuration, troubleshooting, support, technical and clinical staff training, and many more.

For example, organizations have growing security and application control requirements that must be individually addressed. In addition, a conventional deployment requires interfacing work to be performed with each individual application, which is time-consuming and costly to achieve. There can also be inconsistent adoption of commercial standards, and back-end integration challenges to overcome, or varying hardware and software requirements and deployment approaches. All of these create implementation delays and have significant costs associated with them.

And repeat... Each time a healthcare organization wants to procure a new stand-alone application, this entire process is repeated. The complexity and associated time-demands limit the number of projects a healthcare organization can adopt, never mind the limitations of financial and personnel resources.

In total, this limits the rate and pace of adoption of new technologies that have the potential to benefit clinical care and care coordination, and significantly lengthens the period of time in which a healthcare organization can reap the financial benefits of such software purchases.

This cumbersome process has not changed much over the last 25 years, since the early days of medical software development. And it is no longer fit for purpose.

Given today's challenging healthcare business environment and the pressure to reduce the cost of healthcare, this cyclic and resource demanding approach is unsustainable. In addition, the companies that develop medical imaging software are also impacted by the slow pace of adoption of their software.

A new approach to software procurement could significantly mitigate these risks and facilitate the adoption of AI-powered and other medical imaging applications that are ready for clinical use.

**By adopting a more efficient means to assess, test, and enable healthcare systems to more rapidly and effectively implement new clinical applications, the entire industry will benefit.**

## A Platform for Success

A platform approach provides an opportunity to assess the value of new medical imaging applications and significantly reduce the financial and time costs and risks. The essential function of a platform strategy is the provision of a centralized means to access and manage multiple applications using a single technology framework.

A platform strategy:

- Simplifies the application selection and implementation process for every stakeholder involved.
- Enables applications to be quickly implemented, allowing groups of users to add new applications, with a minimal amount of financial, operational, and technical risk.
- Manages data flow between the applications on the platform and the client's clinical systems.
- Ensures that the right data and images are sent to the right applications and results are returned to the right locations at the right time.

Adopting a platform strategy means that organizations only deal with all those operational and technical challenges once, rather than each time a new application needs to be implemented. This is because the platform offers a single interface to a healthcare provider's infrastructure and the platform provider manages all of the application-specific demands behind the scenes.

Once interoperability and interfacing between the platform and the healthcare provider's infrastructure are in place, the platform provider handles all required security, applications control, data flow, and other specific requirements within the platform ecosystem. Application-specific needs are worked out in advance during the process of validating applications and are all managed by the platform provider. This effectively eliminates the need for the healthcare provider to manage and maintain multiple applications.

A platform strategy offers a number of unique benefits:

- Simplified infrastructure requirements
- Shortened implementation times
- Reduced IT support resource requirements
- Removal of barriers to technology adoption
- Streamlined procurement process

**"With a platform, I can be up and running in hours."**

William Moore, MD
Chief of Thoracic Imaging at NYU
Clinical Director of Radiology
Information Technology

Adopting a platform strategy offers hospitals and imaging centers instant access to the most up-to-date imaging applications and AI algorithms. Flexibility is key – if an application becomes irrelevant or outdated, organizations can quickly switch to the newer version.

## A Curated Marketplace

The ultimate value of a platform approach is defined by the breadth and quality of the applications that are avaliable. An imaging platform should offer access to a marketplace of applications that address the full range of needs of a radiology department and its referring physicians.

A "curated" marketplace takes the approach a step further, providing comprehensive vetting of applications, including regulatory clearances, software and hardware validation, technical and end-user support, interoperability, privacy and security issues. This relieves the healthcare organization from the responsibility of the vetting process, which now lies with the platform provider, saving both time and money, and enables the organization to more confidently and quickly build its toolbox of imaging applications.

**"Why would I do 12 different experiments to find out which one works best? That's a concept that could paralyze me from starting. Actively managing and vetting the options ensures that key interoperability criteria are met, and ensures that product implementation, training, and customer support are standardized and delivered properly."**

- Stephen Willis, CTO, Canopy Partners

The applications in a curated marketplace are vetted by the marketplace provider according to strict criteria that are important to users, such as:

- Confirmation of commercial viability
- Achievement of regulatory clearances
- Assessment and validation of interoperability criteria
- Standardization and documentation of product implementation, training, and support
- Assessment and documentation of compliance with privacy and security requirements

In a curated marketplace, quality is valued over quantity. As all the solutions available on the platform are subject to the same vetting process, the platform provider is able to address potential technical, clinical, workflow and deployment issues arising during the purchasing process that would have otherwise been overlooked.

A curated marketplace provides hospitals and imaging centers with a tenable way to determine which AI algorithm or software application to use, with assurances that it will work as stated, is properly tested, has local regulatory clearance, and will be fully supported. This is particularly important for AI-powered software applications, where there is still significant confusion about which applications are available for research only and which are available for clinical use.

**"The quality of any AI-powered software solution is dictated by the quality of the initial input data. Having regulatory clearance in a local market is a critical affirmation of the statistical validation of the training data and affirmation that a solution is ready for clinical use."**

- Alison Laws, CEO, Resonance Health

## The IT Perspective

For the healthcare IT department, a platform strategy resolves numerous key issues that can allow the department to be more efficient with their available resources. Individual deployment of applications demands a tremendous amount of work from IT, which needs to implement and configure all software and hardware requirements as well as considering the specific data flow needs of each application.

**"The biggest frustration is how long these implementations take. It takes a huge amount of time to test these systems. Little scenarios you don't think about as you're testing can break the system... The heavy work should not be done at the level of the radiologist or hospital, but at the level of the corporation providing the platform."**

- William Moore, MD, Chief of Thoracic Imaging at NYU and Clinical Director of Radiology Information Technology.

Once the initial platform deployment is completed, all relevant imaging data goes through the platform. Instead of a complicated process of onboarding new software applications or individual AI algorithms, multiple applications from different providers can be easily and quickly "switched on" for use by clinical staff, with minimal additional IT work required. This significantly limits the number of physical hardware and software interfaces the IT department needs to manage.

**"Everyone wants to figure out how to capitalize on technology to help deliver more efficient care, better care, and quite frankly more profitable care. IT departments of most healthcare organizations are only staffed to work on the most pressing projects, and don't have time to tinker with interesting programs that catch the eye of the clinical staff.**

**If you told me that each radiology group we work with wanted to try out 10 different programs, I don't know how I can prioritize that without bringing on additional staff. Even with our 50 people helping, it would be a multi-year project as each independent program is its own large project, and not a project taking a handful of hours. They're all tens to hundreds of hours of work, financial investment, time and energy that just doesn't exist in today's healthcare IT department budgets."**

- Stephen Willis, CTO, Canopy Partners

The platform approach addresses these concerns and also simplifies an organization's technical support needs, as it means there is only one point of the technical contact for the entire library of applications, rather than a different contact for each application vendor.

## The Radiologist Perspective

Providing radiologists with access to new applications on a curated marketplace lowers the risk of adoption and may increase their willingness to implement new applications. The flexibility inherent in a platform strategy enables them to easily turn new applications on or off, or switch to a different application altogether.

With a traditional software purchase model, significant scrutiny is required to ensure the application works as advertised and meets the unique clinical and workflow requirements of the organization. This scrutiny takes time and money and lengthens the entire purchase process.

**"I want to know that I'm not getting a random program from someone coding in their garage. It has to have appropriate regulatory clearance (if needed) and have meaningful clinical testing behind it if I'm going to purchase it. I don't want to be the guinea pig testing out new software."**

- William Moore, MD, Chief of Thoracic Imaging at NYU and Clinical Director of Radiology Information Technology

Choosing and implementing imaging applications is time-consuming for radiologists and other clinical staff who have to integrate them into their daily workflow and existing applications. If they don't work as expected, it can be an expensive and inefficient undertaking. Using a platform with a curated marketplace provides radiologists with faster access to the applications they need, and also gives them the ability to try new applications without having to commit to long-term and expensive license fee up front whilst still allowing multi-year deals that offer economies of scale.

**"It's much better to have all of these solutions available, and they can choose the most appropriate application that meets their needs at that time."**

- Alison Laws, CEO, Resonance Health

A platform also makes things easier for the radiologist by not adding more hardware or tool sets.

**"Physicians are not excited about using more tool sets. They want everything integrated within the systems they use such as PACS, whatever they're using most often. Clinicians are bombarded with new technologies to do their jobs. If behind the scenes you can utilize several different programs, but as far as the user is concerned, it all feels like one platform, you'll get a much higher adoption rate on the clinical side."**

- Steven Willis, CTO, Canopy Partners

## The Physician Perspective

Referring and subspecialty physicians who make use of radiology services can also benefit from a platform strategy. A single point of access to multiple FDA-cleared applications makes it easier for non-radiologist physicians from a wide range of clinical specialties and departments to add clinical value through advanced, disease-specific analysis.

A platform approach helps physicians make more informed decisions by providing access to applications that deliver more actionable information to assist clinical decision-making and facilitates more effective patient communication. It also increases access to analytics and quantitative data that supports better informed treatment planning and clinical outcomes.

By accessing more applications that help reduce the time required for planning and treatment of clinical interventions, physicians can realize significant cost savings and improved organizational productivity. And, with more quantitative information included in clinical reports and automated inclusion of relevant condition-specific information in radiology reports, they can improve diagnostic confidence, while minimizing additional work and maximizing accuracy.

## The Administrator Perspective

Healthcare administrators are always looking for ways to improve efficiency and identify new opportunities. By reducing the repetition of costly and time-demanding tasks associated with software purchasing, a platform strategy helps improve the overall efficiency of the organization. In addition, a platform approach means that the organization only has to work with one primary supplier for all its imaging applications, which can significantly streamline the adoption of new products.

Healthcare administration departments are understandably risk averse, focused on controlling and reducing costs. A platform strategy is financially attractive because it reduces the risks associated with purchasing software applications, whether it's discovering that an application is not clinically valuable over the long term, has been superseded by newer software, or is difficult to implement.

**"You don't even know if the programs are going to be the best ones six months from now. A platform strategy enables administration to more efficiently deploy funding as well as staff resources to support implementations. IT resources can then be more wisely deployed to address other priorities."**

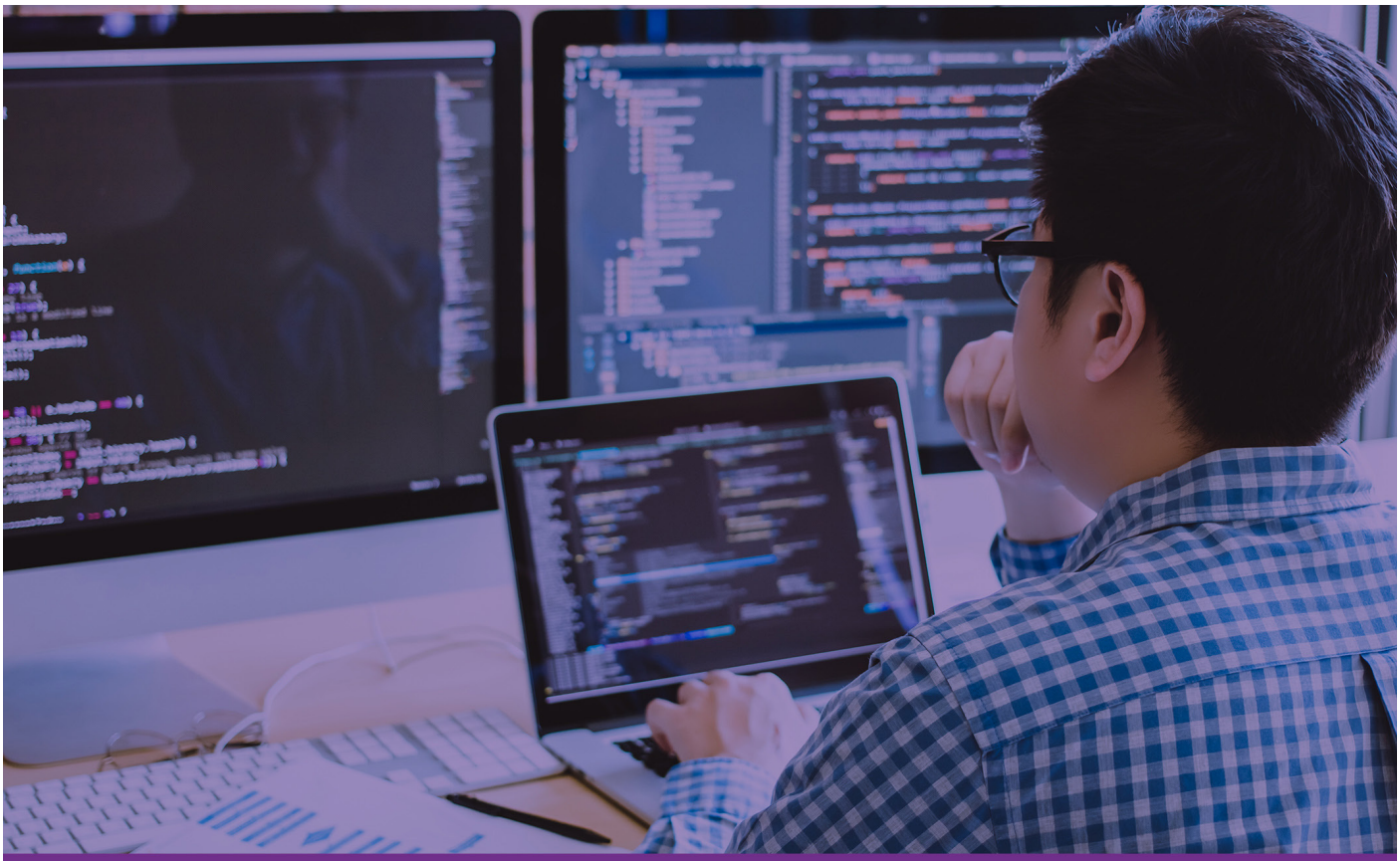
- William Moore, MD, Chief of Thoracic Imaging at NYU, Clinical Director of Radiology Information Technology

Some platforms offer a pay-per-use model, which means healthcare organizations only pay for the services they use. This ties costs more closely to service delivery and revenue, making better use of operational budgets and facilitating the strategic reallocation of capital. In general, platform funding models are flexible and can fit with an organization's preferred method. For example, after initially starting with a Fee-Per-Study (FPS), an organization could move to a subscription model as usage increases based on clinical and organizational value.

In addition, platforms must have comprehensive security measures in place, such as being HIPAA-compliant. This helps a healthcare organization reduce its exposure to security threats such as hacking or unauthorized access by limiting the external and internal points of access to software used by the organization.

## The Application Developer Perspective

For software application developers, deploying an AI algorithm or imaging application via a platform provider presents a compelling new market opportunity. A software vendor may choose to leverage a platform strategy to complement both direct and channel sales initiatives.



A platform approach has the potential to simplify and even eliminate a number of challenges that the application developer might otherwise be responsible for. For example:

- Reducing the need for a large and costly sales and customer integration and implementation team
- Increasing access to new prospects through co-marketing with the platform provider
- Reducing the support burden, with Tier 1 support being handled by the platform provider
- Enabling new pricing models not available via other sales channels

Testing software applications can be a laborious process for both the software vendor and the customer. A platform strategy simplifies the process as the software provider integrates their application with the platform to make sure all interoperability and workflow requirements are met. As all testing has been done in advance, the application can be rolled out quickly and easily, with little effort required from the healthcare organization.

Breast imaging application developer, Densitas, leverages a platform approach to manage its resources effectively and enabling the company to bring its innovations to market more quickly.

**"A platform approach improves our ability to rapidly and efficiently scale up our commercialization efforts. It enables us to focus our resources on algorithm and software development and leverage our platform partner's established marketing and sales channels as well as their experience integrating with hospital and clinic IT systems.**

**We want to stay true to our strengths, and that is developing core IP. We're not seen as yet another vendor to deal with in terms of procurement, billing and deployment and support. We can leverage the infrastructure established by the platform, so it's logical on so many levels."**

- Mo Abdolell, CEO of Densitas

Resonance Health is the developer of FerriSmart – an application for measuring liver iron concentration. The company knows what it takes to build a customer base from scratch as it has been selling directly to healthcare organizations for more than 10 years.

**"In order to get a hospital to sign a contract to use our service, we need radiology approval, and procurement approval. Then, of course, we have to get individual contracts through individual hospitals. Obviously, there are issues with that technique, including scalability. Selling a product, especially to a large hospital, is not straight forward, and it's a long, slow process. It can take a year from when a hospital first says yes, to contract execution."**

- Alison Laws, Resonance Health CEO

Offering its applications on a platform means that Resonance Health benefits from faster entry into new and expanding markets and provides exposure to the platform's established customer base. Via the platform, Resonance Health benefits from a physical sales presence in additional territories, removing the need to hire overseas sales staff and reducing the cost of sales.

Using a platform also allows Resonance Health to maximize the sales potential of its new product, FerriSmart.

**"It's a cost-effective way for us to promote FerriSmart. If the platform technology is already used by radiologists, they can see it as one of their choices when they're deciding which analysis tools to use. Hopefully, that will increase the initial uptake of the technology."**

- Alison Laws, Resonance Health CEO

# Top Tips for Choosing a Platform


For organizations thinking about making the switch to a platform strategy, there are many factors to consider. Here are five top tips:

### 1. What kind of marketplace does it provide?

Platforms that offer a curated marketplace ensure all applications on the platform are vetted and tested to meet strict criteria such as FDA clearance, or clinical and interoperability testing.

### 2. Does it offer secure processing?

The ability to supplement local processing capability with cloud-based processing should be considered as a strategy to minimize hardware costs while supporting future software applications growth and spikes in processing demand. Secure de-identification and re-identification of data must be performed to ensure that personal health information is fully protected and HIPAA-compliant regardless of whether a platform is deployed locally or in the cloud.

### 3. Does it automate workflow?

The platform should be able to automatically extract relevant information and produce results prior to image reading. This can be achieved via the relevancy engine that automates the process of matching incoming study information with the appropriate application, processes the data, and ensures results are quickly sent back to the right system.

### 4. What is the provider's customer service reputation?

The platform provider should have a reputation for providing excellent customer service and training, not only for the platform, but also for the applications available on it. The platform vendor should provide a single point of contact for the purchasing, contracting, and financing of the platform and the applications available in the marketplace.

### 5. How strong is the provider's technical expertise?

The platform should have excellent documentation and controls around security and HIPAA compliance and provide the appropriate legal privacy protections. It should be fully integrated with existing systems, able to prove its ability to manage proprietary and OEM-specific implementations of the DICOM standard, and disparate backend and user interface configuration challenges. A high-quality platform will also provide data analytics that span all applications on the platform, as well as allowing the adoption of varying deployment approaches.

Blackford

Blackford provides a single platform to quickly access and manage regulatory approved medical image analysis applications and AI algorithms that add clinical value. Easily integrated into existing workflows, the platform provides actionable information that allows healthcare providers to use imaging information smartly and reduce the cost of care, while improving diagnostic confidence and patient outcomes.

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