

Case Study

UNLOCKING THE STRATEGIC VALUE OF IN-HOUSE 3D LABS



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Abstract

With the rising demand for 3D imaging services, alongside increasing concerns about employee burnout, and the growing influence around AI, hospitals are reevaluating whether to expand their in-house labs or outsource. What was once a straightforward decision driven primarily by case backlogs and costs is now more complex. This case study examines three different hospital systems' perspectives and strategies in expanding their in-house 3D labs, focusing on four key areas: cost, quality, control and collaboration. Drawing on insights from these prominent hospital systems, it demonstrates how investing in in-house 3D labs can streamline operations, enhance quality, and reduce costs, making them a strategic asset within these hospitals' long-term plans.



As the volume of imaging studies increases, driven by aging populations and expanding diagnostic options, radiology departments are under pressure to meet growing demand. Many institutions are considering whether to expand their in-house 3D labs or outsource imaging services to third-party vendors.

The evaluation criteria for keeping services in-house or expanding often focus on four main areas: cost-effectiveness, quality of imaging output, operational control, and collaboration with radiologists and clinical departments. This case study spotlights three leading hospitals – Cedars-Sinai, Aurora Health Care and Massachusetts General Hospital (MGH) - as it delves into their experiences in growing their in-house 3D labs. It explores how these institutions maintain control over processes, ensure high-quality imaging, foster collaboration, and achieve long-term financial savings.

Financial Benefits | Long-Term Cost Savings

Outsourcing has often appeared to offer immediate financial and resource relief, but the long-term costs can quickly outweigh the benefits. Healthcare systems that manage their own 3D labs report significant financial savings, particularly as imaging volumes increase. Fixed costs for staffing, equipment, and software provide a more predictable financial model, reducing the uncertainties that come with fluctuating vendor fees.

At Massachusetts General Hospital, the financial justification for an in-house lab was compelling. An analysis showed that outsourcing just 12 cases per day would cost the institution \$215,000 annually – significantly more than the cost of employing a full-time technologist. Dr. Gordon Harris, Director of the MGH 3D Imaging Service and Radiology Clinical Trials Program at the Boston based health system explained “We thought within five years we’d be doing as many as 15 cases a day, but we were doing 80 cases a day. Now we’re doing 150 cases a day.” As case volumes grow, these costs will escalate even further, making in-house services a more sustainable option over time.

Institutions like Aurora Health Care have also seen financial benefits by expanding their in-house labs to manage the rising volume of imaging studies, allowing them to avoid the higher per-case fees charged by external vendors. This model not only saves money but also allows for better resource allocation, where the savings can then be reinvested in staff, technology, and patient care improvements.



We looked at outsourcing but the cost benefit wasn't enough to sell us. Keeping the 3D lab in-house, we can do what we want to do. We have control and can use whatever software or processing we want.”

Ta'Nia | Cedars-Sinai

Quality | Consistency and Service

High-quality imaging is critical for accurate diagnostics and patient care, and all three hospital sites emphasized that in-house 3D labs provide greater consistency in precise, reliable images. By managing their own teams, hospitals can enforce strict protocols, reducing variability and ensuring every case meets high standards.

At Massachusetts General Hospital, Michelle Kohanski, 3D Lab manager stated, “The 3D image that one technologist produces will be no different than another technologist’s 3D image. You should not know, visually, who performed the study.” This consistency is vital, especially for complex cases where precision impacts patient outcomes.

The close relationship between lab technologists and clinicians strengthens this consistency. Ta’Nia Harris, Imaging Informatics Lead Administrator at Cedars-Sinai explained, “Radiologists and surgeons can consult with us directly, and we can tailor the services to exactly what they need, ensuring customized, high-quality results.” Aurora Health also emphasized that direct communication allows for immediate adjustments, improving imaging quality and meeting the exact needs of radiologists.

In-house labs can ensure quality through the service that the entire team provides each other. Having close collaboration and maintaining direct oversight are advantages difficult to replicate with a third-party post-processing vendor.

Control | Maintaining Flexibility and Customization

One of the most significant benefits of an in-house 3D lab is the ability to maintain full control over the entire imaging process, from software choices to workflow protocols. Managing the lab internally allows health systems to tailor imaging solutions to meet their specific needs and adapt quickly to changes in personnel, demand or clinical priorities.

At Cedars-Sinai, this control was a key driver in the decision to keep their lab in-house. Ta’Nia also noted, “We looked at outsourcing, and the per-case fee might be a little more cost-effective in the short run, but it wasn’t enough to sell us on fully outsourcing. Keeping it in-house, we have better control and can use whatever software or processing protocol we want.”

Massachusetts General Hospital has long held the combined use of outsourced and in-house 3D reading support. While this hospital’s main in-house 3D lab has played a major role in supporting the radiology department and continues to grow in both its effectiveness and efficiency, outsourcing during off-hours has been critical to their team’s success. Dr. Harris explains “The outsourced lab is a crucial part of the team’s operations - specifically for handling overnight 3D imaging work. This lab was established 21 years ago to address the challenge of covering overnight shifts and ensures that the imaging work is continuous, allowing the main lab to have completed cases ready for review first thing in the morning.”

In-house 3D labs offer significant advantages for radiology departments, including:

- Long-term cost savings: In-house labs offer significant financial advantages over outsourcing, especially as imaging volume increases.
- Predictable costs: Fixed costs for staffing, equipment, and software provide a more stable financial model compared to fluctuating vendor fees.
- Increased revenue: Expanded in-house labs can lead to increased revenue by avoiding higher per-case fees charged by external vendors.
- Enhanced collaboration: Close relationships between lab technologists and clinicians foster better communication and tailored services.
- Strategic decision-making: Maintaining control enables hospitals to make informed decisions about software choices, workflows, and resource allocation.

The ability for MGH to strategically use both their main and outsourced labs has helped drive the credibility of the lab with its radiologists, as it is able to work through more cases with the same level of quality. This approach has allowed their main lab to focus on daytime operations while ensuring that urgent and time-sensitive imaging tasks are completed promptly.

This ability to choose the best tools and workflows ensures radiology departments can provide the most relevant and efficient services for their clinical teams. While the cost of outsourcing imaging processing services serves a short-term problem, each of the three healthcare systems interviewed agreed that having on-site control of the imaging service was far more important in their need to meet both radiologist and patient needs.

Collaboration | Strengthening Relationships with Clinical Teams

An in-house 3D lab allows for more seamless communication and collaboration between radiologists and technologists. This direct access improves feedback speed and enables real-time adjustments, which is especially important in urgent or complex cases. At Cedars-Sinai, Ta’Nia noted, “The staff really enjoys the partnership with the radiologists. There’s a two-way communication that’s hard to replicate with an outsourced team.” This close collaboration allows the imaging team to quickly respond to the needs of clinical staff, ensuring timely and high-quality imaging results.

Aurora Health Care also emphasized the importance of close physician collaboration. Megan Yach, Aurora Health Care’s Imaging Services Supervisor explained, “Having that direct line of communication with the readers... if they have questions or want adjustments, we can do that right away. It’s about making the radiologists happy and delivering what they need.” This immediate responsiveness helps tailor imaging outputs to the radiologists’ needs, enhancing the overall interpretation experience.

Direct relationships are challenging to replicate with external vendors, where communication barriers and time delays can often slow the process. By keeping imaging services in-house, these hospital systems ensure their teams work closely with radiologists and specialists, leading to more personalized, efficient and high-quality image processing.

Conclusion

As understood from spending significant time with 3D lab technologists at Cedars-Sinai, Aurora Health Care, and Massachusetts General Hospital, building and maintaining an in-house 3D lab offers substantial strategic benefits for radiology departments. From greater control and improved service quality to enhanced collaboration and significant financial savings - investing in internal capabilities has positioned these large institutions to better manage increasing demands for advanced imaging services while maintaining high standards of care.

For healthcare leaders seeking a solution that balances efficiency, collaboration, and cost-effectiveness, growing an in-house 3D lab is a proven strategy that delivers long-term value. By focusing on financial sustainability, quality, control, and collaboration, in-house 3D labs empower healthcare institutions to meet growing demands while ensuring the highest standards of care and operational efficiency.



Our techs take the time to work with the images and see what information can still be extracted. That level of service comes from close relationships with our radiologists and knowing their needs. It’s not always possible to achieve this same service quality with an outsourced vendor.”

Aurora Health Care



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