



Focus Group

# Accelerate Your Data Science Agility with a Modern Healthcare Data Lakehouse

The healthcare industry generates a tremendous amount of data from several diverse sources, but healthcare CxOs struggle to convert the data into insights that improve clinical outcomes, patient engagement, and operational efficiencies. Healthcare organizations can accelerate data analysis at a lower cost by using query accelerators like data lakehouse.

## Bringing the ACID concepts of the data warehouse into the data lakehouse



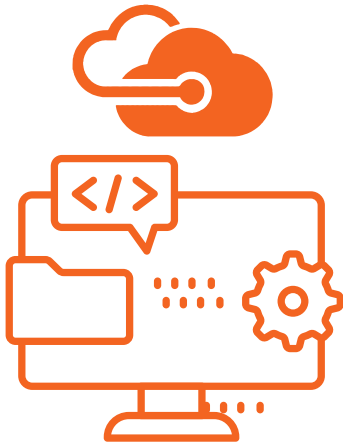
Data lakehouse combines the adaptability, cost-effectiveness, and scale of data lakes with data warehouses' data management and ACID transaction. ACID stands for "Atomic, Consistent, Isolated and Durable," which are all qualities customers want when working with data.

Healthcare CIOs take all the benefits of dealing with data warehouses of yesterday, combining them with what data lakes have to offer in the cloud space today. So, data lakehouse is the best of both worlds of data (warehouse & data lake).

**Healthcare Triangle (HCTI) recently called together a focus group of 12 healthcare IT leaders to share their thoughts on how participants can get the most value from their data with a modern data lakehouse architecture. The discussion was facilitated by Damian David, HCTI's Senior Director Business Development.**

Some of the major takeaways:

- The need for expertise/skill sets to develop more insights out of the data through analysis and provide better value to customers.
- When it comes to third-party data platforms, healthcare CIOs aren't interested in undergoing the process of attaining HITRUST certification themselves, but have an eye on getting more from their data cost effectively and leveraging vendors that can bring HITRUST to the picture for them.



- CIOs found that relying on vendors has been challenging because of how the data is used, stored, and processed to deliver meaningful insights.
- The majority of the healthcare CIOs rely on Microsoft Azure cloud platform to enhance clinical informatics, HIPAA compliance, and improve healthcare.
- Power BI tool was leveraged by most CIOs to convert all sources of their raw data into coherent, easy-to-process, visually compelling, and interactive insights.
- Data usage is hindered by organizational culture. A physician or nurse might be best suited to participate in deciding how the data can be most meaningful to the organization because they are already knowledgeable about how important it can be when making decisions on behalf of patients' healthcare needs.

Here's a recap of the focus group discussion:

### Rising to the challenges of a successful data lakehouse initiative

One of the most apparent challenges with data lakes is that it is hard to find resources with the unique skills, expertise, and competencies that can help organizations derive valuable insights from their data in a short time. Participants in the focus group largely said they get far too many requests from clinicians for data reporting and analytics, and having to prioritize the requests based on the skill sets their resources have was one of the biggest cause of the bottlenecks they have to deal with.

A participating Director of IT added, "We were trying to improve on our data warehouse, and I started reading about lakehouses, and I was like, that is what we need, and we've done a good bit of laying the foundation. But still, having both the technical experience, expertise on staff and the subject matter experts is the need of the hour. We have a few BI developers on our staffs who know how to work with the various tools, but they still need to understand the data itself when you're trying to develop something effective."



Another CIO added, "Our major challenge now is the appropriate-leveled staff. We used to have a good team with medical persons with programming skills, business knowledge (understanding the operational aspects of healthcare organizations), and the ability to talk to and truly understand the needs and asks of the business owners. Due to the recent changes in staffing we are facing huge challenges in improving overall operations and streamlining care delivery. We're looking for someone or a few people to fill the gap, and to look for new technology that can reduce that kind of self-reporting."

A CIO from a smaller community hospital faced challenges in the lack of control over what the data looks like when relying on a vendor. "Being from a smaller community hospital, when we moved our EHR to the cloud back in 2015, we relied on a vendor to present the data back to us in the data lake. Transitioning to the vendor's cloud-based EHR system resulted in challenges related to lack of data control and data validation. To tackle these issues and unlock hidden potential in the data collected from patient visits and immunizations, we built an internal data warehouse. This allowed us with greater flexibility with reporting needs while ensuring all regulatory requirements were met - ultimately providing enhanced insight into improving operations such as reducing downtime."

Another participant added, “Some of the issues we faced originated from the community connect platform that we patched into, so, we relied on not only the EHR vendor who was Epic, but also our community connect partner who controlled a lot of the data.”

Other challenges that CIOs agreed upon included data security, cost of storage, and data silos across different departments.

### **Unlocking the potential of data through intelligent analytics in healthcare**

The participating CIOs agreed on recognizing the value and potential of utilizing advanced analytical tools to gain insight from real-time data. Advanced analytics tools like Studio enables healthcare organizations to explore, visualize, and understand their data. It gives users the ability to create visualizations with drag-and-drop simplicity and apply advanced machine learning algorithms for predictive analytics.



“We're still in the middle of integrating smart analytics tools within our current environment. We have a private cluster that's hosted in the universities' data center, and within that environment we've set up tools such as Studio Enterprise that people can integrate with Python, Jupiter Notebooks, etc. to work on the data,” said another participating CIO.

An additional CIO from a small community hospital added, “We rely on Cerner, and leveraging their Oracle affiliation is a positive for us, i.e., we are able to get more accurate, better information on the dashboards. Being able to drill down per provider to identify those that are effective or not, identifying who's struggling with their EHR adoption or utilization, who needs assistance, where they're struggling, and which in department has really benefited us I think this is common for a smaller community hospital.”

### **Innovating with the right data analytics partner**

A retired CIO adding to the conversation said, “I agree on the lift, that's a big portion of it. But having models to understand return-on-investment is also important in the small community hospitals where cost justification is the key.”



“I know from my organization that one of the key challenges is that since we're part of a State University, our budgeting process is very long. So even if I want to partner with someone, if they're not already in this system, it can take a couple of years just to get things rolling and by then you're dealing with new technology,” said another participating Director of IT, adding to the topic of challenges of creating a strategy to leverage partnerships to fill gaps and force multiply their internal team.

## Azure Vs Google Vs AWS analytics platforms

Choosing the right cloud platform provider can be a daunting task. Take the big three: AWS, Azure, and Google Cloud Platforms; each offers a huge number of products and services but understanding how they enable your specific needs is not easy. There was a talk happening between the participating CIOs on leveraging the platforms according to their business needs.

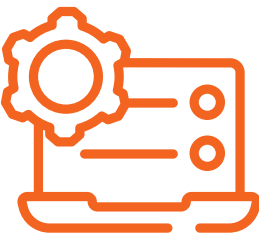


Damian David, the moderator of the focus group said, “Whether it is Azure, Google, or AWS, all three are public cloud platforms that have analytics capabilities. All three of them offer AI, machine learning, and natural language processing. You're all probably going to want to leverage these in the future if you aren't already, especially as you try to get the information to tell you meaningful ways to positively impact your communities, patient outcomes, and your operations. They all have their specific strengths and limitations based on the business needs. For example, I see that AWS has the most robust and secure capabilities for healthcare data processing and storage due to their longer tenure in that focus area, but Azure and GCP have made great strides in being solid options for the most demanding healthcare applications. I think healthcare leaders tend to do more on those two latter platforms due to the easier point-of-entry that creative licensing and pricing models have presented to them. Google has a Google Health initiative mostly directly tied to the MEDITECH platform at this point. But they are trying to expand that. AWS has been used in life sciences, pharma, probably longer than the other two.”

One CIO confirmed, “We're using Azure cognitive services, and are still in the early stages, but we find it useful in the healthcare area.”

## Understanding horizontal and vertical business structures

When looking to change the organization's structure (engineers, analysts, and teams) to better align with business values and be more agile, participating CIOs agreed on taking the horizontal approach rather than the vertical approach.



Damian, the moderator commented, “If you want to take full advantage of your data analytics and EHR solutions, it's the right time to lean towards a horizontal rather than vertical approach. The shift is more advantageous in terms of potential and flexibility. As an industry [healthcare] we have spent millions and millions of dollars on getting data into electronic format, digitization, and we're just starting to use it in a meaningful way, digitalization. We are witnessing the evolution as it is happening, but make no mistake, we are far from achieving true digital transformation as a whole healthcare industry. It will be up to the healthcare leaders to push a lot more of their vendors to embrace and take strides towards true digital transformation. You have the responsibility for setting the stage for your own organizations' successes or failures.”

## Moving from competitors to collaborators

When it comes to collaborative data sharing across a third-party platform, healthcare CIOs are not looking to undergo the process to become HITRUST certified themselves, but are looking for partners who can get them more from their data cost effectively and securely.

“So, we don't really require HITRUST for data or security or privacy. But I remain interested in what everybody else is doing in that space,” said a retired CIO.

A CISO from a community hospital added, "As a security officer, one of our concerns is keeping track of where our PHI exists. I mean the more we share data, the more risks we are incurring. We haven't gone with HISTRUST, obviously for cost reasons. But it just seems that, you know more and more people want access to our data and it's just becoming much more difficult to track where that data lives and how it's being used. So, as we expand the use of patient data, I think we must be very thoughtful about the security of our PHI."

## Gaining value from a data lakehouse platform

Most participating CIOs wanted to get more out of analytics and use their data more effectively over the next five to ten years.

One Director of IT said, "We are planning to leverage a data lakehouse platform for our analytics initiatives in the next few years. There is a lot of data available, and unless organizations are able to convert data into actionable insights, they will fall behind."

"I'd love to use our data more effectively, but it's hindered by our organizational culture, i.e., a group of organizational leaders who may not be taking advantage of the data that they have. So, how can we make that data actionable? We've worked with nursing leadership to develop a nursing scorecard for each of the nursing floors, so there are some pieces that are really moving forward, and hopefully, initiatives like this could influence and change the way people make business decisions," added another CISO.

Finally, a Chief Innovation Officer commented, "I was just thinking that it's important to have a physician or nurse or champion to be the point-person. Instead of an IT Professional, have them advocate for the use of data, the benefits of data, and speak to the volume of capabilities you can gain from an IT standpoint. Everybody knows that analytics and data will help, it's just a matter of being able to see how."

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