

To Build or To Buy a Healthcare Enterprise Data Warehouse? Why Buying Makes Sense



HEALTHCARE ORGANIZATION

Multi-specialty group practice

TOP RESULTS

- Completed buy versus build analysis
- Used Agile approach, engaging BI, clinicians and stakeholders in the development
- Launched healthcare data warehouse core platform in 54 days

PRODUCTS

- Late-Binding™ Data Warehouse Platform

SERVICES

- Installation Services



A decade ago, Crystal Run Healthcare — a physician-owned medical group in New York with more than 300 physicians in 40 medical specialties — decided to develop its own data warehouse and analytics solution. This solution proved to be a key factor in Crystal Run earning a reputation as a national leader in the delivery of integrated, coordinated care. The practice was among the first 27 healthcare organizations in the nation to participate as an Accountable Care Organization (ACO) in the Medicare Shared Savings Program (MSSP).

However, Crystal Run realized over time that its homegrown

To keep up with the data needs of a healthcare organization at this time when everything is changing so rapidly — new care delivery models, more regulatory reporting, an increasing need for business agility and an imperative to understand your performance across a number of clinical domains — there is simply no other way to do all this without an enterprise data warehouse.

Greg Spencer, MD, Chief Medical & Chief Medical Information Officer



Because we've been using our own EDW for years, we had a very clear picture of the right way to go about analytics — and the right way is adaptable and scalable. One of the main reasons our own solution won't work for us in the long-term is because it doesn't adapt and scale. So as we looked at solutions, one of our main criteria was that the solution had to be something that could grow and adapt as we did. A lot of the traditional EDWs we investigated were time-consuming to implement and very inflexible. But as we talked to Health Catalyst® clients, one of the main things we heard was how flexible the platform is. That is something we absolutely must have.

Christopher D'Angelo,
Business Intelligence
Project Manager

solution wouldn't scale to satisfy the growing needs of an ACO. This paper outlines why Crystal Run made the decision to set aside its legacy enterprise data warehouse (EDW) in favor of a commercially available solution that could provide a scalable, cost-effective and viable platform for meeting its long-term accountable care and population health management goals.

CHALLENGES OF A HOMEGROWN DATA WAREHOUSING SOLUTION

Inability to keep up with accelerating data demands

Because the physician group has had its own EDW solution in place for almost a decade, its culture is one that relies on and expects data. In fact, all aspects of the Crystal Run organization rely on information from the business intelligence (BI) team. The organization recently began growing even more rapidly, making it more difficult for the BI team to deliver data to the increasing number of people who need it.

The organization's information needs are also growing because of an increase in regulatory, licensing and accreditation reporting. Crystal Run recognized that they would not be able to meet the increasing demands for information with their existing data warehouse design and BI staffing levels. Instead, they needed a solution that would empower individuals throughout the organization to get the data they required in a more self-service fashion. Developing a self-service model would not only provide insight to individual clinicians and staff but would also enable the BI team to spend more time on processes and business analytics, helping the organization to achieve their strategic goals.

An unsustainable, non-scalable data model and infrastructure

The ability to quickly and easily integrate clinical, financial, operational and other data is a must for managing the health of an ACO population. In fact, data from various source systems — including EMRs, human resources, radiology, pharmacy, patient satisfaction, accounting and cost systems and more — is required for population health management. Crystal Run's legacy EDW struggled to integrate data from a variety of source systems. Manually integrating the data from these systems required significant coding and expertise in developing complex ETL (extract, transform and load) processes — a requirement that taxed the BI team and was untenable for future success.

The legacy data warehouse also lacked a well-defined or standard data model. The solution also lacked automation tools and took

considerable time and effort to maintain. Massive time was spent on extraction, transformation and loading (ETL) of data because full copies — terabytes worth of data were loaded every night. And most of the reports generated by the solution were static in nature and did not enable users of the information to easily drill down to the more granular information they wanted without having BI create another report.

DECIDING TO BUY VERSUS BUILD

Crystal Run's executive and BI leaders examined the increasing need for data and the strain on their current system and determined that their legacy system wasn't sufficient. Once they decided they needed a new solution, they had to decide whether to build or buy it. The following are reasons why, despite their experience with building a data warehouse, they opted to buy a solution:

- When they built their legacy EDW solution a decade ago, solutions that could meet their exact needs did not exist on the market. Today, viable healthcare EDW solutions are commercially available.
- Despite the sophistication of their BI team, they didn't have the skill set in-house to design, architect and build a scalable data warehouse platform. Not only would they have to start from scratch from a technology perspective, they would have to expand on the expertise within the BI team to support the development of an EDW.
- Their legacy EDW solution evolved over an eight-year period. Today however, they no longer had the luxury of taking that much time to develop a solution, hoping that it would meet their long-term requirements. They couldn't risk learning lessons (i.e., making mistakes) that had previously been addressed by an experienced vendor. They needed a solution that could be built in weeks, not months or years.
- A commercially available solution would simply cost less in the long run than developing another in-house solution.
- Buying a proven solution would mitigate significant risks: the risk associated with not having existing in-house expertise; the risk of developing a solution that would not scale over time; the risk of distracting existing personnel from their current jobs; and the risk of failure, especially with something as mission-critical as information to provide exceptional patient care and manage their business.



What we're doing with Health Catalyst is creating a solution that gives our BI team flexibility. Instead of spending our time trying to keep up with the report queue, slicing and dicing the data using complicated SQL queries or running massive ETL processes on a daily basis just to keep the system updated, we can spend our time actually analyzing data and developing processes to help our business improve. We can be data stewards and analysts instead of just report writers.

Lou Cervone,
Director of
Business Intelligence

Once Crystal Run leaders decided that buying a solution made the most sense, they had to choose the right solution. Many of the options on the market were 'black box', turnkey EDWs from companies that used traditional enterprise data models. From their own experience developing an in-house solution, the Crystal Run team was skeptical of claims that any kind of turnkey solution could meet its needs in the rapidly evolving healthcare environment. In fact, they found that many of these companies had little to no healthcare experience, nor were they transparent with their data model — an important factor for a pioneering ACO that wanted to take ownership of its analytics processes. Not surprisingly, the focus of many of these turnkey solutions was on long-term services, something Crystal Run was not interested in. They wanted a vendor that would partner with them to set up the EDW platform and then help them quickly become independent in using the platform to transform healthcare.

THE SOLUTION: BUYING AN ADAPTIVE EDW PLATFORM

Crystal Run was looking for an innovative solution — and a partner that could implement that solution rapidly. They needed a partner who understood and lived in the healthcare world and had a proven track record of success. They found Health Catalyst and its Late-Binding™ healthcare EDW platform.

The following were principal factors in Crystal Run's decision to adopt the Health Catalyst EDW:

- *The flexibility of the unique late-binding data model.* The late-binding approach gives Crystal Run maximum flexibility for using data to tackle a wide variety of use cases as the need arises. The approach can be described as just-in-time data-binding. Rather than having to hammer out a data model up front when you can only guess at what all the use cases for the data will be, you bind the data late in the process — just in time to solve an actual clinical or business problem. This means that Crystal Run doesn't have to make lasting decisions about their data model up front when they can't see what's coming down the road in two, three or five years. It also means that the platform easily scales and adapts to future needs and requirements. It has the agility necessary to adapt to rapidly changing vocabularies, standards and new healthcare analytics use cases.
- *Deep healthcare and quality improvement expertise.* Keenly aware of the unique requirements for effective analytics in a healthcare setting, the Crystal Run team was impressed by Health Catalyst's healthcare expertise. They knew that



Health Catalyst's healthcare experience was a big factor in our vendor selection process. A lot of the data warehouse vendors we talked to wanted to work with us to get healthcare experience. But we couldn't afford to be anyone's healthcare experiment. The fact that Catalyst had expertise in a value-based healthcare world, that they have been helping clients succeed in risk-based and value-based contracting for a while, that they are respected by prestigious healthcare organizations — all of those factors were very compelling. Now that we're working together to implement the analytics platform, it's obvious that Catalyst has done all of this before. It shows in the way the project is flowing. You can just tell.

Greg Spencer, MD,
Chief Medical &
Chief Medical
Information Officer

Health Catalyst was founded and run by a group of healthcare veterans who had spent decades developing data warehousing and quality improvement models at Intermountain Healthcare — one of the highest-quality, lowest-cost health systems in the nation. And they were able to talk to Health Catalyst clients to understand how the company had applied this expertise to help them solve their quality and cost challenges.

- ▶ *A track record of success.* Unlike organizations that rely on traditional, early-binding EDWs, Health Catalyst clients have been able to consistently demonstrate the success they've had improving quality and lowering costs using the EDW platform. In fact, Health Catalyst clients are being recognized by the industry for their achievements. For example, Texas Children's Hospital recently received CHIME-AHA Transformational Leadership Award, which honors an organization that has excelled in developing and deploying transformational information technology that improves the delivery of care. In addition, Stanford Hospitals & Clinics and Health Catalyst received last year's TDWI Best Practices Award in the Enterprise Data Warehousing category.
- ▶ *Cultural values and mission of transforming healthcare.* Crystal Run was impressed by how similar Health Catalyst's mission, values and operating principles aligned with its own. With such an important initiative at stake, Crystal Run leaders knew they needed a trustworthy partner they could work with closely and effectively, and they quickly felt that the Health Catalyst team met this requirement. Of particular importance to the Crystal Run team was Health Catalyst's commitment to transparency, not only in terms of openly discussing successes and challenges, but also in terms of the data model — which means that the team would always know where the data was going and where it came from, giving them better control over the platform and stewardship of the data.
- ▶ *An agile approach and commitment to enabling self-sufficiency.* Self-sufficiency was incredibly important to the Crystal Run BI team. One of the BI team's main goals was for its internal customers to become self-sufficient in getting the information they needed to improve operations and patient care. They themselves also wanted to be self-sufficient and not have to constantly rely on vendor services. Health Catalyst's Agile approach met that need. Health Catalyst has engaged the BI team, clinicians and other stakeholders in implementing and developing the platform. This approach establishes buy-in and

support among those who will use the platform. Catalyst also emphasized transferring knowledge. This knowledge transfer empowers Crystal Run's BI team with access to integrated data and easily accessible metadata. It gives them the freedom not only to manage the platform but also to improve upon it in any way they see fit to extract even more value from the investment. They can, for example, develop their own predictive models, connect to operational systems or build bi-directional interfaces with other third-party systems.

- *Rapid time to value.* Traditional, early-binding data warehouses take a long time to implement. In fact, they can take as many as two years to implement and generate any kind of return on investment — and then they lack the flexibility to adapt to the changes in the industry that occurred during the two years it took to implement them. However, the Health Catalyst late-binding EDW has demonstrated a rapid time to value. The incremental nature of implementing the late-binding EDW model can enable Crystal Run to demonstrate ROI in a matter of months.

Although still in the early stages of the project, Crystal Run and Health Catalyst have already seen impressive results. **They designed, built and launched the core healthcare EDW platform in just 54 days.** They are now working to implement financial and clinical improvement initiatives on that EDW foundation — which includes creating permanent cross-functional teams focused on deploying and monitoring the effectiveness of improvement efforts in specific clinical areas.

Importantly, Crystal Run's BI team will no longer be tied up with producing reports. Instead, the team will be empowered to focus on its real mission: developing processes to manage and improve every aspect of the business. 📈

ABOUT HEALTH CATALYST

Health Catalyst is a mission-driven data warehousing, analytics, and outcomes improvement company that helps healthcare organizations of all sizes perform the clinical, financial, and operational reporting and analysis needed for [population health](#) and [accountable care](#). Our proven enterprise data warehouse (EDW) and analytics platform helps improve quality, add efficiency and lower costs in support of more than 50 million patients for organizations ranging from the largest US health system to forward-thinking physician practices.

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