



SALES + MARKETING



**CASE STUDY:** Business Technology and Big Data

## The Digital Enterprise in Action

### Accelerating the Speed to Market of New Therapies

AMGEN | PHARMACEUTICALS | U.S.

Amgen's award-winning data lake revolutionized the company's global operations by driving bottom-line savings and enabling new data-driven insights—and, as a bonus, it offered the same potential to the entire company

Taking raw potential from a petri dish and manufacturing it on a commercial scale to meet patient needs involves heavy experimentation, complex analysis and constant innovation, all of which depend on data. At Amgen, this function is called process development, and it involves more than 1,500 scientists and engineers working across multiple functions within Amgen's global operations from clinical labs to manufacturing, quality and supply chain. What sets Amgen's process development function apart is that the company has been able to centralize and democratize its data and the associated analytics in order to significantly reduce the cycle time from discovery to commercialization of drugs.

### The Problem

"From raw material to patient, we're leading a digital transformation across Amgen. We have a broad vision to accelerate the speed to market of new therapies and enable new patient insights to influence product and service design," says Chris Nardecchia, vice president of information systems at Amgen. "One of the main obstacles to achieving this vision was that the functions within process development relied on data from processes and systems that were siloed and not ready for analytics." He describes a common

environment in pharmaceutical companies in which scientists, engineers and analysts are hindered by their inability to efficiently access, integrate and analyze large and complex sets of global data. "You can imagine how much of the work was manual, or lost in terms of collaboration, and how much was repeated because one group had no idea that the other group had already done similar work," Nardecchia says.

Suraj Pai, director of information systems at Amgen, helped lead the initiative to revolutionize Amgen's global operations with the use of this data lake. "We needed our scientists and engineers to have centralized access to global data sets that were primed for analysis and put the power of analytics in the hands of each user," but that isn't a simple proposition, Pai says. There's a high degree of complexity and variation in transactional data, systems and processes across sites, and there are also differences in the kinds of analysis that each group needs to do with this data. This is a common big data problem that hadn't been elegantly solved on a large scale. In order to help address this, Amgen decided to partner with ZS, a leader in the pharmaceutical big data technology consulting space. "We needed to design and deploy the platform in a way that would fundamentally change how business users leveraged data in their daily work."

Learn more at  
[www.zs.com](http://www.zs.com)

“To be able to exceed delivery expectations on a project of this complexity and scale in a regulated environment is exactly what you need in a big data and analytics partner like ZS.”

## The Solution

The Amgen and ZS partnership was able to deliver, creating an industry-leading big data solution. Through an agile implementation focused on proof-of-concepts, incremental delivery and frequent business feedback for continuous improvement, the partners created:

- + A centralized, GMP-compliant, searchable repository leveraging Hadoop, AWS and a wide variety of related big data technologies (an enterprise data lake) that integrates structured and unstructured data in near-real time across Amgen’s global operations to process it for analytics. Examples of data sets include manufacturing execution systems, quality systems, lab systems and ERP systems.
- + An App-Store-like exchange from which users can access self-service applications used for data visualization and advanced analytics in the enterprise data lake.
- + A peer-led adoption model that involved the creation of a “global data champion and liaison network” across Amgen’s sites comprising data scientists, data engineers, big data application specialists and business subject matter experts who could not only educate users and solve complex business problems using analytics, but also promote buy-in.

## The Impact

“Our users were very impressed by the capabilities of the platform right from day one of deploying the solution, and we are starting to see strong acceptance by scientific staff,” Pai says. “For many, it is well on its way to becoming an integral part of executing their daily activities.” Amgen’s data lake has increased competitive advantage in three key ways:

- + Efficiency savings: Amgen’s data lake has created significant efficiencies in process development. Analyses that took hours can be done in minutes or seconds, and what took days or even weeks can now be completed in hours.
- + New insights: Amgen can now undertake analyses that were either impossible or too time-consuming to realistically complete.

For example, Amgen is now able to analyze historical product information across products and sites to predict overall performance and quality. Amgen also can predict the likelihood of successfully manufacturing additional batches without extending the production schedule. Other examples include near-real-time remote process monitoring as well as rapid information turnaround during regulatory inspections.

These are only a handful of examples of the many success stories that Amgen has realized. “Users are widely adopting this solution and finding new ways to leverage their data, and we owe that success to our agile, user-first approach,” Pai says.

- + Enterprise-wide capability: With the “one team” approach that Pai took in the design and implementation of the data lake, he was able to collaborate with several teams (across Amgen and with ZS and other vendors) to simplify the big data landscape and deliver a platform that was enterprise-grade. Most major business units across Amgen are planning to adopt the solution, so the same speed and innovation can spread across the whole enterprise.
- + Accelerating future innovation: With this next-generation data and analytics platform in place, Amgen is accelerating innovation in areas such as virtual/augmented reality, internet of things, and robotic process automation and simulation.

“Scientists can now focus on the science first,” says Patrick Dey, executive director of information systems at Amgen. “They get answers fast, meaning that they can ask more questions than ever before and avoid spending most of their time with spreadsheets, phone calls, emails and quality control checks.”

“I think [ZS does] a lot of things differently compared to many consulting firms—the way they’re agile in their partnership, pivoting when we need to, and operating in a world of constant technological flux,” Pai adds. “To be able to exceed delivery expectations on a project of this complexity and scale in a regulated environment is exactly what you need in a big data and analytics partner like ZS.”

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ZS is the world’s largest firm focused exclusively on helping companies improve overall performance and grow revenue and market share, through end-to-end sales and marketing solutions—from customer insights and strategy to analytics, operations and technology. More than 4,500 ZS professionals in 22 offices worldwide draw on deep industry and domain expertise to deliver impact for clients across multiple industries. To learn more, visit [www.zs.com](http://www.zs.com) or follow us on Twitter and LinkedIn.