Case Study: Life Sciences

Data Science Fast-Tracks Cancer Drug Development

Cross-referencing research data speeds drug development and lowers clinical trials cost.

Cancer is a protean enemy — and the human body's range of reactions to treatment is incredibly complex. Understanding the impact on patient outcomes when a variable changes is the heart of clinical research on potential treatments. But predicting outcomes when there are a hundred variables? A thousand? And millions of potential records on patient data? Enormously difficult.

This challenge is what drug development companies face when conducting clinical research and clinical trials for potential cancer treatments, the efficacy of which change based not only on dosage but also on a patient's individual symptoms and health profile.

Since 2009, Cognizant has worked with this pharmaceutical client to test and validate critical technology implementations. Because of their trust in our approach, their R&D leadership asked us to consider ways to make review of critical information on drug performance and patient outcomes more efficient.

At a glance

We applied data science techniques to clinical trial data to make referencing cancer drugs and doses to various patient conditions faster and more accurate, smoothing the path to clinical trials and speeding new drug development.

Outcomes

- Shortened oncology research by up to 3–4 years.
- Reduced cost per patient by 8% to 10% in clinical trials.
- Built an automated data analysis pipeline for other drugs.

July 2019

Cognizant

Researching with rigor

Until recently, documenting pharmaceutical research was a painstaking, principally manual process of cross-referencing information in repositories of publicly available data and information published in scientific and medical journals with a company's information from its own drug development and testing.

How to manage all this data? How to track which compounds and dosages work and which are not effective or even potentially harmful? How to model findings against various patient profiles, from height, weight, and age to liver health and previous history? How to control, report on, and deliver to oncologists the information they need to make the right choices in prescribing treatments?

Our client, a major international pharmaceutical research company focused on a full range of cancer treatments including acute myeloid leukemia (AML), needed a method for more quickly and accurately processing the massive amounts of data emerging from their own trials, from available research, and from the Cancer Cell Line Encyclopedia (CCLE).

Data science cracks the code

Cognizant's Artificial Intelligence team applied its expertise in data science and analytics alongside our deep experience in the life sciences industry to build an automated process for analyzing data in clinical trials research and during clinical trials specifically for one treatment for AML.

Cancer treatments, including new and aggressive chemotherapies, have complications for patients with a range of other conditions. Using a variety of data science tools and techniques, we built an automated solution that makes identifying optimal doses for drugs dramatically faster.

Our solution adopts text mining to automatically review more than 10,000 online resources such as medical journals and scientific research publications. Using an Agile development model, we designed and built an automated pipeline that intakes this vast range of disparate data, normalizes it, performs analytical processing at blinding speed and delivers easily understood reports on outcomes.

Our client can now deliver to oncologists conducting trials for this specific treatment more accurate, informed recommendations on dosages cross-indexed to a staggering amount of information. The faster, more accurate review of drug outcomes reduces the review process from 20 months to 20 days. With the full drug development process taking from ten to eighteen years and costing $40,000 to $50,000 per patient, our solution can trim up to four years from the process and offers savings of as much as 10% of total costs.

Next-generation solution

Our data science solution helps this pharmaceutical company improve what had historically been a manual, costly and laborious process for cross-referencing research clinical trials on cancer drugs, while laying the groundwork for use with a full range of other drugs for conditions ranging from Alzheimer's disease to depression and schizophrenia.

In the battle to beat cancer, the stakes are high. The process is costly, the competition fierce and the mission critical. Our client's journey ahead is clear: use its new automated pipeline driven by data sciences for different treatments, then incorporate machine learning, using artificial intelligence (AI) to speed drug development while improving the safety and efficacy of their clinical trials.

For more information, visit www.cognizant.com/ai.

About Cognizant Life Sciences

Cognizant's Life Sciences business unit is dedicated to building solutions to healthcare challenges and improving the lives of patient around the world. Serving 30 of the top 30 global pharmaceuticals companies, 9 of the top 10 biotech companies and 12 of the top 15 medical device companies, Cognizant is helping the life sciences industry accelerate the shift to digital in research, clinical development, manufacturing, supply chain and commercial operations. The practice provides domain-aligned consulting, business process improvement, systems integration, collaborative platforms and software-as-a-service solutions globally. Visit us at http://cognizant.com/life-sciences

About Cognizant Artificial Intelligence Practice

As part of Cognizant Digital Business, Cognizant's Artificial Intelligence Practice provides advanced data collection and management expertise, as well as artificial intelligence and analytics capabilities that help clients create highly-personalized digital experiences, products and services at every touchpoint of the customer journey. Our AI solutions glean insights from data to inform decision-making, improve operations efficiencies and reduce costs. We apply Evolutionary AI, Conversational AI and decision support solutions built on machine learning, deep learning and advanced analytics techniques to help our clients optimize their business/IT strategy, identify new growth areas and outperform the competition. To learn more, visit us at www.cognizant.com/ai.

About Cognizant

Cognizant (Nasdaq-100: CTSH) is one of the world's leading professional services companies, transforming clients' business, operating and technology models for the digital era. Our unique industry-based, consultative approach helps clients envision, build and run more innovative and efficient businesses. Headquartered in the U.S., Cognizant is ranked 195 on the Fortune 500 and is consistently listed among the most admired companies in the world. Learn how Cognizant helps clients lead with digital at www.cognizant.com or follow us @Cognizant.

Cognizant

World Headquarters
500 Frank W. Burr Blvd.
Teaneck, NJ 07666 USA
Phone: +1 201 801 0233
Fax: +1 201 801 0243
Toll Free: +1 888 937 3277

European Headquarters
1 Kingdom Street
Paddington Central
London W2 6BD England
Phone: +44 (0) 20 7297 7600
Fax: +44 (0) 20 7121 0102

India Operations Headquarters
#5/535 Old Mahabalipuram Road
Okkiyam Pettai, Thoraipakkam
Chennai, 600 096 India
Phone: +91 (0) 44 4209 6000
Fax:: +91 (0) 44 4209 6060

Codex 3595