Cognizant

Case Study: Life Sciences

Data science fast-tracks cancer drug development

A pharmaceutical client cross-referenced research data to speed drug development and lower clinical trials cost.

The challenge

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.

For many years, Cognizant has worked with this pharmaceutical client to test and validate critical technology implementations. Because of the company's trust in our approach, its R&D leadership asked us to consider ways to make the process of reviewing 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 to 4 years
- Reduced cost per patient by 8% to 10% in clinical trials
- Built an automated data analysis pipeline for other drugs

Researching with rigor

Until recently, documenting pharmaceutical research was a painstaking, mostly 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 one for acute myeloid leukemia (AML), needed a method to more quickly and accurately process the massive amounts of data emerging from its own trials, from available research and from the Cancer Cell Line Encyclopedia (CCLE).

The approach

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 of 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.

Business 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 10 to 18 years and costing $40,000 to $50,000 per patient, our solution trims 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 from 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 AI to speed drug development while improving the safety and efficacy of its clinical trials.

For more information, visit 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 185 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
300 Frank W. Burr Blvd.
Suite 36, 6th Floor
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

APAC Headquarters
1 Changi Business Park Crescent
Plaza 8@CBP # 07-04/05/06
Tower A, Singapore 486025
Phone: + 65 6812 4051
Fax: + 65 6324 4051

Codex 3595