

CASE STUDY

Empowering Forecasting Accuracy with AI-Driven Insights in the Biotech Sector: **Data Analytics, AI, and Modeling**



The Challenge

In the face of a rapidly evolving market, a prominent biotech leader struggled with accurately forecasting shipments—a critical capability for maintaining supply chain efficiency and meeting demand. The company also grappled with outdated processes, inconsistent data quality, and limited flexibility in deriving actionable insights from internal data systems. Executive leadership demanded a more intuitive, on-demand analytics interface to support timely and data-driven decisions.

The Goals

- Enhance the accuracy of shipment forecasting models.
- Improve data quality, particularly from external data inputs.
- Extend the lifespan of legacy forecasting infrastructure.
- Provide executive leaders with AI-powered, real-time access to business data using natural language.

Results at a Glance

- Over 6 months, trained the models and fine-tuned parameters to achieve a 98% global accuracy rate
- Reduced feature preparation process time from 24 to less than 2 hours.
- Reduced model run time from 7 days to >4 hours.
- Increased codebase support life by 36 months.

Solution Overview: AI-Infused Forecasting and Decision Enablement

Partnering with Motion Consulting Group, the company launched a transformative initiative centered around AI, automation, and modernization. The approach combined advanced data science techniques with conversational analytics to deliver a scalable, insight-driven solution.

AI-Powered Natural Language Interface

To address the leadership's need for rapid insights, the team integrated a natural language chatbot within AWS QuickSight. This solution enabled executives to query internal data systems using plain English and receive immediate, auto-generated visual and textual insights. This significantly reduced the time between inquiry and decision, democratizing access to analytics across the leadership team.

Collaboration and Technical Execution

Motion Consulting Group collaborated closely with the internal data team to:

- Extract and structure data from the SAP HANA database
- Preprocess and load data into AWS QuickSight
- Configure semantic models that aligned with business terms used by executives

Forecasting Model Modernization

The core technical challenge—improving shipment forecasting—was tackled using a multi-pronged AI approach:

- Development of new models and features tailored to evolving market dynamics
- Parameter tuning and integration of high-quality external insights
- Refinement of existing models for enhanced regional accuracy
- Codebase modernization, upgrading from Python 3.7 to 3.10

Outcomes

- Over 6 months, trained the models and fine-tuned parameters to achieve a 98% global accuracy rate
- Reduced feature preparation process time from 24 to less than 2 hours
- Reduced model run time from 7 days to >4 hours
- Increased codebase support life by 36 months.
- Increased forecasting model user confidence from 70-90%
- Modernized the codebase from Python 3.7 to 3.10
- Streamlined decision-making across the organization
- Reduced dependency on data analysts for ad hoc reporting
- Enhanced user confidence in operational data

Conclusion

By harnessing the power of AI and natural language processing, the organization transformed both its forecasting capabilities and executive decision-making processes. The synergy between human expertise and AI tools enabled a smarter, faster, and more resilient operational model—well-positioned to adapt to the demands of a rapidly evolving biotech landscape.

If your organization faces similar challenges with building out a comprehensive data optimization strategy, let's connect to explore tailored solutions that meet your specific needs.