

Globant

Globant helps a leading pharmaceutical company streamline its production processes



Introduction

Globant's Data and AI Studio helped a leading pharmaceutical company streamline its drug production with artificial intelligence (AI) and machine learning. By developing models that accurately predict the duration of manufacturing processes, Globant improved visibility into the process timelines to help increase efficiency at two key production facilities. In turn this is enabling a consistent supply of life-saving medicines for patients.

The challenge

The pharmaceutical manufacturing process is incredibly complex. A single facility may be required to manufacture medicines in a number of different formats, from blister packs to vials. Different batches of drugs are often interdependent, so a facility cannot begin production on one batch before completing another. And manufacturing each batch involves multiple substeps, each of which introduces its own complexities. Precise planning is paramount in order to deliver life-saving products efficiently and on schedule.

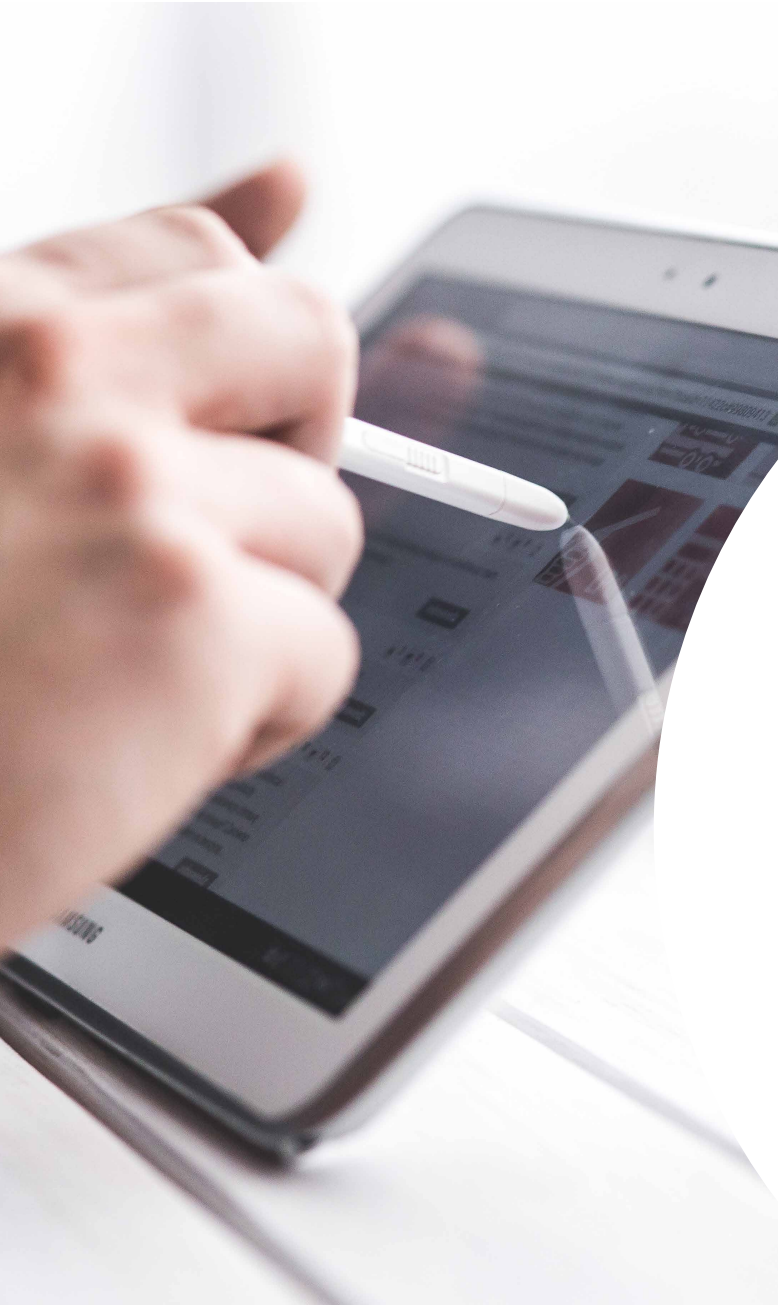
For this project, the pharmaceutical company wanted to use AI and machine learning to improve planning and enable its production facilities to run more efficiently, with fewer delays. Specifically, they wanted AI models to predict the duration of batches and other steps of the manufacturing process — including wait times between steps — more accurately than their original planned timelines. This would enable human planners to make more accurate decisions about when to schedule production for particular batches.

To achieve this goal, the pharmaceutical company needed AI and machine learning expertise. They also needed to gather data from multiple systems to build a robust data pipeline that would deliver clean, high-quality data to be ingested by models.



How we helped

Globant leveraged our data science expertise to build AI models to provide insights into the pharmaceutical company's manufacturing process. First, we formed a blended team of data science talent from our Data and AI Studio and the pharmaceutical company. For the first month of our engagement, the team dove deep into research on the company's production process by reviewing documentation and interviewing SMEs, including data engineers and specialists charged with maintaining the company's enterprise resource planning (ERP) software. These conversations were vital for understanding what data was available for us to use and how to gather it.



The team's goal was to build four models, each of which would "zoom in" further to examine manufacturing processes with a greater degree of granularity. Each model would predict duration at different granularities, as well as the waiting time between different batches.

With a plan in place, the next step was to build a data pipeline to support AI and machine learning models. We worked with stakeholders at the pharmaceutical company to clean and standardize data from the two facilities' ERP systems, building a robust foundation for our data science work.

Then we began development of custom-made machine learning models. As we trained and refined the models, we collaborated closely with Amazon Web Services (AWS) to put the first models into production and ensure they would predict continuously. The team is continuing to work to deploy further models as further data becomes available.

The results

Today, the initial models have been implemented at both production sites and are already helping deliver efficiency gains. A dedicated user interface (UI) enables human planners to review the models' predicted durations for different parts of the process. These highly accurate predictions let planners optimize their work and avoid unexpected delays or interdependent batches falling out of sync, ensuring that drugs reach pharmacies, hospitals and — most importantly — patients on time.

Conclusion

This project demonstrates the power of AI and machine learning across the pharmaceutical value chain. Pharmaceutical companies have a major opportunity to unlock efficiency and gain new insights through the use of technology everywhere from R&D labs to production lines.

We're continuing to work with the pharmaceutical company in this case study to grow our collaboration and find new ways to support their work. Our next step is to adapt our existing models to flag delays and potential issues in the drug production process as well as predicting process duration. This enhancement will enable human workers to address problems quickly and further boost both production sites' efficiency. Eventually, the pharmaceutical company hopes to expand the use of these models to additional sites, multiplying the impact of the project for the long term.



About **Globant**

We are a digitally native company that helps organizations reinvent themselves to create a way forward and unleash their potential. We are the place where innovation, design and engineering meet scale.

- We have more than 17,250 employees and we are present in 18 countries working for companies like Google, Rockwell Automation, Electronic Arts and Santander, among others.
- We were named a Worldwide Leader in CX Improvement Services by IDC MarketScape report.
- We were also featured as a business case study at Harvard, MIT, and Stanford.
- We are a member of the Cybersecurity Tech Accord.

For more information, visit **www.globant.com**




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