Fortune 500 Insurer Accelerates Quantitative Research and Reduces Compliance Risk with Domino

By Janet Wagner

Quantitative research was too slow, and the risk was too great.

Despite a data science department of about 80 team members, the pace of quantitative research at this Fortune 500 Insurer made rapidly delivering value to the business a challenging proposition.

Data scientists were working hard every day on numerous research projects; spending hours building models, documenting research, emailing each other results, and performing many other research tasks. Despite their hard work, the pace of research and innovation was not fast enough.

The company did not have a solution in place for teams of data scientists to collaborate on research projects. There was no version control, no system or central place to manage projects. Instead there were pockets of coupled together internal practices. New projects would be created only to become lost months later, no one knowing they even existed.

The lack of a data research system made it difficult for team members to collaborate on projects, find original models and datasets, pick up on existing research, and answer questions from regulators. Documentation, including assumptions, was lacking resulting in a significant effort for compliance and greater compliance risk.

The company realized that with every passing day, the onerous research process further demotivated the team. This Fortune 500 Insurer also realized that without a solution that accelerated research and helped its data scientists build better models, rates would be too high and the company would lose customers to competitors.

This Fortune 500 Insurer needed a solution that allowed its data scientists to conduct research in a way that was reproducible, collaborative, and reusable.

That's where Domino came in.

At a Glance

Company

Serving millions of households across the United States, this Fortune 500 Insurer is among the top ten largest personal lines property and casualty insurance companies in the United States.

Problem

Company did not have a data research system in place making it difficult for team members to find original models and datasets. Documentation, including assumptions, was lacking resulting in significant effort for compliance which increased compliance risk.

Solution

Implement Domino, a solution that would allow the company's data scientists to conduct research in a way that was reproducible, collaborative, and reusable.

Results

- Data scientists are conducting research at an accelerated pace.
- Past research can be easily reproduced greatly reducing compliance risk.
- Data scientists can easily pick up on past research, knowledge is now compounded.
- Data scientists have more experimental agility than ever before.

The Problem

This Fortune 500 Insurer was facing a number of problems slowing down the pace of research, making it difficult for the company to meet the regulatory compliance requirements of each state. The slow pace of research also made competing with insurance peers difficult. Data science and analytics have become important tools in business. Insurance companies in particular, must use data science to remain competitive and profitable.

For example, when an individual purchases auto insurance, the insurance company uses their zip code, driving experience, and other information to predict the kind of driver they are going to be and how many insurance claims they may file.

Insurance companies that are unable to accelerate research and quickly build cutting-edge predictive models will be unable to compete with insurance peers.

This Fortune 500 Insurer needed a solution that would allow the company to:

Accelerate research.

Data scientists at this Fortune 500 Insurer often wasted time reinventing the wheel not knowing research had already been conducted. Team members were having difficulties picking up on past research, especially if the original researcher(s) was no longer at the company. Knowledge was not being compounded.

Reproduce past research.

Regulators may ask questions about recent research or research conducted some time ago. The company had no version control in place; code, models, results, and other project files were stored in data silos. It was difficult for this Fortune 500 Insurer to reproduce past research projects, models, and results for regulatory compliance.

Improve project collaboration.

This company's data scientists were struggling when it came to collaboration. Sharing code was difficult because team members often used different tools. It would take hours to set up an environment and get the data needed to share models. In addition, project discussions occurred primarily through disassociated email threads.

Easily onboard team members.

New team members had a difficult time joining and getting up to speed on research projects. Past information was difficult, if not impossible, to find. Project discussions were difficult to follow and understand as email was the primary method of communication.

Conduct cutting-edge research.

Team members had to rely on the IT department to install programming language and data science packages. If a data scientist wanted to use the latest version of Python or a new cutting-edge machine learning package, they had to wait for the request to be fulfilled by the IT department. This could take months, if at all.

The Solution

After reviewing several solutions, this Fortune 500 Insurer chose Domino because of its comprehensive feature set and platform stability. In addition, Domino was able to meet the company's unique infrastructure and IT security requirements.

Featuring automatic version control, Domino's reproducibility engine preserves environments exactly as workers leave them. Code, datasets, models, results, discussions, and other project information are saved automatically. Research projects can be easily reproduced exactly as before, even years later.

Domino provides a central web interface where team members can share research results, leave comments, and discuss projects. Project results can be easily compared; the differences between code, data, parameters, and results displayed side by side.

Joining and catching up on a project is a breeze with Domino. Team members can join a project by simply responding to an email invite. Comments and discussions are saved with all projects so new project members can quickly catch up.

Domino features environment management which allows data scientists to install new programming language and data science packages without IT assistance. Data scientists can safely experiment with new technologies without interfering with anyone else's work.

The Results

Feedback from the company's data science department has been overwhelmingly positive. The internal review team found that Domino met or exceeded user expectations and users are enthusiastic about the product.

As a result of implementing Domino, this Fortune 500 Insurer has benefited in a number of ways:

Accelerated research.

Domino helped this Fortune 500 Insurer accelerate quantitative research by providing data scientists a system that allows them to find, reuse, and build upon past work. Data scientists are no longer spending hours hunting down past projects, wasting time unnecessarily starting projects from scratch, or having to wait for scripts to run before working on the next project.

"We had an analyst move off the project a couple of weeks ago, but with the Domino interface everything he had run was still right there, so it's been pretty straightforward to pick that work up," says Fortune 500 Insurer data scientist. "We haven't had to dig around trying to match up code with results and try to figure out what was actually run and when."

Past research can be easily reproduced.

Thanks to Domino's reproducibility engine, data scientists can now easily reproduce past research projects, models, and results for regulatory compliance. The company's previous lack of auditability could have lead to a temporary or permanent loss of its right to engage in business in one or more states. Domino has helped this Fortune 500 Insurer greatly reduce compliance risk.

Increased collaboration and easier onboarding.

Domino has helped this Fortune 500 Insurer greatly increase collaboration among its data scientists.

Before Domino, team members struggled to collaborate on projects. Configuring environments for sharing models and analyses was a difficult and time consuming process. Very few team members would even bother doing it. With no system in place for new team members to quickly catch up on projects, project onboarding was difficult.

"I really like how easy it is for multiple modelers to work on a project together," says Fortune 500 Insurer data scientist. "It makes it very easy to see what code everyone else is running, what stage it's at, when it finishes, etc. I don't think you can get the same transparency working outside Domino."

When Domini was first implemented at this Fortune 500 Insurer, there were about 80 data scientists working on a number of independent projects. Today there are about 120 data scientists working on more than two dozen research projects in the Domino system.

More Experimental agility.

Thanks to Domino, when a new programming language or machine learning package is released, data scientists don't have to wait months for IT to install it. This Fortune 500 Insurer's data scientists are now leveraging sophisticated data science techniques and the latest technologies.

This Fortune 500 Insurer is building better predictive models, expanding its research on connected cars, and conducting cutting-edge research at an accelerated pace. The shackles have been removed; data scientists at this company have more experimental agility than ever before.

"The ability to switch out to the latest version of R at a moment's notice will be great for keeping up to date with the latest features, and not something we could do otherwise," says Fortune 500 Insurer data scientist.

Conclusion

Before Domino, research was slow, collaboration was difficult, and the compliance risk was high. Now this Fortune 500 Insurer is conducting quantitative research at an accelerated pace, data scientists are collaborating on more projects than ever before, and past work can be easily reproduced for regulators.

With the help of Domino, this Fortune 500 Insurer has tackled nearly all of the daily research challenges its data scientists were facing, and the company isn't stopping there.

This Fortune 500 Insurer is using Domino to democratize data science and analytics across the company.

The data science department is developing lightweight applications and self-service analytics tools that non-technical employees can use to answer sophisticated questions. For example, a claims adjuster can use an application that analyzes claims metrics or a marketing department employee can use an application that leverages predictive models to send targeted emails to customers.

This Fortune 500 Insurer is on the leading edge of insurance industry innovation leveraging data science and cutting-edge technologies to offer low insurance rates and better serve customers. Insurance companies that fail to adopt sophisticated data science techniques and accelerate research run the risk of losing customers, experiencing profit losses, and facing compliance failures.

Don’t let your insurance company get stuck in the slow lane when it comes to data science innovation.

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