



CUSTOMER SPOTLIGHT

Construction Tech Company

3Cloud enables a leading provider of facility & construction cost data, software and services with AI solutions to create operational efficiencies and set them apart in the construction industry

CHALLENGE

This client is the leading provider of facility and construction cost data, software, and services for all phases of the building lifecycle, i.e., they provide contractors & owners of buildings with standardized information and professional support on prices of labor, equipment, and materials used in construction. About 150 Account Managers (AMs) mediate the creation of proposals for construction on behalf of contractors/building owners bidding on the work. The AMs strive for the most accurate and cost-effective proposals possible but must review a large volume of proposals each week, which contain up to 200 construction line items, selected from a catalog of ~200K line items.

The proposal review process is time consuming, error prone, and is difficult to onboard to new AMs. If Account Managers are unable to provide proposals with proper attention and scrutiny, it opens the potential for supplemental and unexpected work, and more importantly, the company's clients may be subjected to proposal inaccuracies and price discrepancies.

In addition, the Data Research team is responsible for researching as many labor, equipment, and material prices every year before the annual cost data catalog is published. The material prices are particularly difficult due to volume and complexity. With over 55,000 materials in the cost catalog, a full-time 15-person team researched prices year-round, but are only able to complete about half of the materials.

This process leads to loss of opportunity cost as the Research team is staffed with skilled construction engineers whose time would be better spent analyzing trends in construction to create a better cost data catalog. And as accurate, standardized pricing information is crucial to the organization's livelihood, pricing information that is infrequently updated could lead to customer attrition.

 [SCROLL TO VIEW DETAILS ON THE 3CLOUD SOLUTION](#)



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SOLUTION

The technology company has expansive opportunity for AI solutions in creating operational efficiencies and providing accurate, fair prices to their clients. To target AI-driven operational efficiencies and price accuracy, a process and platform was crafted by 3Cloud using a combination of Azure and open-source technologies. Collaboration on this project was crucial, as the construction industry is nuanced, hence decisions were made jointly to best utilize our client's expertise and create a solution that they can own and scale.

Azure DSVMs were selected to house memory intensive development. 3Cloud tested multiple NLP approaches for incorporating the large amount of text data available in written construction scopes and construction line-item descriptions, stored in Azure SQL Databases and Azure Blob Storage. Data scientists were empowered to train models and deploy asynchronous API services iteratively with Docker, Azure Container Registry, and Azure DevOps pipelines.

To craft the Proposal Review Assistant, 3Cloud architected a system of machine learning models and analytic modules to provide recommendations to Account Managers on which actions should be taken during the review process. Adoption and explainability were the driving force behind AI development; if an AM couldn't make sense of the AI recommendations, they were not well equipped to have a productive discussion with the contractor.

3Cloud utilized NLP techniques to interpret the written scope of the construction project along with line-item descriptions and notes to understand if the proposal accurately reflects the construction work required.

To solve the Data Research challenges, 3Cloud boiled down the data research task into a digestible question: How can the company accurately map supplier products and materials together to streamline pricing research, within a framework where humans are able to validate and improve the model over time? 3Cloud landed on training a deep learning similarity model. The goal of the model was to match supplier products and materials together based on their text descriptions, using the large history of research as labeled data. 3Cloud rolled out the MVP model for testing and interviewed the research team on their experience before moving forward into productionization.

 [SCROLL TO VIEW DETAILS ON THE 3CLOUD RESULTS](#)



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RESULTS

The impact of 3Cloud's AI solutions for the technology company have been multifaceted. AI sets the business apart in the construction industry. It signals to their clients that forward-thinking construction solutions and efficiencies in client time and money are their highest priority. It has enabled the skilled workforce to focus on higher order problems for their clients.

3Cloud's AI solutions have combined the most effective elements of software development best practices and data science for automation to create a foundation for future AI product development at the organization. The Proposal Review Assistant has saved hundreds of hours of AM's time and they report that their proposals are not only reviewed quicker but are also more accurate. Account Managers were empowered with insights on the review process and armed to communicate more effectively with contractors and building owners.

The Data Research matching model MVP pointed to time savings in research of 20-40%. Each researcher interviewed was enthusiastically supportive of the model's potential to increase the number of materials priced and free up their time to work on enhanced pricing methodologies and broader improvements to their catalog.

The Proposal Review Assistant and the Data Research human-in-the-loop matching model have provided a foundation for scaling AI product development for the company.

CLIENT PROFILE

Leading provider of facility & construction cost data, software & services.

Employees: 685

Annual Revenue: \$134M

Innovation Focus: Data & Analytics, AI