

Workforce Optimization

**A CASE STUDY IN STREAMLINING
RESOURCE ALLOCATION AND COST
SAVINGS**

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Introduction

This whitepaper highlights the transformational journey undertaken by Tek Leaders' team to optimize workforce allocation within a leading defense contractor. The project centered on providing an automatic data science algorithm capable of efficiently matching engineers with suitable projects, considering skill sets, security clearances, and project timelines. By streamlining the allocation process, the project aimed to enhance project management efficiency, reduce costs, and ensure optimal resource utilization.

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Project Overview

Our client, a leading defense contractor, faced a critical challenge of managing 1400 different projects with 1300 engineers available and 60% of their engineers having 50% of their schedules unfilled, leading to inefficiencies and high costs. The company sought to automate the process of matching engineers to projects based on their skill sets, security clearance, and location. Additionally, project timelines were continuously changing, necessitating a solution that could provide real-time updates every two hours. The goal was to offer project managers seven suitable engineer options for each task, factoring in budget constraints and geographical proximity.

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Technical Environment



The project's technical environment involved the use of Microsoft Azure Government Cloud, which presented unique challenges compared to commercial Azure Cloud. Key technologies utilized included

- Python for data science
- Spark and SQL for data engineering
- Azure ML Studio for deployment
- Power BI for data visualization.

The team also developed custom libraries to overcome the limitations of the government cloud.

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Proposed Solution



The project was divided into two major phases: prototyping and implementation. The first phase involved extensive research and development to create a robust data science algorithm capable of handling the complex requirements of the client. Python was the primary language used for feature engineering, model selection, and computational resource optimization.

The second phase focused on deploying the algorithm into the client's government Azure cloud environment. This involved overcoming challenges unique to government clouds, such as limited availability of certain Azure Core ML libraries. The team successfully deployed the algorithm in Azure ML Studio, achieving an impressive processing time of just 300 seconds, a significant improvement from the initial eight hours.

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Results and Impact

The project yielded exceptional results, positively impacting the client in several key areas:

Cost Savings: By optimizing resource allocation, the client achieved substantial cost savings, estimated to be in the tens of millions. The reduction in unfilled schedules and streamlined project management processes contributed significantly to this outcome.

Enhanced Efficiency: Project managers experienced a four-hour reduction in daily task allocation, allowing them to focus on other critical aspects of project management. The algorithm's ability to forecast hiring timelines provided valuable insights to aid in decision-making.

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Results and Impact

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Improved Transparency: The algorithm's data visualization through Power BI empowered project managers with real-time access to resource availability and project status. This transparency fostered better decision-making and resource planning.

Customization and Scalability: The algorithm was tailored to meet the client's specific needs and could be scaled for future projects, ensuring adaptability to changing requirements.

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Conclusion

The successful workforce optimization project undertaken by Tek Leaders team significantly transformed project management efficiency. By leveraging data science, machine learning, and Azure technologies, we achieved remarkable results in resource allocation, cost savings, and project transparency. The project's success serves as a testament to the power of data-driven decision-making in driving meaningful organizational change and optimizing resource utilization.

(Note: Client identity and proprietary information have been withheld to maintain confidentiality.)

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