Revolutionizing Agriculture Planning:
Altimetrik's Agile Solution Delivers Operational Efficiency and Forecasting Precision

Client: US based produce grower, packager and seller

- **Efficiency Boost**
- **Cost Savings**
- **Capacity Optimization**
- **Improved Collaboration**
- **Informed Decision-Making**
- **Sustainable Growth**

Key Highlights

Efficiency Boost

Before: Planning processes took 8 hours for a year's algorithm and a day for 5 years

After: Reduced simulation run time to under 15 minutes

Cost Savings

Before: Reliance on manual effort and lack of technical support

After: Significant reductions in labour costs and overheads

Capacity Optimization

Before: Underutilized greenhouse capacity

After: Achieved over 30% increase in greenhouse utilization

Improved Collaboration

Before: Limited collaboration due to siloed processes

After: Enhanced collaboration across teams with seamless integration

Informed Decision-Making

Before: Limited access to real-time data

After: Better-informed decisions with real-time data and advanced forecasting

Sustainable Growth

Before: Limited scalability and growth potential

After: Positioned for future growth and expansion with enhanced planning tools

Background

The client, a prominent player in the agriculture industry, aimed to modernize their planning capabilities to overcome manual processes, outdated technology, and scalability limitations. The company engaged Altimetrik to revamp their planning framework for enhanced agility and efficiency.

The objective was clear: deploy advanced planning solutions to optimize resource utilization, elevate decision-making, and foster sustainable growth. Leveraging state-of-the-art technology and innovative strategies, the company sought to streamline planning processes, foster cross-team collaboration, and position themselves for future expansion.

Altimetrik undertook the challenge by developing a long-range planning simulator to forecast crop planting across greenhouses for the next 5 years. Additionally, a short-term yield forecast tool was crafted to predict yield over a 6-week rolling period. The overarching aim was to empower the company with predictive capabilities, enabling informed decisions, efficient resource allocation, and successful business outcomes.
With a focused vision of enhancing operational efficiency and driving growth, the client embarked on a transformative journey, partnering with Altimetrik to harness modern technology and predictive analytics.

Pain Point

The client faced significant challenges with their existing planning tools, including lengthy simulation run times and manual data management processes. Over the past decade, reliance on a proprietary data science team to manage the outdated platform limited innovation and responsiveness.To streamline operations and free up resources for new projects, the client urgently sought to reduce time-to-predict and enhance responsiveness without disrupting ongoing operations.

Key Objectives

Achieve Scalability & Replicability

Ensure the solution can scale to accommodate future growth and be easily replicated across different environments or business units.

Future-Readiness

Develop the solution with an eye toward emerging technologies and industry trends, ensuring it remains relevant and adaptable to evolving needs.

Increase Speed of Delivery

Implement processes and technologies to accelerate the delivery of features and updates, enabling faster response to business requirements.

Facilitate Ease of Experimentation for Large User Base

Design the solution to allow for seamless experimentation and testing, particularly for a large user base, enabling rapid iteration and innovation.

Establish Well-Organized, Consistently Written, and Modularized Code

Ensure the codebase is well-structured, consistently written, and modularized, facilitating easier maintenance, updates, and onboarding of new team members.

Enhance Traceability and Model Tracking for Transparency

Implement mechanisms to track changes and updates to models and data, ensuring transparency and accountability in decision-making processes.

Ensure Compliance and Meeting Security Standards

Adhere to industry regulations and security standards, ensuring the solution is compliant and robust against potential security threats.

Reduce Human Effort & Intervention

Automate repetitive tasks and streamline workflows to minimize manual intervention, improving operational efficiency and reducing human error.
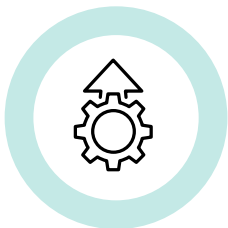
Implement Metadata-Driven and Complete Configurability

Utilize metadata-driven approaches and provide comprehensive configurability options, offering greater flexibility and control over the solution's behaviour and settings.

Solution

Altimetrik practitioners meticulously evaluated the client's existing platform, collaborating closely to engineer a state-of-the-art cloud-native architecture. This innovative architecture, centered around a pluggable core AI engine developed in Python, was precisely tailored to meet the client's unique requirements and challenges. Leveraging cutting-edge technologies such as AWS SageMaker for scalable ML model building and deployment, Snowflake for robust data warehousing, and advanced AI/ML libraries, the solution adhered to stringent InfoSec standards to ensure optimal performance and security.
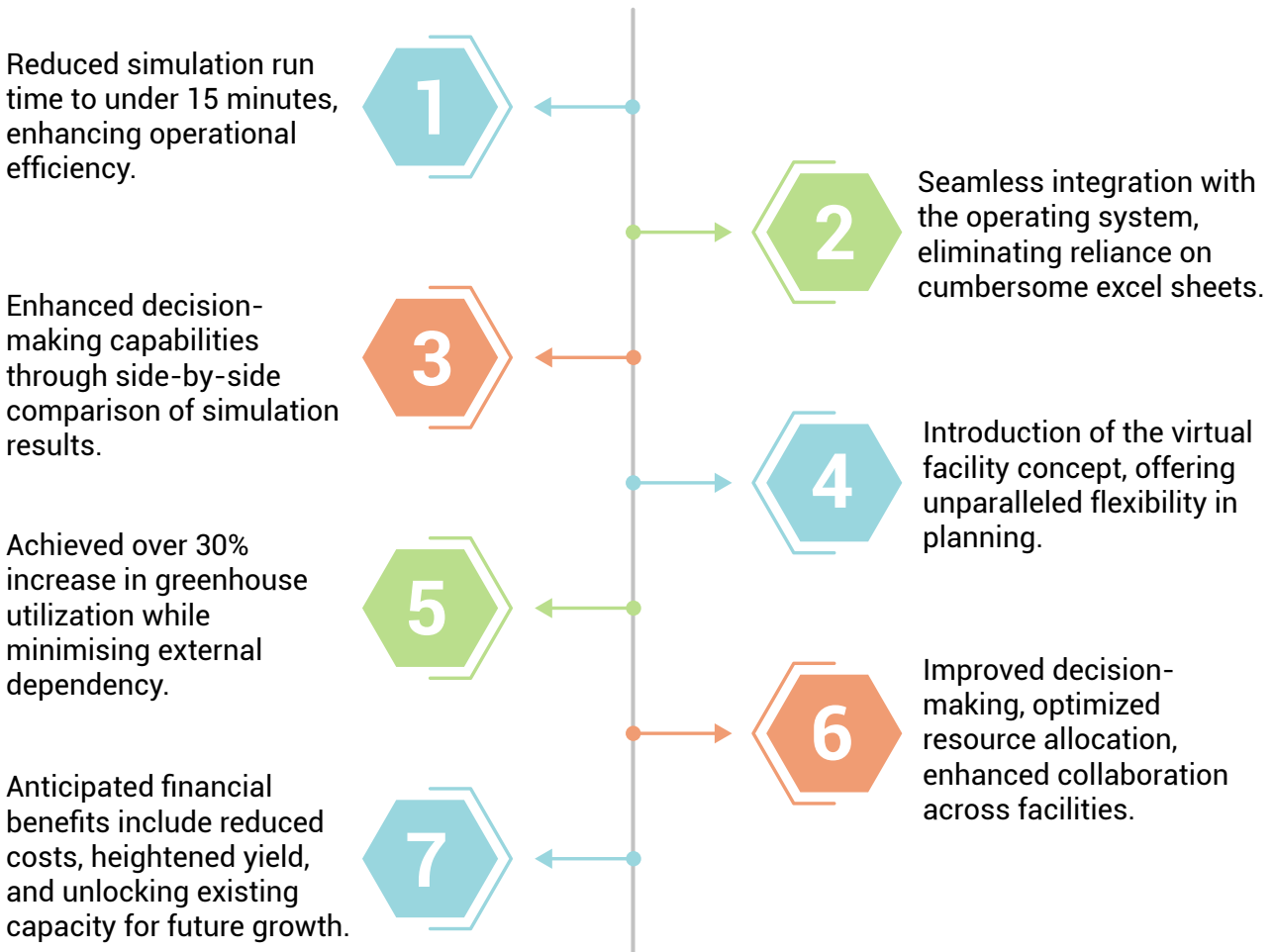
A key aspect of Altimetrik's intervention was the migration of the client's legacy system from the outdated R programming language to the more modern and versatile Python, resulting in enhanced flexibility and industry compatibility. Additionally, Altimetrik pioneered a novel approach to integrate and streamline MLOps within a CI/CD pipeline, simplifying operations and empowering the client with one-click process triggering and automated failure detection and remediation. The solution's metadata-driven and configurable nature provided unparalleled flexibility and transparency, effectively addressing legacy system shortcomings, and significantly enhancing overall efficiency and effectiveness.

Outcome

Altimetrik's intervention led to a transformative outcome, establishing a distinct separation between data engineering and core data science components. This architectural refinement streamlined operations, empowering the data science team to focus on value-added tasks rather than routine maintenance. Moreover, the implementation of a well-organized, consistently written, and modularized codebase shortened the learning curve for new data scientists, facilitating quicker onboarding and proficiency.

The implementation yielded a host of significant improvements:

1 Reduced simulation run time to under 15 minutes, enhancing operational efficiency.

2 Seamless integration with the operating system, eliminating reliance on cumbersome excel sheets.

3 Enhanced decision-making capabilities through side-by-side comparison of simulation results.

4 Introduction of the virtual facility concept, offering unparalleled flexibility in planning.

5 Achieved over 30% increase in greenhouse utilization while minimising external dependency.

6 Improved decision-making, optimized resource allocation, enhanced collaboration across facilities.

7 Anticipated financial benefits include reduced costs, heightened yield, and unlocking existing capacity for future growth.

In summary, Altimetrik's solution not only addressed immediate challenges but also laid a robust foundation for future scalability and innovation.

About Altimetrik

Altimetrik is a pure-play digital business services company. We focus on delivering business outcomes with an agile, product-oriented approach. Our digital business methodology provides a blueprint to manage data and develop, scale, and launch new products to market faster. Our team of 6,000+ practitioners with software, data, cloud engineering skills help create a culture of innovation and agility that optimizes team performance, modernizes technology, and builds new business models. As a strategic partner and catalyst, Altimetrik quickly delivers results without disruption to the business.