

# Replacing legacy systems with AI-powered, data-driven ad planning

## Client

A major media and entertainment company

## Company Size

10,800+ employees

## Location

North America

## Featured Partners



A major North American media company partnered with Marlabs to overhaul its legacy ad campaign planning system. The client's existing optimization engine was powered by a commercial FICO solver and delivered plans with nearly 0% acceptance rates. It lacked the ability to optimize toward key performance indicators (KPIs) like impressions, gross rating points (GRP), and reach, and the user interface required excessive manual input, which often led to inaccurate and inefficient plans.

Marlabs implemented a data-driven machine learning solution through AWS that leverages historical campaign data to generate optimized parameter estimates. This feeds into a new multi-objective optimization engine that reduces reliance on manual inputs and directly targets business KPIs. The open-source implementation both improves ad plan performance and eliminates expensive software licensing fees.



AI Machine Learning Model Development



Ad Platform Modernization



AI-Powered Predictive Analytics



KPI-Driven Campaign Strategy



# The Challenge: Replacing a costly, ineffective ad campaign optimization system



**Objective:** Develop a smarter, data-driven optimization solution that improves campaign plan quality and aligns with business KPIs.



**Existing Issues:** The legacy solver produced low-acceptance-rate plans, required costly licenses, and lacked learning capabilities.



**Solution Needed:** A machine-learning-enhanced planning system that reduces manual input, learns from historical data, and optimizes core KPIs.



**Outcome:** A modern AI/ML-powered optimization model that improves plan accuracy, boosts revenue potential, and eliminates legacy software fees.



**The client struggled with a legacy planning tool that delivered poor results and incurred high licensing costs.** It failed to optimize key business outcomes and placed a burden on users inputting information, who often lacked the tools to make effective decisions or give accurate input.

# The Solution: Delivering intelligent ad campaign optimization through ML and open-source tools

Marlabs designed a solution using Amazon AWS that uses historical campaign performance data to predict optimal parameters for future planning via learning-guided optimization. These insights drive a new multi-objective optimization engine that directly targets metrics like GRP, impressions, and campaign success similarity. It also minimizes required user inputs and eliminates expensive software dependencies.

## Phase 1: Historical Data Analysis & Feature Engineering

Our team extracted and analyzed past campaign data to identify key features impacting ad plan success.

### Workstreams:

- Data collection
- Performance metric correlation
- Feature selection

## Phase 2: Machine Learning Model Development

We developed a learning system to predict optimal parameter estimates for new campaigns.

### Workstreams:

- Model training
- Performance testing
- KPI alignment

## Phase 3: Optimization Engine Replacement

The team implemented a new, open-source, multi-objective optimization system to replace the commercial solver with automated iterations and human-in-the-loop touchpoints.

### Workstreams:

- Solver configuration
- Integration with ML output
- GRP and impressions optimization
- Governance & access setup

## Phase 4: User Input Minimization & System Integration

We reduced the complexity of the user interface by using ML-predicted values to simplify campaign setup.

### Workstreams:

- UX simplification
- Input auto-population
- Workflow streamlining

## Services and Technologies Used:

### Services:

- AI Machine Learning Model Development
- Ad Platform Modernization
- AI-Powered Predictive Analytics
- KPI-Driven Campaign Strategy

### Technologies:

- Amazon AWS

# The Results: Impact on the client organization

**The new ML-based optimization solution delivered major improvements in ad plan accuracy, efficiency, and cost savings.** With fewer manual inputs required and direct alignment to key metrics like GRP and impressions, campaign plans now more effectively utilize ad inventory and support revenue growth within guardrails so that advertiser outcomes aren't compromised. The open-source architecture eliminated over \$250,000 per year in licensing fees, and the predictive capabilities increased both internal trust and advertiser satisfaction.



**Improved GRP Delivery:** More effective ad placements increased inventory utilization and campaign success.



**Better User Experience:** Reduced input requirements simplified campaign planning for sales representatives, reduced human error, and led to increased customer goodwill and demand.



**Higher Revenue Potential:** Even the smallest gains in efficiency translated into millions of dollars in annual revenue uplift.



**Accurately Targeted Campaign Plans:** Data-driven parameter estimation improved plan acceptance and performance.



**Cost Savings:** Open-source implementation replaced commercial licensing, saving the client over \$250,000 annually.



**Stronger Advertiser Relationships:** Increased impressions and lower CPMs enhanced goodwill and demand.