Revolutionizing the Music Industry with Data Science

Cloud-Native AI in Entertainment and AI-Driven Innovation in Music Production

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Data Science Lead at Metyis

Ex Director of Research and Analysis at Warner Music Group

AGENDA

1. What is the problem?
2. Data
3. Introduction to AI in the Music Industry
4. Case Study 1: Uplift modeling
5. Case Study 2: AI-Driven Planning & Marketing Optimization
6. The Impact of AI on Music Industry

What is the business of music?

Artists
& Repertoire

Recording
& Production

Artist Promotion
& Marketing

Releasing tracks
& Distribution

Monetization
& Royalties

Problem 1

> We'd like to use it too, but we're not sure **where** and **how**

> Artificial Intelligence as a Driving Force for the Economy and Society is a key theme

WORLD ECONOMIC FORUM

AI IS EVERY WHERE

Problem 2

> We have a lot of data. What's next?

2 567 346 786 210 streaming data

15 000 parameters

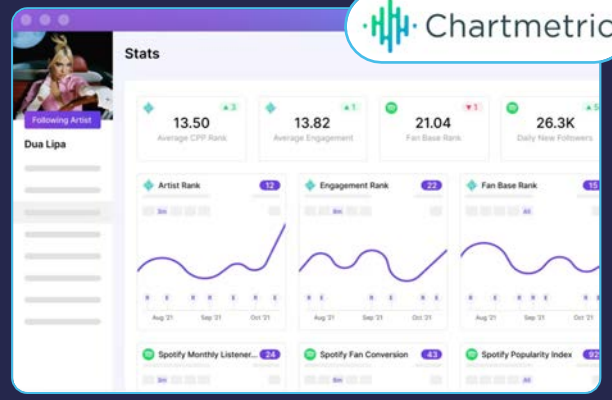
a lot tables

180
companies
share their data with WMG

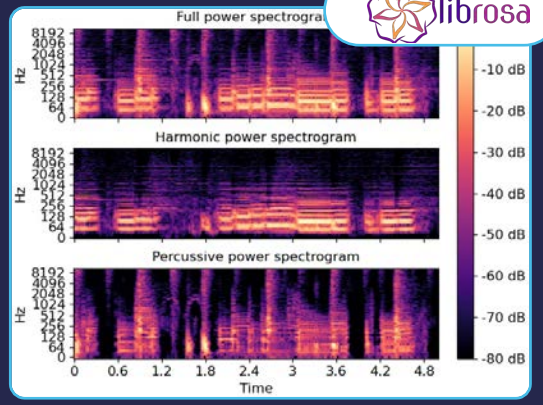
10
billion
transactions are processed daily
the number is growing

DSP (Digital Service Provider)

Chartmetric



librosa



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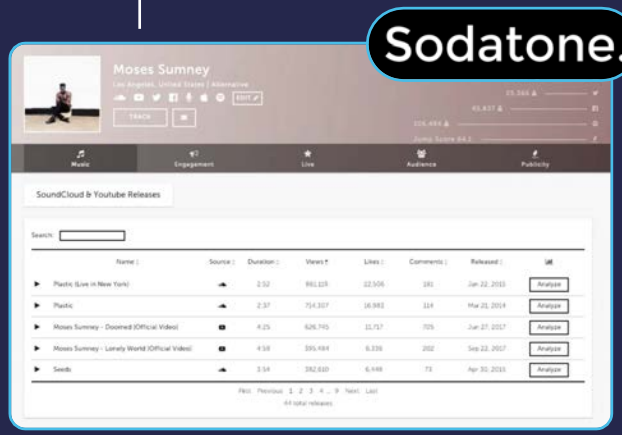


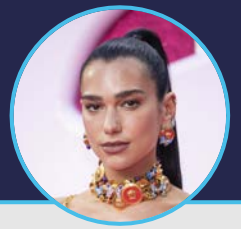
DATA

AI in music

Key problems

Operations

- Segmentation
- Customer Journey
- Market Basket Analysis
- Customer Acquisition Cost
- A/B testing
- Omnichannel marketing



Strategy

- Next Best Offer
- Response prediction
- LTV prediction
- Stream forecasting
- Uplift modeling
- Churn rate prediction
- Attribution model

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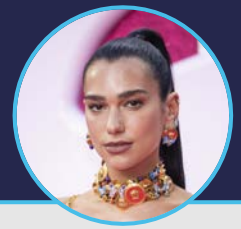

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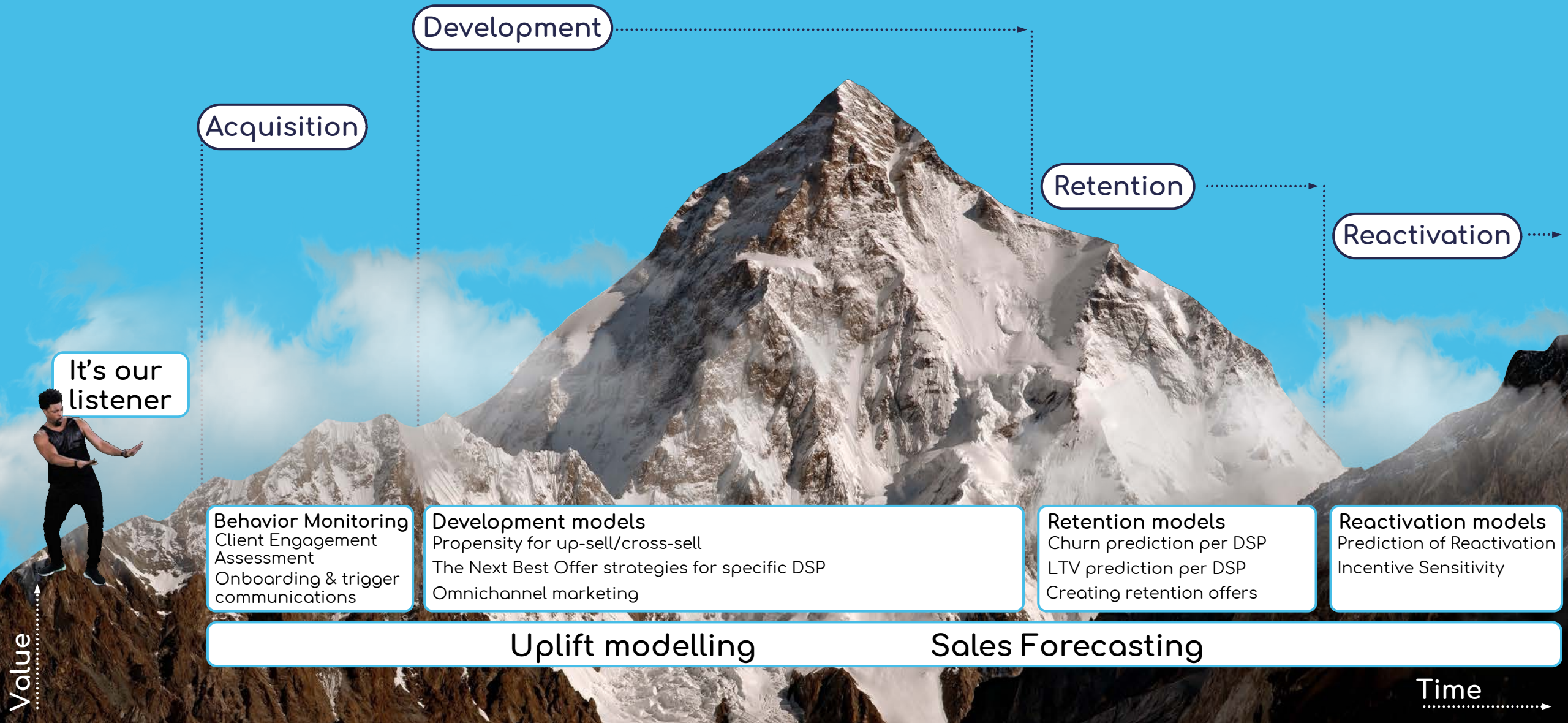
Whole picture

The music business revolves around the listener



Case 1: Uplift modeling

What is it?

Data Collection Ad

Gather data from past
marketing campaigns
and user engagement metrics

Data Collection Non-Ad

Gather data about listening
and **user** engagement metrics

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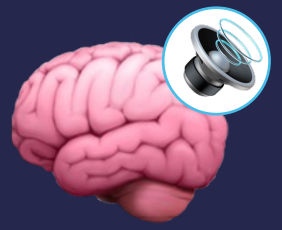
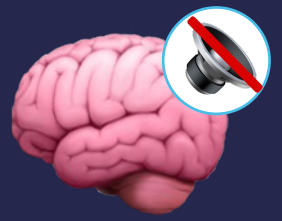


AI model - Ad

Predicts the likelihood of user engagement (clicks or streams) with ad

Data Collection Non-Ad

Gather data about listening and user engagement metrics



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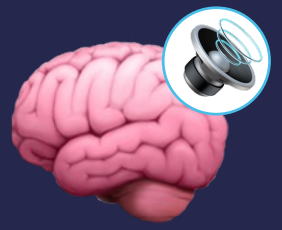

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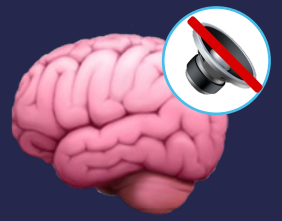

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Uplift

Calculating Uplift
Identify users where the ad will have a significant positive impact

Targeting High-Uplift Segments

Case 1: Uplift modeling

Optimization of marketing campaigns based on CPA metric

One

Launching campaigns by AI segments

TikTok for Business

for Artists

Promoting music on Spotify

New release

Two

We reviewed the results of these advertising campaigns

AI segmentation

30%

*Cost of adding track to library is 30% **lower***

Agency segmentation

XX.X

Case 2: Stream Forecasting

DATA

- Lagged values
- Historical streaming values
- Ratio. Moving Averages
- Track Metadata
- Librosa features: (loudness, spectral data, bpm, harmonics, type of arrangement, etc.)

~ **700**

Problem statement

To develop a sales forecasting model **for 3 months ahead** for all tracks with at least **1 week of data available**

Forecasting accuracy was improved by

60%

Case 2: Stream Forecasting

How to Optimize Marketing Costs?

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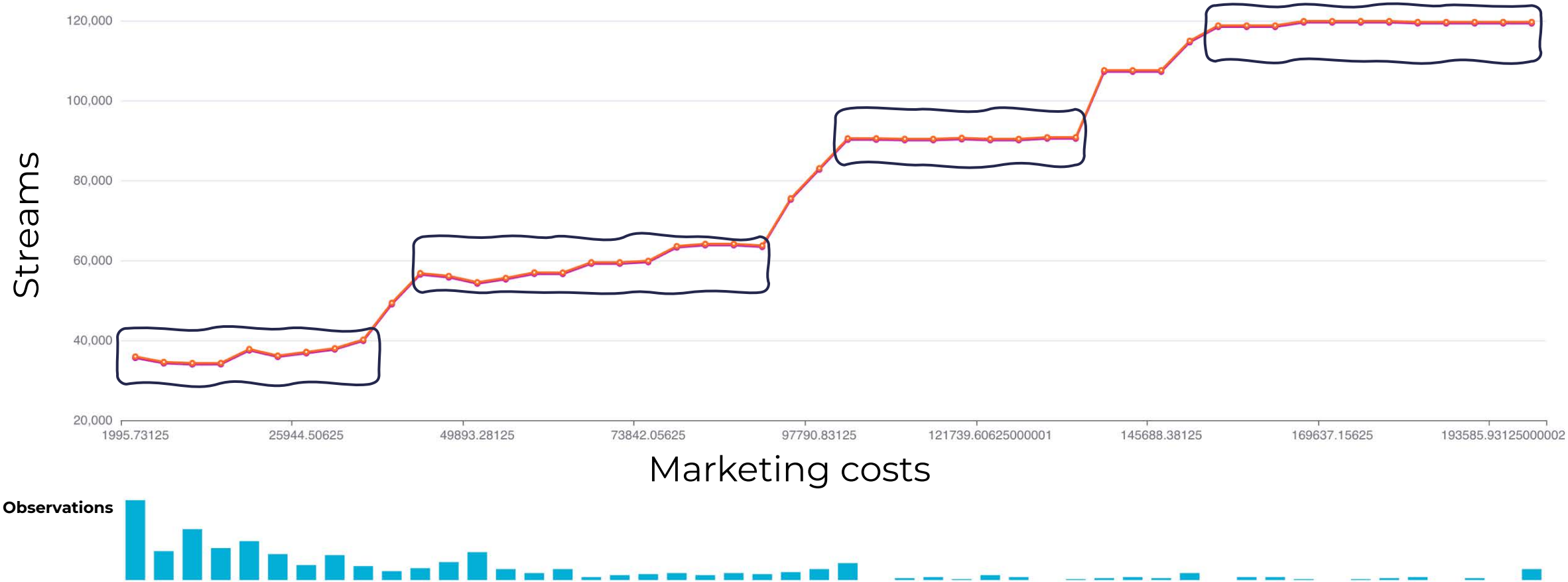
How to Optimize Marketing Costs?

Plateau effects

Partial dependence Plot



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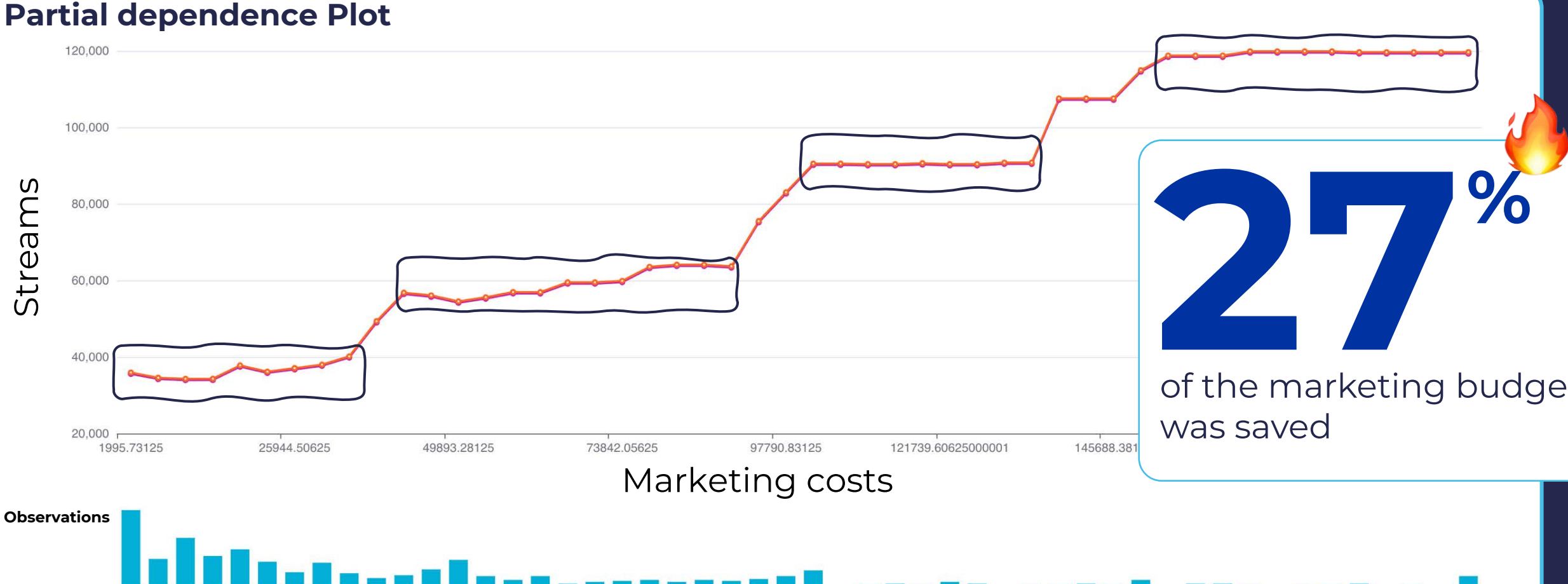
How to Optimize Marketing Costs?

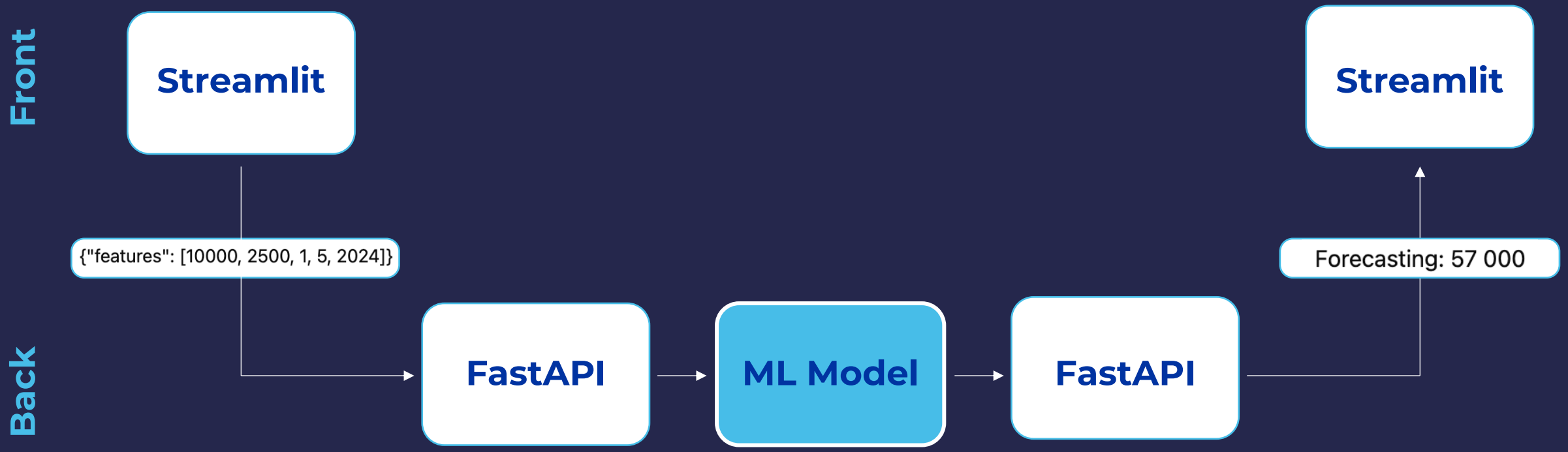


27%

of the marketing budget was saved

Final solution

Architecture



"Ultimately, music has to win.
It's just too important not to

-Max Lousada

CEO of Recorded Music Warner Music Group