Predicting TV Tune-In Using Pyspark, MLib & Delta Lakehouse

Who are we ?

REIMAGINE THE VALUE OF MARKETING

We are an independent marketing intelligence company with the people and technology that help businesses win

What do we do ?

We are experts in combining real-world and digital data and applying marketing intelligence to give our customers the insights that help them win.
Our core offerings help our clients:

MEDIA

Fuel brand growth and higher sales through award-winning, hands-on programmatic ad campaign management

ANALYTICS

Drive successful business outcomes through custom analytics solutions

TECH

Unlock value in any data asset through best-in-class AI technology with limitless scalability

MIQ

MEDIA

PROBLEM STATEMENT

We need to drive better revenue from our programmatic campaigns.

SOLUTION

We need to drive better revenue from our programmatic campaigns.

ANALYTICS

PROBLEM STATEMENT

Our key business challenge is that of every booking, 30% don't turn into sales, because people don't pick up the car they pre-booked. We don't have the insight as we can't analyze our data because it's siloed into many platforms.

SOLUTION

Leveraging our data lake and custom dashboard solution, we aggregated all Avis data insights into one warehouse and built easily accessible dashboards to pull reports. From there, our data scientist teams built models to create intelligence into why people reserve cars but don't pick them up.

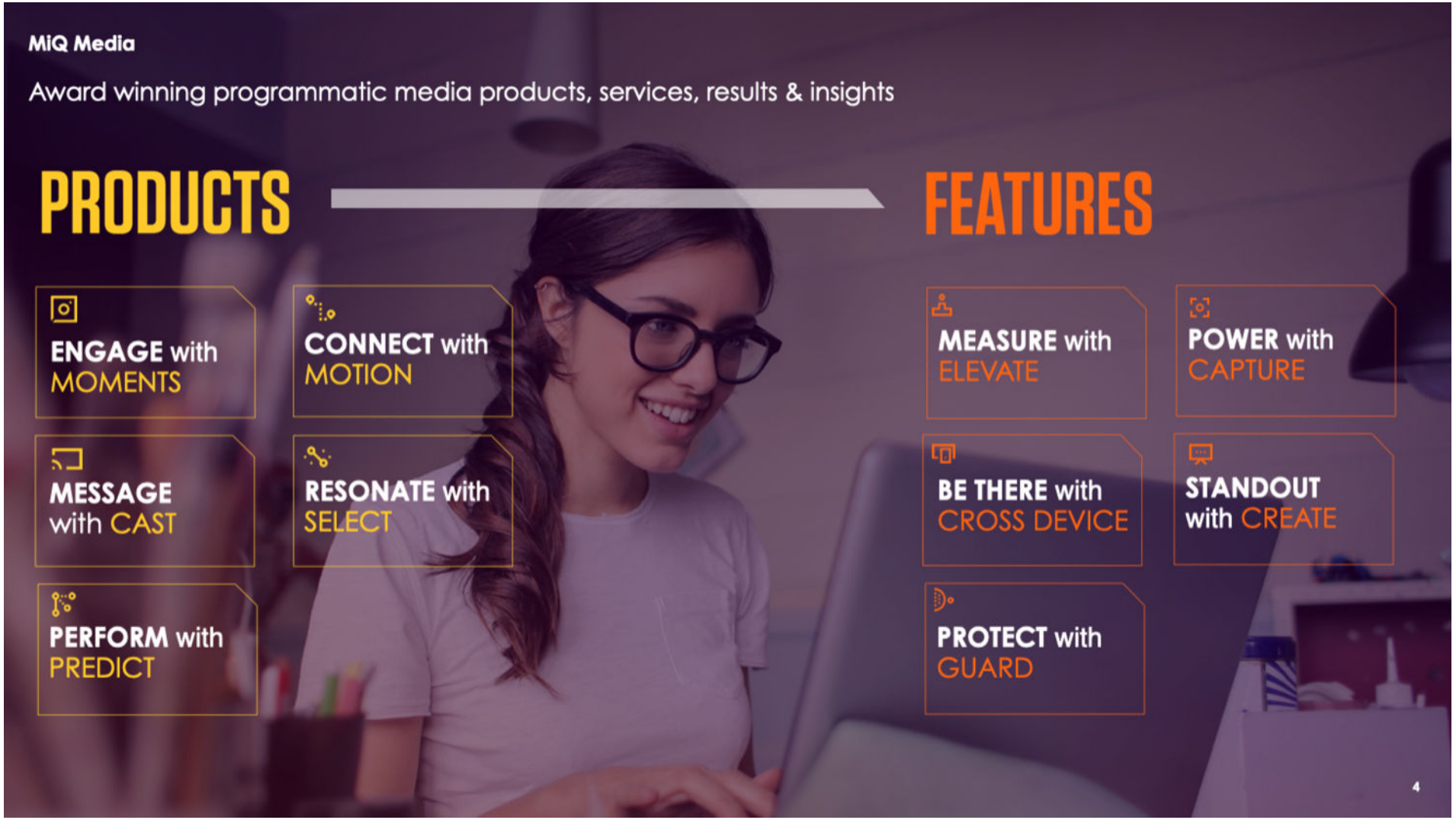
TECH

PROBLEM STATEMENT

My analyst team needs better self service access to our data lake.

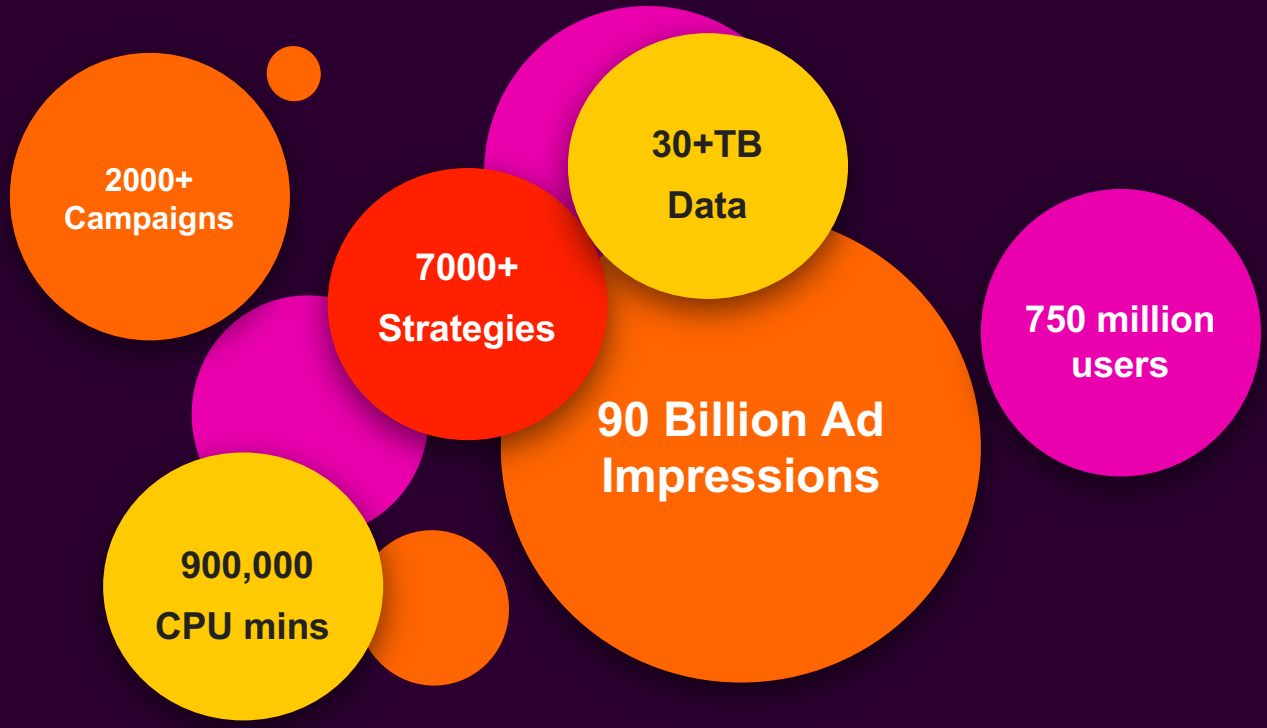
SOLUTION

We built a custom Advanced Modelling Platform specifically for this agency and client.


MiQ Media
Award winning programmatic media products, services, results & insights
PRODUCTS
ENGAGE with MOMENTS
CONNECT with MOTION
MESSAGE with CAST
RESONATE with SELECT
PERFORM with PREDICT
FEATURES
MEASURE with ELEVATE
POWER with CAPTURE
BE THERE with CROSS DEVICE
STANDOUT with CREATE
PROTECT with GUARD
4

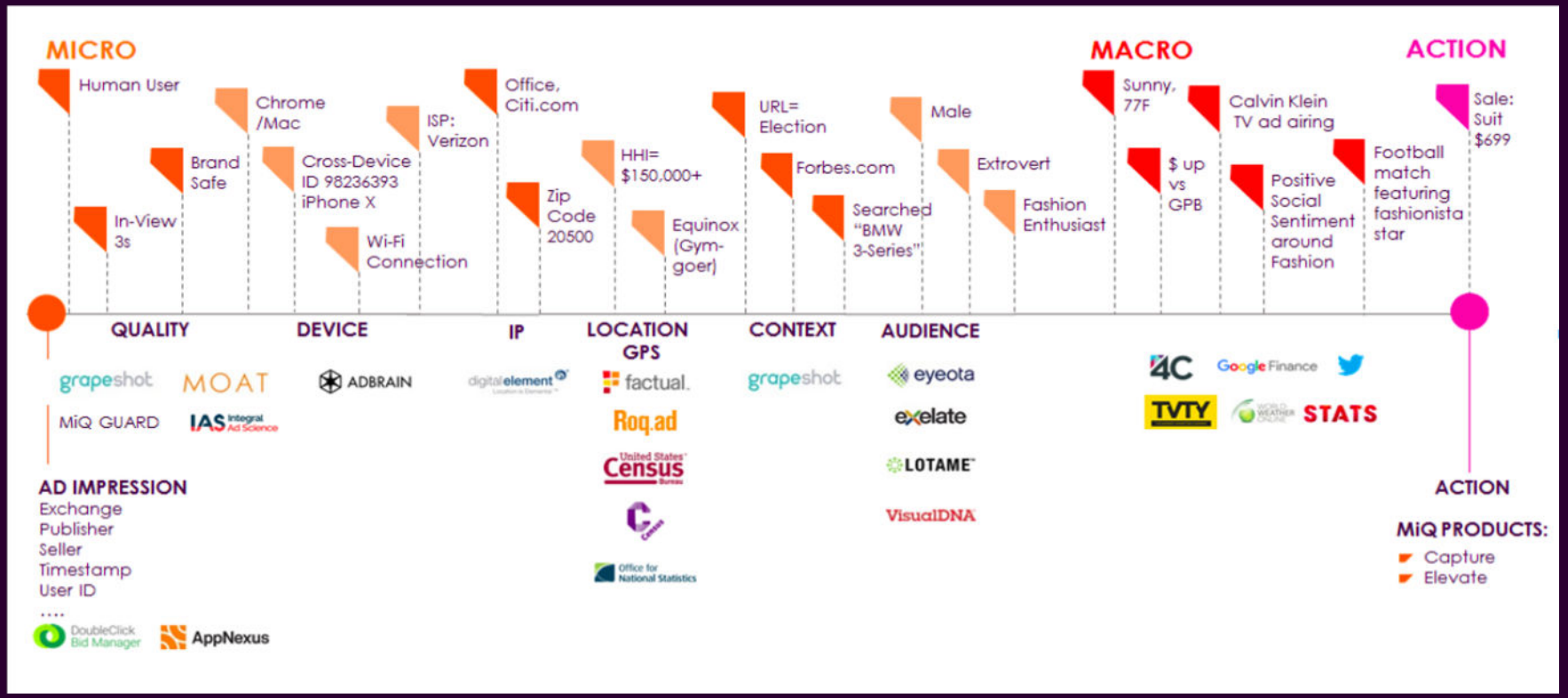
Daily Scale

MIQ Scale



Connecting **Datasets**

MIQ Scale



OTT INSIGHTS From MiQ

$8.88BN

2020 investment in OTT that has historically had to take a test and learn approach

"How do I find my audience on OTT before spending a dollar?"

27%

Of marketers see inadequate metrics or measurement a barrier to OTT adoption

"How can I track performance of my TV investments in real time?"

24%

Of marketers see integration of data into activation as a barrier to OTT adoption.

"How do I optimize towards incremental value with OTT?"

We Do Advanced TV differently.

By applying our principles of programmatic to TV, we take the complexity out of the picture for you.

DATA DRIVEN

We apply a data-science led approach to connecting over 150 different datasets, including tens of millions of viewership data

PARTNER AGNOSTIC

So we can bet big on the best partnerships, connect exactly the right data and activate flexibly across every channel.

CURATED SUPPLY

Our team work hard to give you the screen, genre & content level targeting that fits your need regardless of platform or supplier.

MiQ ADVANCED TV

CONNECT

Get maximum reach & representation of US TV viewing, with multiple, connected viewership data partnerships, providing us daily raw data feeds from millions of US households.

DISCOVER

Converged planning insights across broadcast and digital, connected to first party and digital data with our TV Intelligence platform.

ACTIVATE

Reach precise audience with premium OTT supply across open and closed buying platforms, expertly curated and de-bundled all in one place.

OPTIMIZE

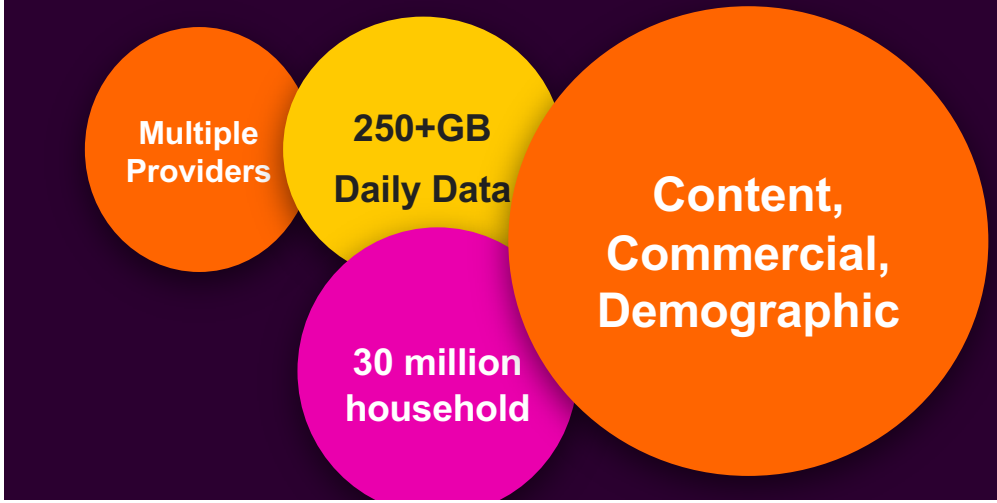
Get faster results by tapping into our principles of performance marketing applied to TV activation. Pre-bid verification, inventory classification, SPO & flexible, automated set up.

MEASURE

Close the loop on TV with measurement connected to the metrics you care about like reach, frequency optimization, brand insights, offline outcomes or digital performance.

Automatic Content Recognition

- ACR Technology true to its name can identify the content played on a Smart TV
- MiQ buys the data from the provider & ingest it into our AWS lakehouse architecture.
- The ACR data is then used to build out solutions.



MiQ Advanced TV Solution

GOALS

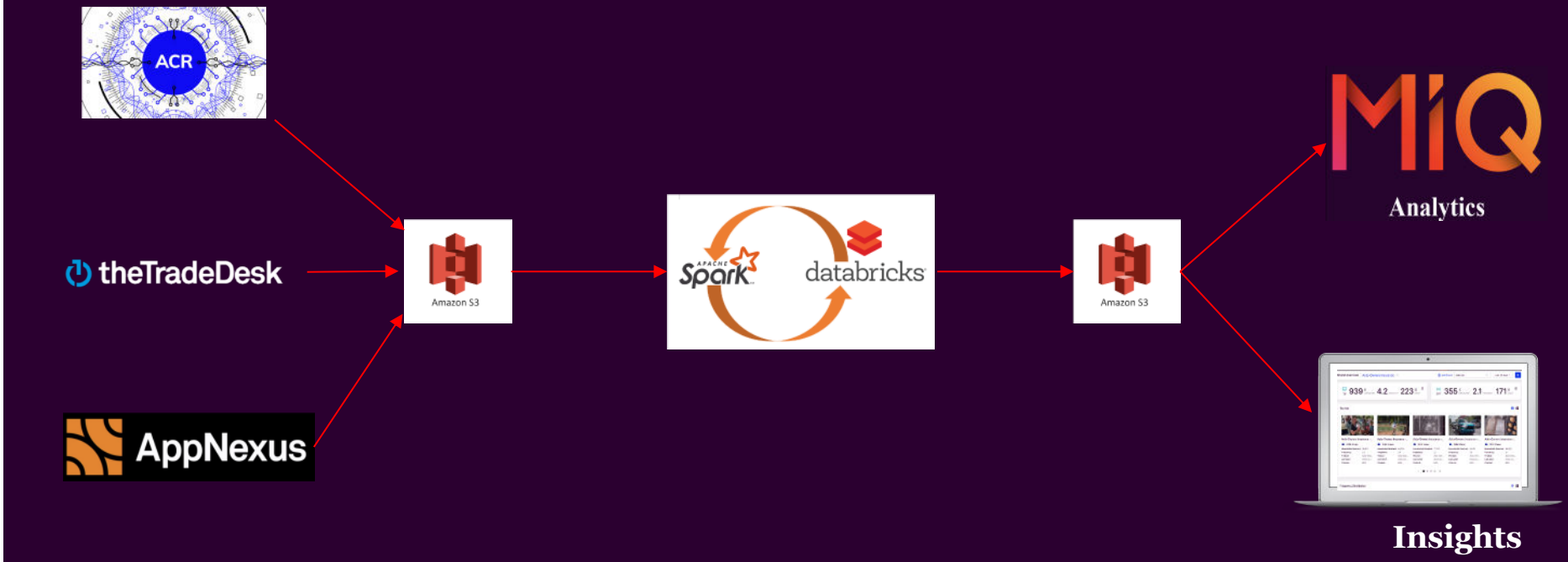
Process ACR data with other datasets to Derive Insights
Predict TV tune-in & Churn
Target relevant audience across Multiple Platforms

Advanced TV Solution

Lakehouse architecture, Big data ecosystem & Machine Learning

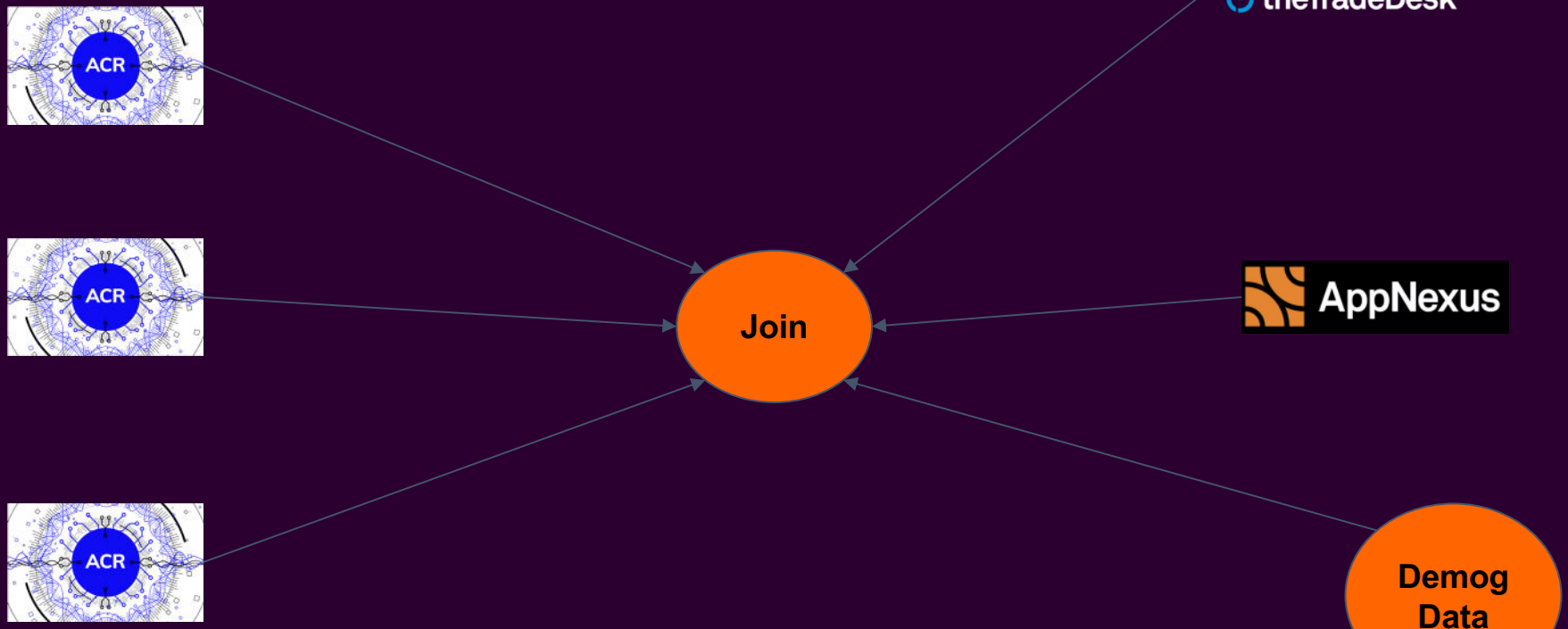
Data Pipeline **Architecture**

Processing Infrastructure



Data Processing

Processing Infrastructure



Data Preparation Challenges

Processing Infrastructure

High Runtime
~ 4.5 to 8 hrs

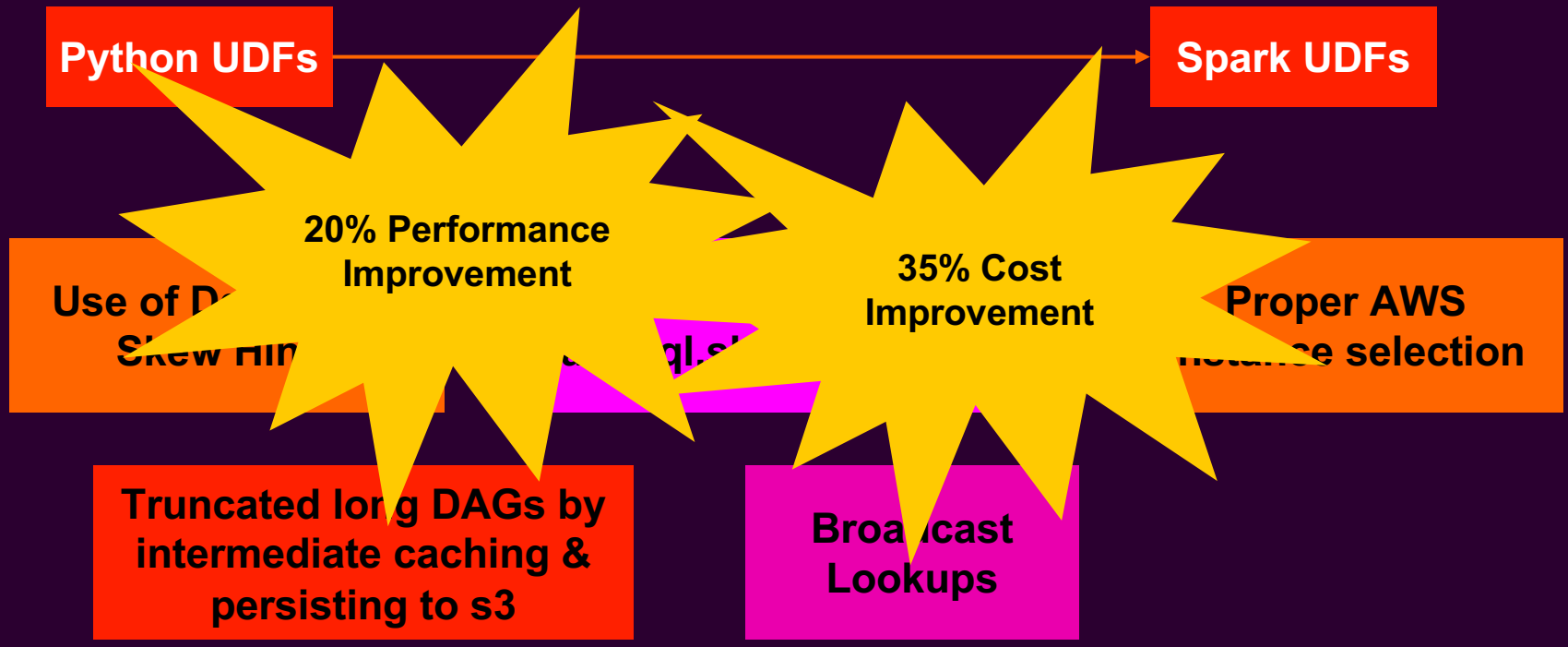
Increase in cost exponentially with new brands

Not Scalable

- Frequent failures
- Multiple Backfillings

Big Data Optimizations

Processing Infrastructure



Machine Learning

MLib

Machine Learning

MLib

TV Show Tune-in Prediction

Incremental tune-in using ALS Recommender system

“Predict the new set of viewers who have higher probability of starting to watch the content, based on their TV viewing activities”

Repeat or Loyal viewers/Churn using Logistic Regression

“Predict viewers who will continue watching the sequential content vs viewers who will churn ”

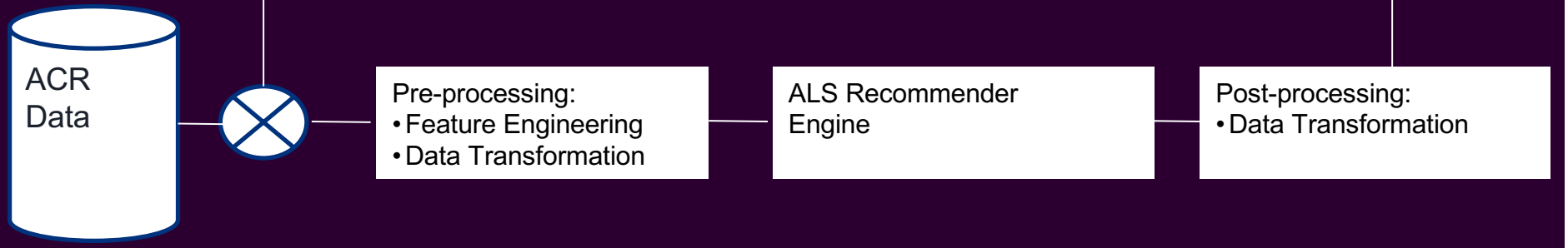
Incremental tune-in using ALS Recommender system

MLib

User Input:
- TV Show Name
- Network
- Show duration
- N (No of TV IDs)

- ❖ Input on UI by end customer
- ❖ N - Top N new TV IDs most probable of tuning in for the show
- ❖ Optional - Similar networks

Output:
- TV ID
- Score



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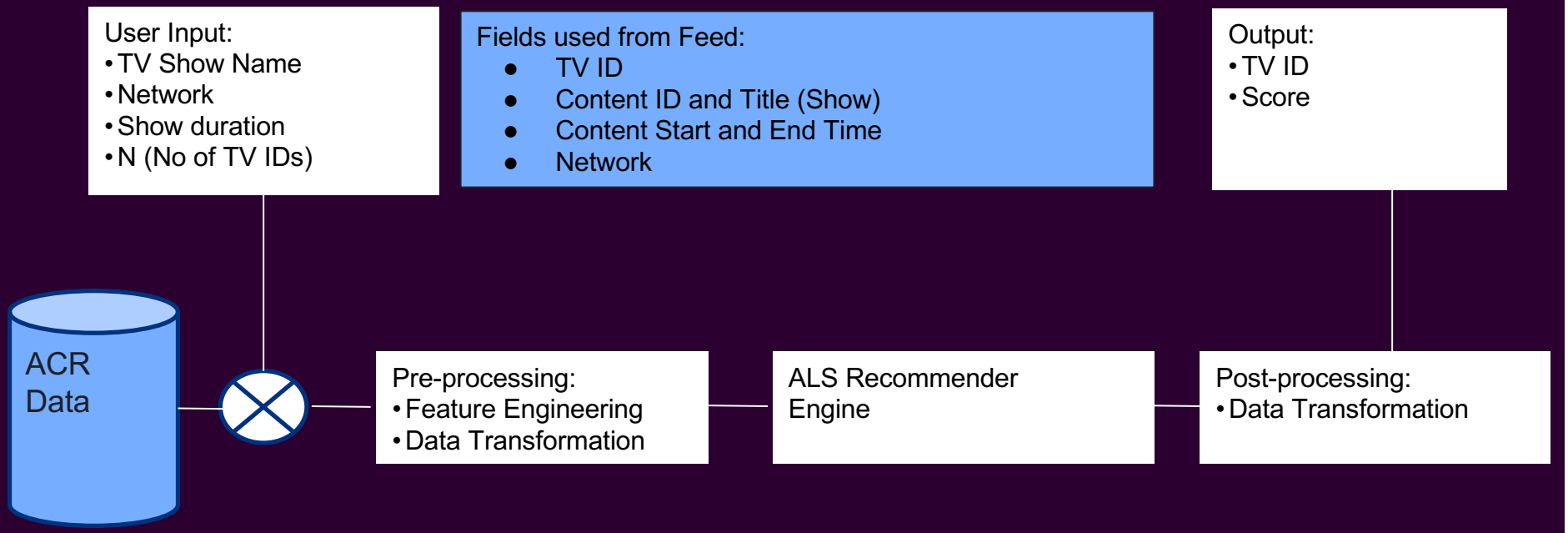

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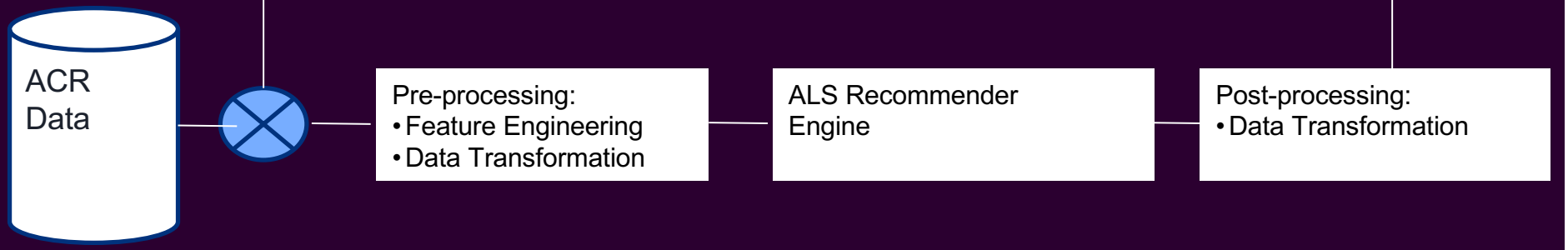

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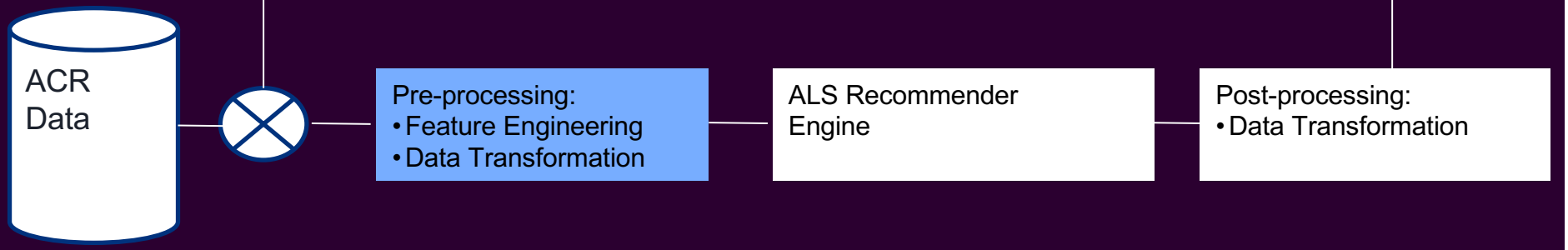

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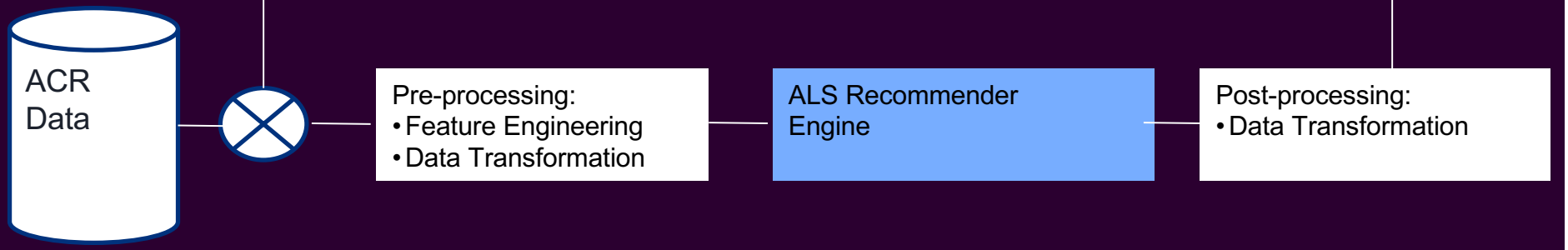

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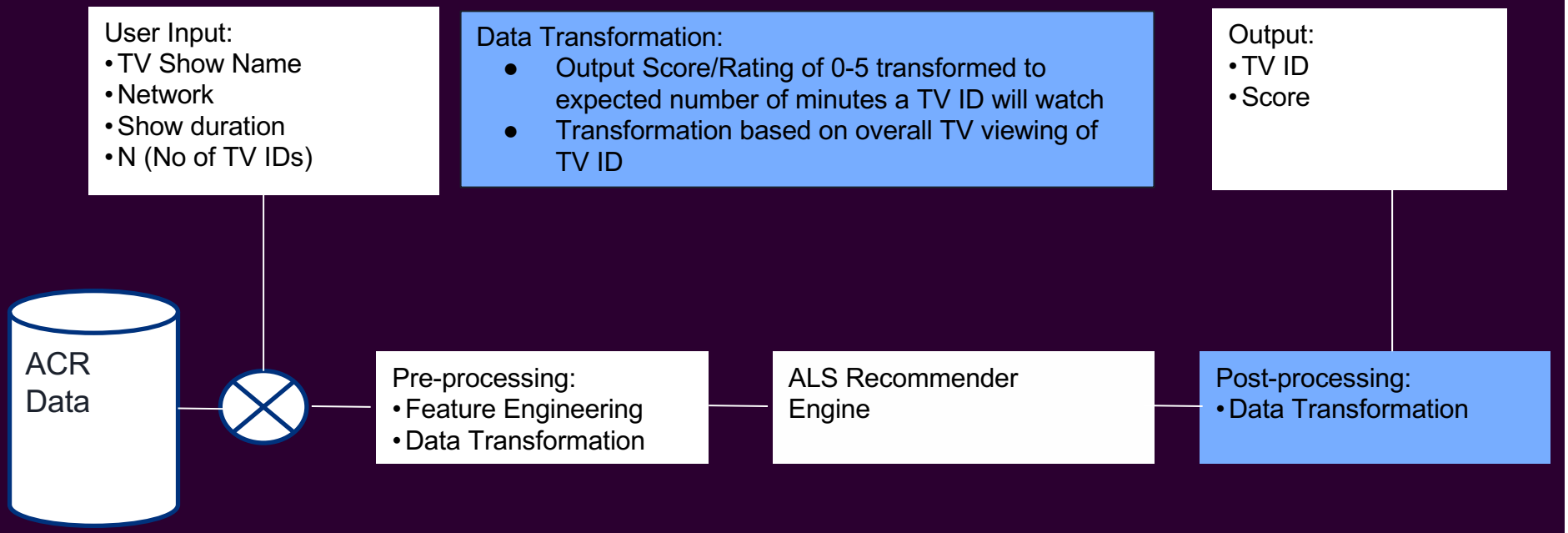

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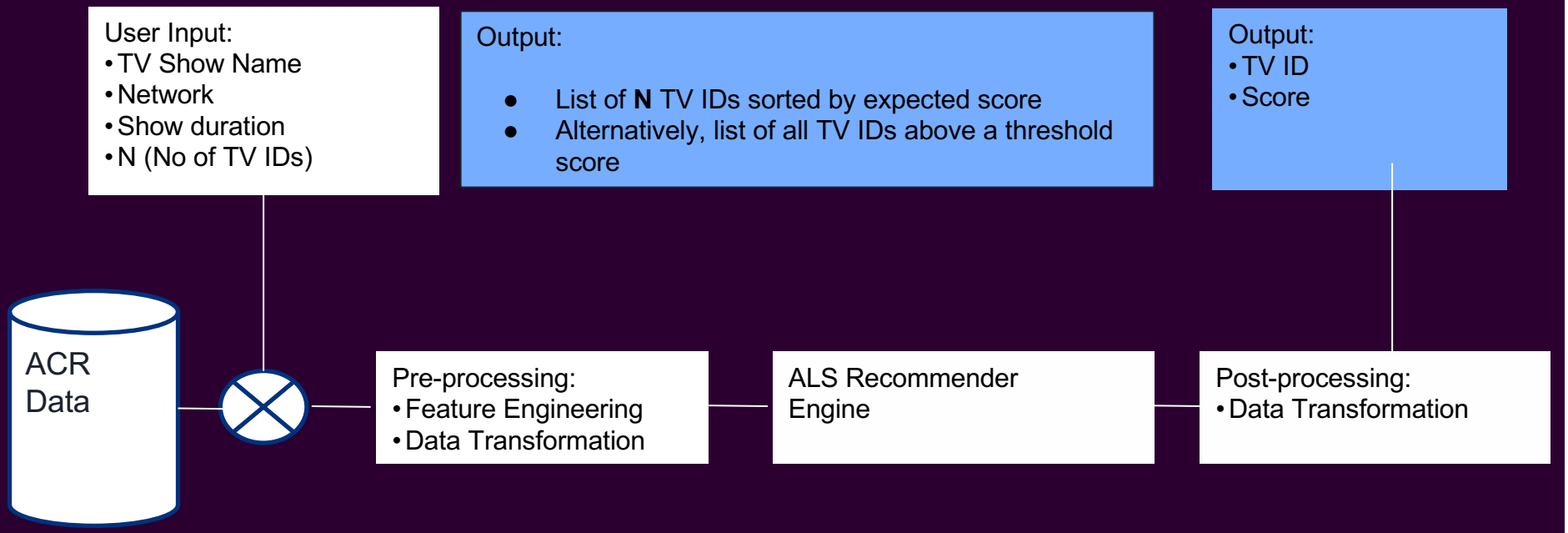


Incremental tune-in using ALS Recommender system

MLib

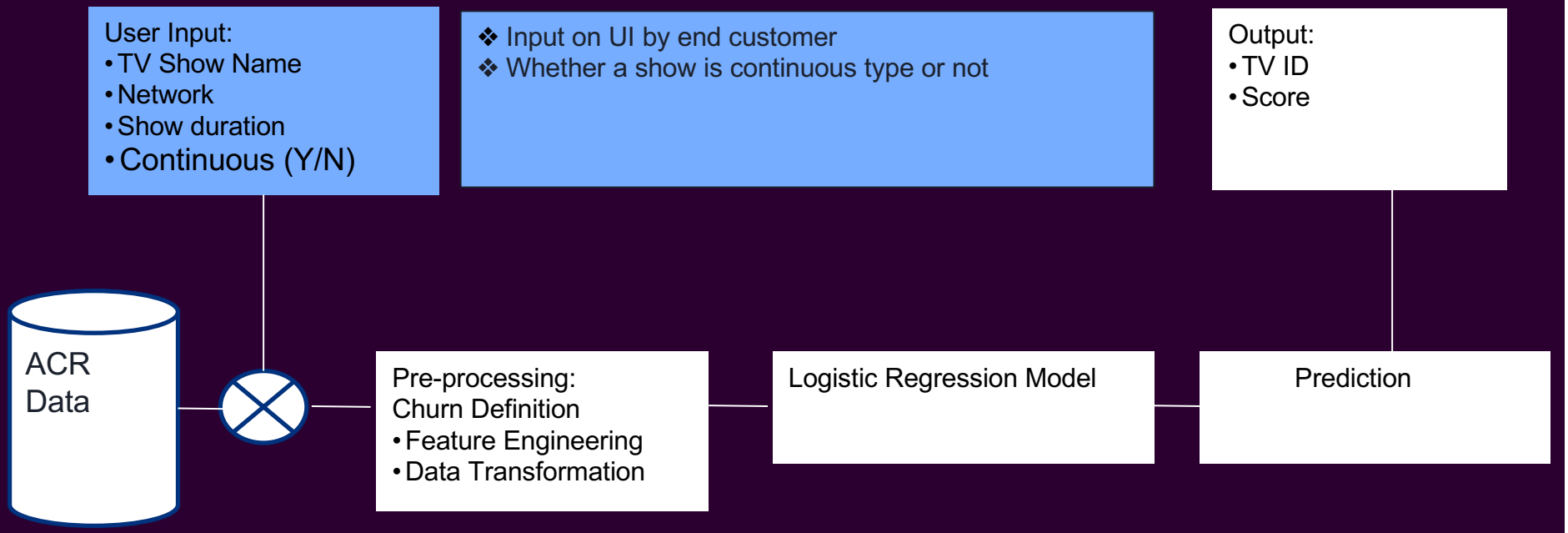
R-squared : 0.94
(for Vikings on History)

Validation for Alone S6 on History from Prediction

Segment	Households
TVs that actually tuned in	~103k
Total S6 viewing TVs	~185k

Repeat or Loyal Viewers/Churn using Logistic Regression

MLib



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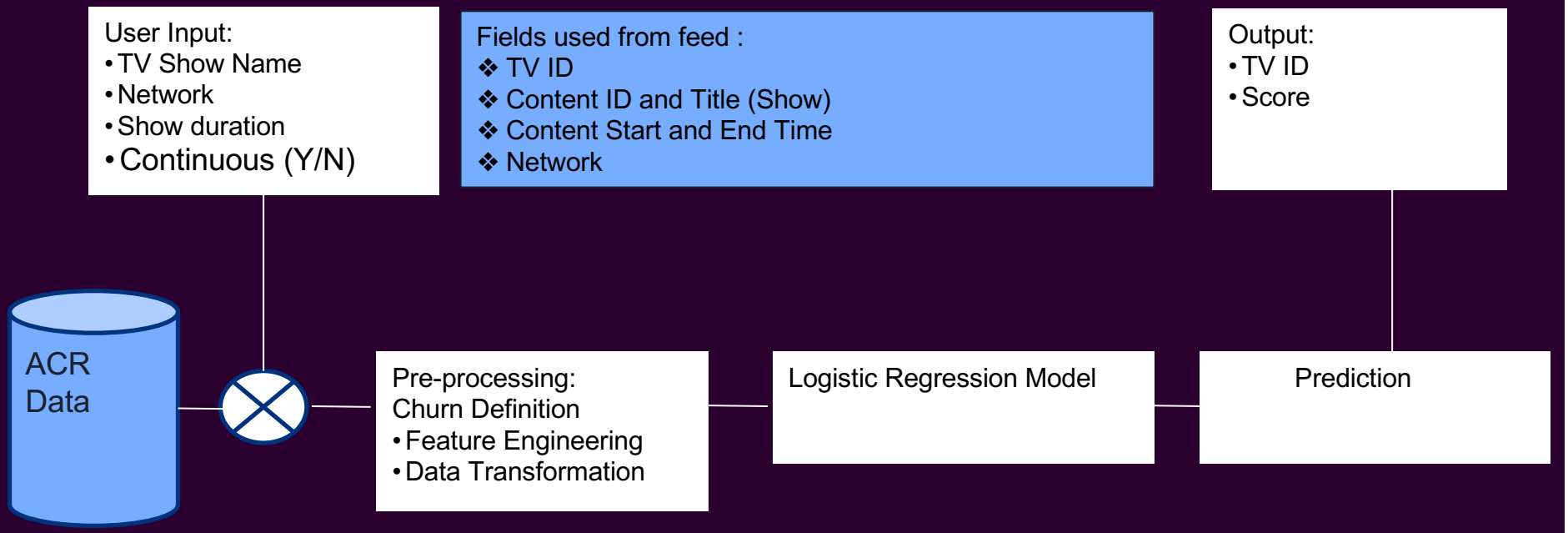

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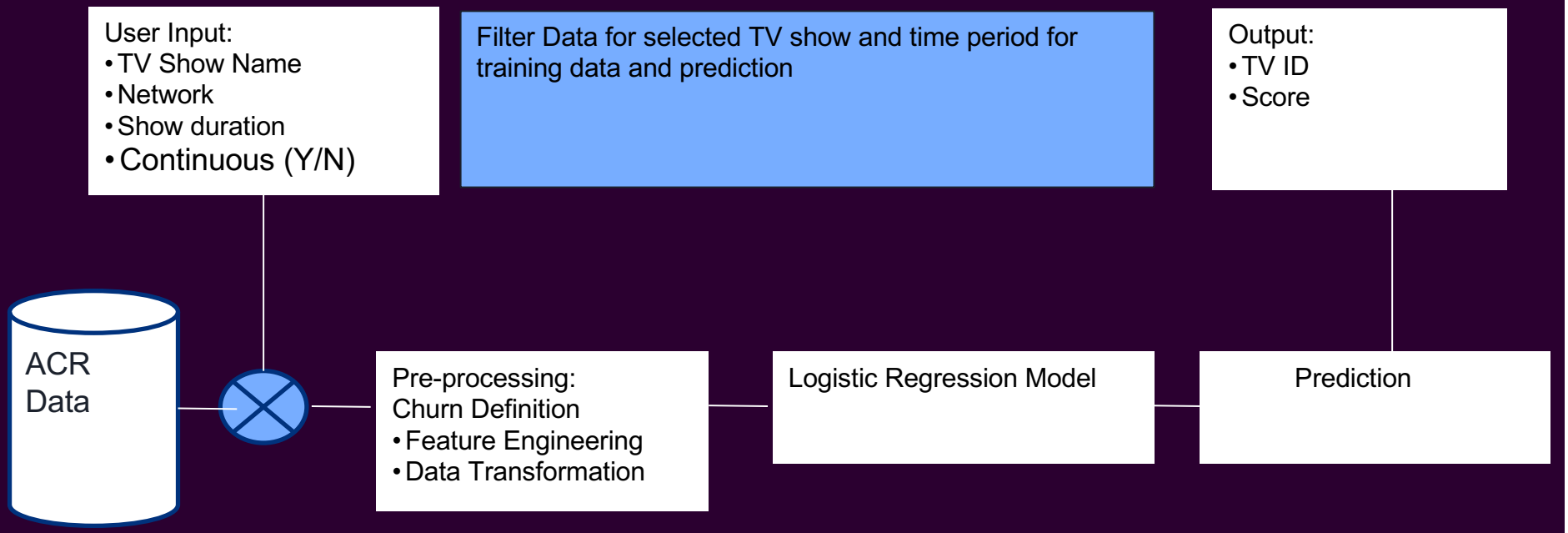

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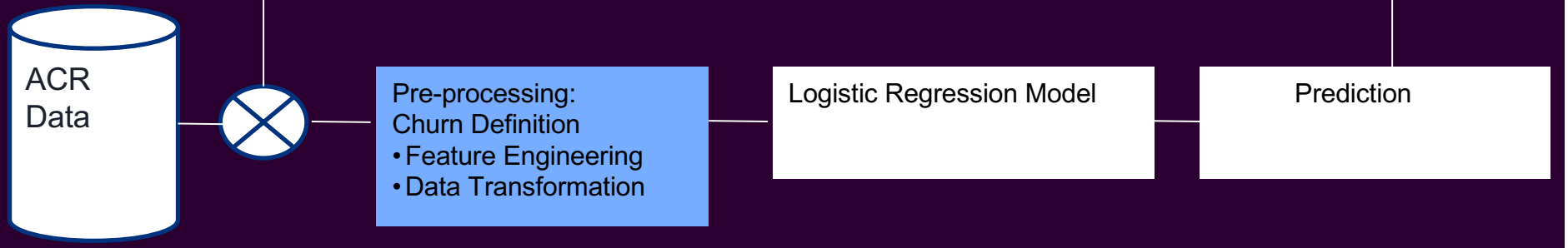

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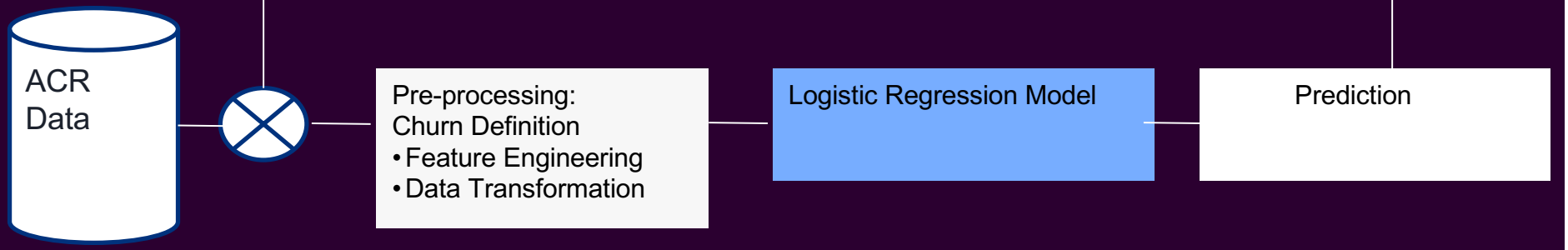

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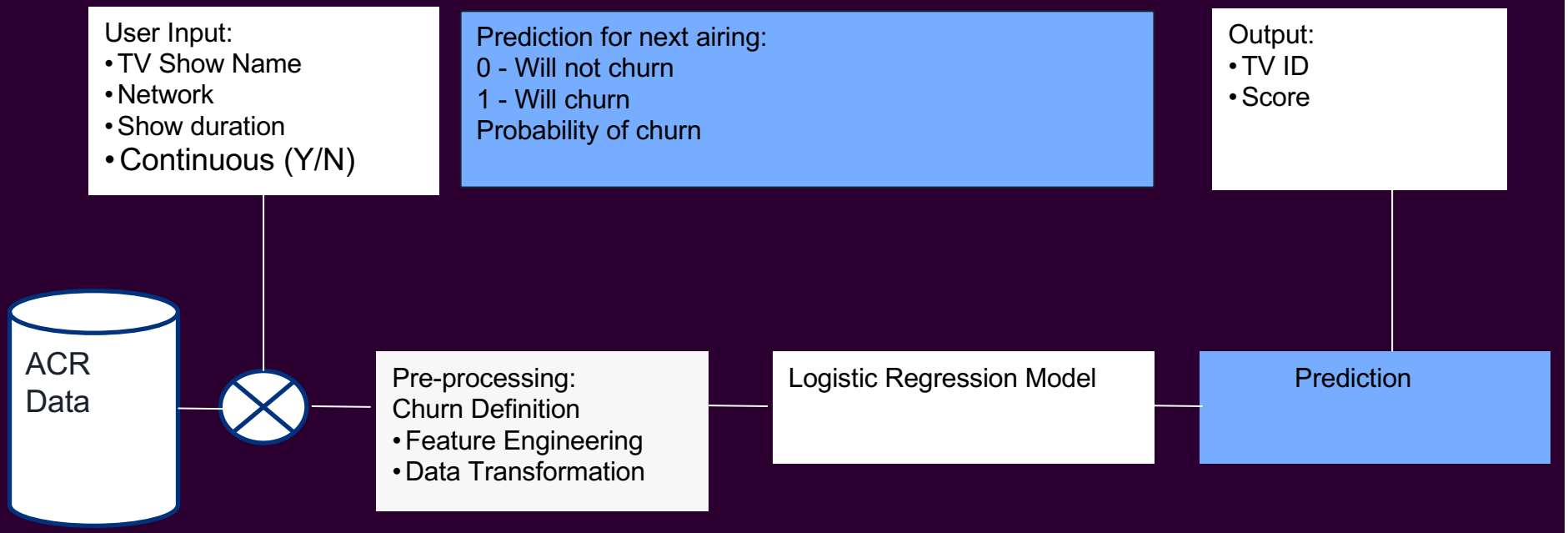

Repeat or Loyal Viewers/Churn using Logistic Regression

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Repeat or Loyal Viewers/Churn using Logistic Regression

MLib

85% of 5k users who will churn from Ep3 to 4 identified

Show: Vikings S6 or History

Starting Viewers	~50k
Churn from E1 to E3	40%
Churn from E3 to E4	10%
Joined in E2 and E3	~60k

ACTIVATION

MiQ Analytics

Real Time Activation

ACR RTA Data

Batch Activation

ACR Batch Data

Data Processing

Amazon EC2

databricks

theTradeDesk

AppNexus

Thank You

Q & A

MiQ