



DEPLOYMENT OF A DATA SCIENCE PLATFORM

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BACKGROUND



L.A. COUNTY

2.2M MEMBERS

MEDICAID

\$9B FUNDING

EXISTING DATA ANALYTICS IN 2016

BASIC TRENDING AND EXPLORATION

SILOED EFFORTS

SQL AND SAS

DATA FOR DECISION SUPPORT REQUIREMENTS

EXECUTIVE BUY-IN

APPROPRIATE USE CASES

APPROPRIATE DATA

ANALYTIC TOOLS

ANALYTIC TALENT

L.A. CARE DATA SCIENCE PLATFORM SEARCH

TEAM MEMBERS

- I.T. Infrastructure
- Database Administration
- Existing Data Analytics Team Leaders
- Senior Oversight

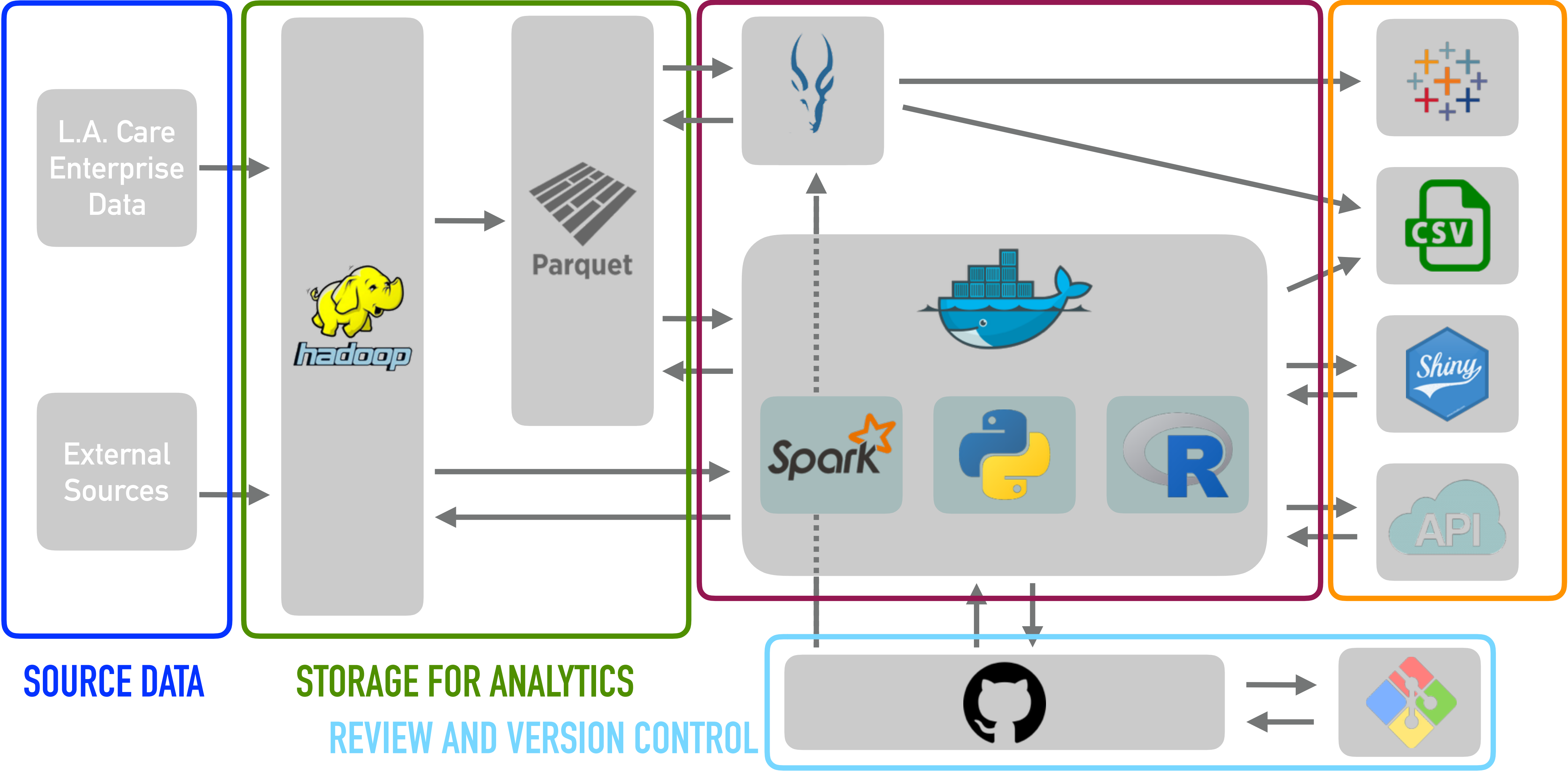
MUST HAVES

- Support end-to-end data science process
- Access to popular open source analytic tools
- On-premise deployment
- Easily scalable
- Secure, server-based access
- Fast processing

L.A. CARE DATA SCIENCE PLATFORM

ANALYTIC DEVELOPMENT

DELIVERY



ANALYTICS DATA LAYER **PROBLEM**

Inconsistent analytic deliverables

Lack of transparency

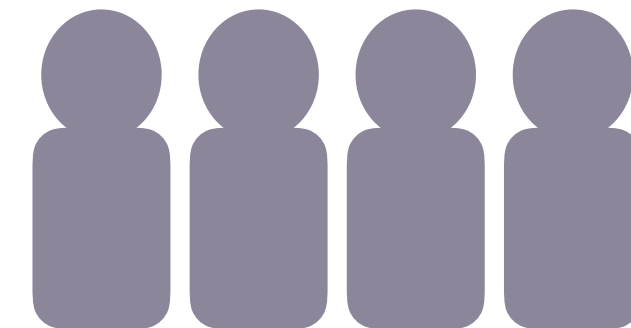
Existing ETL processes ran 1x month

ANALYTICS DATA LAYER **SOLUTION**

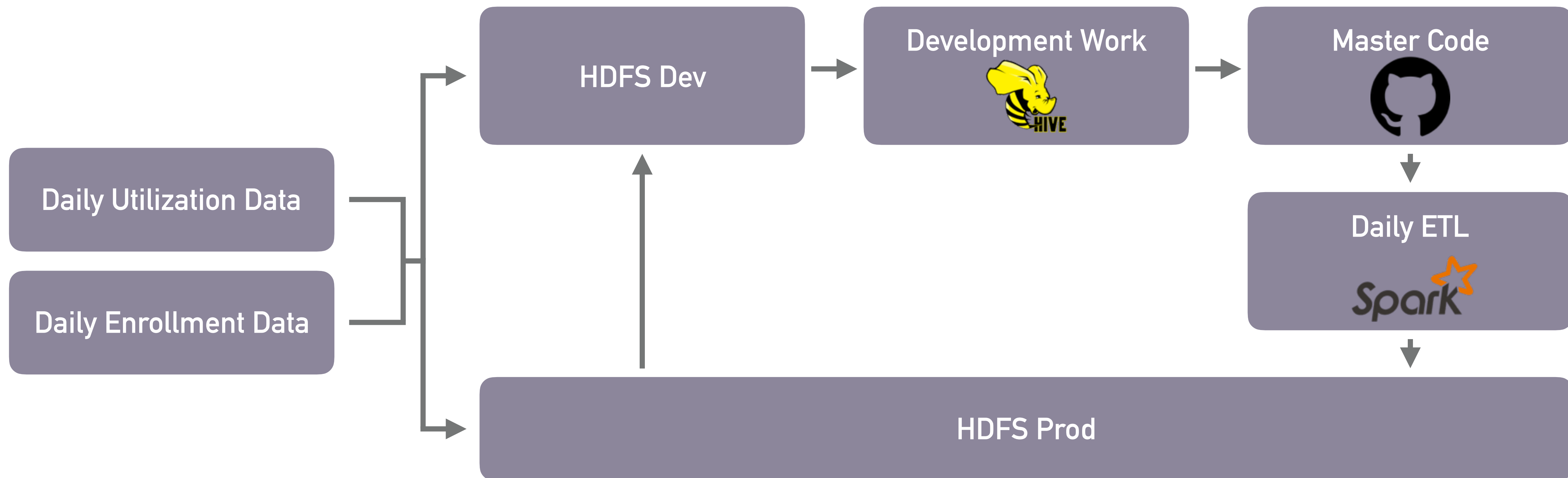
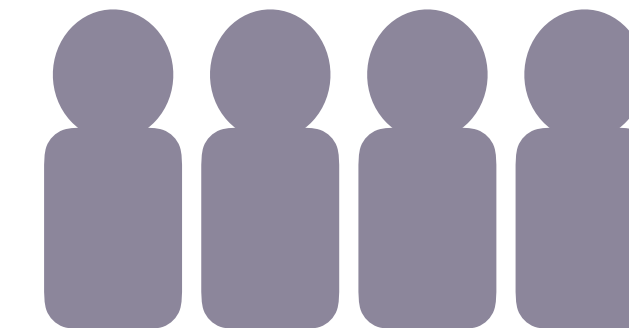
Daily ETL - Reduced processing time by 25x.

Analytic consistency through team contribution and consumption.

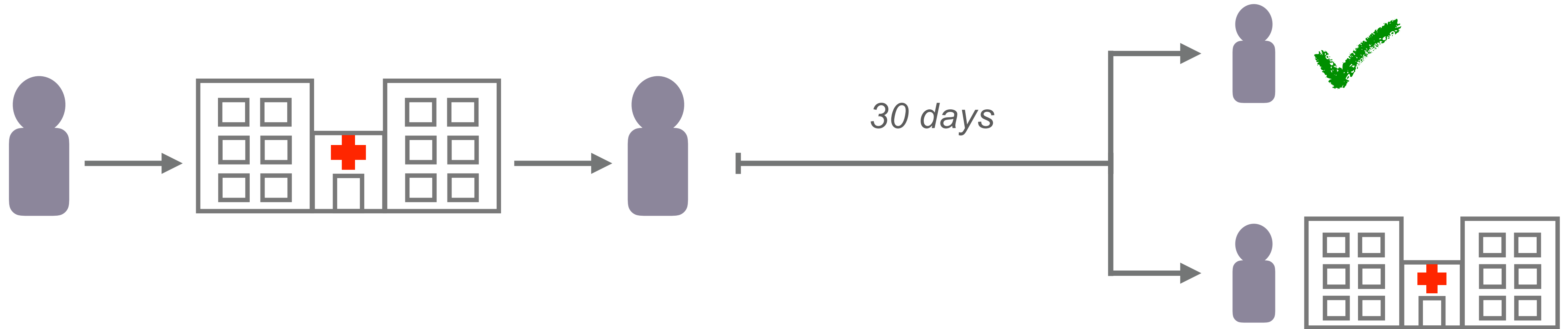
Data Analysts



Data Scientists



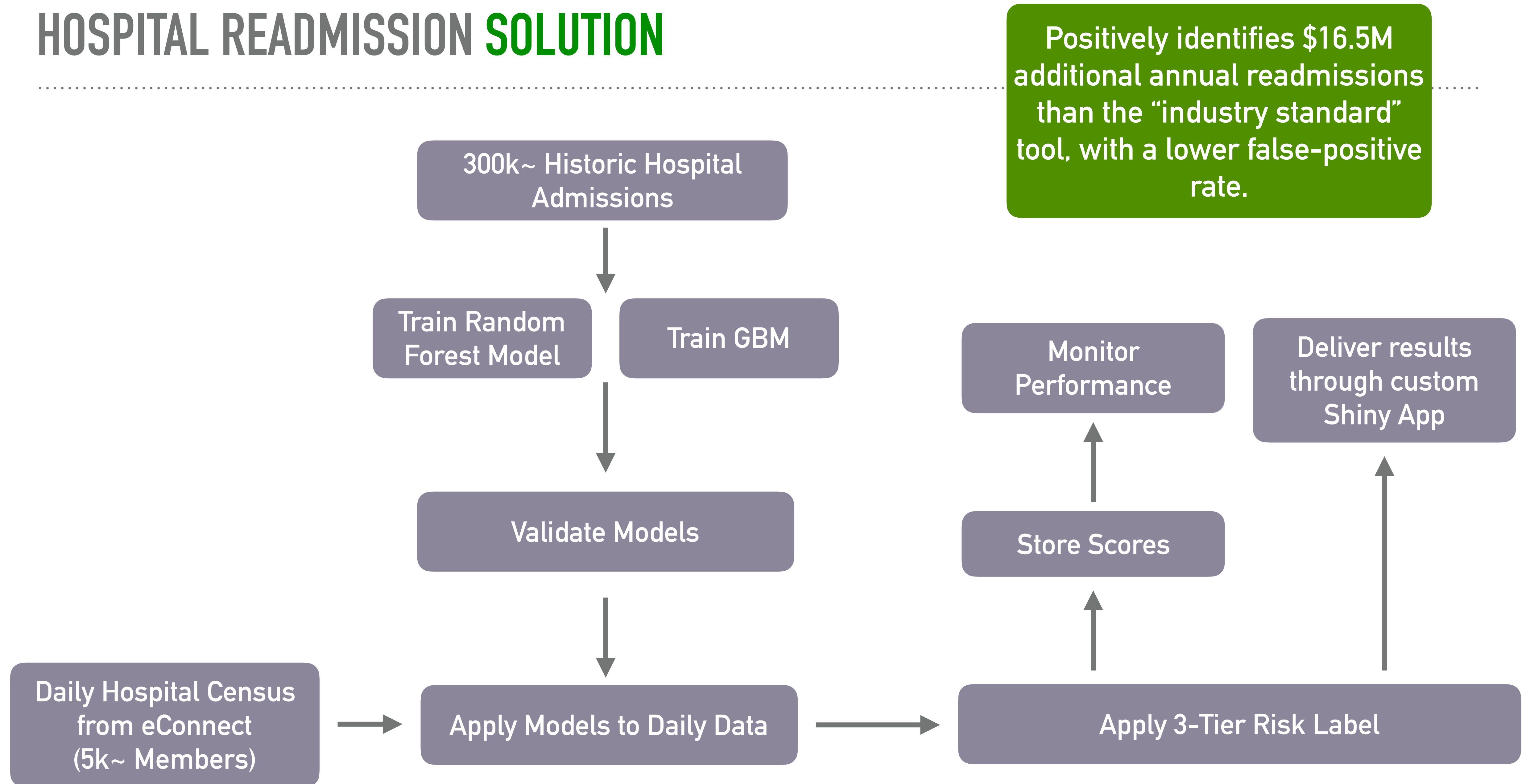
HOSPITAL READMISSION **PROBLEM**



30-day readmissions cost over \$150M per year.

How to prioritize member engagement to reduce 30-day readmissions?

HOSPITAL READMISSION SOLUTION



HOSPITAL READMISSION SOLUTION

Readmissions

Readmission Risk Scores

Glossary

Discharge dates

2020-04-01to2020-05-05

Member's Status

In Hospital

Discharged

Both

Risk tier

Hospital

ST. VINCENT MEDICAL CENTER

Member's SPA region

QNXT Member ID

CIN

Member's first name

Member's last name

Get Scores

Reset filters

Readmission Risk Prediction

Download

Latest Admit (Y/N)	QNXT Memid	CIN	Readm. Risk Tier	Readm. Risk Score	LACE Score	Last Name	First Name	Admit Date	Discharge Date	Status	Hosp. Na
Y			High	28	11			2019-12-02	2020-05-04	Discharged	ST. VINCENT MEDI
Y			Moderate	24	9			2019-10-02	2020-05-04	Discharged	ST. VINCENT MEDI
Y			Moderate	22	10			2019-11-01	2020-05-04	Discharged	ST. VINCENT MEDI
Y			Moderate	21	10			2019-11-05	2020-05-04	Discharged	ST. VINCENT MEDI
Y			Moderate	18	16			2019-12-11	2020-05-04	Discharged	ST. VINCENT MEDI
Y			Moderate	12	10			2019-10-30	2020-05-04	Discharged	ST. VINCENT MEDI
Y			Low	16	7			2019-11-04	2019-11-06	Discharged	ST. VINCENT MEDI
Y			Low	10	9			2019-12-02	2019-12-13	Discharged	ST. VINCENT MEDI
Y			Low	9.6	7			2019-08-26	2020-05-04	Discharged	ST. VINCENT MEDI
Y			Low	9.1	8			2019-11-12	2020-05-04	Discharged	ST. VINCENT MEDI

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FRAUDULENT PROVIDER **PROBLEM**

How to identify fraudulent provider activity without knowing what the schemes are?

Adversarial game with fraudulent providers

FRAUDULENT PROVIDER SOLUTION

Honed in on specific provider service-type



Identified outlier combinations diagnosis code, age group, procedure code, and modifier code combinations



Developed k-means clustering algorithm on 120~ providers



Identified 3 providers with very similar and suspicious patterns with \$6M in combined annual spend

OTHER SOLUTIONS

Applications to image and web-scrape competitor provider relationships to assist with network strategy.

Supervised machine learning models that identified **\$3M** in mis-coded hospital overpayments.

Integrated Rx utilization and enrollment data to discover **\$10M** operational issue.

Integrated Rx utilization and medical utilization data to discover **\$4M** of Rx fraud.

Q & A