

A photograph of three business professionals (two women and one man) sitting around a table in a meeting, smiling and gesturing. The image is overlaid with a blue tint. The text "Data for Breakfast" is written in a white, cursive script across the center of the image.

# *Data for Breakfast*



# **SNOWFLAKE**

## **THE CLOUD DATA PLATFORM**



# DATA...THE NEW FRONTIER



# NEW TECHNOLOGY CHANGES HOW WE USE DATA

## Diversification of Analytics



Analytics is growing in importance, everywhere, and for everyone

## Explosion of Data



IoT, mobile, and social open up new opportunities for insight

## Rise of the Cloud



Cloud gives us the ability to scale and centralize data





# TAKING A PLATFORM APPROACH LEADS TO BIG BUSINESS IMPACT

**Make Better, Quicker  
Business Decisions**



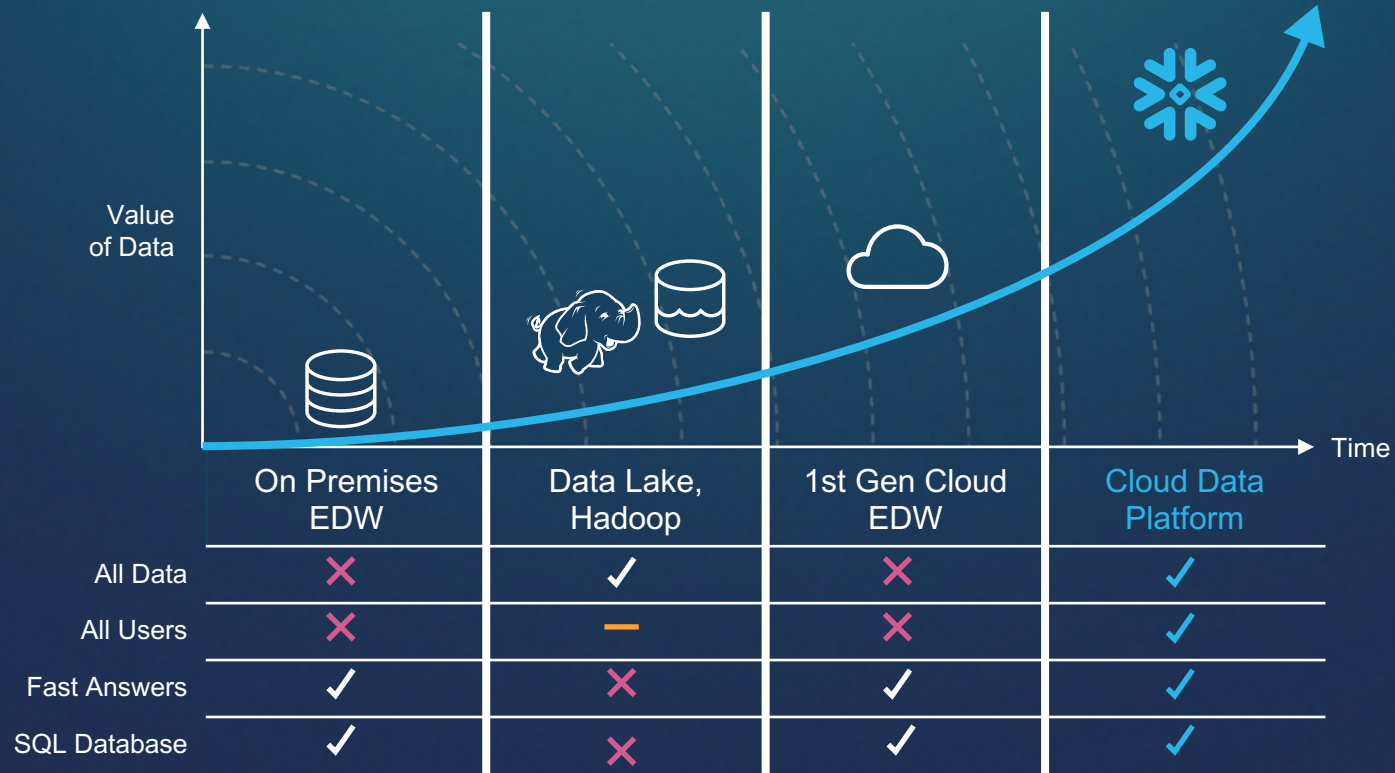
**Reduce the Cost of  
Scaling Data Management  
and Analytics**



**Create a Great Customer  
Experience with Data**

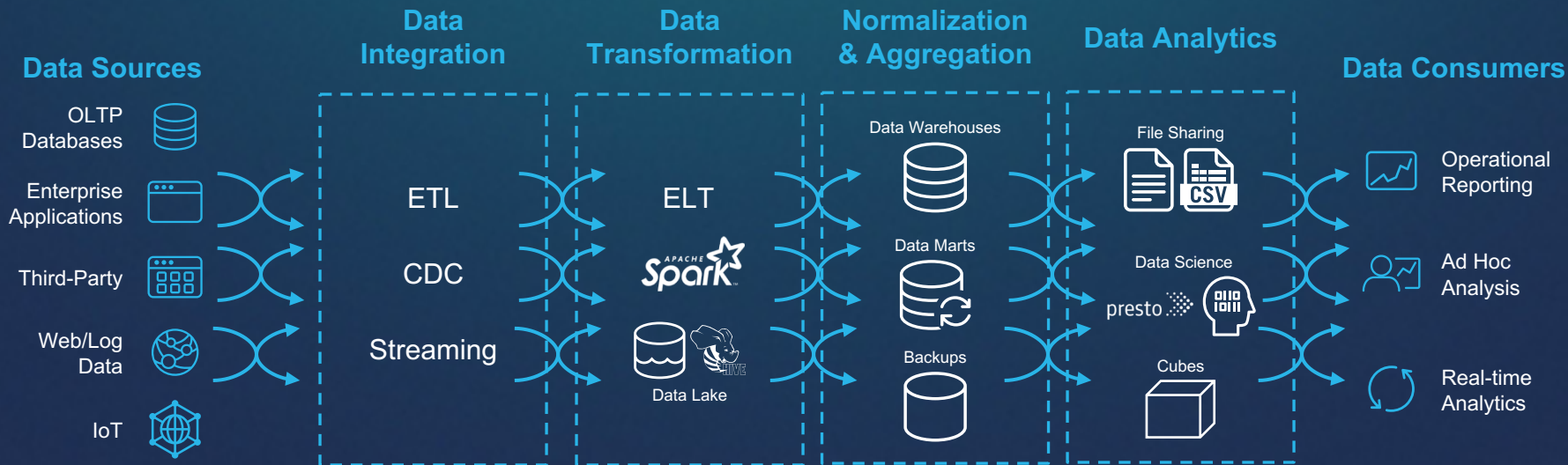


# JOURNEY TO A CLOUD DATA PLATFORM



# TRADITIONAL DATA ARCHITECTURE

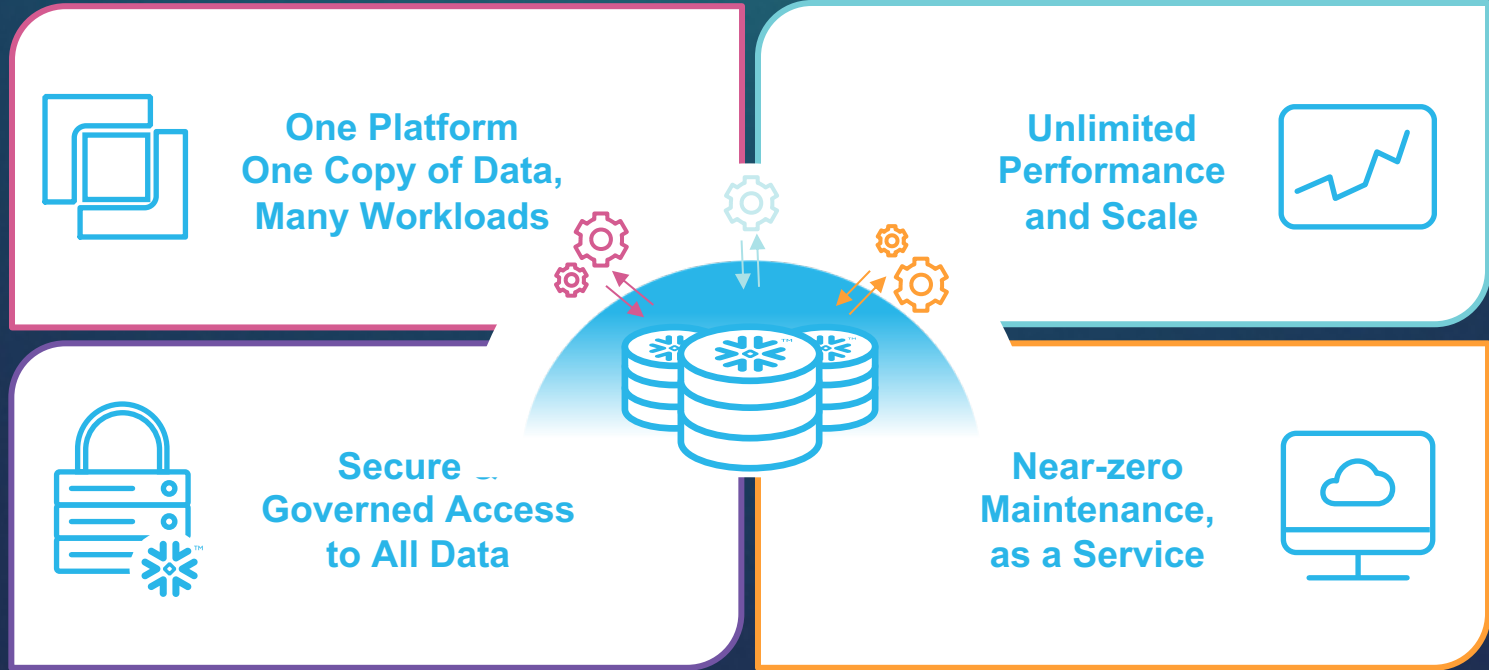
Complex and Costly with Multiple Copies of Data



# MODERN DATA ARCHITECTURE WITH SNOWFLAKE



# THE VALUE OF A CLOUD DATA PLATFORM





# ONE PLATFORM, ONE COPY OF DATA, MANY WORKLOADS



## Data Warehouse

Modernize data warehousing to deliver faster analytics at scale



## Data Engineering

Rethink transformation with robust and integrated data pipelines



## Data Lake

Simplify and accelerate your data lake with one platform for all your data



## Data Applications

Develop apps with fast and scalable analytics that delight customers



## Data Exchanges

Empower your ecosystem with secure, governed access to all data



## Data Science

Simplify and accelerate machine learning and artificial intelligence



# THE IMPACT OF A CLOUD DATA PLATFORM





*Empowering Healthcare*

## SITUATION

- Shift to the cloud with focus on speed and value
- Managing infrastructure
- Significant governance, regulatory requirements



## VALUE

- 60+ analytics teams served by single cloud data platform
- Migrated in < 90 days
- Load speeds improving 86%
- 5x faster complex queries
- Improved governance and democratized insights





## SITUATION

- Multiple data warehouses, some end-of-life
- Data silos caused ambiguity and reporting disparities
- Poor consumer insight

## VALUE

- Diverse data ingested for analytics, data science
- Improved agility, scalability and analytics performance
- In depth customer knowledge and improved services





## SITUATION / PAIN

- Painfully slow analytics cycles
- Limited ability to answer complex questions
- Inability to provide business continuity and ensure security



## SOLUTION / VALUE

- Hundreds of newly empowered analysts
- Improved scalability and faster query times
- Guaranteed security and data availability, 24/7/365





STRAVA™ // boost MEDIA eugust MyPoints® Keboola KIXEYE PlaceIQ PLAYSTUDIOS iovation® gta G

McKESSON outsystems PerBlue LACEWORK™ CapSpecialty celtra Q Reelata n research now® PDX

Sainsbury's hulu instacart Capital One® Akamai Adobe DocuSign® 2K

# PROVEN BY OVER 3000 CUSTOMERS

RhythmOne amino DOORDASH docker Amplitude Blackboard Dropbox Spireon®

Ask sharethrough SONY nielsen peak GAMES Experian Neumob chime AXA SUNS

US FOODS Localytics MADISON REED® VoiceBase JANA accordantmedia The Orchard LEANPLUM

Hotel Tonight whiteops fitbit snagajob HIGHTAIL TUNE DealBase URBAN OUTFITTERS



## Platform



## BI/Analytics



## ETL



# EVER EXPANDING ECOSYSTEM

## Data Science



## Services



# TECHNICAL DEEP DIVE



# HOW IS SNOWFLAKE UNIQUE?



# ARCHITECTURE



# A CLOSER LOOK

## Traditional Architectures



### Shared-disk

Additional capacity requires forklift upgrade

Reads/Writes at the same time cripples the system

Replication requires additional hardware



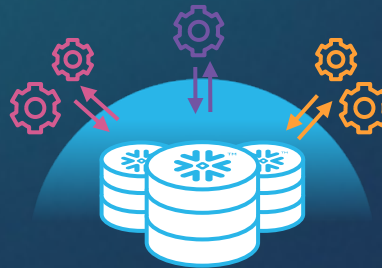
### Shared-nothing

Resizing cluster requires redistributing data. Shut down requires unloading.

Each cluster requires its own copy of data (ex: test/dev, HA)

Vacuuming processes needed to maintain sort and distribution for performance

## Snowflake



### Multi-cluster, shared data

- Centralized, scale-out storage that expands and contracts automatically
- Independent compute clusters can read/write at the same time and resize instantly
- Automated backup across multiple availability zones/regions
- AWS, Azure, GCP





# SNOWFLAKE ARCHITECTURE



# MODERN DATA ARCHITECTURE WITH SNOWFLAKE CLOUD DATA PLATFORM



# ONE PLATFORM, ONE COPY OF DATA, MANY WORKLOADS



## Data Warehouse

Modernize data warehousing to deliver faster analytics at scale



## Data Engineering

Rethink transformation with robust and integrated data pipelines



## Data Lake

Simplify and accelerate your data lake with one platform for all your data



## Data Applications

Develop apps with fast and scalable analytics that delight customers



## Data Exchanges

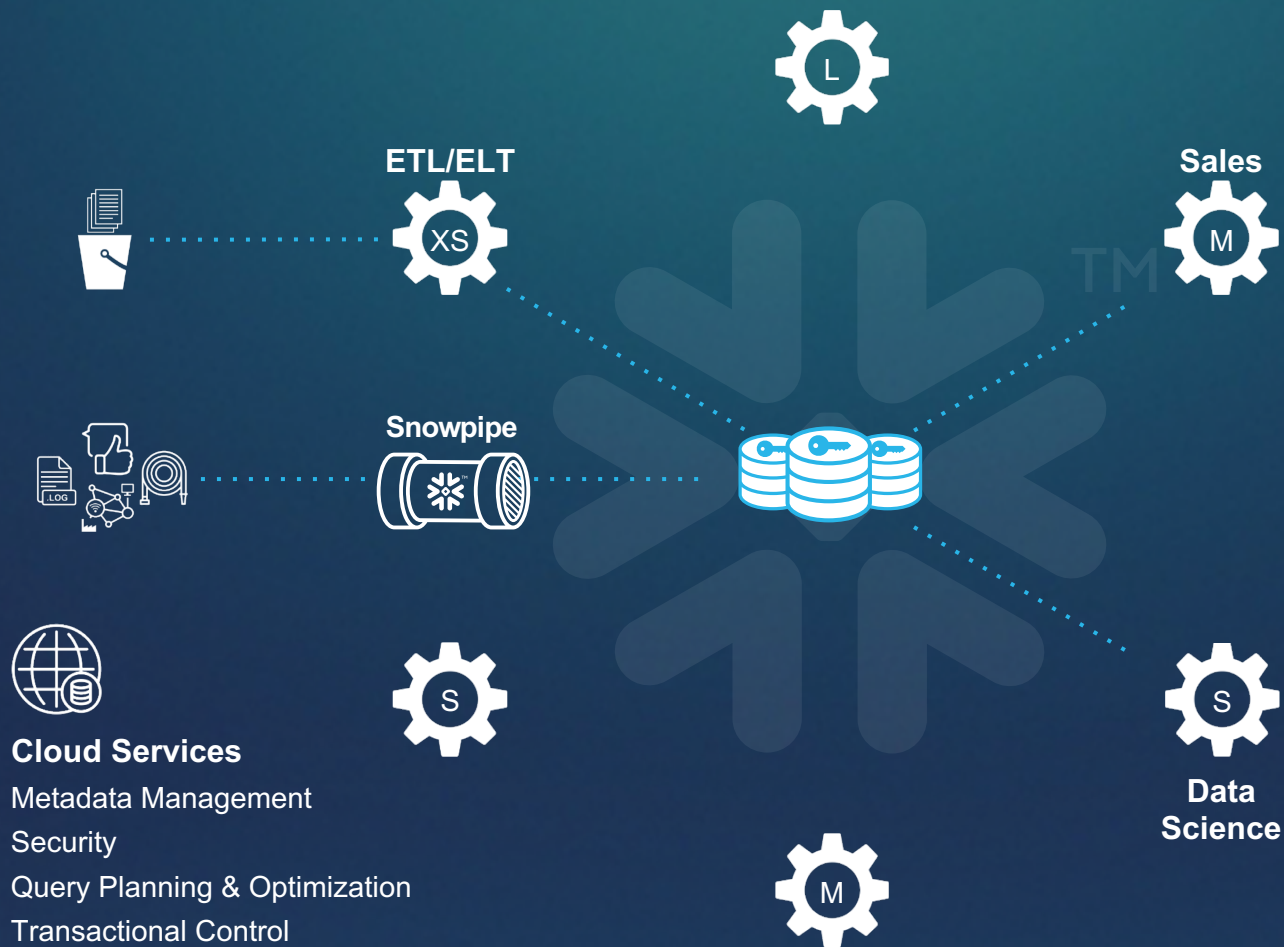
Empower your ecosystem with secure, governed access to all data

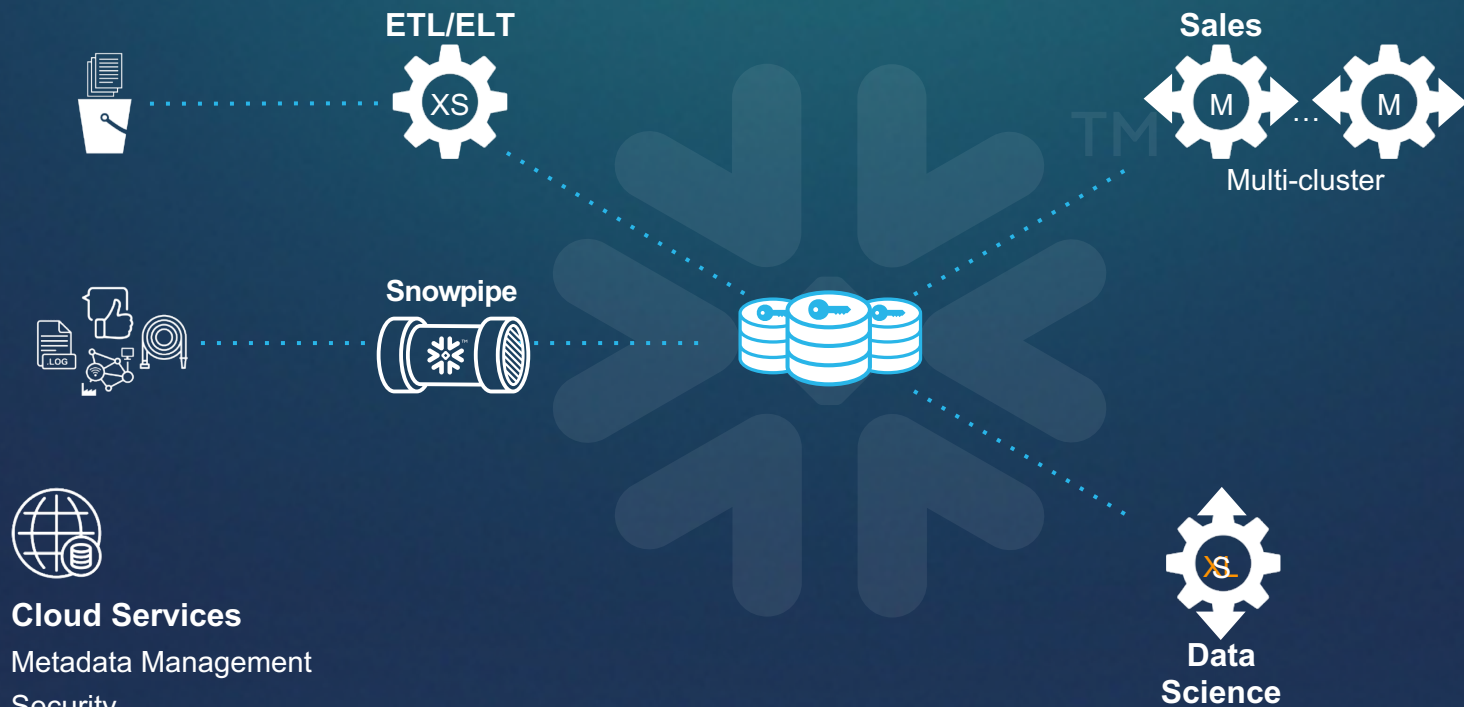


## Data Science

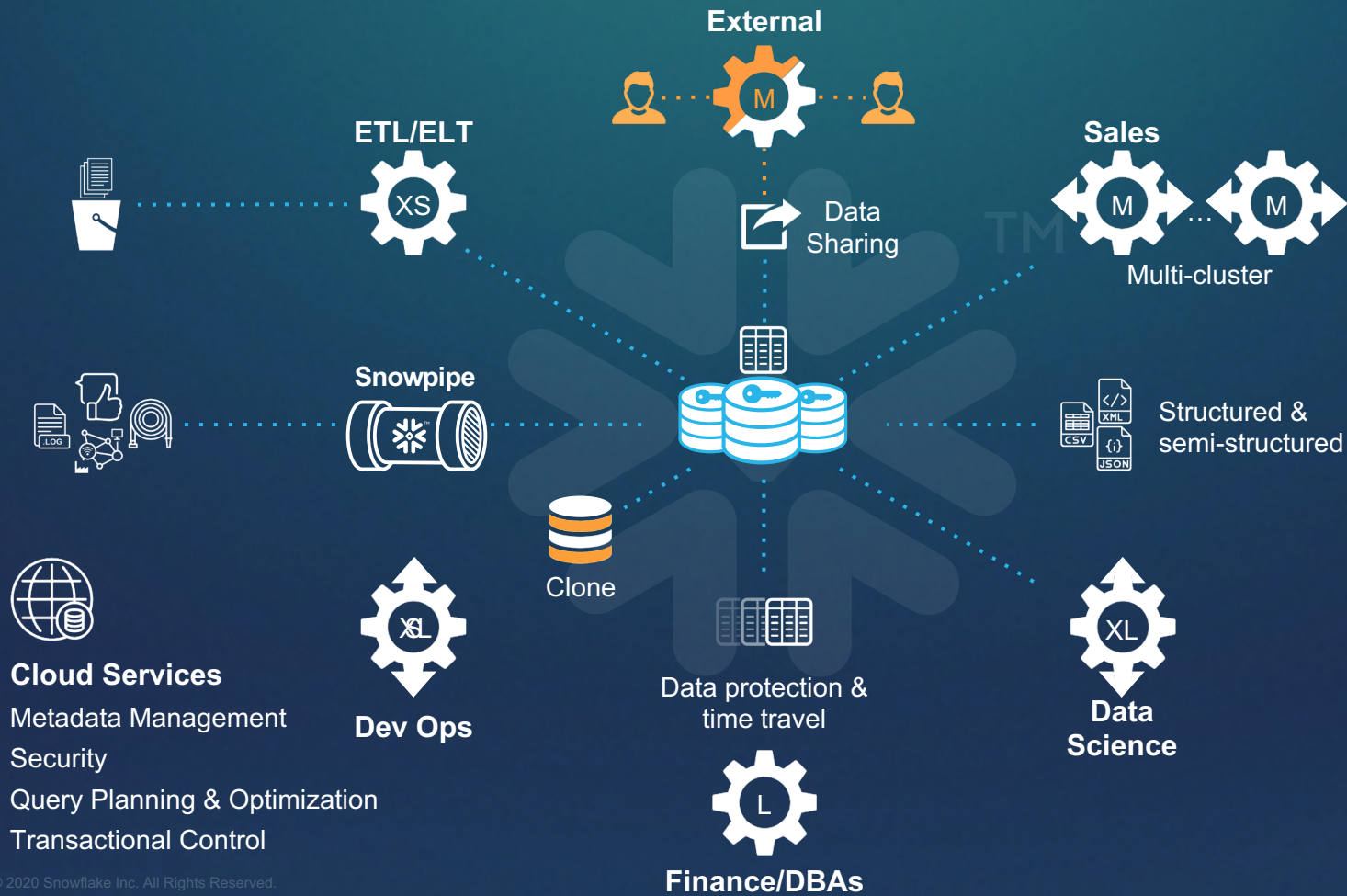
Simplify and accelerate machine learning and artificial intelligence











# SECURE BY DESIGN, DATA AVAILABILITY

## Authentication



- Embedded multi-factor authentication
- Key Pair authentication
- Federated authentication / SSO supported

## Access Control



- IP whitelisting
- Roles-based access control model
- Granular privileges on all objects & actions

## Data Encryption



- All data encrypted, always, end-to-end
- Encryption keys managed automatically

## External Validation



- Certified against enterprise-class requirements
- PCI and HIPAA available

## Data Availability



- User error: Time Travel, Failsafe, Cloning
- Zone failure: Data replicated to multiple zones in a region
- Region/Provider failure: Data replication & failover



# MORE ON WORKLOADS



**Data  
Lake**



**Data  
Exchange**



**Data  
Engineering**



**Data  
Science**



# HOW DOES SCALABLE CLOUD DATA PLATFORM ENABLE DATA LAKES?

## Snowflake

### Data Lake

#### Attributes

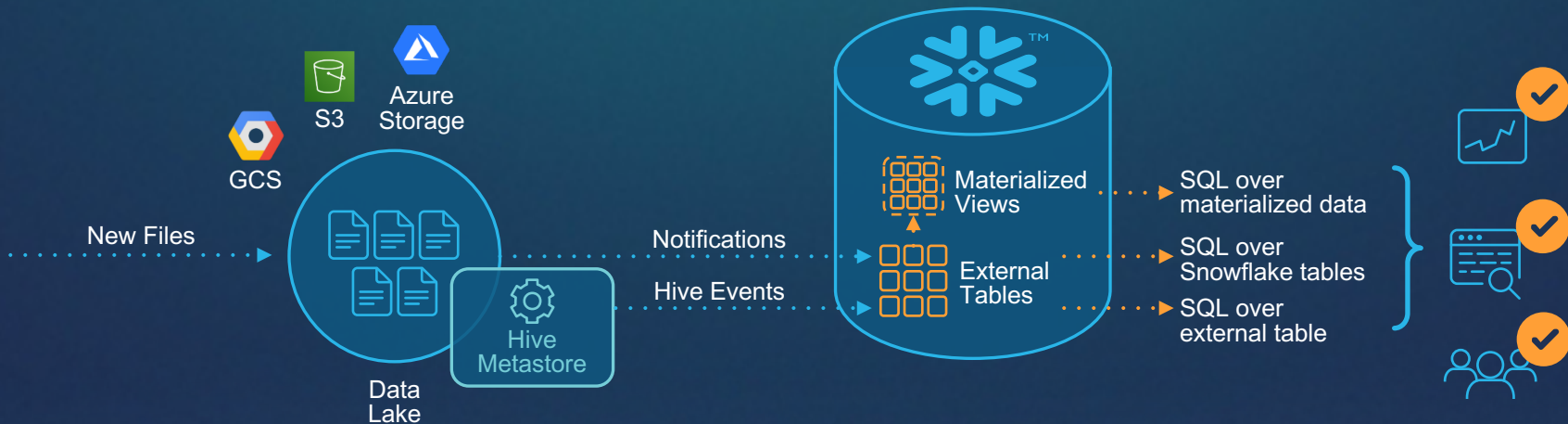
- ❄ No silos – all data
- ❄ Open formats
- ❄ Raw Representation
- ❄ Multiple workloads
- ❄ Cheap storage
- ❄ Schema on read

#### Additional Benefits

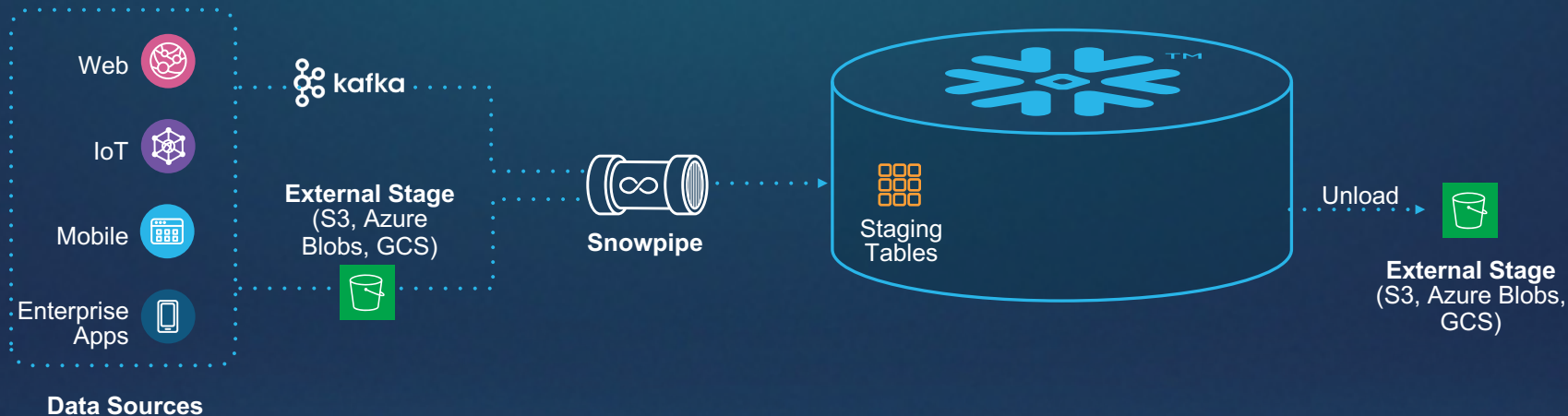
- ❄ Governance
- ❄ Transactional
- ❄ Data sharing
- ❄ Global
- ❄ Performance
- ❄ Managed service



# AUGMENTING EXISTING DATA LAKES

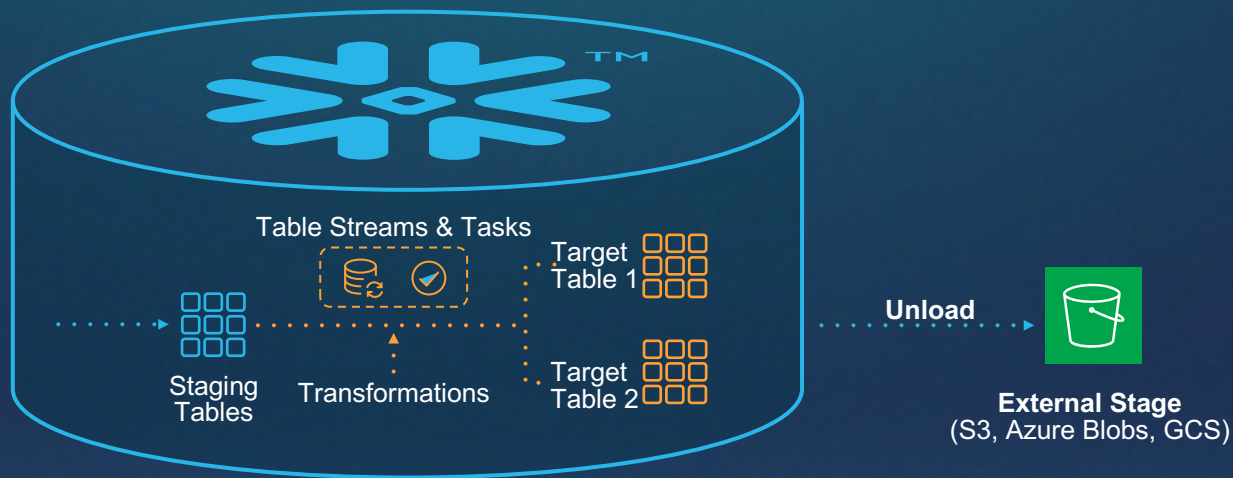


# LOW LATENCY INGEST





# SCALABLE TRANSACTIONAL TRANSFORMATIONS





# SECURE DATA SHARING

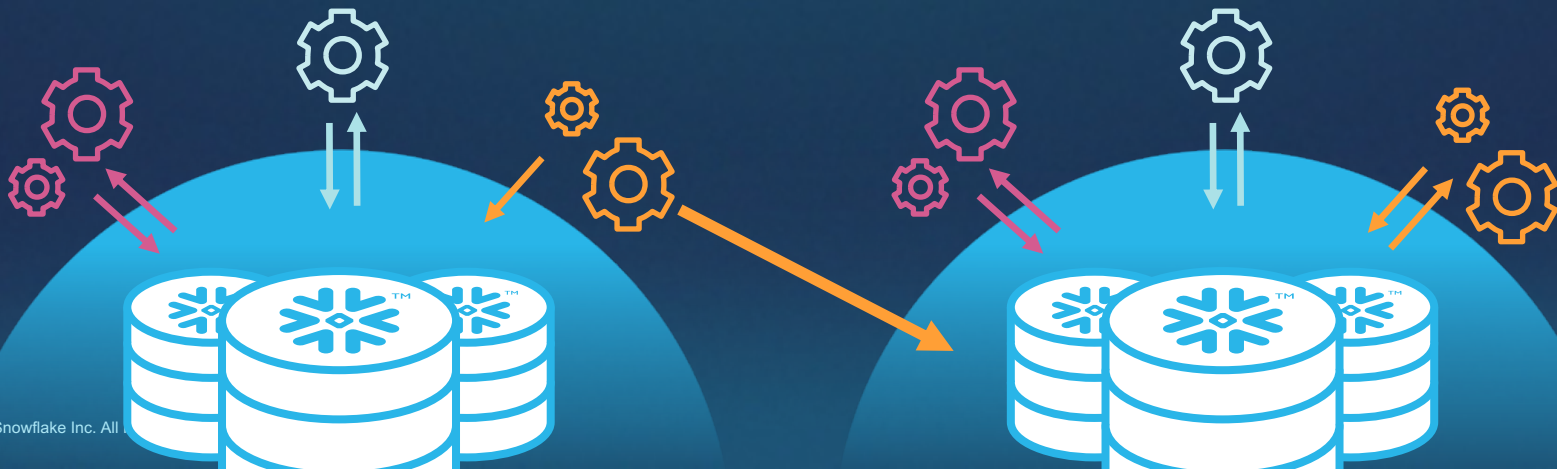
Secure

Live

Frictionless

Personalized

Global



# ENABLING AI, ML, AND DATA SCIENCE

- Improving data science speed and efficiency with centralized source of high performance data
- Accelerating data exploration and preparation by 10-100x
- Connectors to leading and emerging technologies
- First class ecosystem of partners



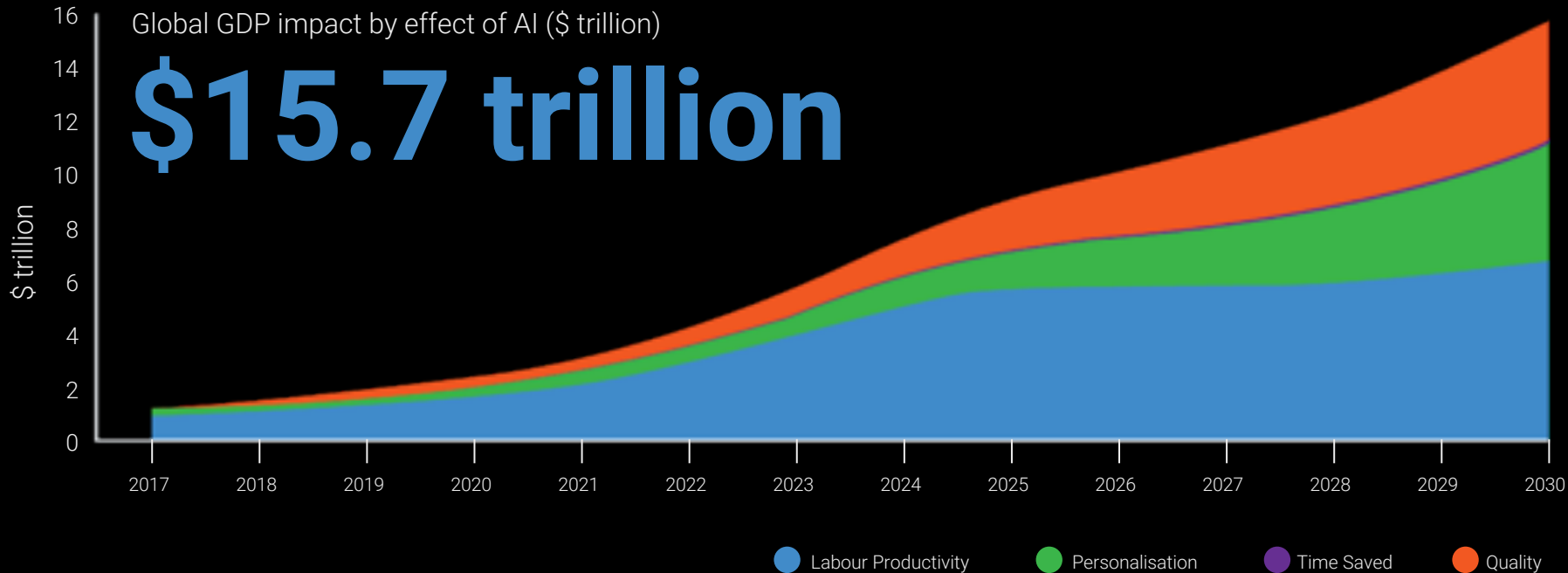
# UNLOCK AI WITHOUT LIMITS



**DataRobot**



# AI is transforming the world

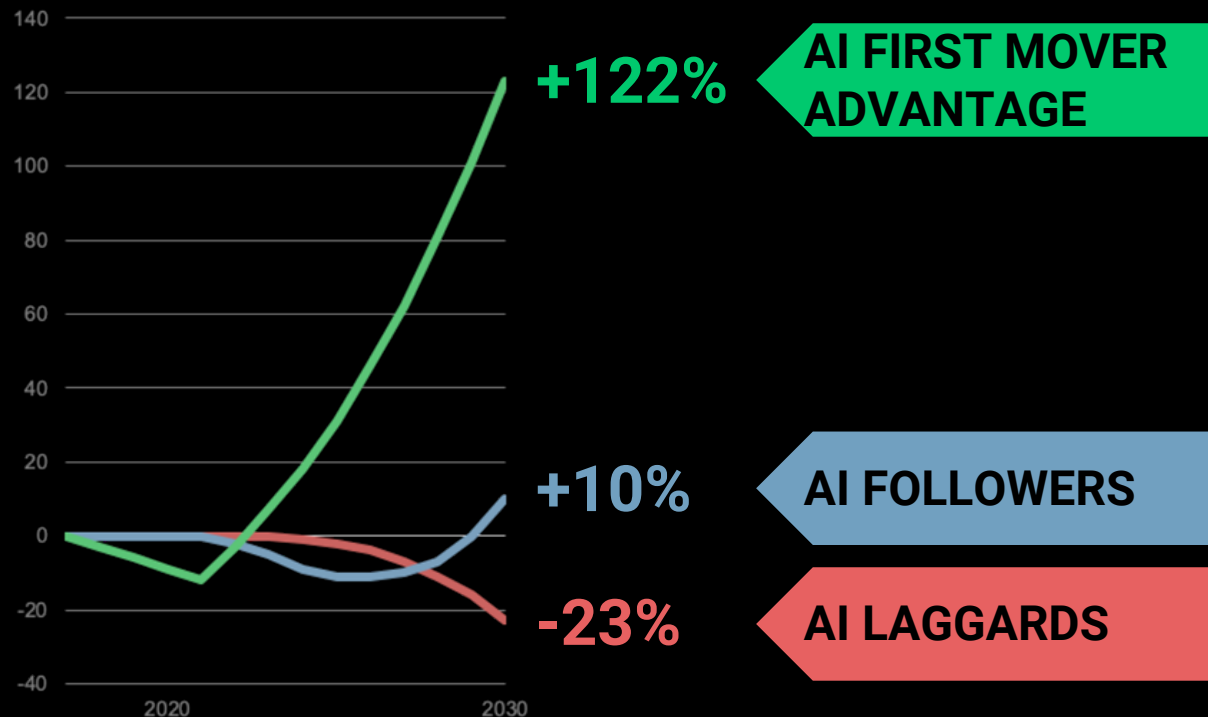


Source: PWC

Sizing the prize: What's the real value of AI for your business and how can you capitalise?

# AI is a massive opportunity for your organization

Changes In Cash Flow by AI Adoption

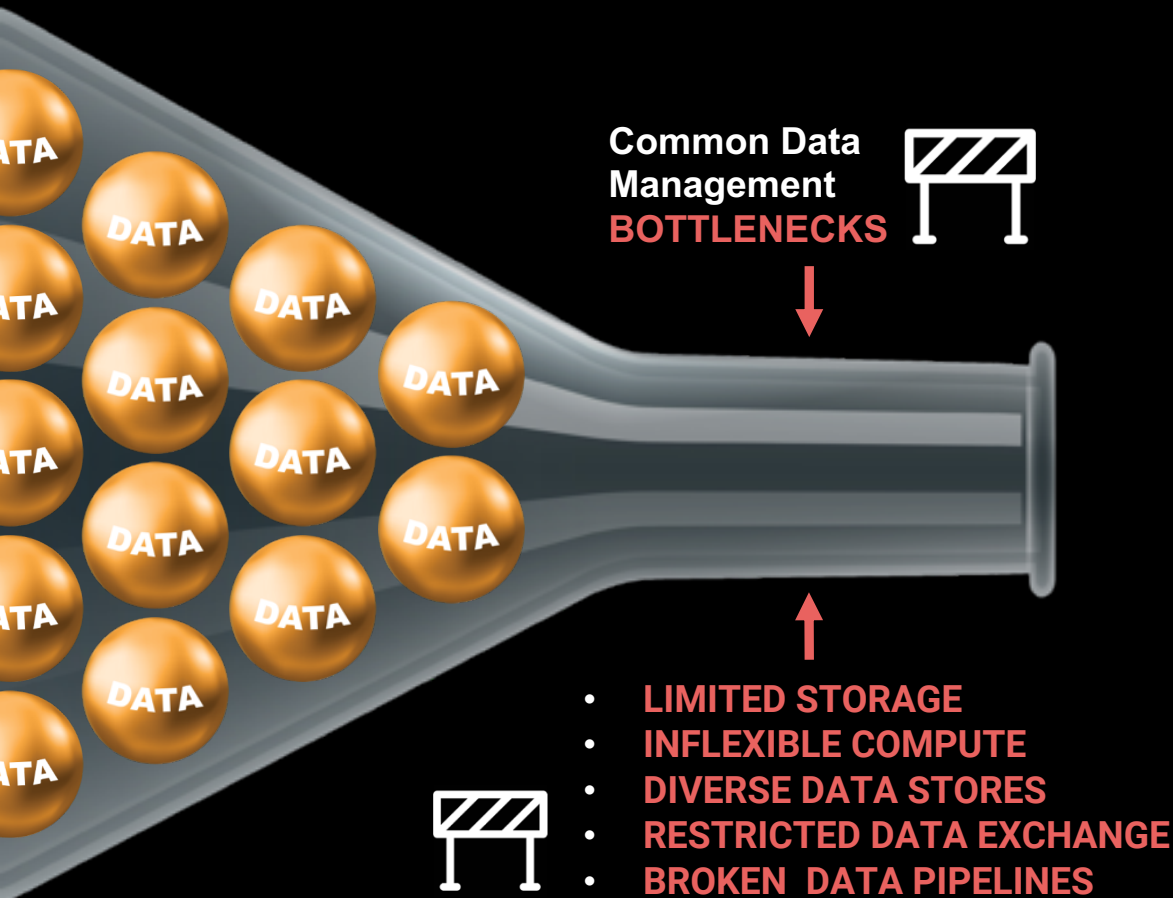


*"The [AI] winners may take all and late adopters may never catch up."*

**Harvard Business Review**  
November 2018

"Relative Changes In Cash Flow by AI Adoption Cohort" [Notes from the AI frontier: Modeling the impact of AI on the world economy](#) by McKinsey & Company

# Data management is a big blocker for many AI projects



## PREP

**98%**

Struggle with aggregating and preparing data sets

## BUILD

**96%**

Experience problems with model development

## DEPLOY

**90%**

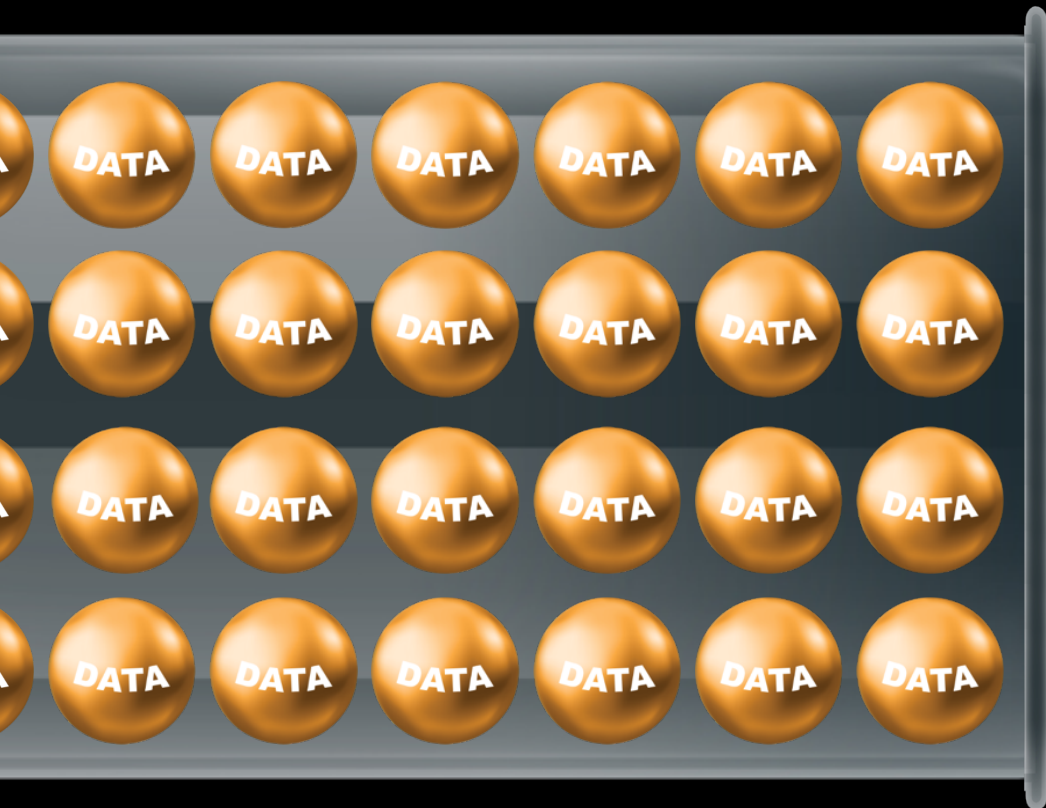
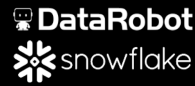
Cite obstacles to moving AI models into production

## MONITOR

**99%**

Don't actively monitor their AI/ML assets once in production

# We have joined forces to unlock AI without limits



**DataRobot**

Simple, scalable & speedy  
Unlimited storage & compute  
Seamlessly connected  
Mutually cloud native  
Overcome IT/Data blockers  
Leader in Data Management  
Leader in Enterprise AI



A portrait of Miles Davis, a man with short brown hair, wearing a dark blue polo shirt. He is speaking and looking slightly to the right. The background is a blurred office environment with a computer monitor and whiteboards. A white text box with an orange border is overlaid on the left side of the image.

**MILES DAVIS**

DATA & ANALYTICS MANAGER | HARMONEY



**Trusted Enterprise  
AI Platform**



**DataRobot**

**Trusted AI-Native  
Strategic Partner**

# Trusted Enterprise AI Platform to accelerate ROI



DATA

## End-to-End AI - Data to Value

AI  
Catalog



AI Data  
Prep



Feature  
Engineering



Model  
Creation &  
Validation



Model Ops &  
Deployment



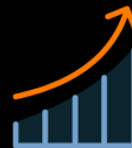
Model Mgmt  
& Monitoring



AI-Powered  
Application



Use Case Mgmt &  
Value  
Measurement



VALUE

## Data Platform - built for any cloud



Unlimited  
data



Data  
Security



Central  
admin



Multi data  
source



Data  
Exchange



Scalable  
compute

0

3

6

9

12

Typical AI project

DataRobot AI  
project

Accelerating AI projects up to 90%+

# You can start with many tried and tested AI use cases



## Real-time optimization

Enhancing routing and predicting delays for logistics and time sensitive processes



## Strategic optimization

Planning store/site locations to maximize sales/support based on local demand and competition



## Predictive analytics

Identifying customer churn risks following behavior changes or an interaction, for proactive retention



## Predictive maintenance

Anticipating failures of critical machinery and equipment, enabling proactive repairs to be scheduled



## Interpreting unstructured data

Reading customer data/ emails/tickets and routing the query based on type, priority and urgency



## Forecasting

Estimating product, service and staffing demand at a hyper local level based on trends and events



## Trend/anomaly detection

Identifying and preventing new cases of fraud based on suspicious activities and behavior changes



## Radical personalization

Customizing offers for every individual customer based on their history and personal profile

# Trusted by customers across all industries globally



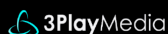
## Transportation & Manufacturing



## Finance



## Technology



## Healthcare



## Insurance



## Retail



PERSONAL LOANS

# SIMPLE 100% ONLINE PROCESS

Personalised interest rates  
from 6.99% — 29.99% p.a.\*

[Apply now](#)[Get a quote](#)

Won't affect your credit score

A close-up portrait of a young woman with long, wavy brown hair, smiling and looking off-camera to her right. She is wearing a dark blue and white striped top.

## Total Application (\$)

\$110.1M

## Total Funded (\$)

\$107.4M

## Risk Level

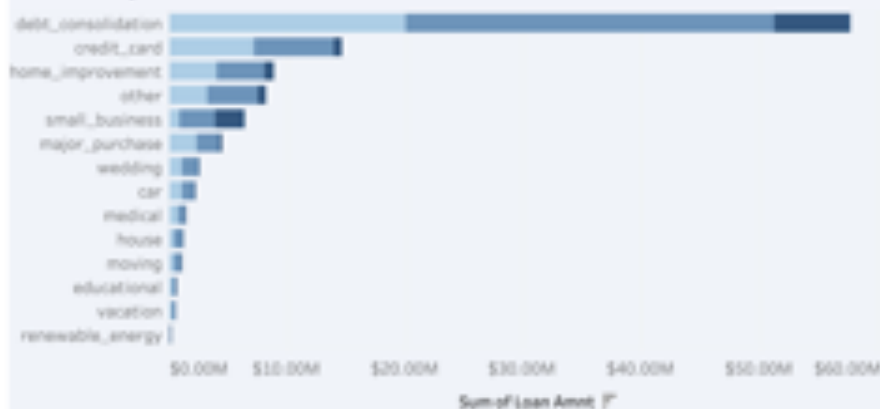
4,310  
Low Risk4,888  
Moderate Risk782  
High Risk

DataRobot

Paid

[UNIT]

## Loan Purposes



## Executive Summary

	Sum of Loan Amnt	Funded Amnt	Number of Applications
High Risk	\$11.7M	\$11.2M	782
Moderate Risk	\$56.0M	\$54.7M	4,888
Low Risk	\$42.5M	\$41.6M	4,310
Grand Total	\$110.2M	\$107.4M	9,980

## Term



## Avg. Interest Rates

## Loan (\$) vs. Fund (\$)

## Grade &amp; Risk



Loan default model

DataRobot Production Server | Loans scoring

Service

Data

Accuracy

Activity

Avg. Predictions/Day

Last Prediction



Jan 18 Jan 19

0

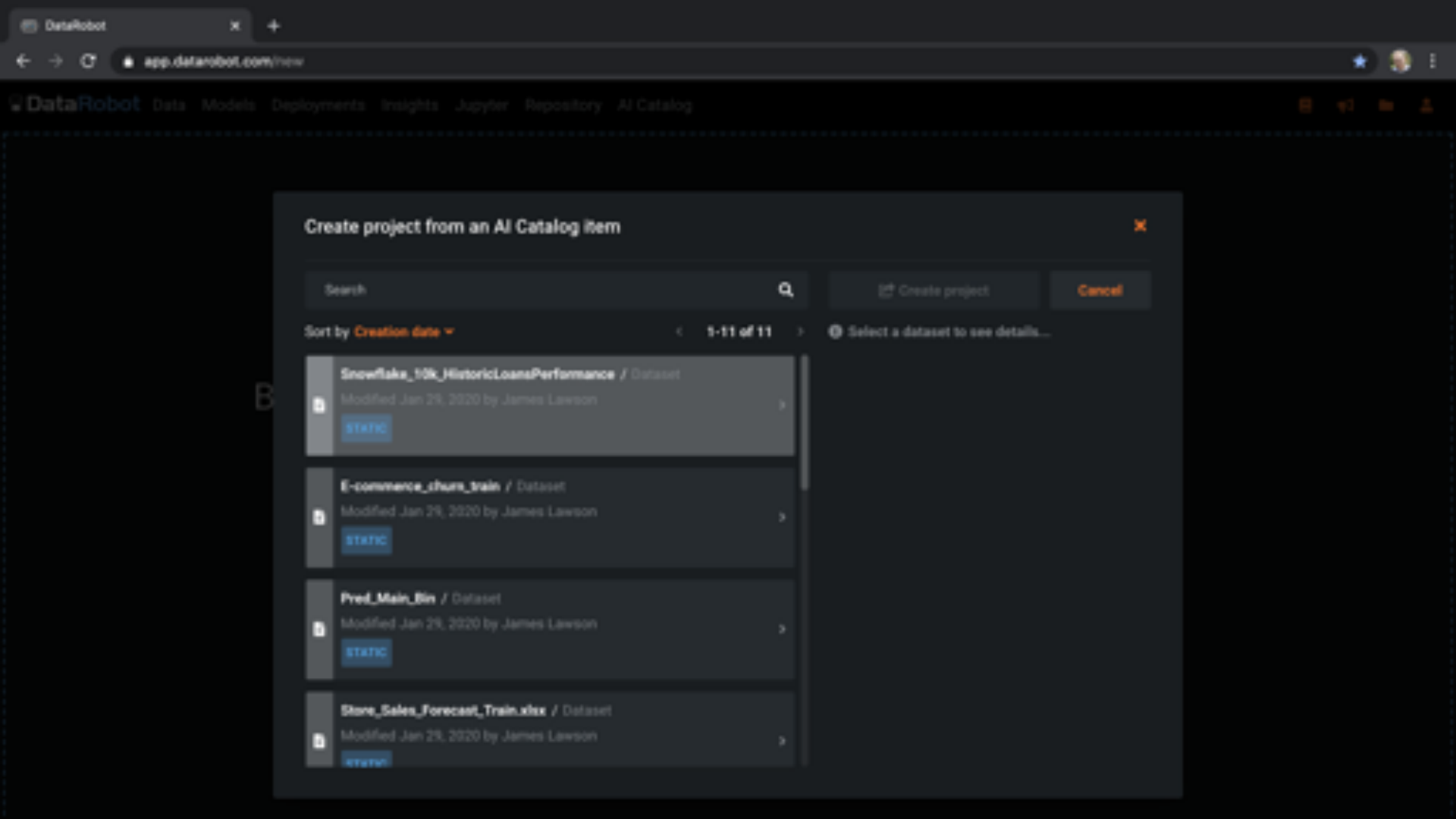
-

[Overview](#) [Service Health](#) [Data Drift](#) [Accuracy](#) [Integrations](#) [Settings](#)

## Integrations

Snowflake  
Not Configured

Scoring Code



## Create project from an AI Catalog item



Search



Create project

Cancel

Sort by Creation date

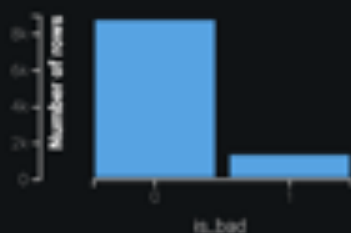
&lt; 1-11 of 11 &gt;

Select a dataset to see details...

	<b>Snowflake_10k_HistoricLoansPerformance</b> / Dataset Modified Jan 29, 2020 by James Lawson STATIC	>
	<b>E-commerce_churn_train</b> / Dataset Modified Jan 29, 2020 by James Lawson STATIC	>
	<b>Pred_Main_Bin</b> / Dataset Modified Jan 29, 2020 by James Lawson STATIC	>
	<b>Store_Sales_Forecast_Train.xlsx</b> / Dataset Modified Jan 29, 2020 by James Lawson STATIC	>

What would you like to predict?

is\_bad



Start

Modeling Mode: Autopilot

Feature list: Informative Features

Optimization Metric: LogLoss



#### Time-Aware Modeling

DataRobot has detected 1 time feature in your data. Would you like to use time series modeling or out-of-time validation?

Set up time-aware modeling

#### WORKERS

Using 0 of 20 total workers across all projects

#### STATUS

- ✓ 1. Uploading Data
- ✓ 2. Reading raw data (Quick)
- ✓ 3. Exploratory Data Analysis (2.742 sec.)



[Leaderboard](#) [Learning Curves](#) [Speed vs Accuracy](#) [Model Comparison](#) [Prediction Apps](#)



Menu Search Add New Model Filter Models Export

#### ☐ Model Name & Description

Feature List & Sample Size 

### Cross Validation

[xg](#) **extreme Gradient Boosted Trees Classifier with Early Stopping and Unsupervised Learning Features**

DR Reduced Features M73   
80.0% 

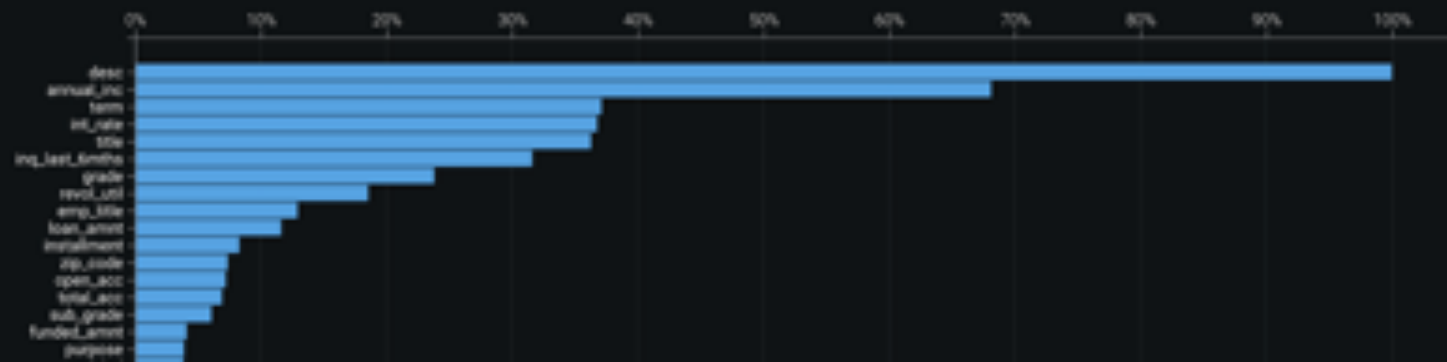
© 2004 Blackwell Publishing Ltd

a. 34.30

Evaluate Understand Describe Predict Compliance

[Feature Impact](#) [Feature Effects](#) [Prediction Explanations](#) [Word Cloud](#)

### Feature Impact



1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

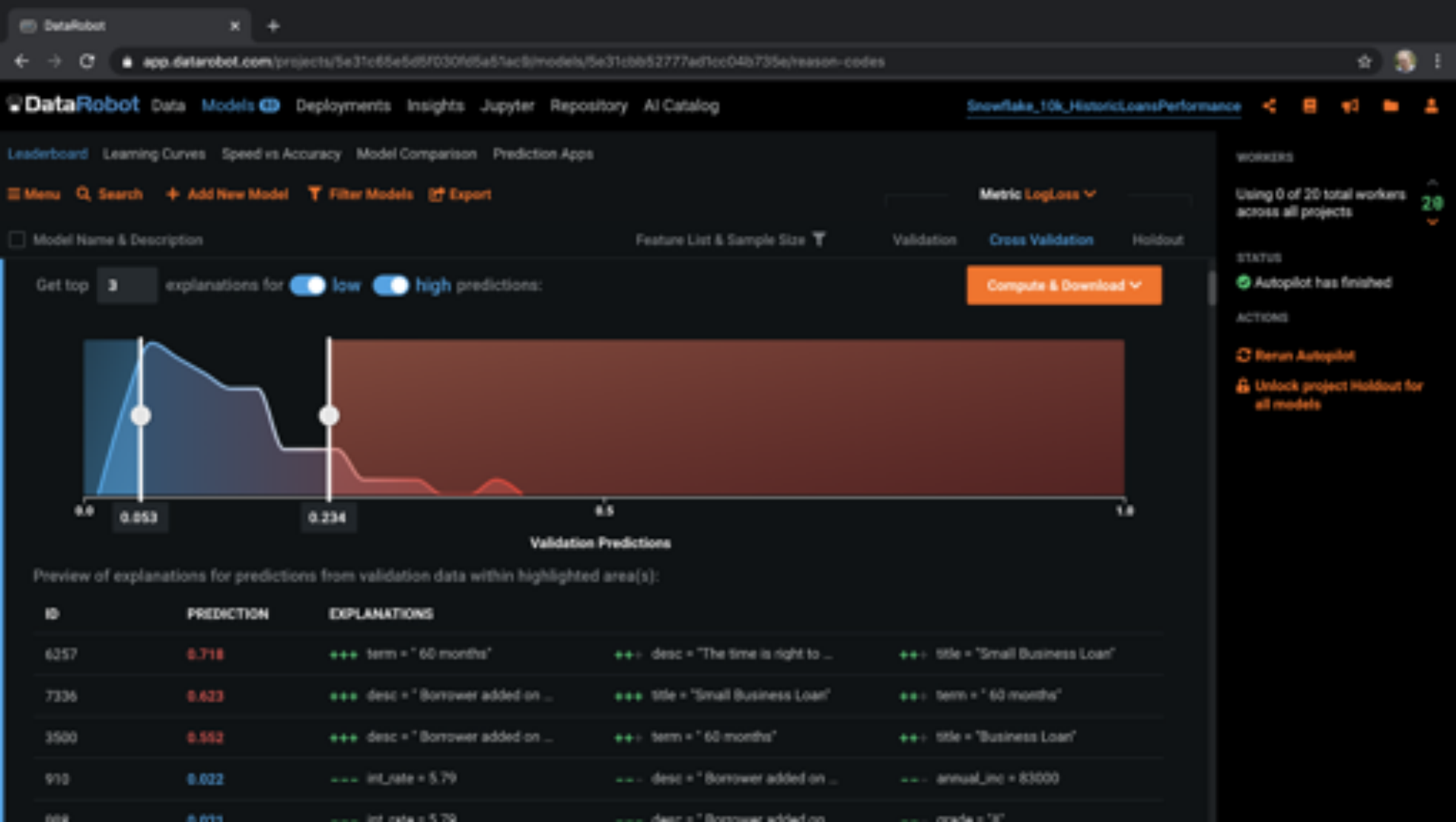
Using 0 of 20 total workers across all projects

Autopilot has finished

## Abstract

© Herman Augustijn

**🔓 Unlock project Holdout for all models**





Worksheet 1



Run



All Queries

Saved 6 minutes ago

Context: ACCOUNTADMIN



COMPUTE\_WH (XS)



SNOWFLAKE\_SAM...



PUBLIC



Results Data Preview

Open History

Table: LENDINGTREE.PUBLIC.LendingTree\_Scored

Data

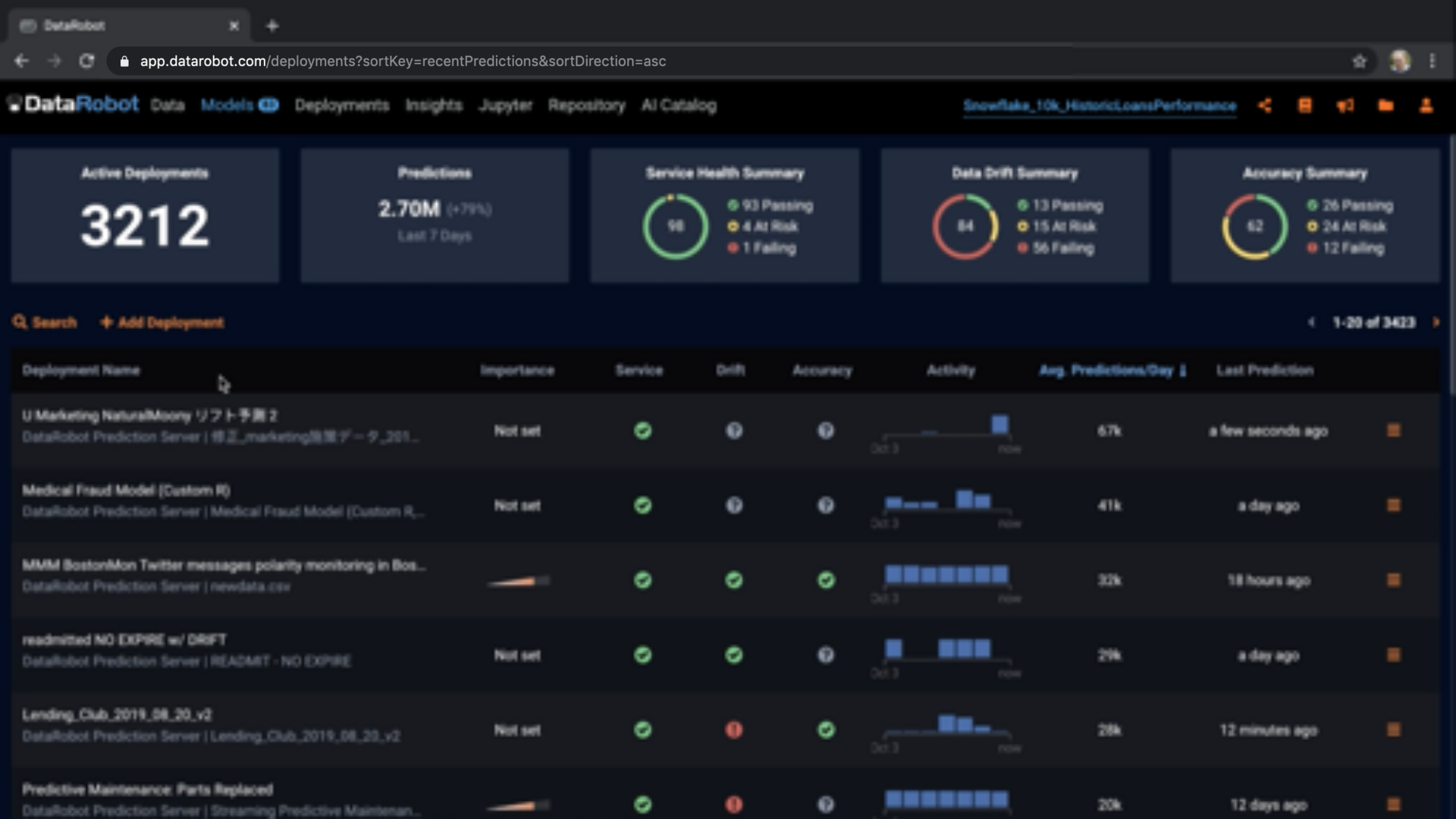
Details

Filter result...

Columns

row_id	revol_bal	revol_util	total_acc	initial_list_status	mths_since_last	policy_code	Prediction ↓	Positive Probabl	Reason 1 Streng	Reason 1 Streng	Reason 1 Fe
1214	9.3	20	f	NA	1	FALSE	0.047275	---	-0.632484	int_rate	
1466	86.2	5	f	NA	1	FALSE	0.112501	+++	0.26099	annual_inc	
29763	56.26	21	f	NA	1	FALSE	0.0603	---	-0.619301	int_rate	
4767	10.8	20	f	NA	1	FALSE	0.083169	++	0.315783	annual_inc	
16006	84.7	38	f	NA	1	FALSE	0.289554	+++	0.46436	int_rate	
2296	38.3	29	f	NA	1	FALSE	0.104191	---	-0.608982	annual_inc	
3634	37.1	22	f	NA	1	FALSE	0.061383	---	-0.512833	int_rate	
11832	56.3	34	f	NA	1	FALSE	0.097507	+++	0.349549	term	
4062	18.1	21	f	NA	1	FALSE	0.060543	--	-0.20443	annual_inc	
10591	32.8	18	f	NA	1	FALSE	0.197204	+++	0.452096	emp_title	
2899	39.7	8	f	NA	1	FALSE	0.165861	+++	0.31219	annual_inc	
8839	80.4	20	f	NA	1	FALSE	0.063234	---	-0.239318	desc	





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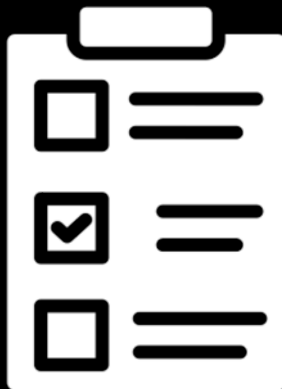
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A close-up portrait of a young woman with long, wavy brown hair, smiling and looking off-camera to her right. She is wearing a dark blue and white striped top.

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*Data for Breakfast*

