Banking on Data

Analyst Day 2022

November 24th , 2022

AXIS BANK

Analytics at Axis Bank – 100+ use cases deployed in 10+ business domains ...

AXIS BANK

Vertical analytics teams aligned to multiple business units

Credit Cards & Payments	Retail Lending
Deposits	Digital Banking
CBG	Wholesale Banking
Ops and Corporate Centre	Bharat Banking

Diverse set of use cases* deployed

Self Service MIS

Customer digital journey monitoring

Productivity tracking

Risk & Portfolio metrics

Txn and spends tracking

...

Risk Management

Real-time underwriting decision

Early Warning Systems

Anti-Money Laundering Alerts

Customer Risk Segmentation

Potential fraud detection

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Customer Experience

Personalized nudges

Next Best Action

Omni channel orchestration

Offer Prioritization

...

Operational Excellence

Branch Network Optimization

HR Attrition Program

Process Automation

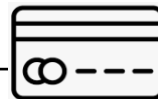Cash Optimizations of ATM and Branches

...

Product & Pricing

Product design

Price leakage reduction

Sensitivity based pricing

...

Not exhaustive

… helping significantly, contribute to our GPS agenda

AXIS BANK

66% of personal loans happen via database programs

79% of the new cards sourcing & **100%** of portfolio exposure increase via data driven strategy

30% of term deposits happens via campaigns backed by analytics

10% CBG business comes via data driven market mapping

80% of the lending happens via in-house scorecards, 1.5x more predictive than CIBIL scores

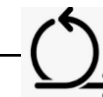**50cr+** YTD savings in fraud via robust alerts framework

Personalization – 10k+ nudge variants live to become best customer experience app in the world

100+ Alternate Data features powering **50+** distinctive models

Data Stack 3.0 to stay on top of data tsunami

Agile operating model

100+ business initiatives & 10+ capabilities helping get bank future ready; 2 digital initiatives & 3 capabilities focus for today
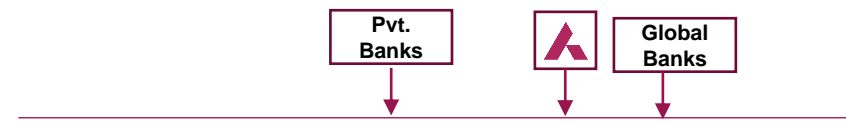
AXIS BANK
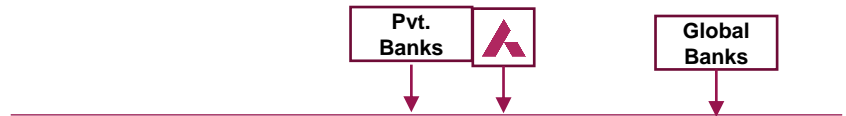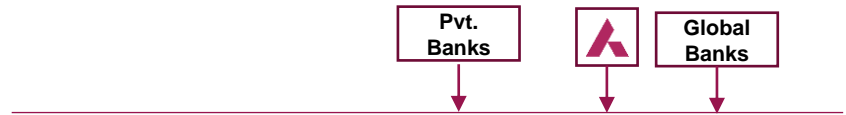
How are we doing as compared to our peers?

Distinctiveness

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Personalization[1]

Pvt. Banks | Global Banks
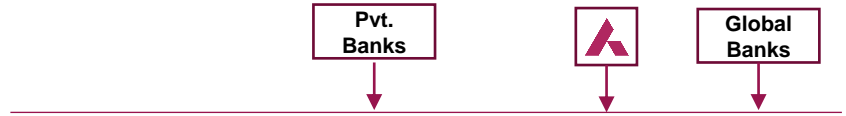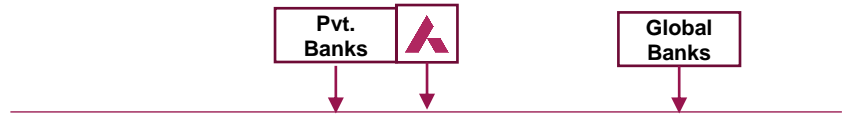
- **10,000+ hyper personalised nudge** across **2,500+ customer features** for the **world's No. 1 rated mobile banking app**

Universal Underwriting[2]

Pvt. Banks | Global Banks

- **Ready loan 10 Cr+ offers for 5cr+ 'customers'** – both existing and new
- **30+ risk scorecards** – loan at right price

Alternate Data[2]

Pvt. Banks | Global Banks

- **Data for Bharat** – leveraging satellite data
- **Data for partners** – partner data-based analytics to deliver best offer for you
- **Best in industry income estimation models**

Data Stack 3.0[2]

Pvt. Banks | Global Banks

- **3 Petabytes of data**
- **100+ nodes big data cluster**
- **Dedicated Kafka cluster: 50+ real time cases**
- **150+ engineering workloads on cloud**

Agile operating model[2]

Pvt. Banks | Global Banks

- **25+ agile pods functional** with agile operating rhythm delivering **2x time to market**
- **10+ departments working together**

Digital Initiatives   **Capabilities**

1 Benchmarking done by independent industry consultants | 2 Benchmarking using internal assessment

Personalization - Let's take a closer look
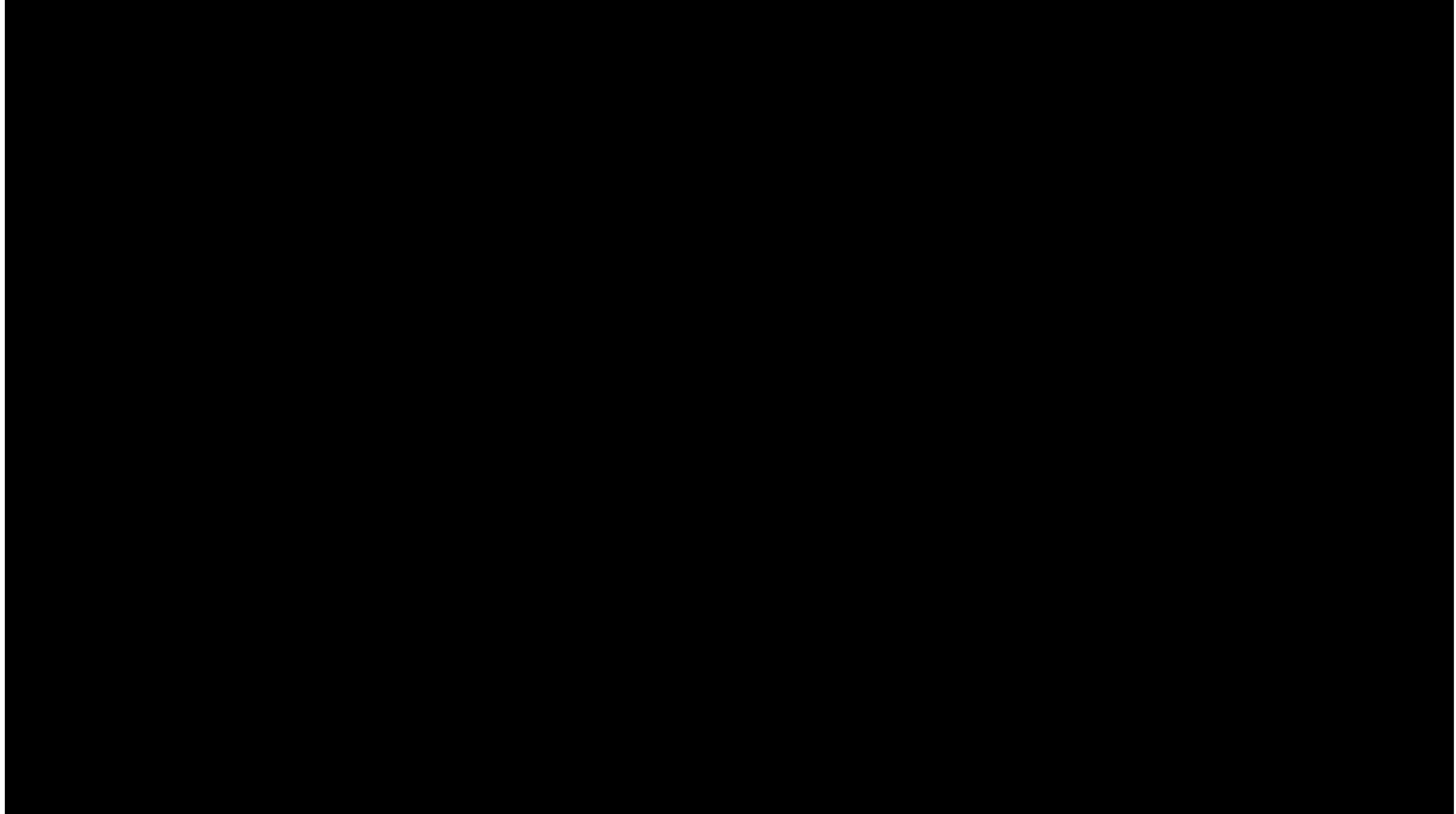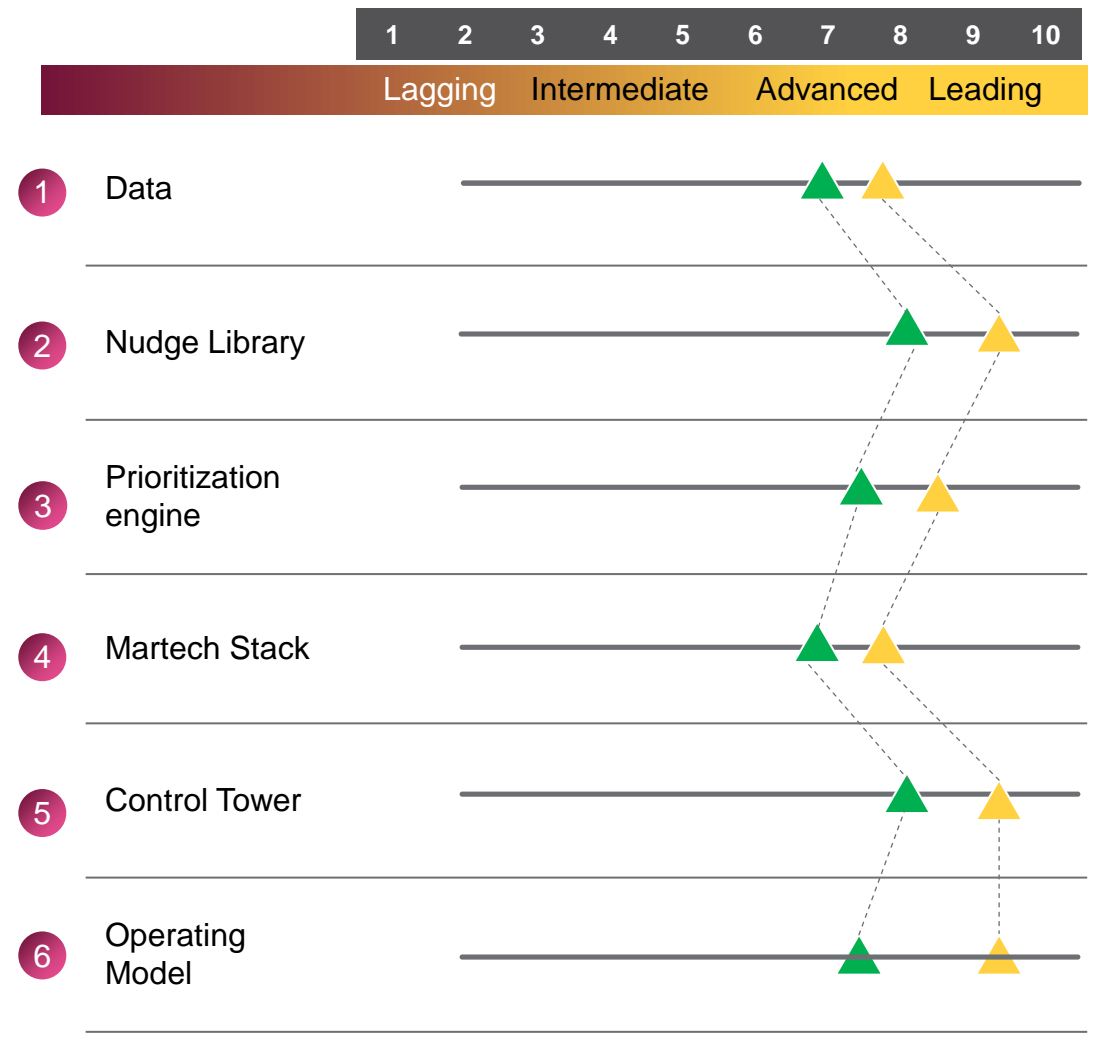
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Built best-in-class personalization capability helping to be the leading customer centric bank

AXIS BANK

Building capability across 6 key areas

1 **Data**
2500+ customer features

- Customer DNA
- Persona
- Propensity
- Value to bank

2 **Nudge library**
10,000+ nudge variants

Offer, reward variants

Channel variants

Message variants

3 **Prioritization Engine**
ML based model

Nudge qualification engine

Nudge optimization engine

Experimentation engine

4 **MarTech**
6+ channels integrated

SMS	Email	MB Push
Banner	R4U	Whats App

5 **Control Tower**
Near real time performance monitoring

6 **Operating model**
10+ departments working together

Where are we in the journey?

1	2	3	4	5	6	7	8	9	10

Lagging   Intermediate   Advanced   Leading

1 Data

2 Nudge Library

3 Prioritization engine

4 Martech Stack

5 Control Tower

6 Operating Model

▲ Axis [1]   ▲ Global Best in Class

1 Benchmarking done by independent industry consultants

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Built best-in-class personalization capability helping to be the leading customer centric bank *(contd...)*

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Name: **Amit Mulchandani**
Location: **Delhi**
Age: **27**

Persona	Risk Segmentation
Digital Native	Low Risk

Products Owned

Salary Account	Credit Card

Spend Tag

Travel	Food

Engagement offers

Edge rewards redemption	Subscribe to bill pay

Regulatory offers	Product offers
ReKYC due	PL - Preapproved

2500+ customer features

Demographics	Digital Behavior
Transaction Behavior	Spending Patterns

....

Offer Universe

Merchant	Offer
Goibibo Zomato	Up to Rs 2000 off 5% cashback

ML Recommendation Engine

Edge Rewards Redemption nudge with Goibibo offer prioritized via ML model for Amit

kafka

amazon DynamoDB

1:06

AM

RECOMMENDED FOR YOU   VIEW ALL

Redeem EDGE Rewards points

Get e-vouchers, products and exclusive deals

You have 40103 eDGE REWARDS points in your A/c. Redeem now to get Goibibo vouchers worth Rs 2000

REDEEM NOW

Your KYC Is Due for Confirmation

Update your KYC details

Your KYC is not up to date as per our records. Please update at the earliest for uninterrupted service
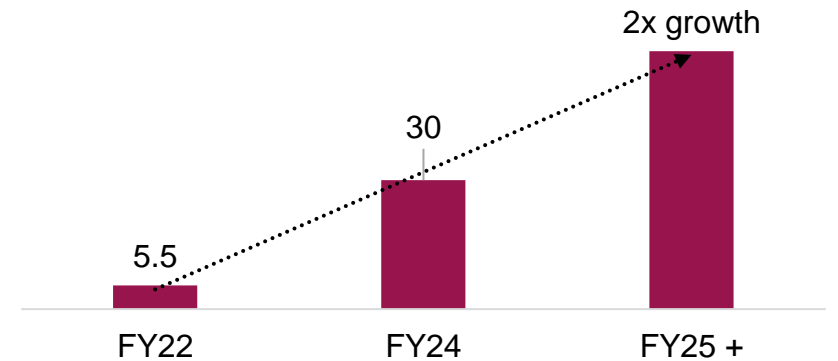
UPDATE NOW

Pay

Accounts | Apply now | Grab deals | More

Data for good enabling credit access for every eligible Indian

Huge potential to increase offers from current 5.5 Cr. to 70+ Cr.

AXIS BANK
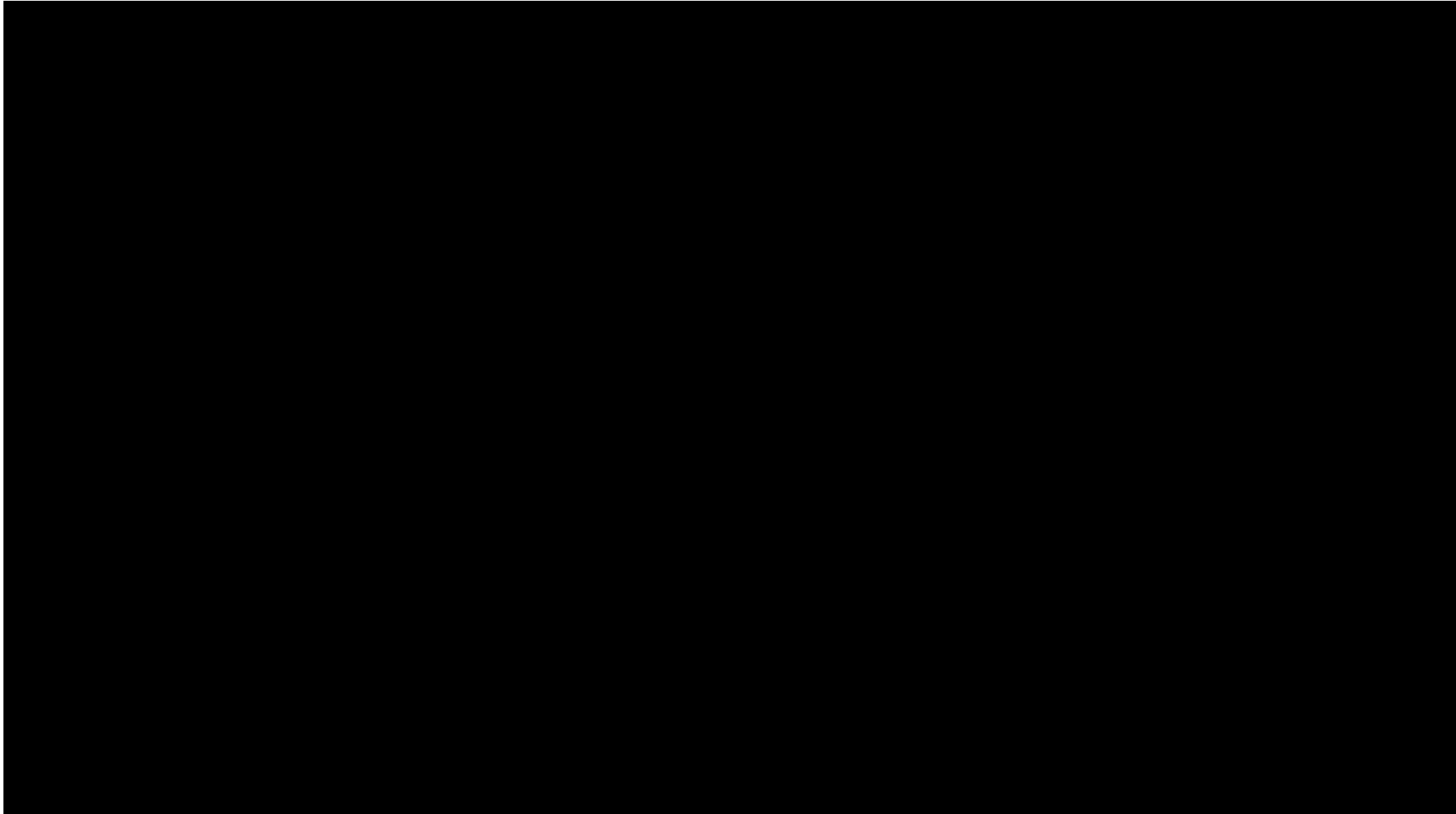
FY2023 (estimated at 1% annual growth)

India's current population — 143 Cr.

Age < 15 — 104 Cr.

(-) Below 15 age
Source: Census enumeration data

Banking population — 83 Cr.

(80% Financial inclusion)
Source: RBI working paper

Lendable segment (19-65) — 76 Cr.

(9% drop du to 15-18 and 65+ age groups)
Source: Census enumeration data

(50 Cr. India have credit footprint)
Source: CIBIL TU

Availing credit — 50 Cr.

Unique customers in consumer bureau

 # Coverage on unique offers in crs (excluding existing portfolio)

- FY22 — 5.5
- FY24 — 30
- FY25 + — 2x growth

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Universal underwriting- Let's take a closer look

# Work initiated across all work streams to scale up universal underwriting

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	ETB	KTB	NTB
Alternate Data	• Using information from **bureau, bank statements, tax** info for on-us customers	• Leveraging data such as spends, deliveries, etc. from partners like **Flipkart, other online store partners**	• Alternate scores like **Telcom, UPI, Satellite farmland info, Geocoding** etc. for real-time customers
Data science	• Using pre-approved scorecards for expanding **database programs**	• Building best-in-class **risk scores** via data room exercises and deploy at partner's ecosystem	• Developed and deployed in-house **model** on cloud for real time income estimation model
Tech	• Deploying non-linear models in-house on Big data platform for scoring via MLOps	Deploying **scores & offers as a service** for external partners, which can be easily integrated	

Test learn scale – Creation of test programs leveraging enhanced analytical toolkits

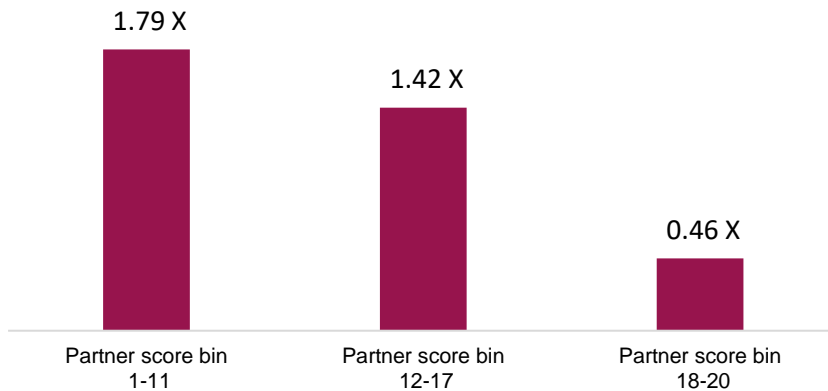**Marketing strategy – offer right product at right price and tenure**

Boosting universal underwriting initiatives via KTB lending

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Custom built scorecards based on Partners data to enable targeting wider range of KTB customers with controlled risk outcomes

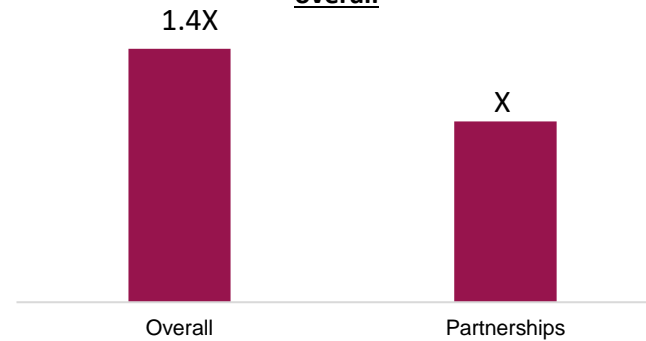*Customer clicks banner* → *ML risk score – prequalified base* → *Card issued successfully*
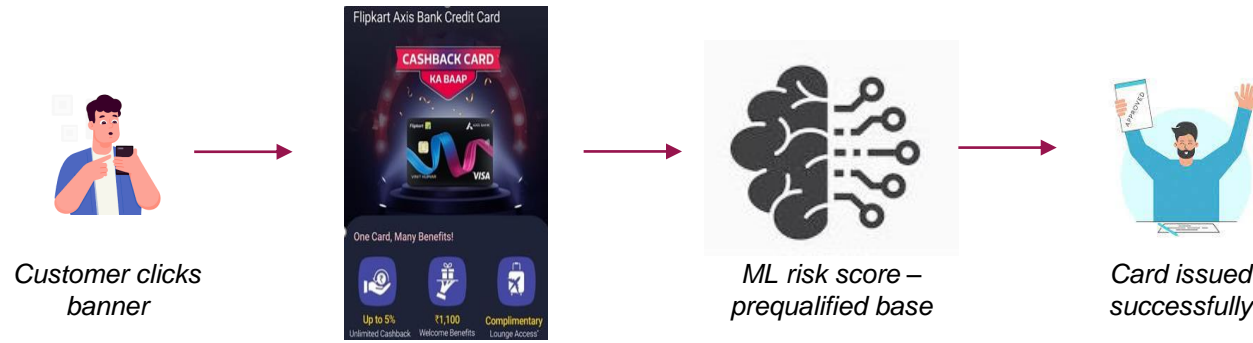
30%+ cards sourced per month via partnerships

Credit risk outcomes by custom built scores

- 1.79 X — Partner score bin 1-11
- 1.42 X — Partner score bin 12-17
- 0.46 X — Partner score bin 18-20

Credit risk outcomes (partnerships) vs overall

- 1.4X — Overall
- X — Partnerships

Approval rates by custom built scores

- Y — Partner score bin 1-11
- 1.7Y — Partner score bin 12-17
- 2Y — Partner score bin 18-20
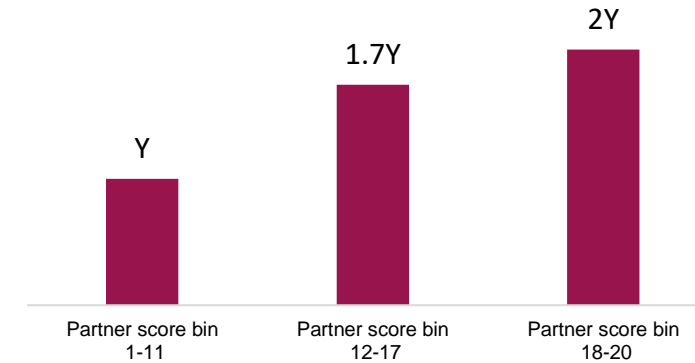
We are making crucial efforts to expand partnership lending ...

airtel   SAMSUNG   freecharge   Retail Online Store 1   Retail Online Store 2

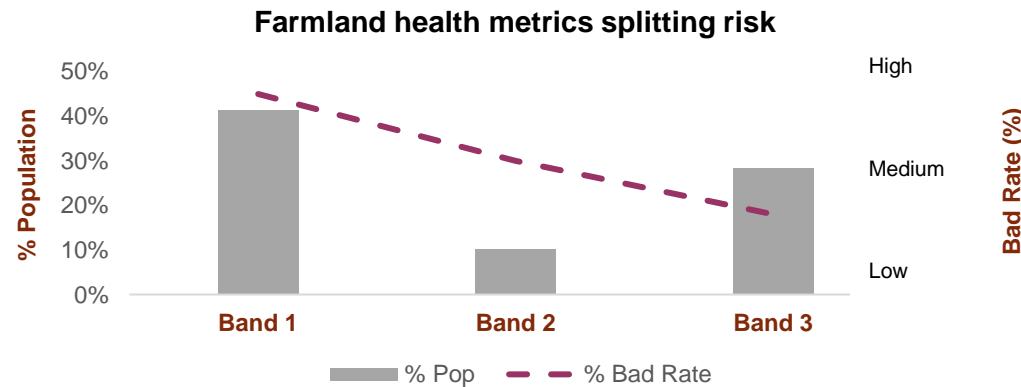# Leveraging alternate data to build best-in-industry standard models to scale up our use cases

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Data for Bharat Banking

First bank to develop & deploy in-house rural lending scorecards for LoBs –

- *Agri KCC*
- *Farm Equipment*
- *OD Loan*
- *Tractor finance*

Satellite data-based farmland health metrics

Farmland health metrics splitting risk

% Pop — — % Bad Rate

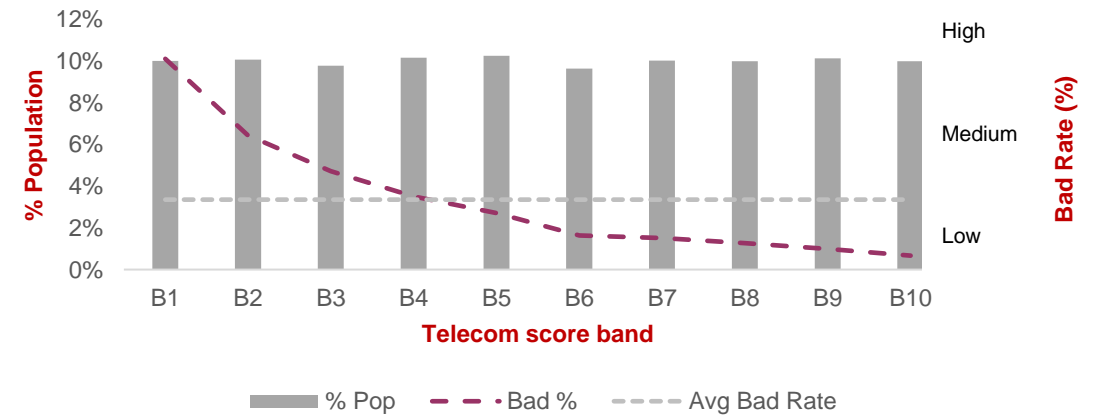## Data for new to credit & thin bureau

Using Third party Telecom score to drive use cases for

- *New to credit*
- *New to bank customers*

Telecom usage data

Telco score shows significant split over avg risk
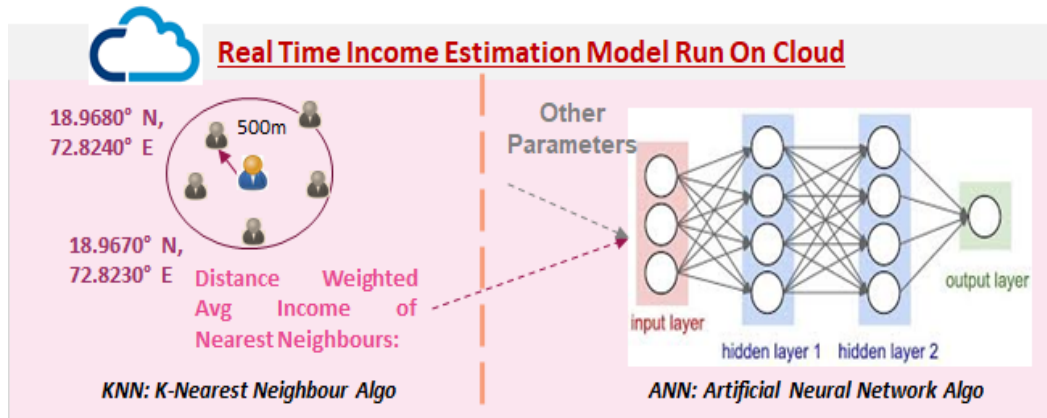

Telecom score band

% Pop — — Bad % — — Avg Bad Rate

Significant growth via campaigns

Leverage risk scores to build strategy for database programs driving significant business growth

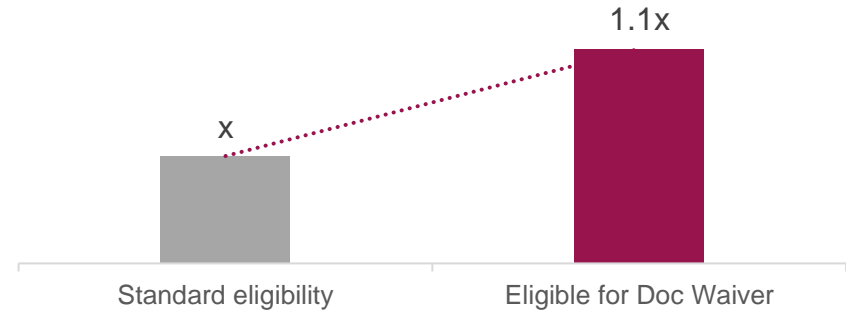| FY22 | FY23 (Till date) |
| x | 1.85x |

Leveraging alternate data to build best-in-industry standard models to scale up our use cases *(contd...)*

AXIS BANK

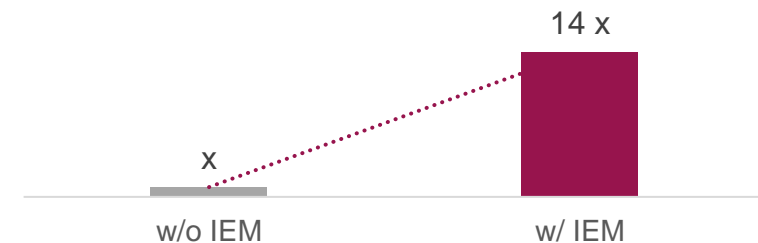Developed first-of-its-kind, fully secure, cloud-native Income estimation for both On-us and Off-us Customers

Liability + **Bureau** + **Location**

TransUnion CIBIL

Real Time Income Estimation Model Run On Cloud

18.9680° N, 72.8240° E

500m

18.9670° N, 72.8230° E

Distance Weighted Avg Income of Nearest Neighbours:

KNN: K-Nearest Neighbour Algo

Other Parameters

input layer   hidden layer 1   hidden layer 2   output layer

ANN: Artificial Neural Network Algo

- Income Doc Waiver
- Credit Line Assignment

10% increase in eligibility for PL

1.1x

x

Standard eligibility — Eligible for Doc Waiver

Significant increase in Flipkart CC Income doc waiver applications via IEM model

14 x

x

w/o IEM — w/ IEM

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Data stack 3.0 is the modern and scalable architecture helps deploy 1000+ use cases

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Data Ingestion tools

20cr + records ingested daily

Batch Load

Informatica

IICS

Power Center

Data engineering workloads

3000+ jobs powering applications

Cloudera

SAS

SAS Viya

Stream & Real time Processing

Kafka

KSQL

Confluent Kafka

Data Warehouse

100+ datamarts across business domains

ODS — ORACLE EXADATA

HIVE

cloudera IMPALA

CDP CLOUDERA

Consumption landscape

Self service BI

1000+ dashboards

SAS VIYA
POWER BI
Branch Analytics

Data as a Service

10000+ personalized offers & nudges

API

Models as a Service

1 lac+ daily hits

Blaze

CDP MLOps

Powered by 7+ source systems

Customer Master Data

Reference Data

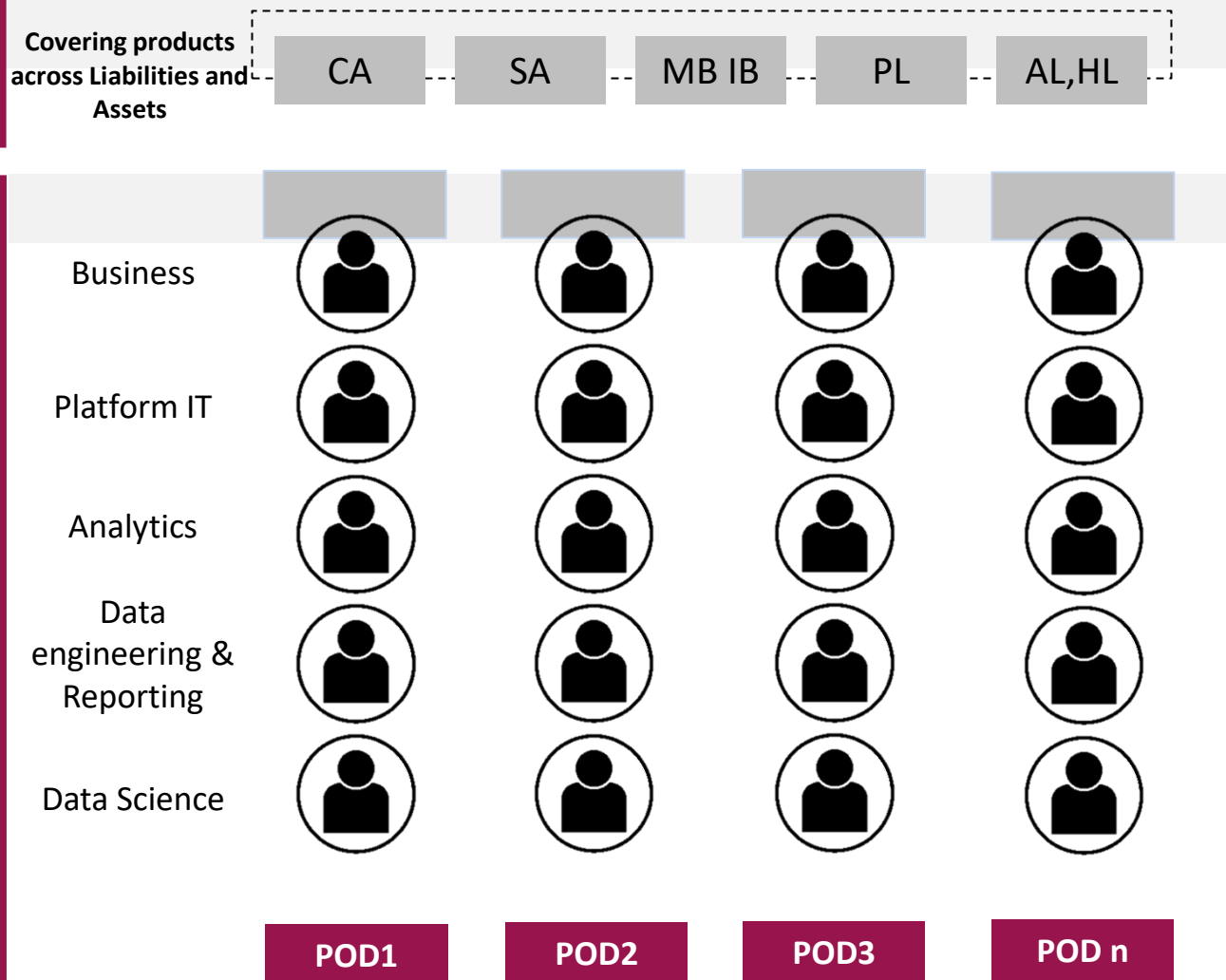**Enterprise Data Catalogue**

Data Quality

50+ DQ scorecards live

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Multiple teams working together to achieve the business outcome

AXIS BANK

| We have Product aligned PODs with different teams with complementary skills | With POD Governance to drive business outcomes |

Illustrative

Product aligned PODs

Covering products across Liabilities and Assets

| CA | SA | MB IB | PL | AL,HL |

PODs comprising people from different teams with complimentary skills

- Business
- Platform IT
- Analytics
- Data engineering & Reporting
- Data Science

POD1　POD2　POD3　POD n

- Book of work driven prioritization with Owner tagging

- Weekly Scrum for review

- Jira - Ticketing system

- Virtual room created for each POD to effectively collaborate

Thank You