aws

When Cloud, AI, and Virtual Banks Meet

A Public Policy Perspective

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Cloud-based digital banking is transforming the industry

Speed to market

By leveraging the cloud, digital banks can bring new products to market faster than their traditional counterparts, changing the economics of banking

Enhanced customer experiences

Digital banks use cloud-based AI/ML tools to gather deep customer insights and provide personalized experiences

Evolving bank regulations are encouraging competition

Regulators are encouraging innovation and competition through open banking and open finance, and by granting digital-only banking licenses.

Digital banking is built on the cloud

Customer experience

Technology infrastructure & services

Data management & governance

Customer relationship management tools

Security & compliance

Data analytics & AI/ML

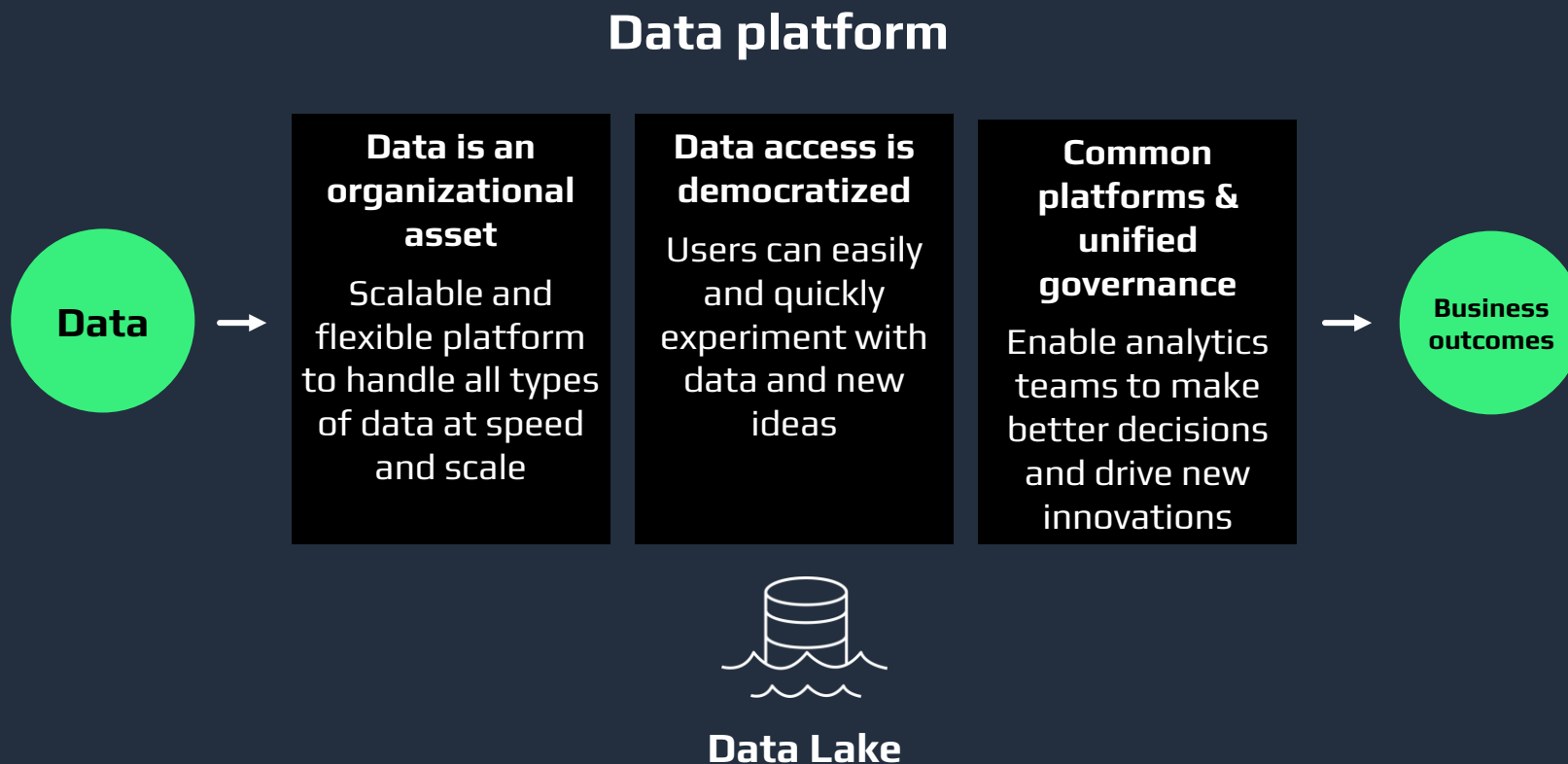**Core banking & payments applications**

Digital banks around the world are launching on the cloud

4

Data lakes are enabling firms to harness the power of data

THE CLOUD PROVIDES SECURE, SCALABLE, AND COST-EFFECTIVE PORTFOLIO OF SERVICES TO ENABLE FINANCIAL SERVICES INSTITUTIONS TO BUILD AND MANAGE A DATA LAKE.

Data platform

Data

→

Data is an organizational asset

Scalable and flexible platform to handle all types of data at speed and scale

Data access is democratized

Users can easily and quickly experiment with data and new ideas

Common platforms & unified governance

Enable analytics teams to make better decisions and drive new innovations

→

Business outcomes

Data Lake

AI/ML creates the next edge for financial institutions

FINANCIAL INSTITUTIONS ARE INCREASINGLY INVESTING IN AI/ML BECAUSE IT IS COST-EFFECTIVE, EASY-TO-USE, AND SCALABLE USING CLOUD INFRASTRUCTURE

Customer Experience

- Streamline customer onboarding and KYC
- Enhance customer service with chatbots
- Call center optimization & call routing
- Maintain context by tracking topics across omnichannel customer interactions

Personalization

- Forecast the needs of customers and personalize recommendations
- Tailor products for individual customers
- Robo advisory

Text Analytics

- Extract key information from:
  - forms
  - regulatory filings
  - social media
  - news
- Sentiment analysis
- Topic classification & email routing

Predictive Analytics

- Portfolio management
- Algorithmic trading
- Image analysis
- Securities lending
- Probability of default
- Risk grid optimization

Fraud detection and prevention

- Identity verification
- Payment fraud detection
- Transaction surveillance
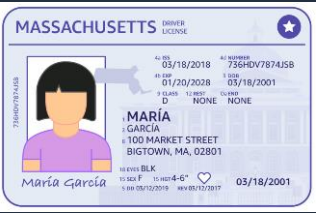- AML/sanctions
- Domain squatting

How AI/ML is applied at different stages of a banking customer's journey

Onboarding & KYC

Use of computer vision, OCR, and NLP to streamline the customer onboarding process

Identify verification using Amazon Rekognition

Upload image of
ID to S3

Upload picture or stream
video of user to S3

S3 stores the image
of the ID and the
image of the user

Amazon Rekognition
compares the image
of the ID with the
image of the user

Similarity score

Amazon Rekognition provides a
similarity score which measures
the likelihood that the faces of two
images are of the same person

Banco de Bogotá reduces fraud on AWS

Banco de Bogotá

> " **AWS services have allowed us to set up an innovation project, meet the challenges of the pandemic and bring better customer experiences. We are evolving remote customer interactions, not only in facial recognition and identity verification scenarios, but also in document validation.** "

Gabriel Morris
Technology Leader - Director of Digital Strategy and Data, Banco de Bogotá

▶ **OVERVIEW**

Banco de Bogotá needed to advance its fraud prevention processes and increase its customer conversion rates by 4%-5%.

▶ SOLUTION

With Amazon Rekognition and machine learning, Banco de Bogotá built and launched identity verification solutions. The bank created a suite of validators to detect fraud at various onboarding checkpoints for its digital products.

▶ IMPACT

Using AWS to expand Banco de Bogotá's fraud prevention processes reduced spoofing attempts by 97%. The bank also increased customer conversion rates by almost 10%.

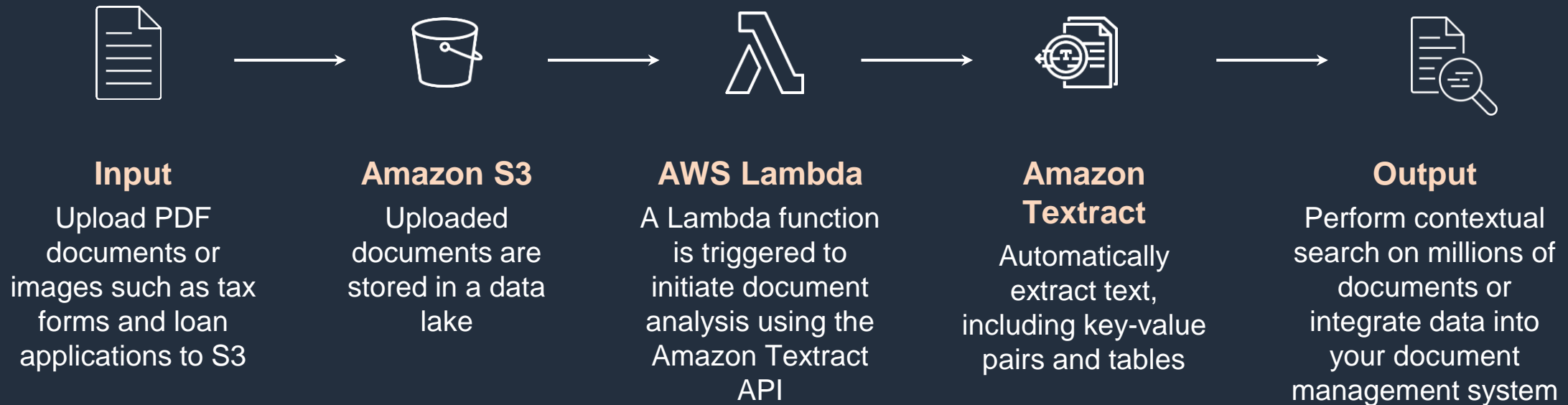# How AI/ML is applied at different stages of a banking customer's journey

Onboarding & KYC

Use of computer vision, OCR, and NLP to streamline the customer onboarding process

Loan origination

Use of OCR and NLP to automate loan document processing

Automate document processing using Amazon Textract

Input

Upload PDF documents or images such as tax forms and loan applications to S3

Amazon S3

Uploaded documents are stored in a data lake

AWS Lambda

A Lambda function is triggered to initiate document analysis using the Amazon Textract API

Amazon Textract

Automatically extract text, including key-value pairs and tables

Output

Perform contextual search on millions of documents or integrate data into your document management system

Pennymac accelerates mortgage documentation review at scale on AWS

PENNYMAC ®

▶ **OVERVIEW**

Pennymac handles 180 million pages of mortgage documentation, and faced significant challenges streamlining the review process due to a lack of consistent structure and ordering across applications.

▶ SOLUTION

Pennymac built models on AWS using ML services like Amazon Textract, which harvests a normalized dataset from raw text across documents. They also used Amazon SageMaker to build a document pipeline that seamlessly integrates with their larger AWS ecosystem.

▶ IMPACT

By implementing AWS AI/ML services, Pennymac has successfully built an intelligent document processing platform and have reduced document processing time from several hours to minutes.

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Credit decisioning

Leverage ML across alternative data sets to better assess the credit risk of your customers

Fannie Mae is transforming loan evaluation with AWS

▸ **OVERVIEW**

Fannie Mae needed to rank all loans by risk and predict the probability of loans going into a "troubled state" within the first two years of acquisition.

▸ SOLUTION

Fannie Mae chose to use AWS machine learning (ML) services in order to increase the catch rate at which it detected potential troubled loans.

▸ IMPACT

Fannie Mae was able to increase its catch rate from 3.5% to 48%, leading to improved risk management and enabling early mitigation actions on higher risk loans.

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AWS powers NuData to help customers fight fraud

NuData Security
mastercard

" **We were able to simplify our machine learning architecture by 95% with services like Amazon Kinesis Data Firehose replacing large segments of our infrastructure. As we simplified our architecture we noticed major reductions in the time it takes to develop new models by over 60%.** "

Justine Fox Director
Software Engineering – NuData Platform, Mastercard

▸ **OVERVIEW**

Using AWS, NuData helps customers fight fraud and protect consumers online. NuData specializes in solutions that minimize the impact of attacks with offerings that are powered by machine learning on AWS.

▸ SOLUTION

NuData uses Amazon SageMaker to improve detection of fraudulent attacks along with Elastic Load Balancing and AWS Lambda to provide real-time device intelligence and enable passive biometrics for account verification.

▸ IMPACT

Using AWS, NuData has mitigated over 250 million automated attack attempts with a 99% accuracy rate.

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Customer interaction

Use chatbots and speech capabilities to improve the customer experience

NAB is using AWS to improve the customer experience

"   **We're looking to Amazon Connect to help us improve the experience customers have when they contact our call centers. For that reason, it was also important that the voice we created using Amazon Polly Brand Voice felt both uniquely NAB and consistent with our position and what our customers expect when they call us.** "

Laurent DeSegur
Executive, Technology Shared Digital Hub, National Australia Bank

▸ **OVERVIEW**

National Australia Bank (NAB) receives about 9 million calls annually and wanted a robust and scalable call center solution that would help customers access information and help across the entire organization.

▸ SOLUTION

NAB worked with AWS to build a voice using Amazon Polly Brand Voice that reflected the bank.

▸ IMPACT

NAB believes that the way it needs to provide customer service is changing and is gradually rolling out the voice-first digital innovation.

Extract insights from customer calls

Input
Voice recordings from customer call center

Amazon Transcribe
Transcribe voice data into text

Amazon Translate
Translate the text (if necessary)

Amazon Comprehend
Run NLP on the text to extract key words, phrases, and sentiment analysis

Analytics
Perform real-time analytics to better understand why customers are calling

Intuit is scaling its contact center to match demand

▸ **OVERVIEW**

Intuit wanted to move beyond a legacy customer contact center solution and provide a proactive customer experience.

▸ SOLUTION

Intuit chose Amazon Connect for its agile, scalable, and flexible platform, allowing it to easily scale in order to meet peak season needs.

▸ IMPACT

And Intuit will leverage Amazon AI and machine learning solutions to analyze customer calls in real time.

" **With the seamless integration between Amazon Connect and Salesforce, we're unleashing the power of technology to customize the agent experience through data. We're improving agent productivity and allowing the agents to focus on customers, not their tools, to provide the best possible " customer experience.**

Loren Lacy
Group Product Manager, Customer Experience Technology, Intuit

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Personalized recommendations

Use ML to forecast the needs of your customers and personalize recommendations

DBS delivers a personalized digital marketing strategy with AWS

> " As we continue to evolve ADA at scale across DBS, we'll continue the partnership with AWS in delivering the functionality needed to enable our insight driven transformation. "

Peng Khim Ng
Managing Director & Head, Institutional Banking Group Technology, DBS

▸ **OVERVIEW**

DBS wanted to deliver a hyper-personalized SME digital marketing strategy and needed an architecture focused on security and data tokenization for built-in confidentiality features.

▸ **SOLUTION**

With AWS, DBS is able to run its "Advancing DBS with AI" (ADA) advanced data analytics platform, which enables data scientists to model using Amazon SageMaker and SME tokenized data.

▸ **IMPACT**

DBS is able to identify buyer-seller relationships, external SEOs, and SEM optimizers. These insights help DBS enhance customer engagement, brand management, and product management.

We engage with global regulatory bodies on an ongoing basis
ONGOING ENGAGEMENT WITH REGULATORS IN THE U.S. AND AROUND THE WORLD

To assess and explain policy

Regulatory policy evaluations to assess the potential impact of regulations

Country-by-country impact assessments to map how financial institutions need to operate

Region- and country-specific compliance guides to document key policy changes and responses

To share our approach and tools

Educate regulators to help examiners audit AWS environments

Help shape the regulatory landscape to reflect changes in technology

Facilitate dialogue between the industry and its regulators

The result: the environment and feedback channels our customers need to innovate **with confidence**

Public policy and regulations at all levels will define the future of financial services—we're working actively with governments and regulators to shape them

Risk-based

Proportionate

Outcomes-focused

Cloud-aware