



Analytics in Action

SAS Analytics Insights Roadshow

13 June 2019 | Kuala Lumpur

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Making the Most of AI/ML in ASEAN

Use Case and Customer Journey

Panelists

Moderated by

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*Snr Business Solutions Manager
Customer Intelligence Asia Pacific Practice
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Khor, Lee Pang

*Cloud Practice Lead
Hewlett Packard Enterprise*

David Burgess

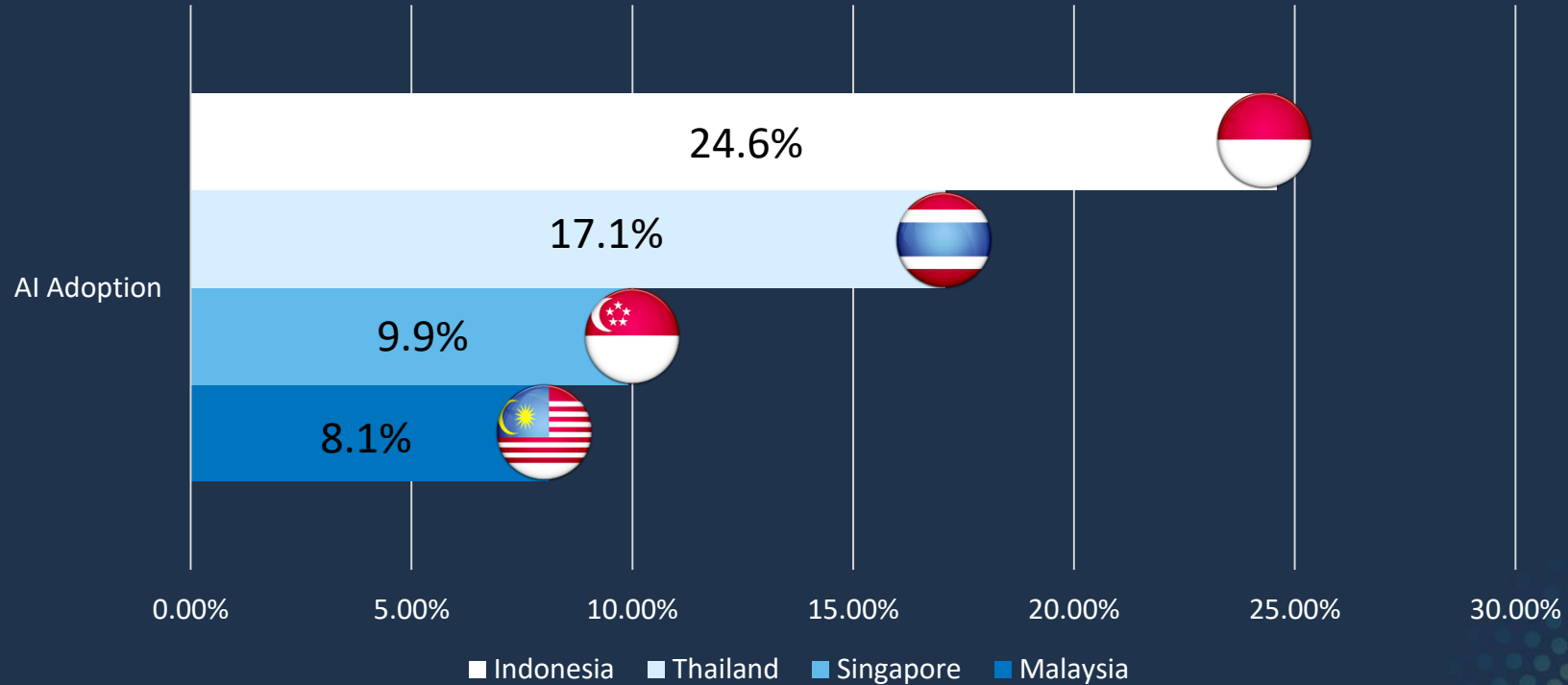
*Global Analytics Lead
SAS Institute*

Perspectives AI Adoption in ASEAN

Sheldon Goh

*Head of Risk Practice, ASEAN
SAS Institute*

AI Adoption in ASEAN (2018)



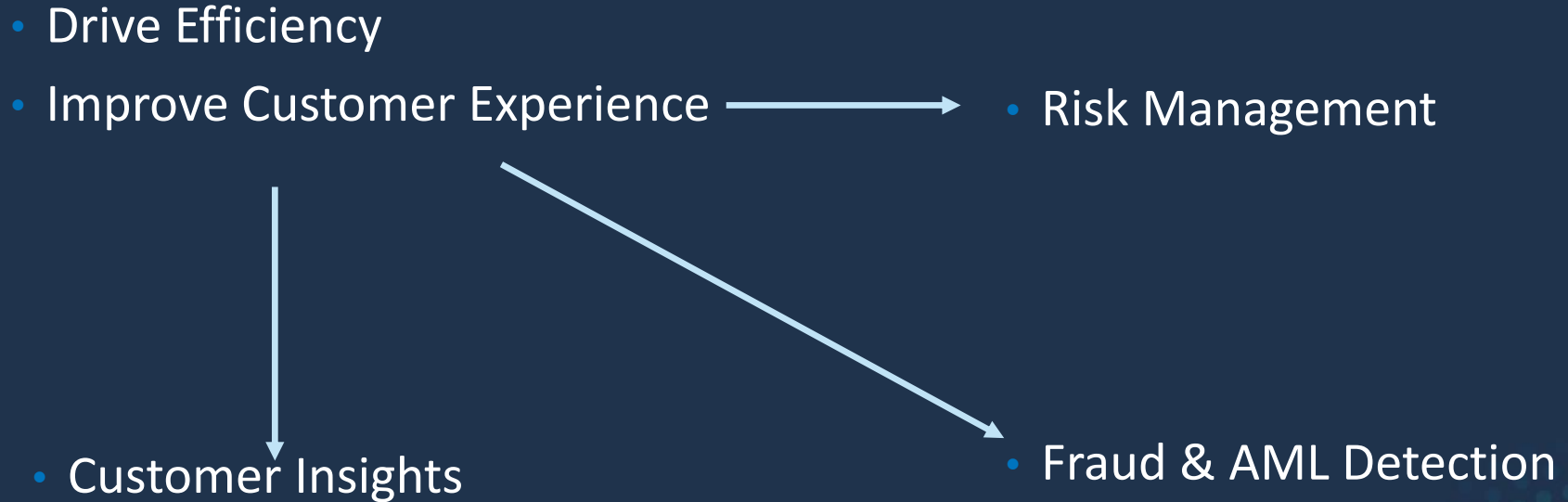
MDEC Study (April 2019)

26% Malaysia Organizations embarked on AI

↑ Competitiveness by ↑ **2.2x** by 2021

32% of companies in Malaysia prioritized speech and image recognition interfaces to improve customer experience and enhance omni-channel know-your-customer

Main Use of AI in FSI - ASEAN



AI Powered Customer Experiences

Ramashish Singh

Snr Business Solutions Manager

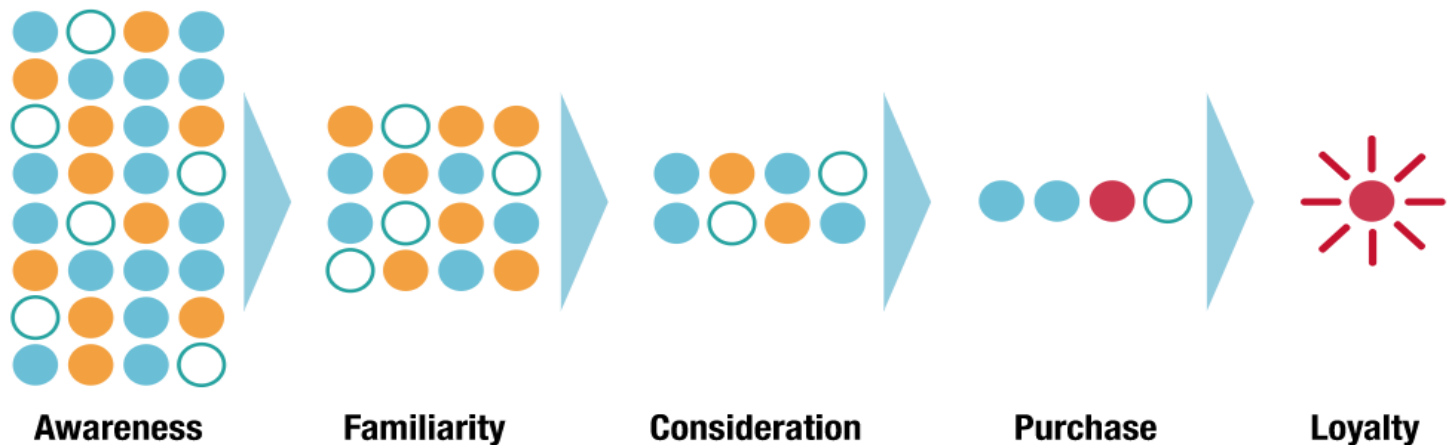
Customer Intelligence Asia Pacific Practice

SAS Institute

Challenges in Customer Experience domain

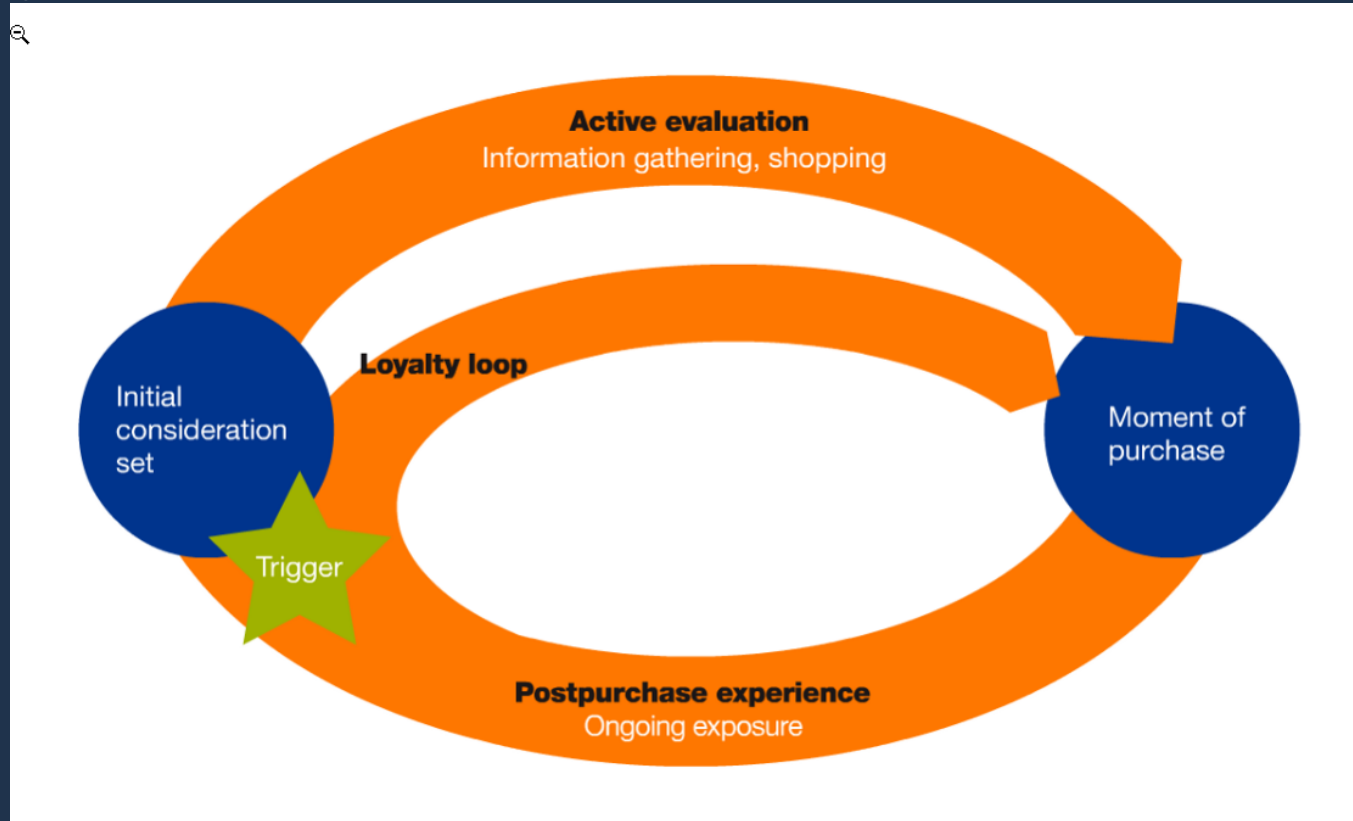
Approach: Traditional linear funnel

In the traditional funnel metaphor, consumers start with a set of potential brands and methodically reduce that number to make a purchase.



Challenges in Customer Experience domain

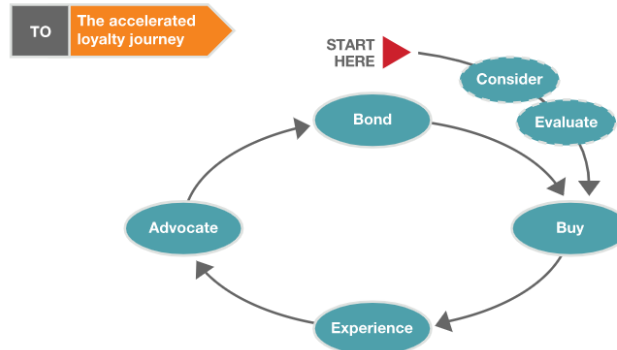
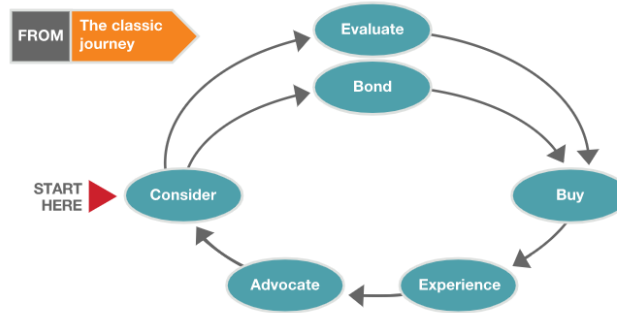
Approach: Consideration Set → Evaluation → Purchase



Challenges in Customer Experience domain

Approach: Accelerated Loyalty Journey

Companies that optimize the customer decision journey by compressing or, in some cases, eliminating the consideration and evaluation phases will assert competitive advantage.



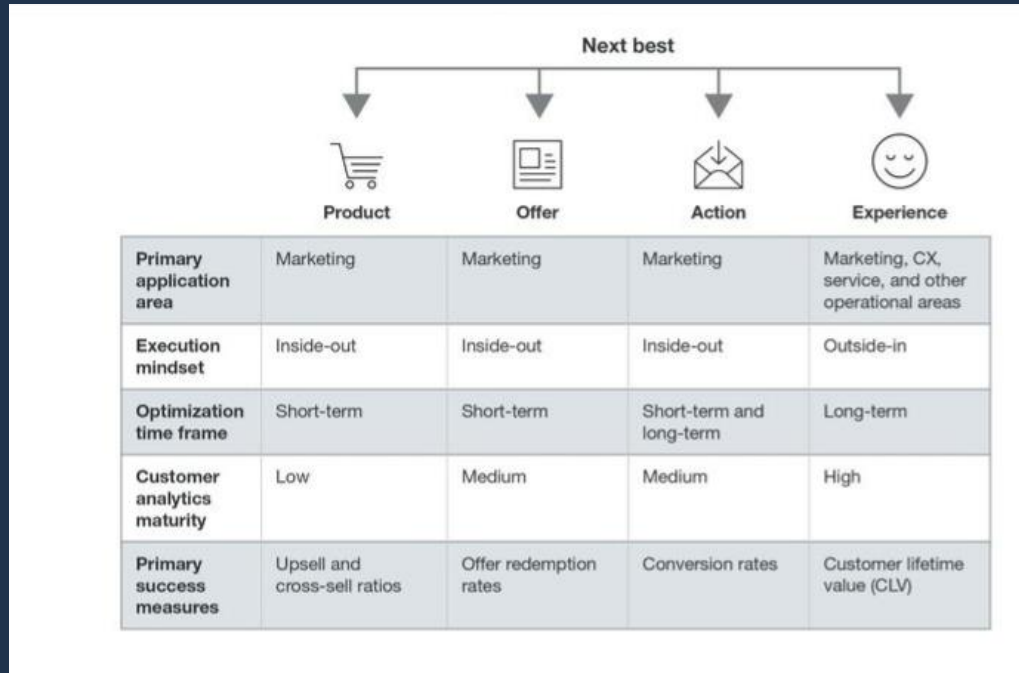
Challenges in Customer Experience domain

Shift in Focus

- Next Best Product – Focus on cross sell
- Next Best Offer – Focus on campaigns
- Next Best Actions – Focus on Optimizing for business, not customer
- Next Best Experience – Focus on Customer experience
 - NBX analyzes signals across customer journey, independent of business domain: customer service, customer engagement, operational, financial or sales and marketing

Challenges in Customer Experience domain Approach

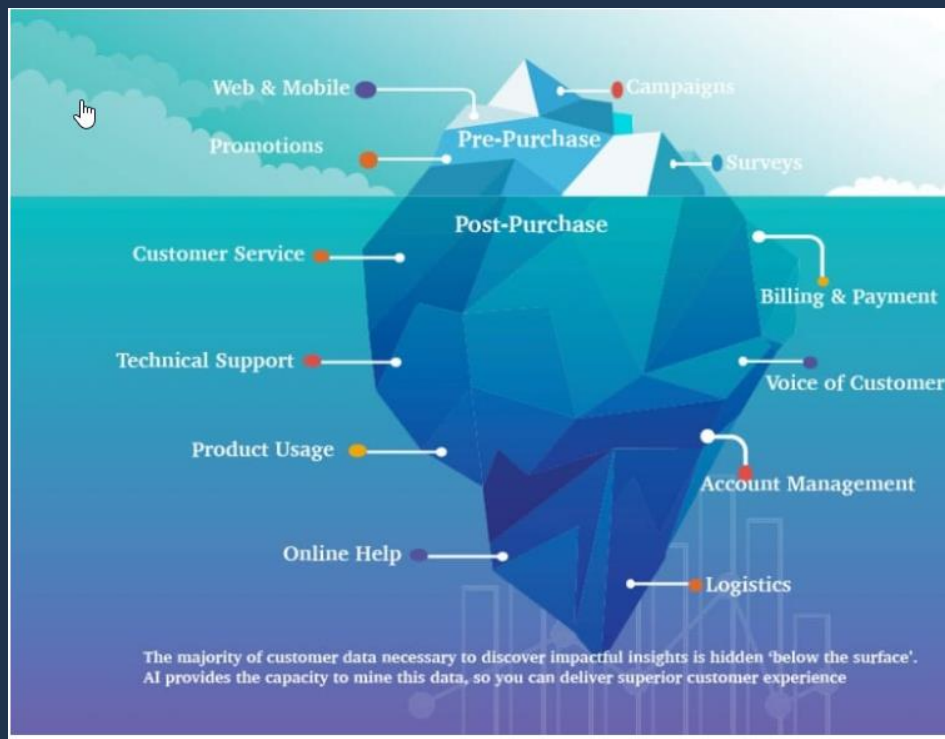
- NBX analyzes signals across customer journey, independent of business domain: customer service, customer engagement, operational, financial or sales and marketing



Challenges in Customer Experience domain

Data

- Online/Offline/Real-Time/Streaming/IoT/Unstructured/Video/Audio/Chats



Challenges in Customer Experience domain Decisions

- Planning
 - Manual and Fragmented
- Scale
 - Growing data and channels everyday
- Customer Analytics
 - Limited skilled resources
 - Lack of automation – Model Building & Retraining
- Speed to Market - Deployment
 - Manual Intervention

Visual Artist



Product Try-On

Instantly try on eye, lip and cheek makeup.

TRY THE WEB VERSION ►



Image Source: sephoravisualartist.com

Looks

Get inspired by and try looks created by Sephora experts.

TRY THE WEB VERSION ►



Supported
Customer list

Client profile

Name
Address
Contact
...

Products

productid, price, high/low,
margin, return, debt/equity,
market cap, dividend...

Contact History

Activity Recommendations

1. Product price fluctuation = high
2. Investment report = next week
3. Inbound product recommendations:

1. Diversify to reduce risk
[best match: product X, Y...]
2. Investment report
Key findings [link1, link2...]
3. Overall best match:
[product A:90%, B:85%,
C:60%, D:55%]

- Pre-empt customer sentiment
- Proactive response
- Trusted advisor status

- Pre-digest report
- Highlight key topics of interest by customer
- Trusted advisor

- Recommend top products of interest
- Highlight market top Challenges – Relevant only

**2.7x
purchase
rate**

Analytics in Action

Other Cases

Customer Service

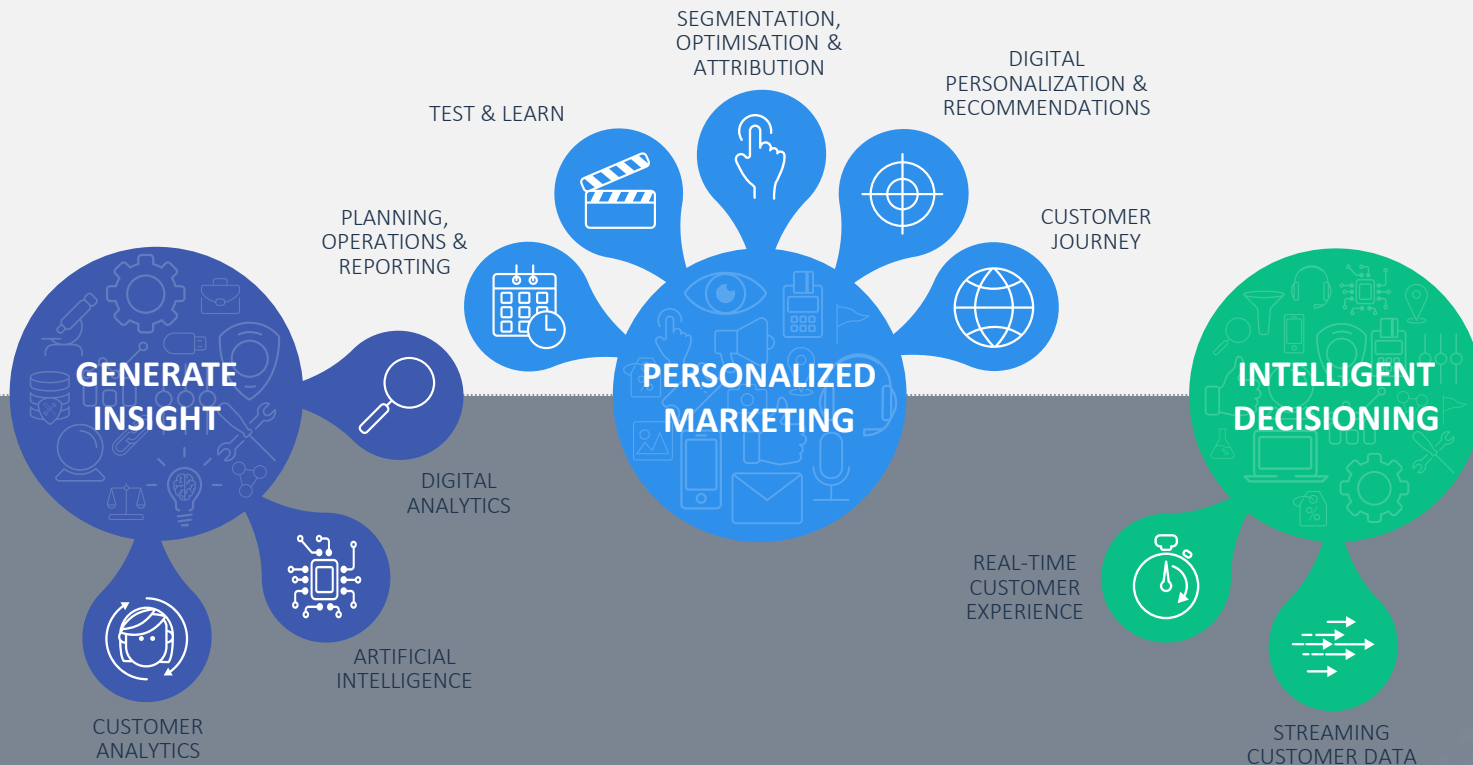
- Chatbots/Virtual Assistant - Natural Language Processing/Generation, Sentiment Analysis, Text analytics
- Voice commands based interaction - Voice to text
- Virtual Employees -Repetitive tasks Automation
- Social Media Monitoring/Voice of customer – Sentiment Analysis ,Text Analytics
- Predictive Maintenance/RPA

Customer Journey

- Customer Acquisition/Lead Generation – Scoring, Recommendations
- Ease of Discovery – Anticipation of Needs, Narrow down Choices
- Pricing promotions and Forecasting - Propensity , Test and Learn
- Loyalty/Retention – Anticipation, Churn score, Preferential treatment

CLOUD

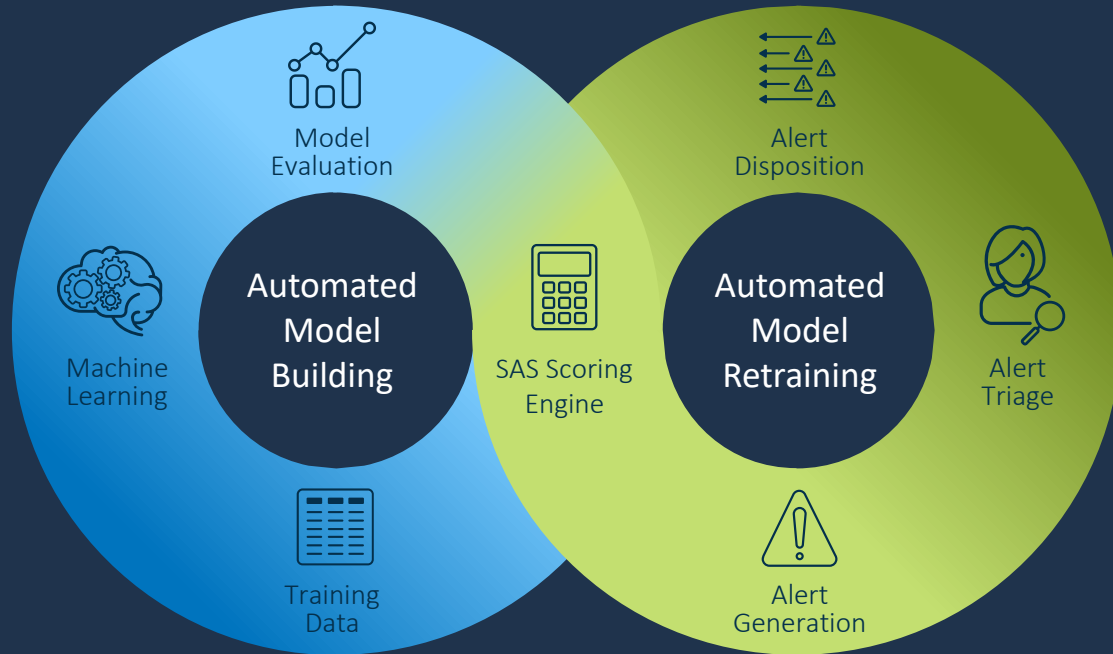
HYBRID



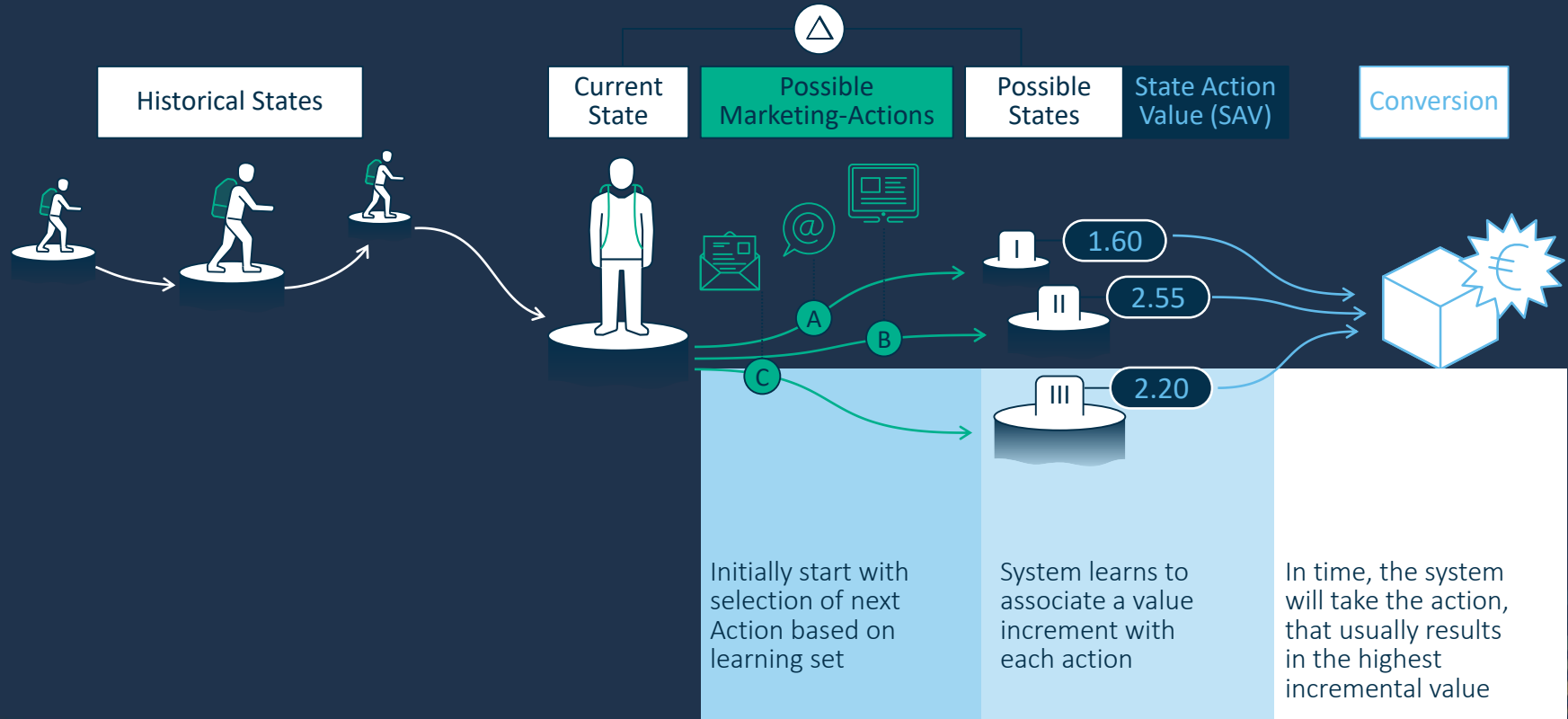
CLOUD

HYBRID

Automated Model Building and Retraining



Next Step: RL-based Customer Journeys



Summary

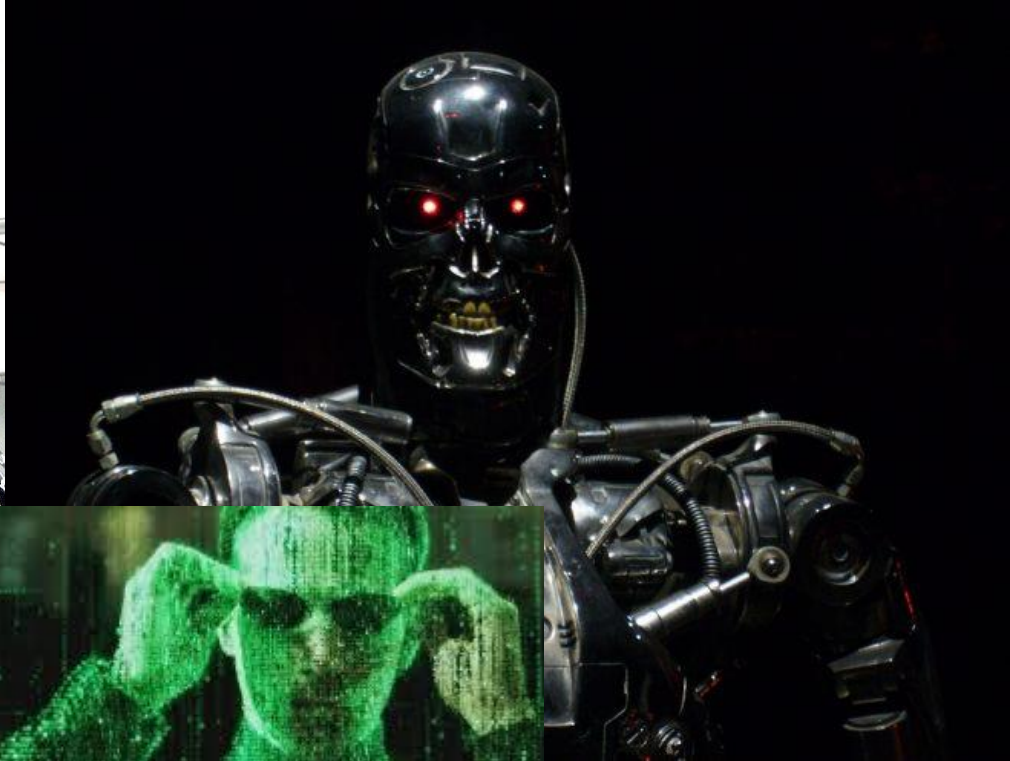
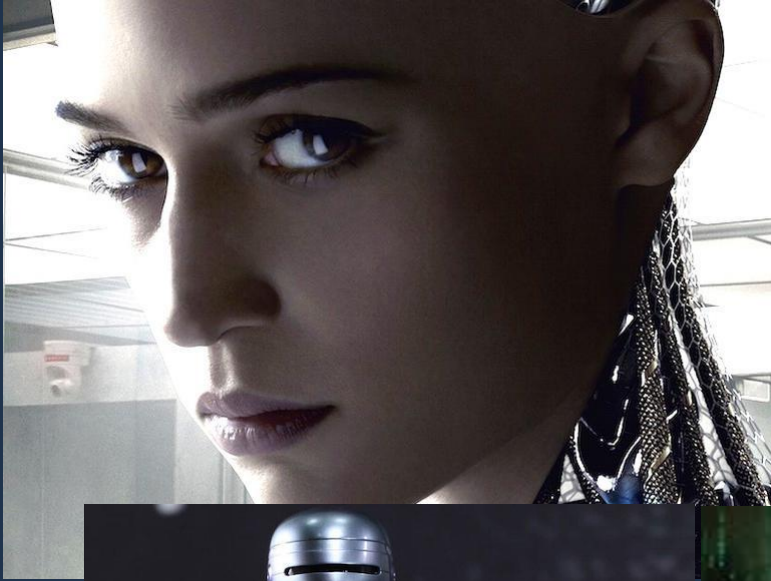
- Customer Experience is going to be the differentiator for businesses.
- AI/ML has arrived and helping organizations gain efficiencies.
- Decide key priorities and Embark on this Journey.

AI and Alternative Data in Credit Risk

Naeem Siddiqi

*Associate Partner, Risk Analytics and Solutions
Financial Services Risk Management, EY Canada*

What People Think is AI



What it sometimes is ..

Microsoft Chat Bot Goes On Racist, Genocidal Twitter Rampage

Less than 24 hours after the program was launched, Tay reportedly began to spew racist, genocidal and misogynistic messages to users.



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FEATURE 12 April 2018, updated 27 April 2018

Discriminating algorithms: 5 times AI showed prejudice

Artificial intelligence is supposed to make life easier for us all – but it is also prone to amplify sexist and racist biases from the real world

Rise of the racist robots – how AI is learning all our worst impulses

There is a saying in computer science: garbage in, garbage out. When we feed machines data that reflects our prejudices, they mimic them – from antisemitic chatbots to racially biased software. Does a horrifying future await people forced to live at the mercy of algorithms?

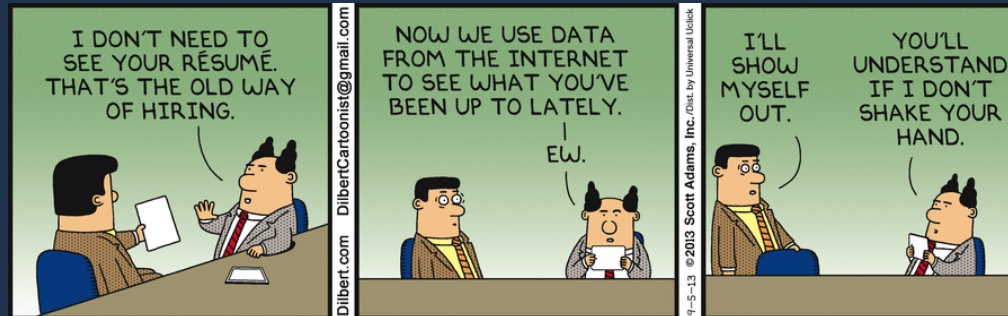
Demystifying AI

- “Artificial Intelligence”
 - Generates predictions (docs, driving, fraud/AML, chat)
 - Uses complex algorithms, mostly black box
 - Faster, better self learning
 - Good for large datasets, preferably dynamic
- More importantly,
 - It detects patterns in past data, just like any other algorithm
 - Dirty, biased, incomplete data → garbage in, AI garbage out

Alternative Data

Main Types

- Non-bureau payment data
 - Utilities such as telco, electricity, water, rental and other on-going payments
- Transactions
 - Savings checking accounts, credit card, purchasing, shopping, collateral data
- Online data
 - Social media (facebook, LinkedIn), browsing history, apps, texts, GPS
- Other Data
 - Driving behavior, blogs, news feeds, online ratings, property data, purchase behaviour
- Psychometric
 - Surveys and attitudes



Better Alternative Data

- Utilities/regular payments/transactions
 - Shows habit of paying small amounts regularly
 - Can be given micro loans, credit cards with smaller limits
 - Builds loyalty
- Cell phone usage data
 - Good : Top ups, mobile payments, delinquency history
 - Dubious : apps, data/voice usage patterns, browsing history, address changes, geo location, content of text messages, make/model, O/S, screen resolution
 - Used for credit card offers, micro loans and offers for post-paid plans
- SME Lending
 - APIs to accounting software (Quicken), suppliers and distributors
 - UPS, Fedex, Staples

Online data

BE CAREFUL

- Social media data from Facebook, Twitter, LinkedIn, online ratings, Paypal, eBay history
- LinkedIn data used for employment history, employment confirmation
- Online ratings, news/negative chatter for SMEs/Corporates
- 'Likes,' 'follows' and profiles of principal and friends indicate social strata, income, character

Online data

CURRENT ISSUES

- Privacy laws
 - Customer consent issues
 - Data exchange between utilities and banks
- Public opinion
 - Bureau data is considered fair and relevant, personal social media is not. Gen X/Millennials may be more open.
- Reputational risk
 - Larger banks are cautious around this. Most users are Fintechs/micro lenders who service high risk segments and charge much higher prices.
- Dubious causality/potential issues with protected classes. Current tracking can identify uses for debt/marriage counseling, gambling, dating/escort services
- Reliability
 - Checks and policy rules must be in place. Potential for fraud is high.
 - No different from unconfirmed self-reported data

AI Use Cases for AML & Fraud

David Burgess

Global Analytics Lead

SAS Institute

Objectives of Applying Artificial Intelligence (AI)

AML & Fraud



(1) Reduce
False
Positives

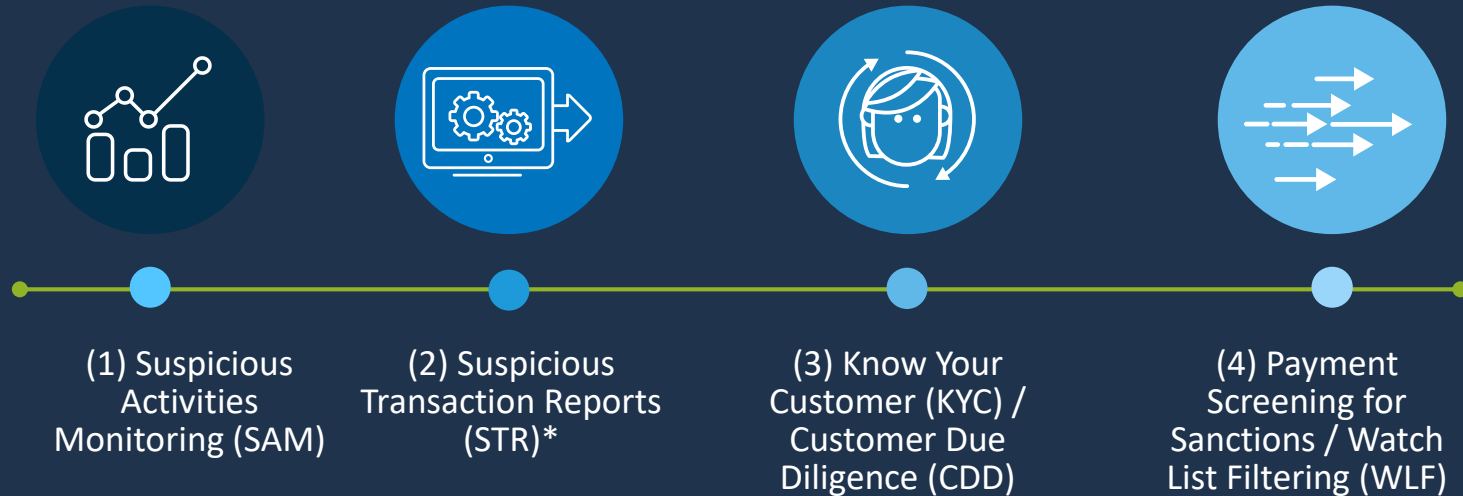


(2) Enhance
Investigations



(3) Improve
Detection

Areas of AML that can benefit from AI



* AKA Suspicious Activity Reports (SAR), Suspicious Matter reports (SMR) etc. depending on jurisdiction.

AML Use Case I: Suspicious Activities Monitoring (SAM)

Reducing False Positives



Enhanced Dashboard

Non-SAS AML Systems
Older SAS AML Systems



STR Feedback Loop Model

Tune Rules
Reduce False Positives



Alert Prioritization

Alert Triage
Outstanding Risk Estimation

AML Use Case II: Suspicious Transaction Reports (STR)

Enhancing Investigations With Network Visualization



Natural Language Processing (NLP)

Extract Entity Information
out of STRs



Customized AML Data Model

Auto-populate an AML
Domain Specific Data Model



Enhanced Network Visualization

Expedite Investigations
Identify New Leads

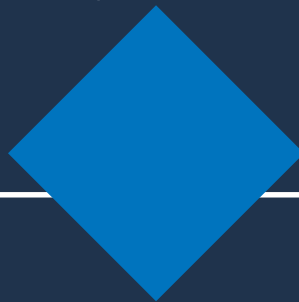
AML Use Case III: Enhanced Watchlist Filtering (WLF)

Move Beyond Name Fuzzy Matching to Image Detection



Watchlists also include
images

Providers include images
(of varying quality)



Require digitalization
of IDs

Image capture, storage
& pre-processing



Facial Recognition

Deep Neural Networks
for Image Detection

Areas of Fraud Detection that can benefit from AI



(1) Trade Finance
Fraud



(2) Credit Card Fraud



(3) On-line Banking

Fraud Use Case I: Trade Finance Fraud Detection

Document Digitization & Text Analytics



Document Intake

Bills of Lading
Invoices etc.



Document Image Digitization

OCR



Natural Language Processing

Entity Extraction
& Text Analytics

Fraud Use Case II: Detecting New Typologies / Attack Vectors

Anomaly Detection – The “Unknown Unknowns”



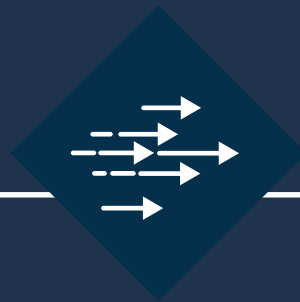
Requires Extensive
Feature Engineering

A large-scale creative
data management project



Apply Outlier
Detection Techniques

SVDD, MWPCA,
Autoencoders...



Integrate With
Real-time Systems

Balance alert volume
with risk appetite

Technology to power AI

Khor, Lee Pang

Cloud Practice Lead

Hewlett Packard Enterprise

How are we helping partners on their AI/ML/Big Data journey?



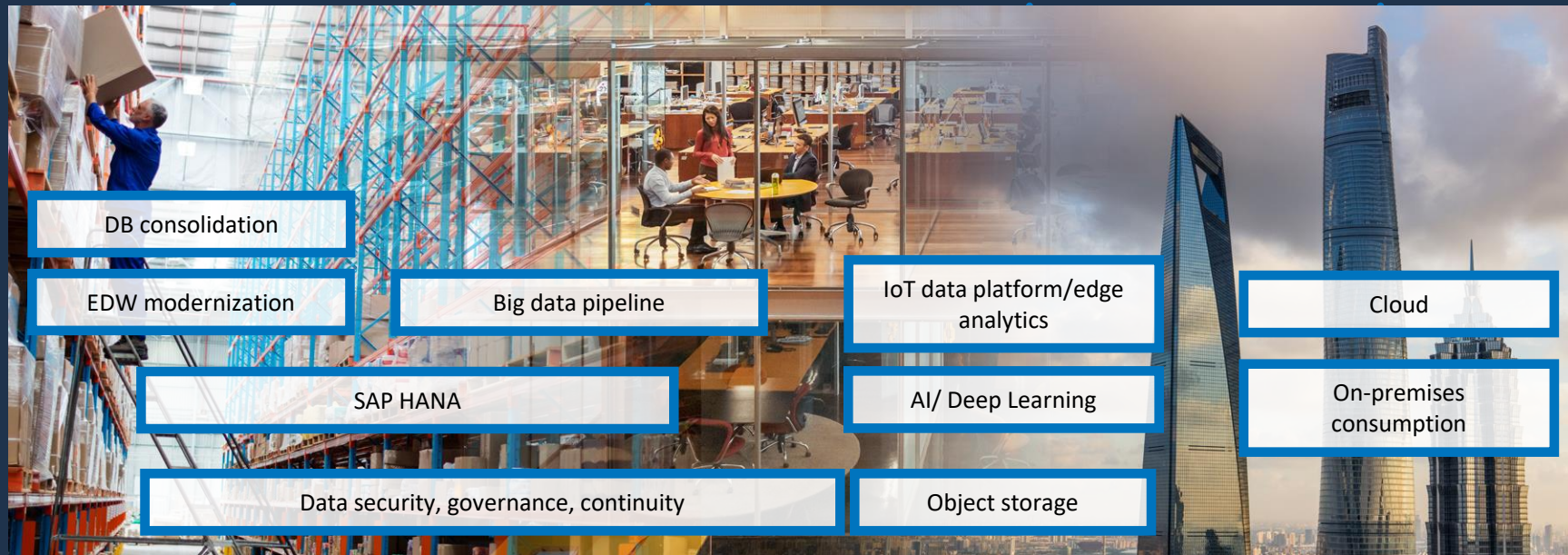
How are we helping partners on their AI/ML/Big

Modernize, secure your
traditional data environments

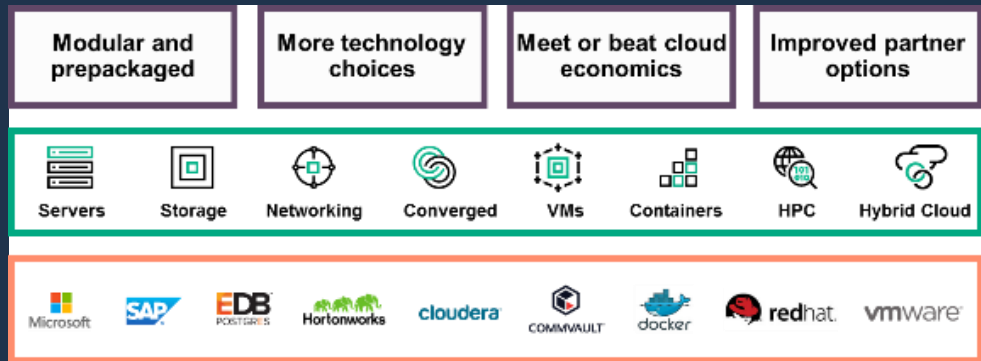
Unify the data
architectures

Generate insights from
data at any scale

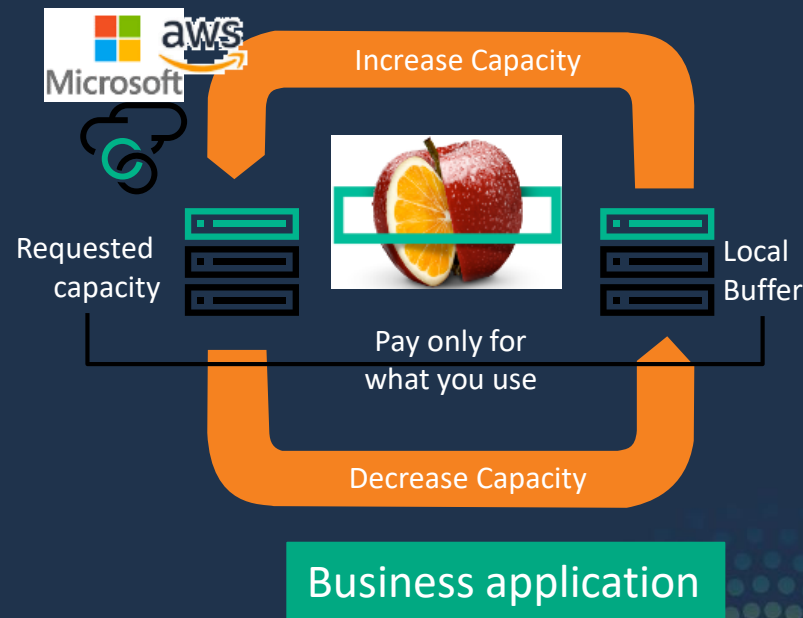
Consume



HPE GreenLake gives personalized, flexible, and comprehensive services to power Everything-as-a-service



- Pay only for what you use
- Aligns costs with usage monthly via [advanced metering](#)
- Infrastructure capacity that never runs out
- Applicable to wide range of infrastructure and technologies
- Common use cases include compute, storage, AI, Big Data, HPC, Containers, SAP, SAS, etc.



What's your thoughts?