

AEROSPIKE USER SUMMIT 2018

AEROSPIKE

The Science Behind Delightful User Experience

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Introduction: What Does FinTech Do?

Raise your hand if you don't have PayPal account

- Is it a Pmt Processor (buyer-seller)?
- Is it banking?
- Is it lending?
- Mobile platform?
- Merchant/Mktplace Integrator?
- ... P2P Payments?
- ... Global / Cross-border?
- ... Multi-Brand?
- ... Social Media?
- ... Blockchain?

The answer depends on Product, Brand, Jurisdiction/Geo...



venmo

xoom

Braintree

Paydiant

User Experience (UX) Defines FinTech Success

- Block fraud...
- ...with low False Positives (*don't block good folks!*)
- Buyer and Seller Protections
- Customer financial data not shared with merchants
- Regulatory Compliance => Customer Safety

➤ PayPal brand promise starts with trust...

- Customer intent
- Sentiment
- Reduce friction:
 - Customer support and conflict resolutions
 - Account opening - enrollment
 - Offers that make sense

➤ And enhances UX from acceptance to delight

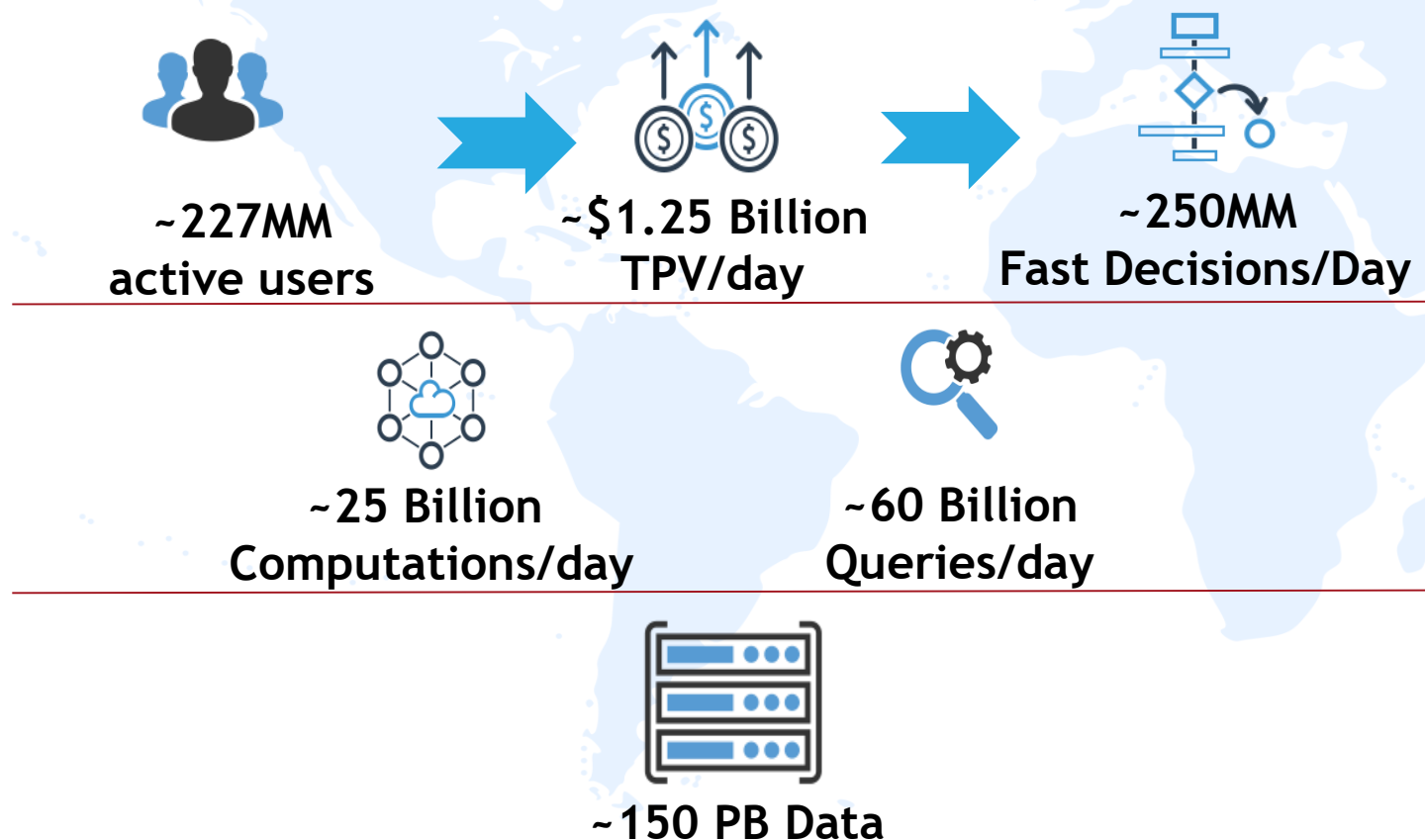


Consumers Trust PayPal to Help Protect Their Information and Transactions

Sources: Nielsen, Dept of Commerce, JP Morgan; PayPal & IPSOS Study Feb 2015; Symantec, Gemalto, LexisNexis

UX Delivered with Velocity and Scale

Supported by multi-billion dollar decisions everyday

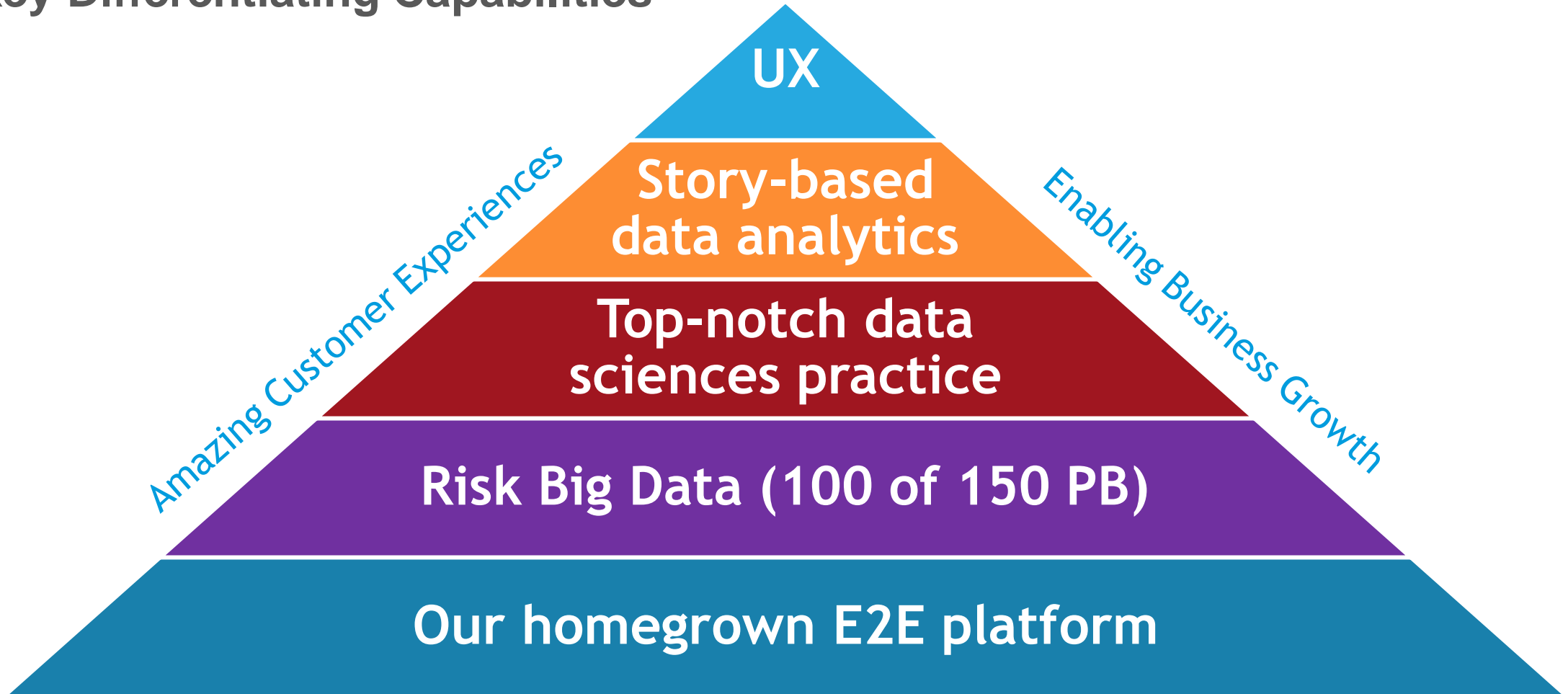


Facts and numbers:

- PayPal - in more than 200 countries and regions.
- Secure Payments: \$451 Billion global transaction volume in 2017
- Incoming fraud pressure markedly exceeds company revenues
- Sophistication of the modern day hacker attacks: distributed; high-velocity
- Compliance and Privacy: AML, Prevention of prohibited activities, KYC, PII protection

Automated Decisioning is PayPal's Competitive Advantage

Key Differentiating Capabilities

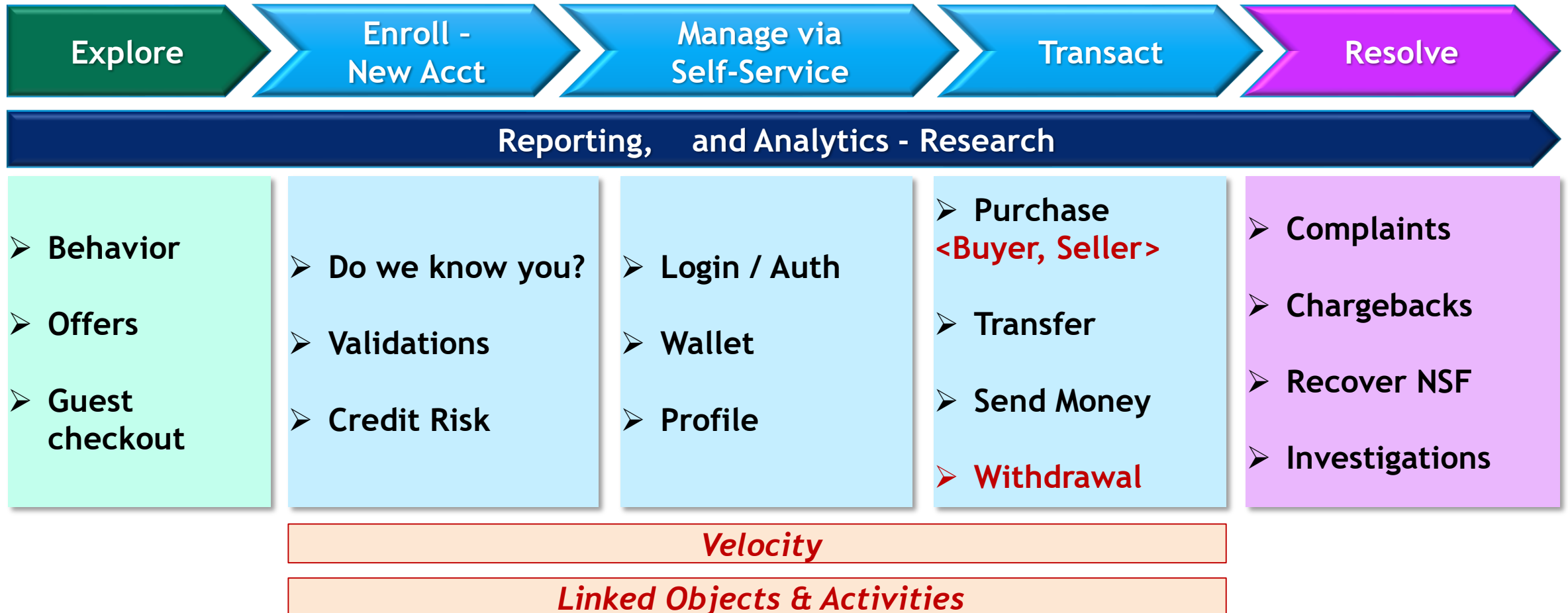


Use Cases:

ML for Fraud Prevention

Carrying Risk of Transactions: Decisions at Checkpoints

- Each payment transaction is a customer's story



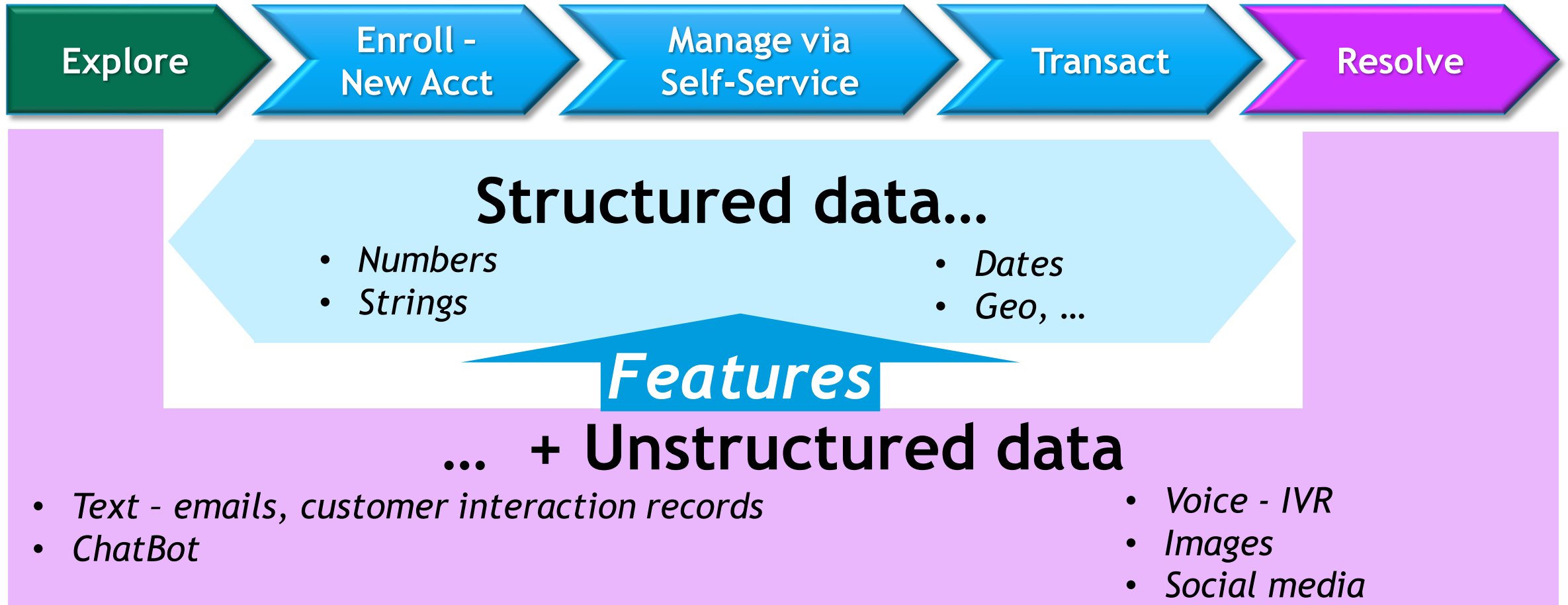
Merchants: a World of Additional Checks

Representative Merchant Evaluation Criteria

- **Merchant -Business Solvency**
- **Customer satisfaction - *Items Not Received; Significantly Not As Described***
- **True Industry; Prohibited Goods - *Merchant Category Codes - MCC***
- **Revenue rate of change: $\frac{d \text{ Revenue}}{dt}$; *fast growth / wild fluctuations?***
- **Linking; Compliance - AML (collusion)**
- ***Partnership / Marketplace - specific***

What Data Do We Process?

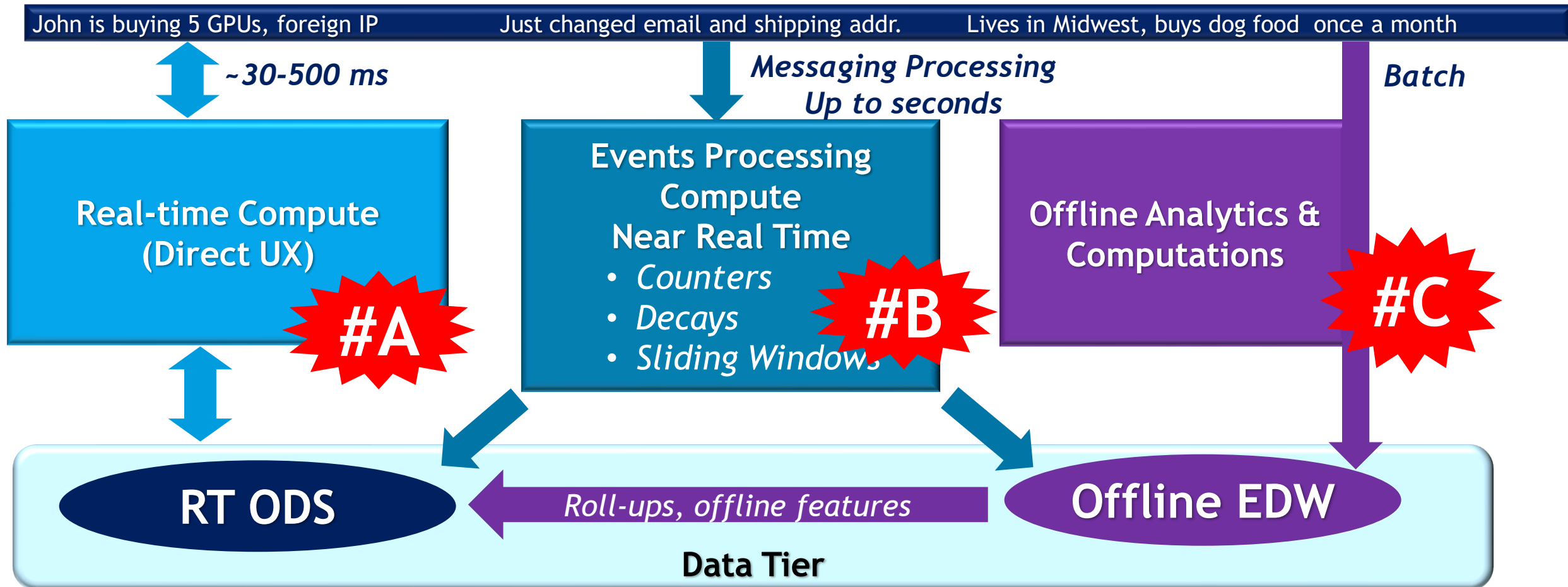
Types of data affect choice of modeling methods and frameworks



Production Platform: Real-Time Inference At Scale

Three Velocities of the Data Flows

Choice of flow to execute ML models (inference) – in #A, or #B, or #C



A Story of a Payment: Serving Decisions at Checkpoints



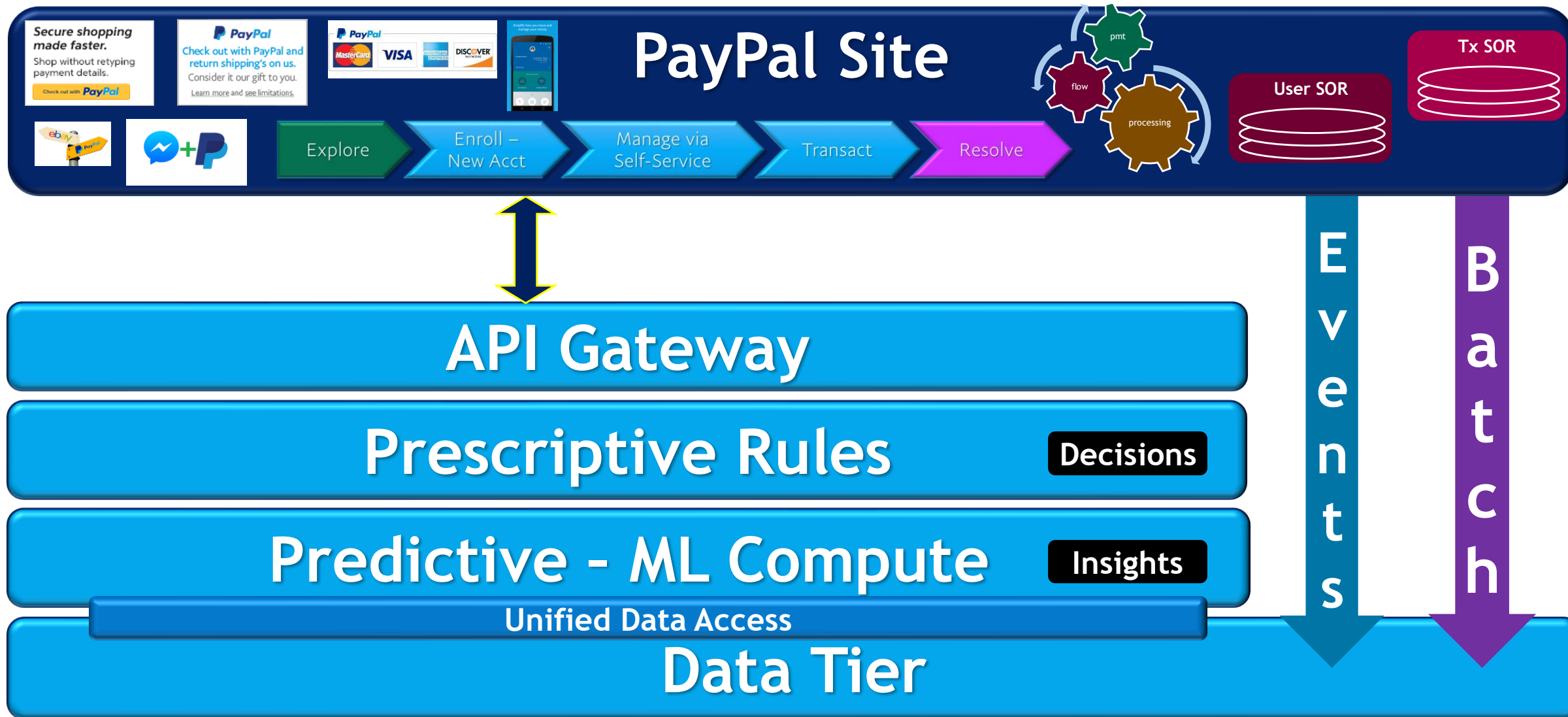
***Y/N, or Action
Decision for a Checkpoint***

***~75% calls at < 50ms;
deep inspections can be ~500ms***

Decisioning Platform

Fail-Open or Fail-Close? - ask Biz & Compliance

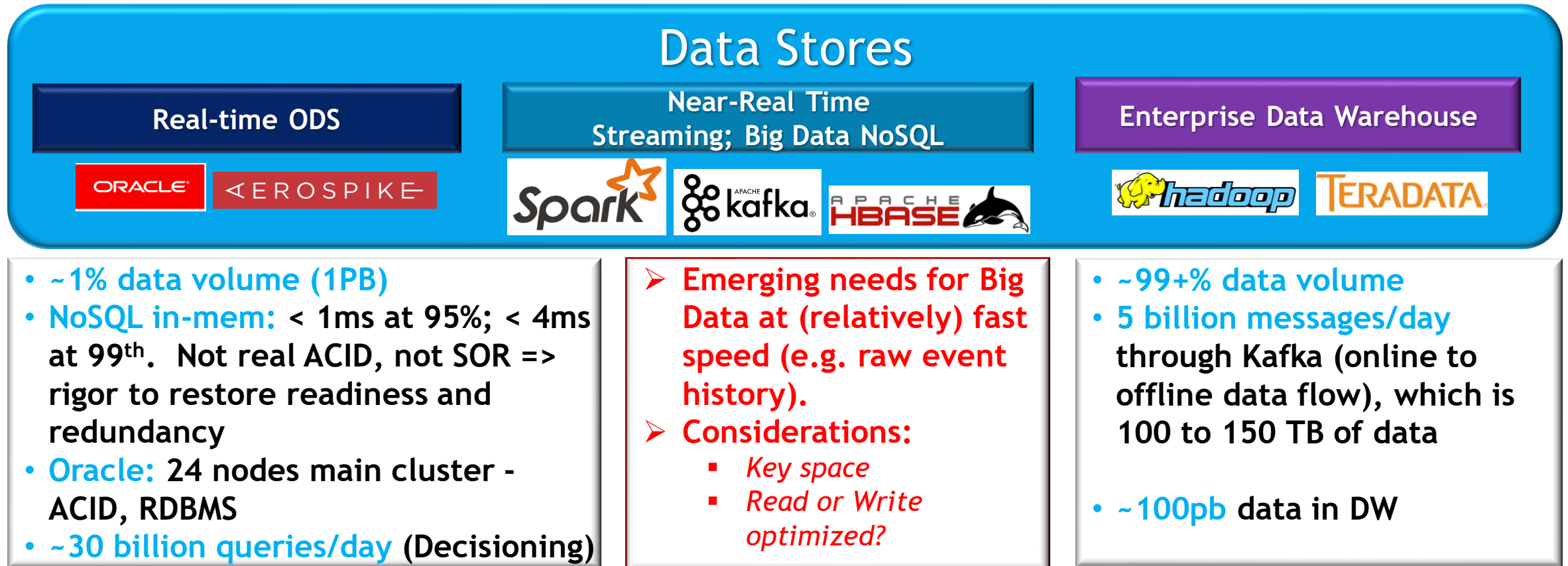
The Anatomy of Decisioning



How to Manage Data?

Data Tier

Types of data stores

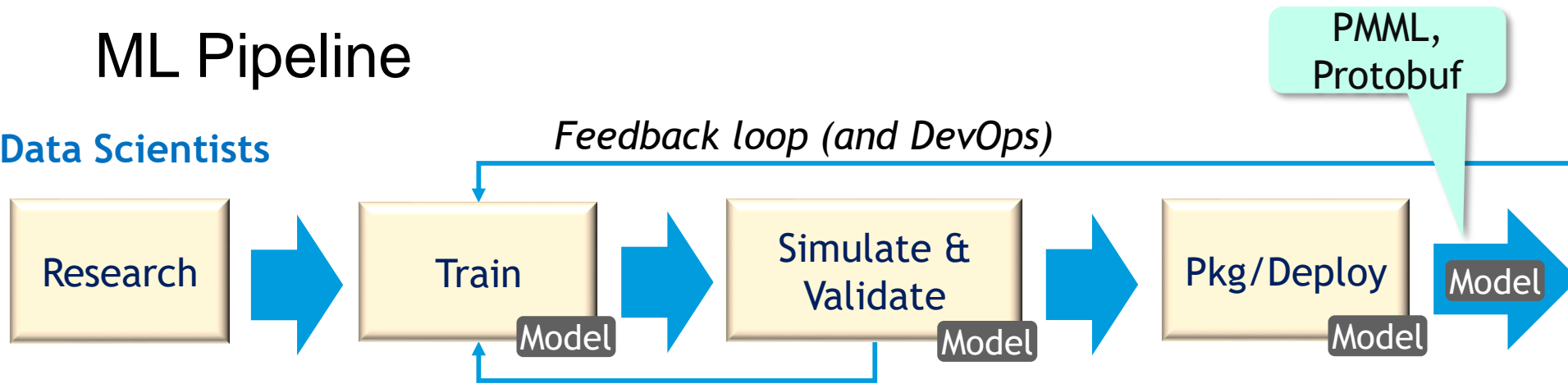


Cloud Appeal, but Beware of Compliance, Privacy.

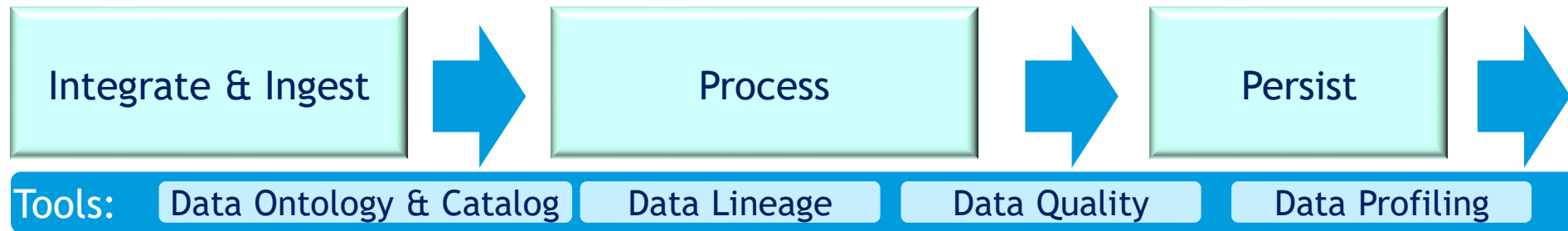
Model Development Process and Roles

ML Pipeline

Data Scientists

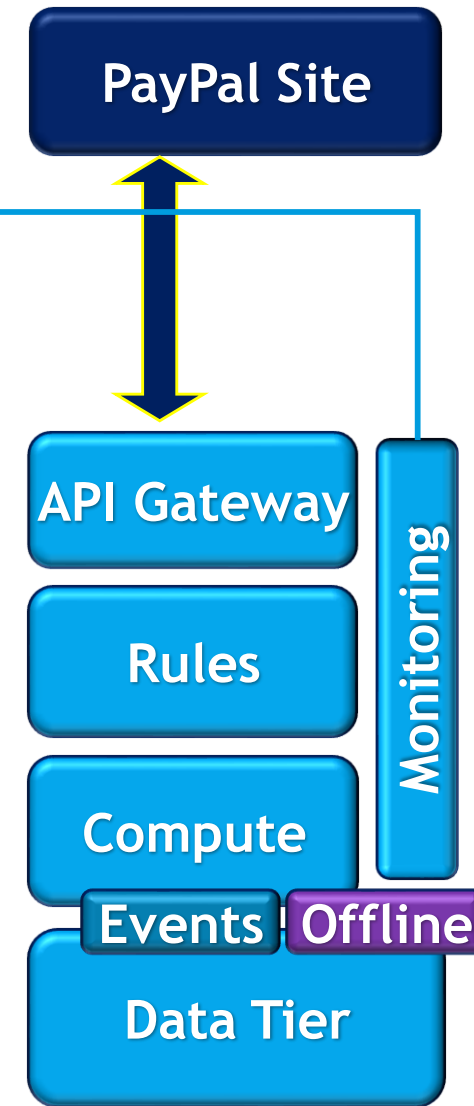


Data Engineers



Infra Engineers

Elastic Intelligent Infrastructure: GPU, TPU; large RAM



Conclusion

Takeaways

- **Decide on type of modeling. Define business metrics**
- **Architect for end-to-end, agile model lifecycle**
 - Agnostic to Framework/Language/Product
- **Know (and manage) your data**
- **Decide in which flow to conduct ML inference**
- **Automate! And offer self-service**

The journey continues ...

Thank You!

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