

Safely Unlock Payment Data for Enterprise AI & Analytics

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Senior Enterprise Solutions Architect

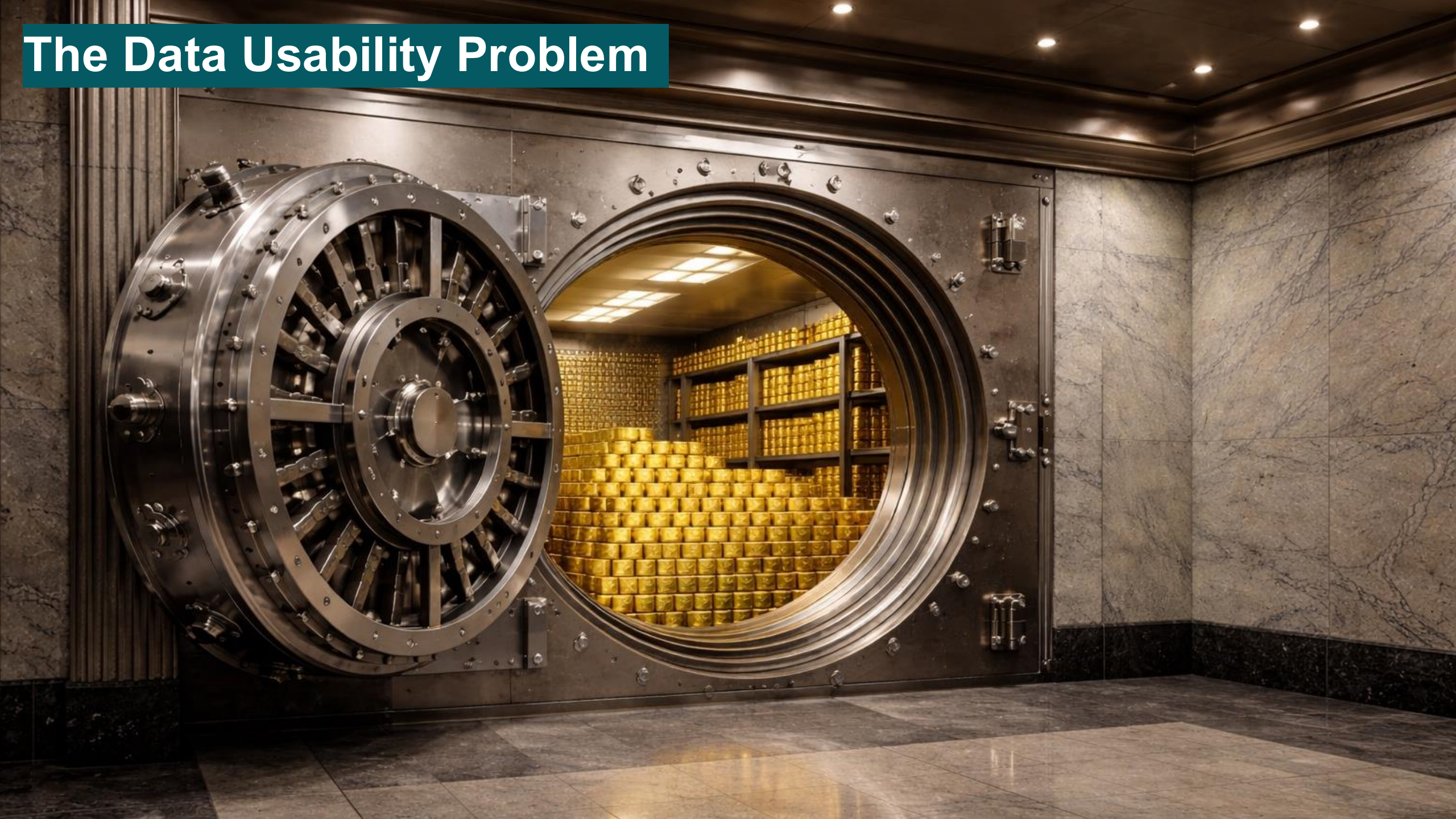
comforte, Inc.



Unlocking Better Fraud Detection, Analytics, and AI



The Data Usability Problem



Sensitive Payment Data is Critical – But Underused

RESTRICTED BY COMPLIANCE

- PCI DSS limits access to sensitive fields
- Data masked, removed, or delayed

INCOMPLETE DATA FOR AI

- Missing transaction context
- Limited historical depth

The most valuable payment data is the least usable

COMPLEX WORKAROUNDS

- Custom masking pipelines
- Data duplication & inconsistency

NEW AI RISKS

- Sensitive data in prompts
- No control over GenAI inputs

Unlocking Data for Analytics and AI

NOW

- Data in silos + sensitive & regulated
- Fraud detection produces too many false positives
- Customer friction

Use more data safely

GOAL

- Use more data without compromising security or compliance
- Improve fraud detection & customer experience

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Use More Data – Safely

PROTECT AT SOURCE

- Tokenization & format-preserving encryption
- No exposure of PAN or PII
- No application changes
- Preserved data utility

1

ENABLE FOR ANALYTICS & AI

- Real-time streaming
- Full datasets
- Consistent tokens
- Preserved referential integrity

2

CONTROL & SECURE USAGE

- AI Protection
  - Detect & tokenize sensitive inputs
  - Secure GenAI interactions
- Data Sovereignty Zones
  - Controlled use of data in clear
  - Cleansing, investigations, compliance

3

Security enables data usage

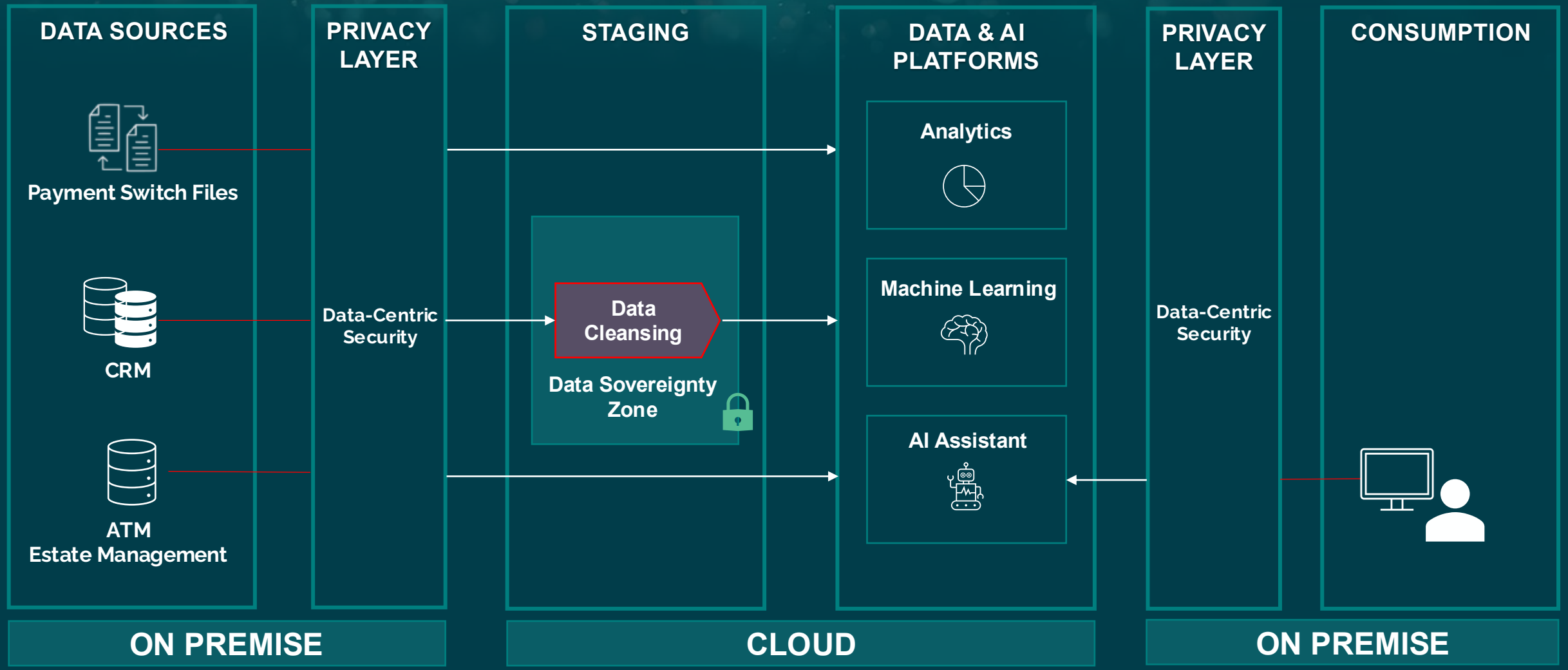
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Secure Innovation

	Data Security	Data Analytics	Machine Learning	AI Assistant Usage
Data	• Payment transactions	• Payment transactions • Customer data (CRM)	• Payment transactions • Customer data (CRM) • ATM locations	• Payment transactions • Customer data (CRM)
Data-Centric Security	• Structured and unstructured data protection • Transport Layer Security (TLS) • Access controls (SSO + MFA) • Unified Key & Secrets Management • Monitoring and Auditing of Security Events	• Data cleansing in a Data Sovereignty Zone (Trusted Execution Environment) • Secure analytics using tokenized data	• Training the ML model using tokenized data	• AI-powered sensitive data detection in unstructured text • Tokenization on the fly
	1	2	3	4

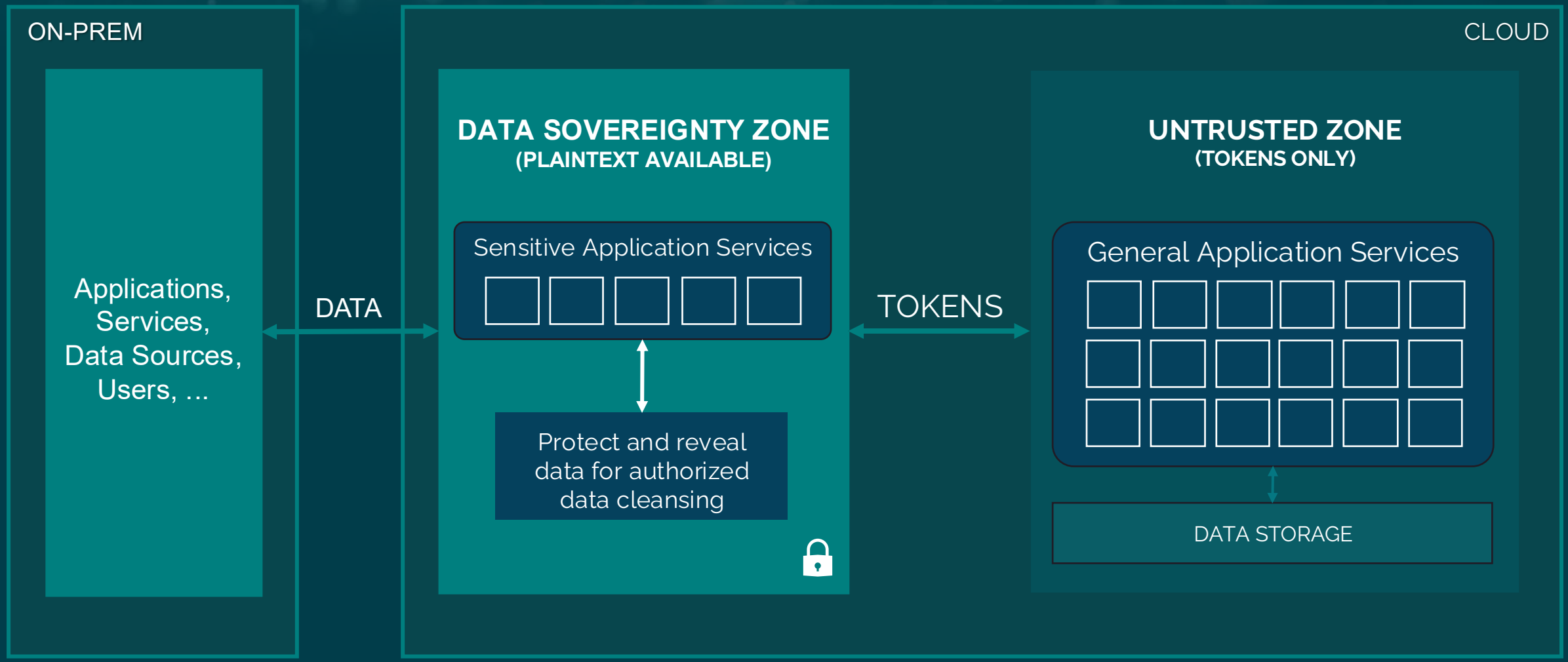
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Secure Data for Analytics and AI



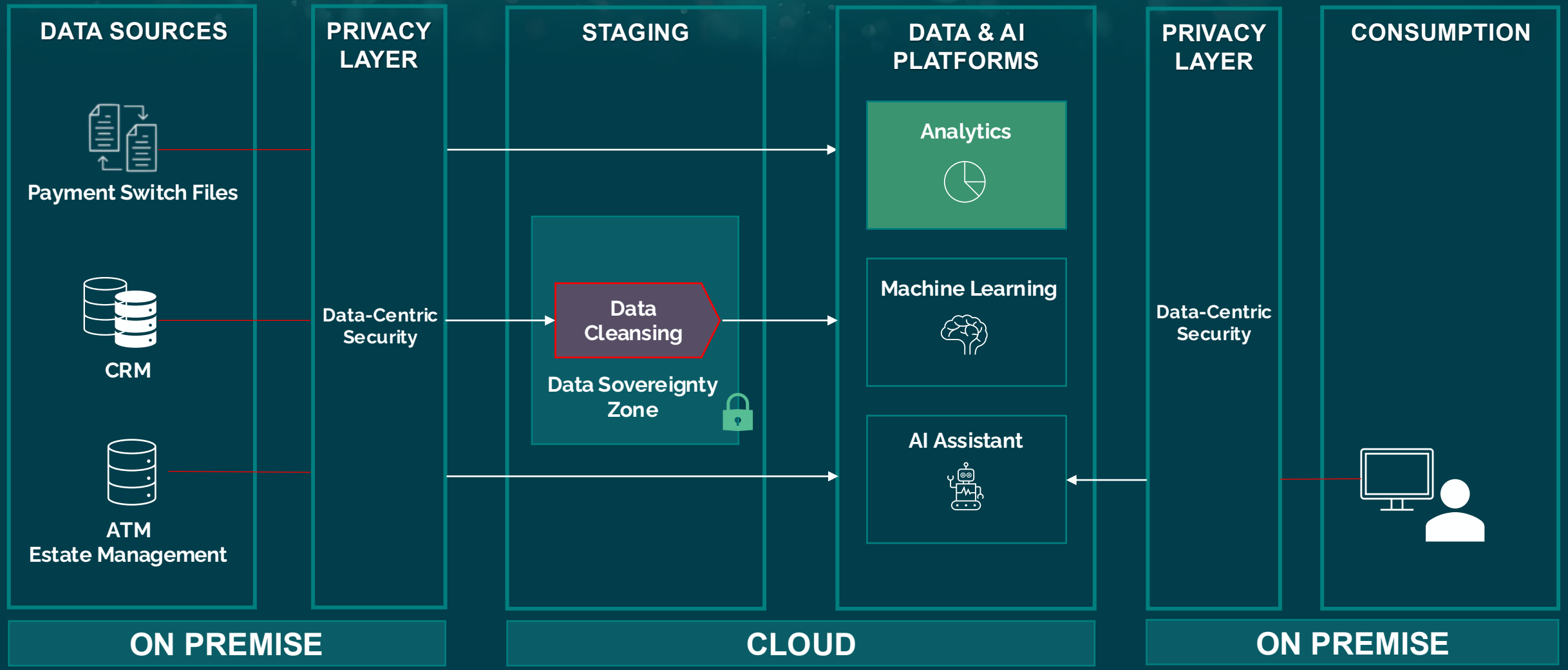
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Data Cleansing in the Sovereignty Zone



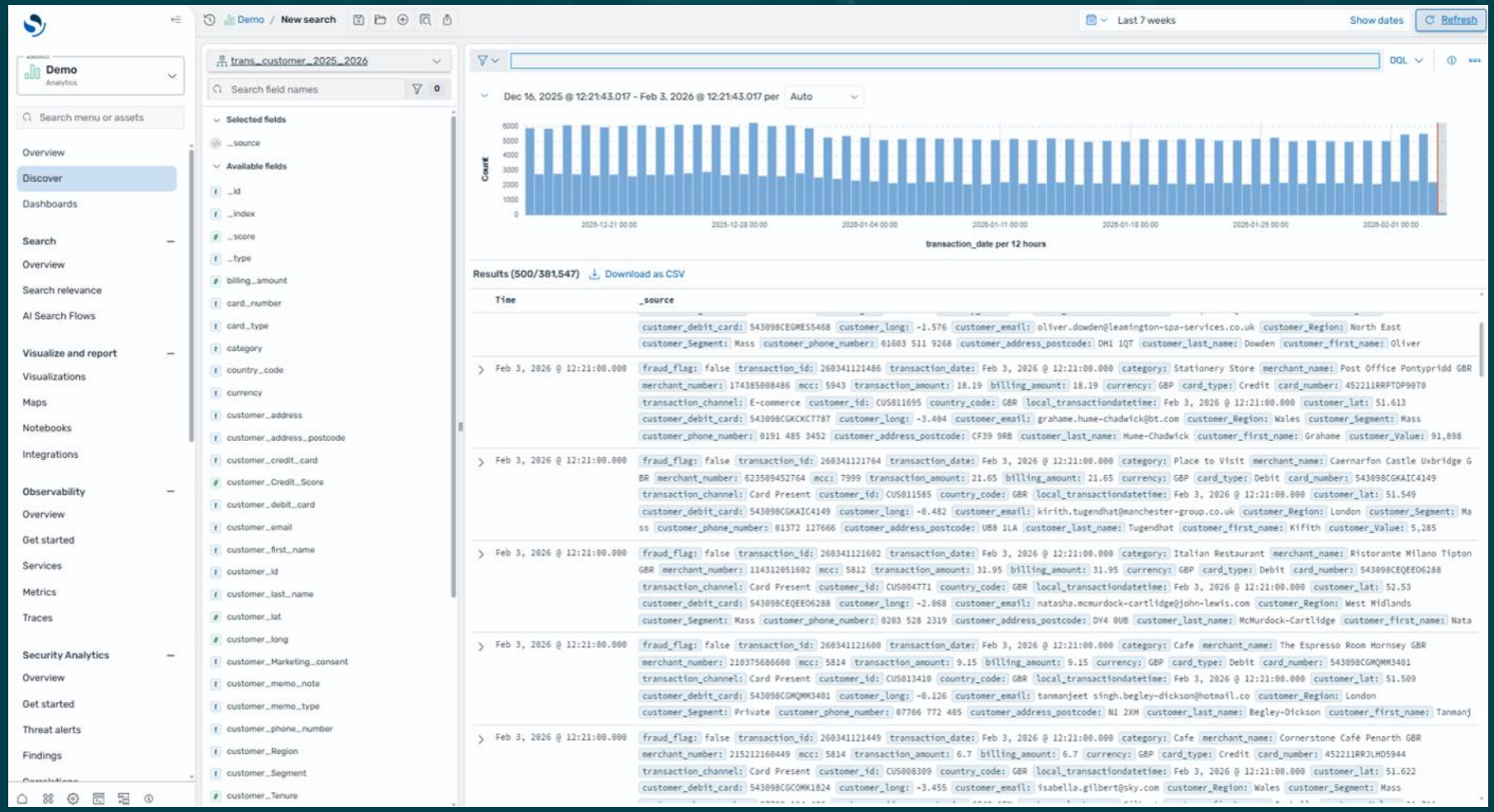
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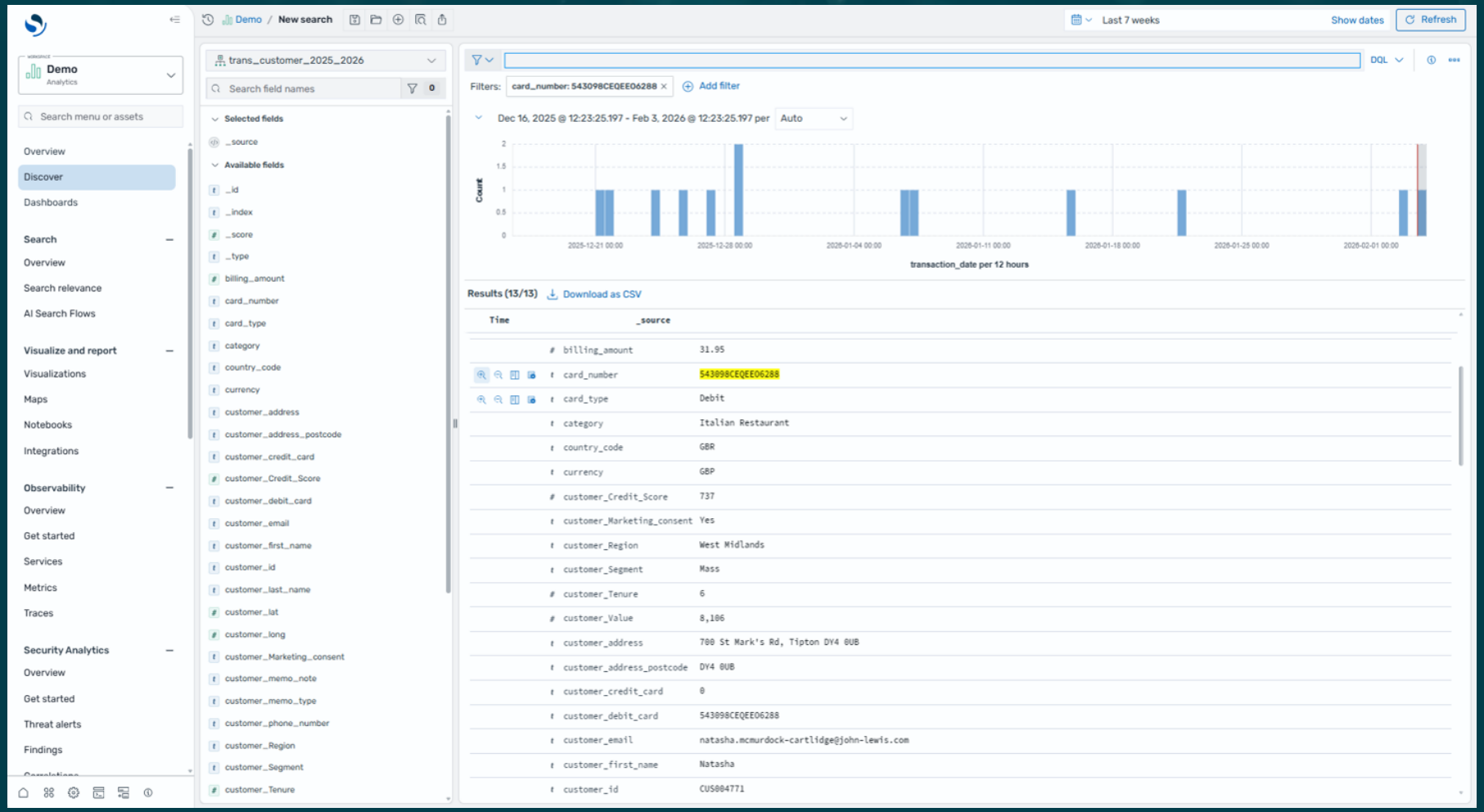
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Data Analytics



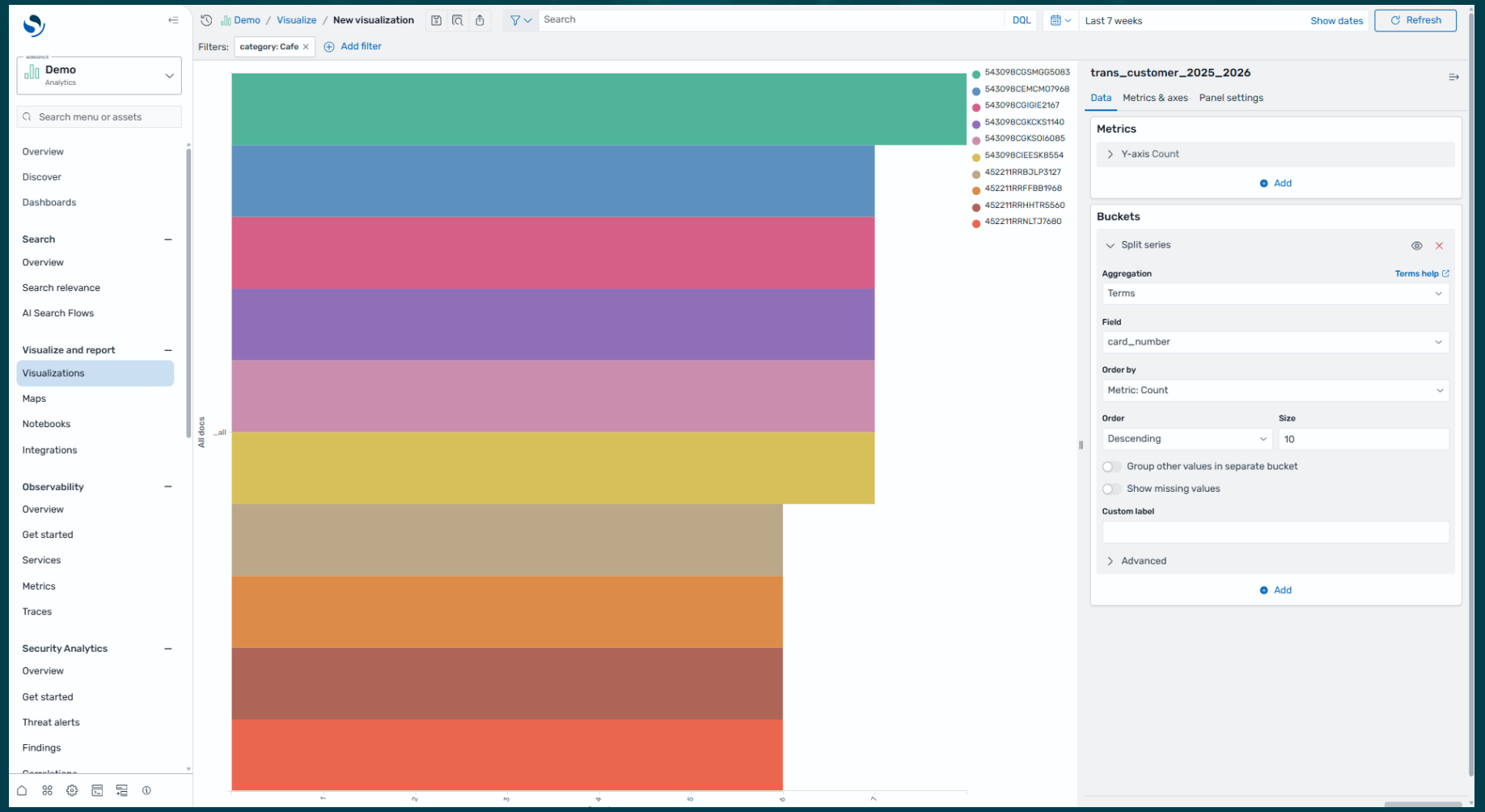
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Data Analytics



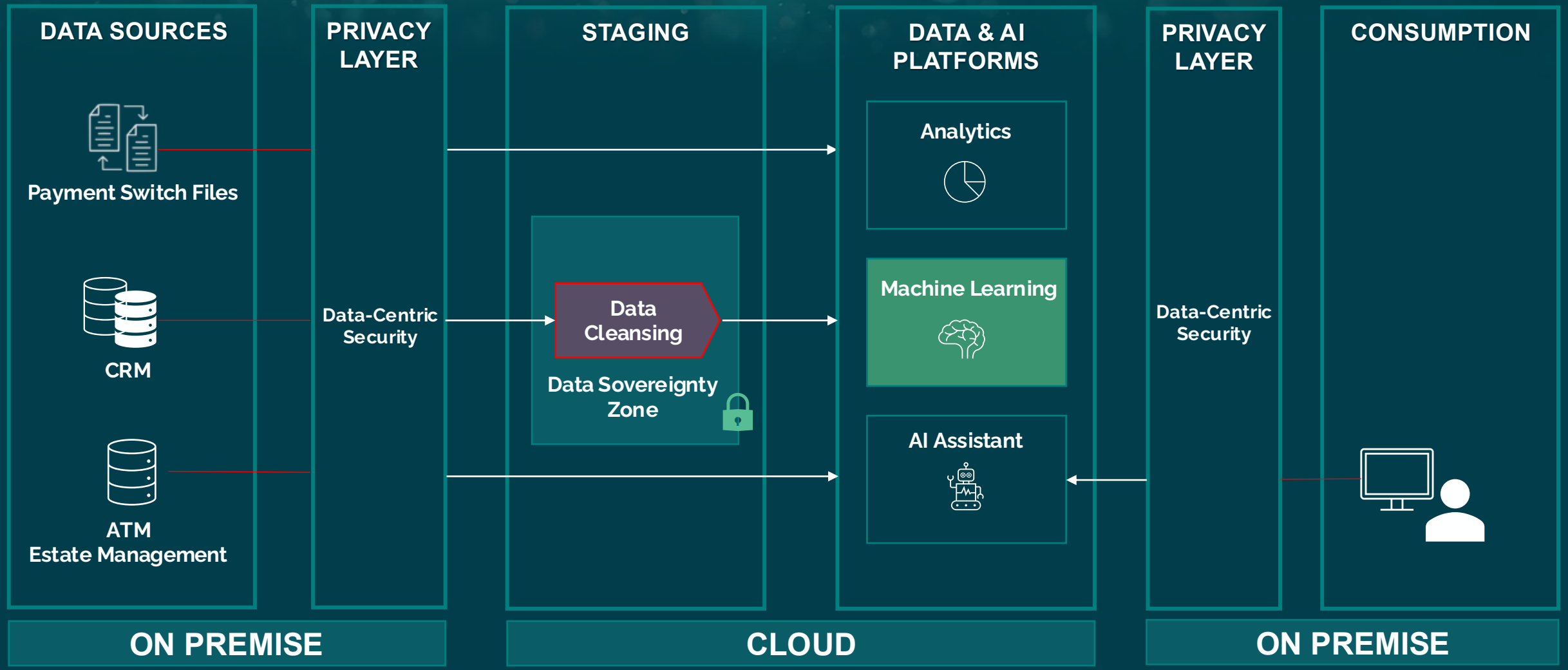
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Data Analytics



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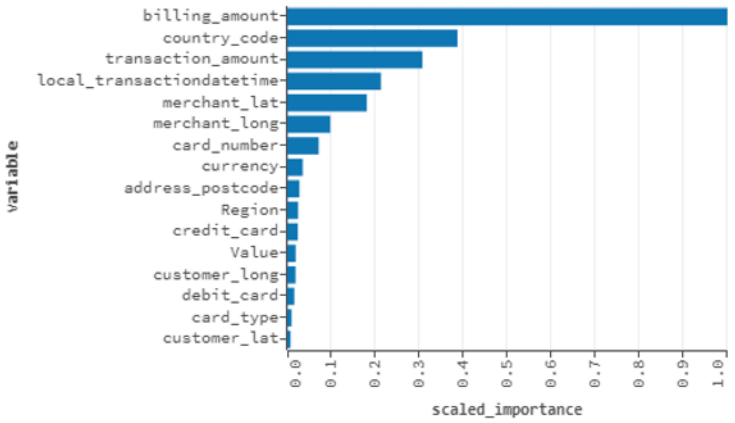
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ML Model

▾ VARIABLE IMPORTANCES



▾ TRAINING METRICS - CONFUSION MATRIX ROW LABELS: ACTUAL CLASS; COLUMN LABELS: PREDICTED CLASS

	false	true	Error	Rate	Precision
false	150341	0	0	0 / 150.341	1.0
true	0	110	0	0 / 110	1.0
Total	150341	110	0	0 / 150.451	
Recall	1.0	1.0			

▾ VALIDATION METRICS - CONFUSION MATRIX ROW LABELS: ACTUAL CLASS; COLUMN LABELS: PREDICTED CLASS

	false	true	Error	Rate	Precision
false	222784	0	0	0 / 222.784	1.0
true	0	9	0	0 / 9	1.0
Total	222784	9	0	0 / 222.793	
Recall	1.0	1.0			

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ML Model

h2o_training_aug_oct_2025.hex

DATA

Previous 20 Columns | Next 20 Columns

Row	Credit_Score	Marketing_consent	Region	Satisfied	Segment	Tenure	Value	address	address_postcode	billing_amount	card_number	card_type	category	country_code	country_code_2	credi
1	981.0	No	Northern Ireland	·	Mass	8.0	¬£33,286.00	37 Rath Rd, Newry BT34 3RX	BT34 3RX	79.5000	543098CEKAEO3411	Debit	Payment Service / Wallet	GBR	·	?
2	300.0	No	East Midlands	·	Mass	0	¬£37,183.00	53 Lower St, Kettering NN16 8BH	NN16 8BH	38.1500	543098CGSIKE2410	Debit	Petrol Station	GBR	·	45221
3	808.0	Yes	South East	·	Mass	1.0	¬£72,741.00	718 west quay retail park, Southampton SO15 1BA	SO15 1BA	5.9100	452211RTFRJT8281	Credit	Coffee Chain	GBR	·	45221
4	703.0	Yes	North West	·	Mass	8.0	¬£56,270.00	2A Lane End Rd, Manchester M19 1WA	M19 1WA	25.8300	543098CGQEME7340	Debit	Supermarket	GBR	·	45221
5	713.0	Yes	North West	·	Mass	2.0	¬£41,513.00	39 Jinny Ln, Burnley BB12 9LL	BB12 9LL	42.6900	452211RPPRLN6576	Credit	Supermarket	GBR	·	45221
6	560.0	Yes	South East	·	Mass	8.0	¬£34,875.00	490 The Compleat Angler, Marlow SL7 1RG	SL7 1RG	25.3300	452211RPTRDT5714	Credit	Games / Digital Games	GBR	·	45221
7	966.0	Yes	South West	·	Premium	2.0	¬£5,872.00	521 Plymouth Rd, Plymouth PL3 6RL	PL3 6RL	20.9700	452211RRFLPH8320	Credit	Supermarket	GBR	·	45221
8	393.0	No	London	·	Mass	3.0	¬£11,242.00	753 Ariel Way, London W12 7GA	W12 7GA	16.4500	543098CEOGOA1181	Debit	Chinese Restaurant	GBR	·	45221

h2o_validation_nov_2025.hex

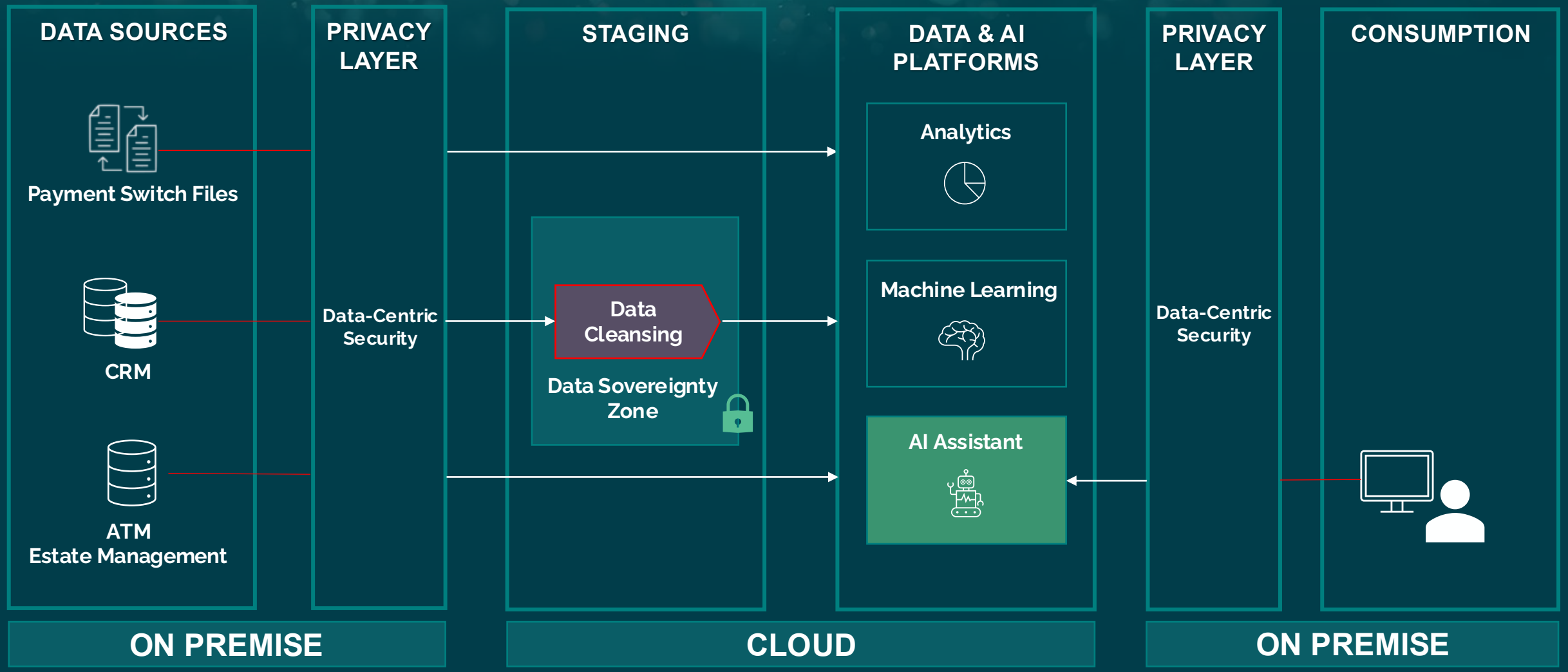
DATA

Previous 20 Columns | Next 20 Columns

Row	Credit_Score	Marketing_consent	Region	Satisfied	Segment	Tenure	Value	address	address_postcode	billing_amount	card_number	card_type	category	country_code	country_code_2	credi
1	464.0	Yes	North West	·	Mass	7.0	¬£54,624.00	328-326 Union Rd, Accrington BB5 3JD	BB5 3JD	29.8800	452211RTLLDL2870	Credit	Chinese Restaurant	GBR	·	45221
2	338.0	No	Scotland	·	Mass	5.0	¬£8,745.00	7 Home St, Edinburgh EH3 9JR	EH3 9JR	63.9700	452211RRPNLL0714	Credit	Online Marketplace	GBR	·	45221
3	634.0	Yes	North West	·	Mass	4.0	¬£79,679.00	58 English St, Carlisle CA3 8HS	CA3 8HS	7.9300	543098CEOSQM8619	Debit	Convenience Store	GBR	·	?
4	690.0	Yes	London	·	Premium	1.0	¬£5,805.00	137-141 Lower Clapton Rd, London E5 8EQ	E5 8EQ	4.9700	543098CESACQ6693	Debit	Cafe	GBR	·	45221
5	937.0	Yes	South West	·	Premium	2.0	¬£74,342.00	35 High St, Exeter EX4 3LW	EX4 3LW	89.7900	452211RTBFDF7271	Credit	Online Marketplace	GBR	·	45221
6	730.0	Yes	South East	·	Mass	0	¬£16,316.00	26 West St, Havant PO9 1PG	PO9 1PG	11.4100	452211RPPFFP0376	Credit	Streaming Service	GBR	·	45221
7	465.0	Yes	South East	·	Mass	7.0	¬£25,155.00	995 Gravesend Rd, Strood ME2 3PW	ME2 3PW	7.5600	543098CEGSIA4005	Debit	Convenience Store	GBR	·	45221
8	596.0	Yes	South East	·	Premium	0	¬£50,446.00	888 Clarence Rd, Windsor SL4 5AE	SL4 5AE	47.0700	452211RRDPBB4369	Credit	Petrol Station	GBR	·	45221
9	806.0	No	South West	·	Mass	2.0	¬£13,505.00	157 Bristol Rd, Chippenham SN14 6NA	SN14 6NA	48.1800	543098CGGGSG8503	Debit	Petrol Station	GBR	·	45221

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Secure Data for Analytics and AI



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AI-Powered Content-Aware Unstructured Data Protection

DETECT AND PROTECT SENSITIVE INFORMATION IN FREE TEXT

- Chatbot prompt/response scrubbing
- Privacy preserving sentiment analysis
- Unstructured free text data in customer service app databases etc.

Ticket ID: 12345

Service Request: "My credit card ending in 9876 was charged incorrectly. Please investigate. My phone number is 555-1234 and I live at 123 Elm St, Springfield."

Date Created: May 19, 2025

Detection (AI-powered):
The system detects sensitive information such as credit card number, phone number, and address.

Ticket ID: 12345

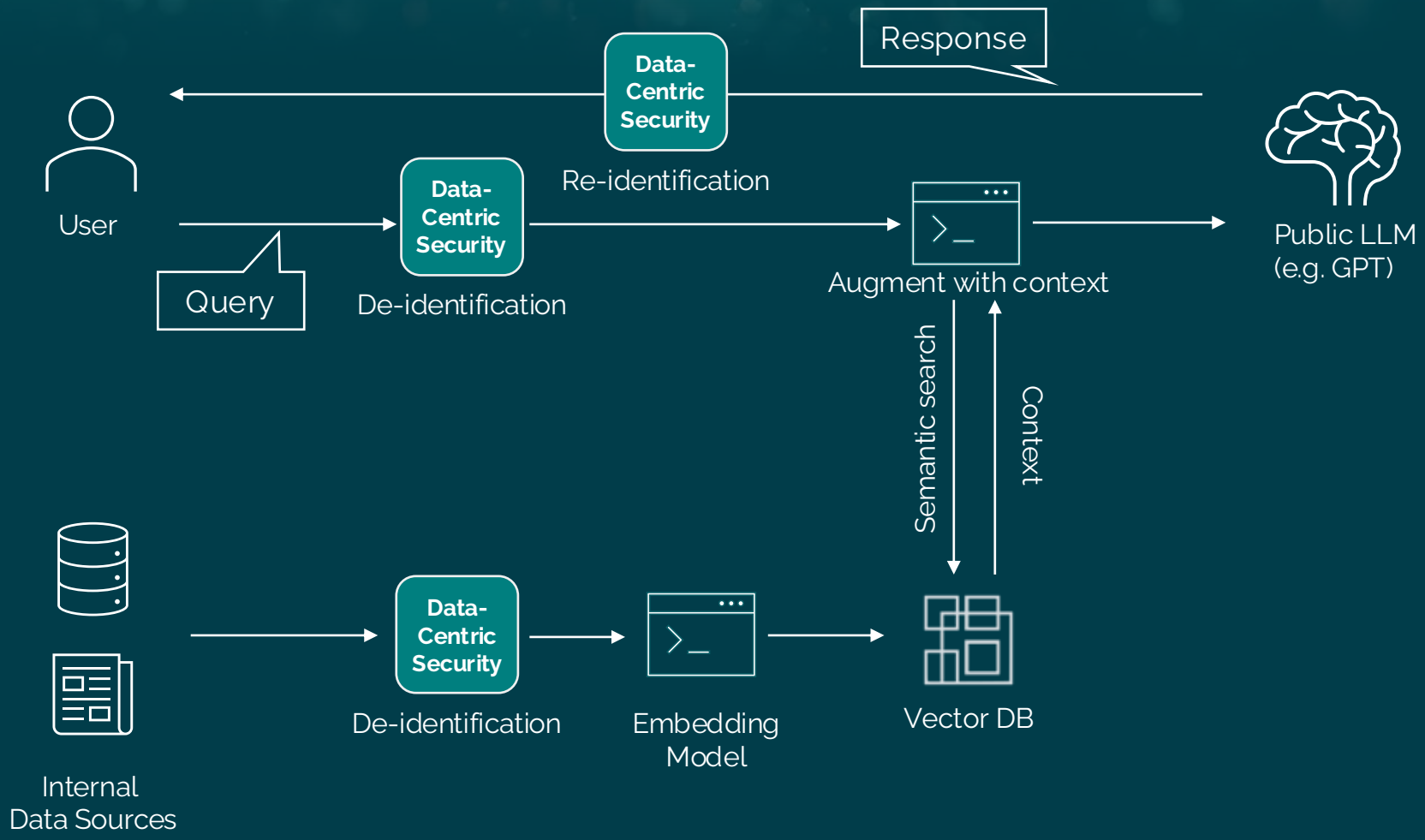
Service Request: "My credit card ending in A12B was charged incorrectly. Please investigate. My phone number is P56-A05F and I live at A05 Frt 9b, KZ9K52."

Date Created: May 19, 2025

The protection engine replaces sensitive information with non-sensitive tokens

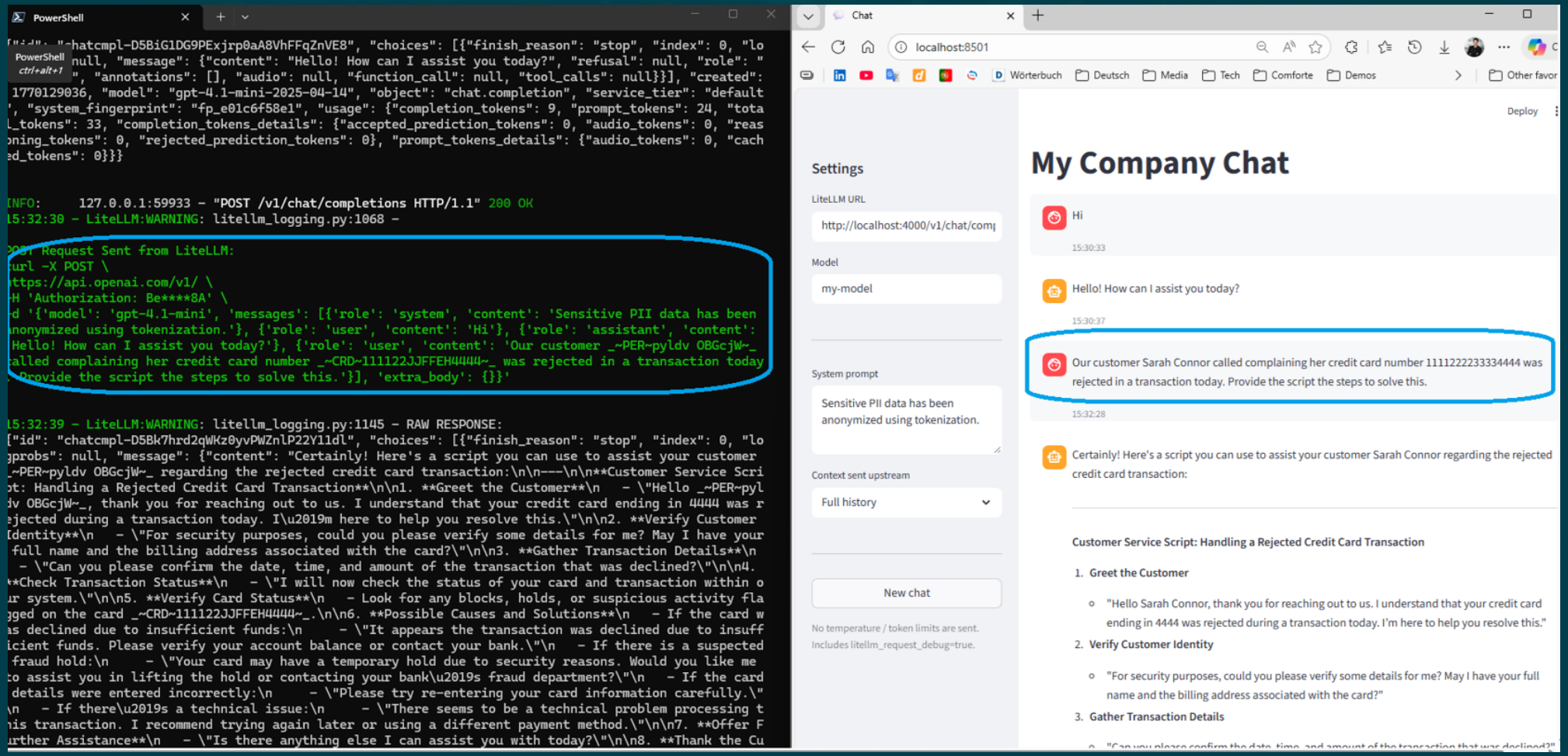
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Data Security and Privacy for Generative AI



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AI Assistant



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Quantum-Safe Encryption for Future-Proof Security

PAINS

- Concern over “harvest now, decrypt later” attacks
- Long lifecycle data (financial, medical) must remain secure for decades
- Regulators push, but enterprises still lack clear guidance how to implement PQ crypto

Quantum-Safe Protection



Quantum-safe, format-preserving encryption and post-quantum TLS for data at rest and in transit to protect sensitive information today and keep it secure in a post-quantum future

BENEFITS

- **Future-proof security**: Keeps long-lived data safe even in a post-quantum world
- **Reduce compliance risk**
- **Build confidence:** Demonstrate assurance to boards, regulators, and partners
- **Gain competitive edge**: Unify tokenization with quantum-safe cryptography; early adoption builds trust and differentiation (regulators, auditors, customers).

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