

Publishers Clearing House - Data Flow & Segmentation Architecture

Dmitriy Lychev — Data Integration Services Architect

Data Sources	ETL / Orchestration	Processing & Storage
<ul style="list-style-type: none">SQL Server & DB2 — Orders & Sweepstakes EntriesGoogle Analytics & Web PlatformsEmail Platforms — Click & Engagement DataAPIs — Customer & Partner SurveysGaming Engagement DataAWS S3 / SQS — Application Files & MessagesExperian — 3rd Party Demographics	<ul style="list-style-type: none">Apache Airflow (Google Cloud Composer)Python transformation scriptsDocker containers on KubernetesMetadata-driven pipeline design	<ul style="list-style-type: none">Raw & curated datasets in BigQuerySegmentation, attribution, personalization modelsAnalytical datasets for targeting & performance metrics

Governance, Security & Compliance

Access Control	PII & Privacy	Encryption & Keys
<ul style="list-style-type: none">IAM roles & Dataset/Table ACLsRow/Column-Level SecurityPolicy tags via Data Catalog	<ul style="list-style-type: none">PII classification & maskingHashing for secure joinsConsent tracking in customer dimensions	<ul style="list-style-type: none">At-rest encryption (GCS/BQ)TLS in-transitCMEK and KMS-managed key rotation
Lineage & Catalog	Audit & Monitoring	Data Quality & Reliability
<ul style="list-style-type: none">Central metadata repositoryColumn-level lineage trackingOwner & SLA metadata	<ul style="list-style-type: none">Cloud Audit Logs, Airflow DAG logsSIEM integration & alertingAccess anomaly detection	<ul style="list-style-type: none">Validation rules & data quality checksSLA freshness monitoringQuarantine & rollback on failure

Downstream Flows

- Audience segmentation for ad targeting and personalization.
- Campaign delivery to external email vendors.
- Merge enriched data back into SQL Server with personal identifiers.
- Generate sales leads and share with partners.

Compliance targets: GDPR, CCPA, least-privilege IAM, and separation of duties for production changes.

© 2025 Dmitriy Lychev — Publishers Clearing House Data Integration Services