EPAM migVisor Platform

Cloud Migration Service Offering

2023

Cloud Data Migration Journey with EPAM

CLIENT'S VISION

Assessment & Planning → Migration Execution → Cutover & Support

EPAM'S ANSWER

Cloud Data Migration Framework

LEARN → PLAN → VALIDATE → EXECUTE → SUPPORT → IMPROVE

Migration Strategy	Processes & Handbooks	Delivery Teams	Best Practices & Trainings Programs




migVisor PLATFORM

migVisor transactional | migVisor analytics | migVisor streaming CE | migVisor landing zone | migVisor code converter | migVisor reconciler

Analytics Assessment — **MVP and Execution** — **Testing & Reconciliation**

Accelerator Platform for Data & Analytics Migrations of Any Complexity

migVisor transactional

migVisor analytics

migVisor streaming CE

migVisor landing zone

migVisor code converter

migVisor reconciler

Key Capabilities

- Speeds up process of OLTP and general DB assessment
- Automatically scans metadata in Oracle, MSSQL, PostgreSQL, MySQL, Hbase, and MongoDB
- Analyzes complexity of db engine change and potential cloud migrations
- Applies AI and past-experience into define target sizing and accurate migration timeline
- Provides a detailed TCO report and detailed migration path

- Speeds up process of DWH ETL and Reports assessment
- Automatically scans metadata in DWHs, Reports and ETL pipelines
- Analyzes complexity of identified inventory and clusters objects
- Applies AI algorithms to identify dependencies and bring down the scope
- Provides an extendable analytics engine

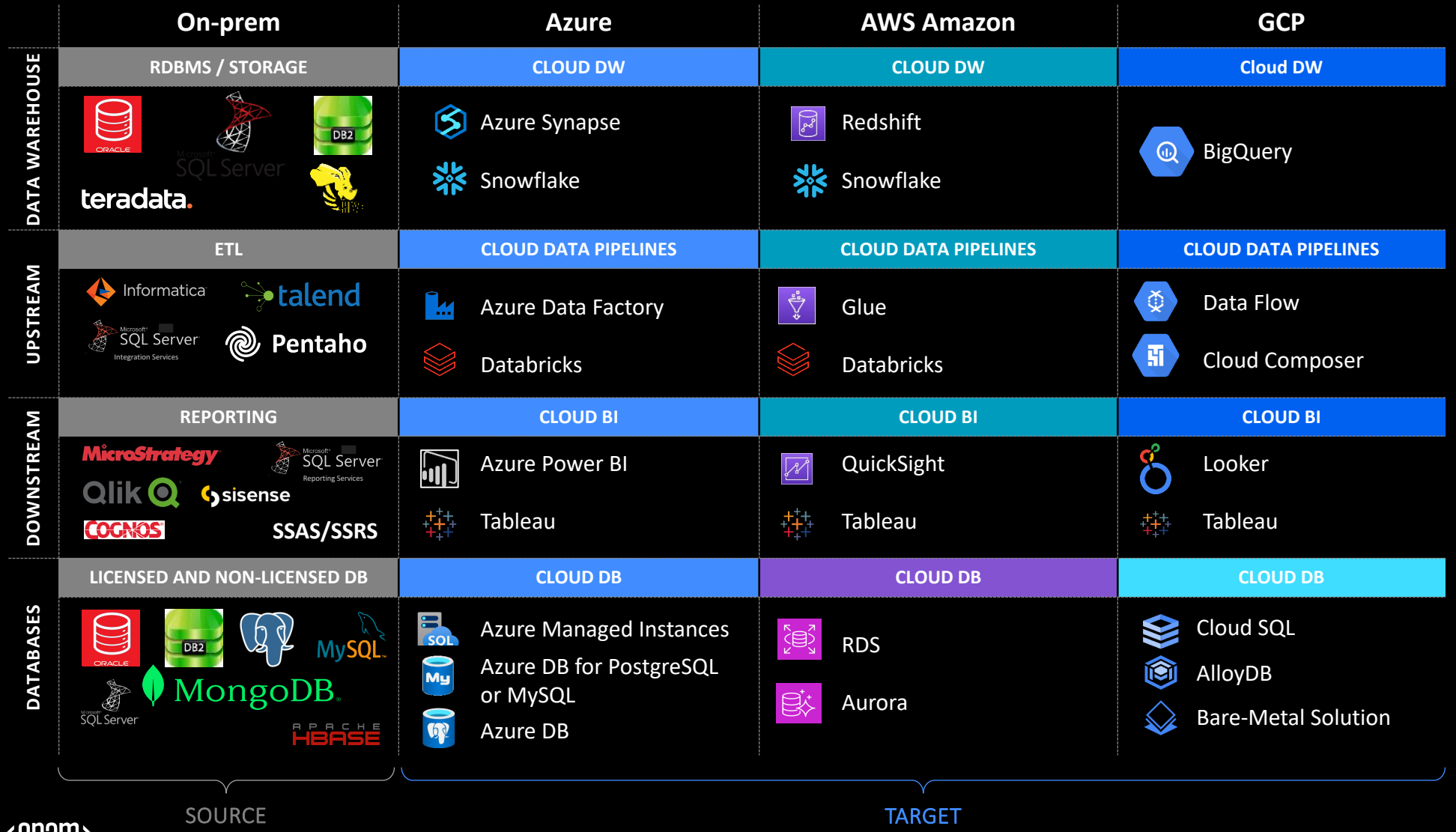
- Accelerating & Streamlining a complex Migration Planning process through intuitive Admin UI
- Eliminating the barriers to buy by reducing the uncertainties surrounding the target streaming platform migration complexity and future runtime cost with a click of a button
- Approximately reducing streaming migration time and cost by more than 50% -based on previous manual migration experience-

- Scripts infrastructure deployment containing basic set of data platform services
- Automated infrastructure deployment to CSP's
- Data product framework
- CI/CD framework, security models, dynamic resource allocation and RBAC with service principals
- Demo application with synthetic data, including data lake, data transformation pipelines, data mart, semantic models and dashboards

- Leveraged within EPAM's conversion acceleration methodology
- Configurable automation tool that works with most used ETL/ELT platforms including:
  - Informatica
  - DataStage
  - Talend
  - SQL
  - Scripting Languages
- Ability to update conversion configurations to handle exception cases and iterate through ~80% automated converted code

- Schema comparison (tables, columns, partitions, DB objects)
- Statistics comparison (row count, checksum)
- Data comparison (value by column)
- Automated database scanning
- AI-driven approach for mapping tables, columns and data types
- High-performance scalable data comparison
- Several layers of reconciliation (quick, detailed, deep analysis)

Migration Technology Capabilities



MIGRATION EXPERIENCE

Snowflake

150+ projects migrated from on-prem RDMBS and Hadoop to Snowflake

Databricks

100+ projects migrated from Informatica, Pentaho, SSIS, Talend and Cloudera Spark to Databricks

Data Migration CoE

Support from Center of Excellence includes:

- Migration Framework, best practices in migration and reconsolidation
- Migration tools and accelerators
- Assessment for DWs and Data Lakes

Analytics Migration Assessment

Empowered by migVisor Analytics

WHY

| Complex, sophisticated and long-time process of DWH, Hadoop, ETL and Reports Assessment

| Extremely time-consuming process of manual migration complexity evaluation

| Overoptimistic estimation due to lack of visibility in legacy systems complexity

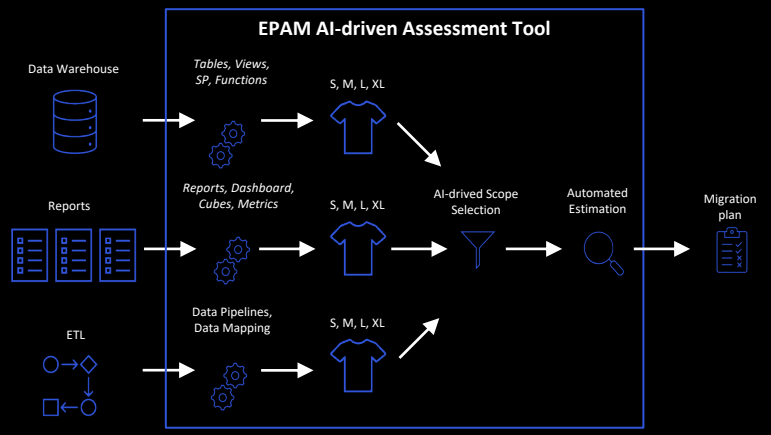
WHAT

KEY CAPABILITIES

- Speed-up process of DWH ETL and Reports assessment
- Automatically scan metadata in DWHs, Reports and ETL pipelines
- Analyze complexity of created inventory and range by S,M,L,XL
- Apply AI algorithms to select inventory scope for the Migration and divide Workloads by phases
- Create Migration Roadmap, including timeline, team composition, delivery milestones
- Provide reports with assessment analyses and deliver Migration plan

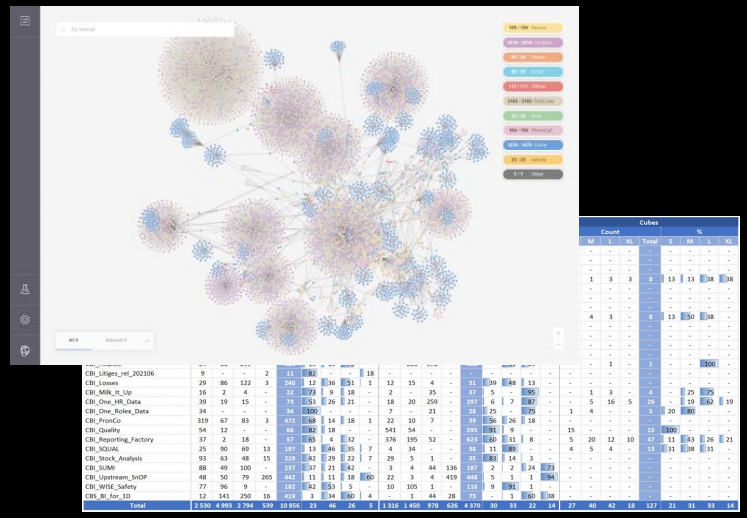
HOW

HOW TO USE IT ON A PROJECT



1. Inventory with initial profiling (data sources, cubes, reports and pipelines)
2. Complexity criteria set up
3. T-shirt sizing based on defined criteria
4. Down selection of representative assets
5. Detailed assessment, complexity estimation
6. Roadmap and timelines

AI ADVANCED ANALYTICS



KEY DIFFERENTIATORS

| Automated process of DWH ETL and Reports assessment

| Automated migration complexity evaluation

| AI-driven Migration Roadmap generation

migVisor Transactional

Empowered by migVisor Transactional

WHY

- License costs reduction reusability
- Reduce commercial databases footprint
- Leverage fully-managed solutions
- Provide a more robust and scaled solution
- Increase database automation levels
- Have database-level agility

WHAT

KEY CAPABILITIES

- Discover and assess your database fleet and app source code using migVisor by EPAM
- Analyze finding to create dependencies mapping and initial estimates
- Create a draft migration plan including TCO
- Confirm the plan and adjust with relevant stakeholders and non-functional requirements and constraints

Outcome:

EXECUTION-READY MIGRATION PLAN AND PROJECT JUSTIFY WITH ROI

HOW

Migration Kick-Off

Discovery

Collect applications and databases information

Assessment

migVisor

Plan

Create migration plan and insights

One Click Migration kick-off fully-automated

Migrate like-for-like

Fully automated migration for Oracle/ MSSQL/ PostgreSQL/ MySQL Including testing and cutover

Modernize DB-engine change

Convert

using available tools and internal KB for complex scenarios

epam | Knowledge Base

Test

Test and validation with accelerators

Cutover

Cutover & data migration with accelerators

Migration execution – end-to-end – semi-automated

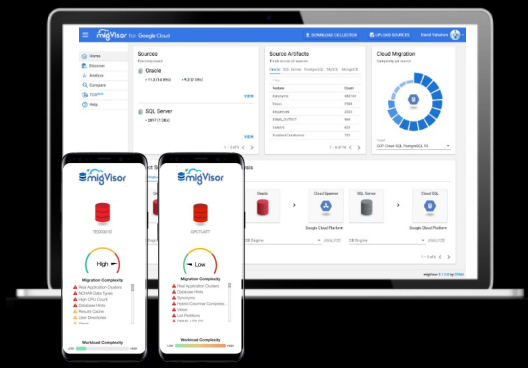
ESTIMATED TIMELINE

Assess

Scan all database (2 weeks)

Finalize

Create and finalize migration plan (2 weeks)



THE migVisor WAY – IMMEDIATE ROI

Automated assessment with TCO

Better decisions

Better migrations

migVisor

KEY DIFFERENTIATORS

Highly-automated approach:

Quick and accurate migration plan for your databases

Widely credible migration experience:

Google selected product for database assessments

EPAM Data Landing Zone Infrastructure

Empowered by EPAM Data Landing Zone

WHY

| Greenfield start challenge

| Time and resource-consuming development of infrastructure deployment

| Legacy processes slow down modern technologies adoption and automation

WHAT

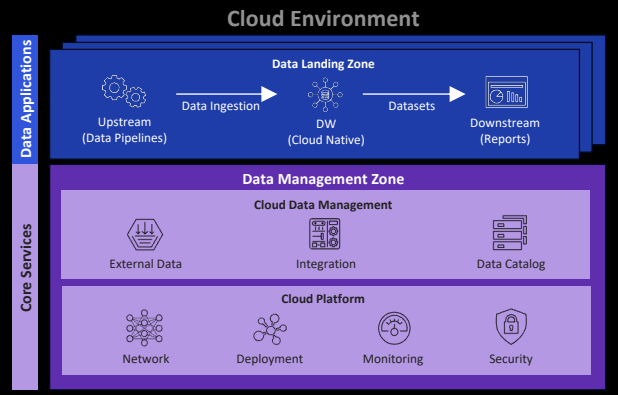
KEY CAPABILITIES

- Ready to use terraform scripts for infrastructure deployment, which contain simplified Data Platform according to EPAM Data Factory standards, including capabilities of data collection, cleansing, consolidation, transformation and aggregation
- Automated infrastructure deployment to Azure, AWS, GCP
- Best practices and an example for end-to-end data analytics solution using cloud Data Lake and Data product approaches
- Best practices and examples for CI/CD approach, security models, dynamic resource allocation and RBAC with service principals
- Implemented training case with synthetic data, including Data Lake, Data Transformation Pipelines, Data Mart, Semantic Models and Dashboards

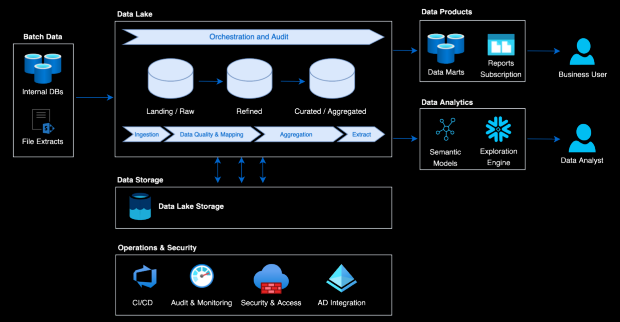
HOW

HOW DOES IT WORK CONCEPTUALLY

Cloud Infrastructure Diagram



Data Flow Diagram



HOW TO USE IT ON A PROJECT

1. **Deploy environment**
   30 minutes for deployment
2. **Configure environment**
   1 day for environment configuration
3. **Start Migration**
   Cloud Environment is ready in 1st sprint
4. **Scale the Platform**
   Landing zone is designed for scaling

KEY DIFFERENTIATORS

| Environment set-up in 30 minutes and ready for a first POC execution

| Best practices in solution architecture, security, CI/CD, Data Quality

| 2 weeks for Onboarding and Technology adoption, based on provided demos

EPAM's Workload Migration

Empowered by migVisor Converter

WHY

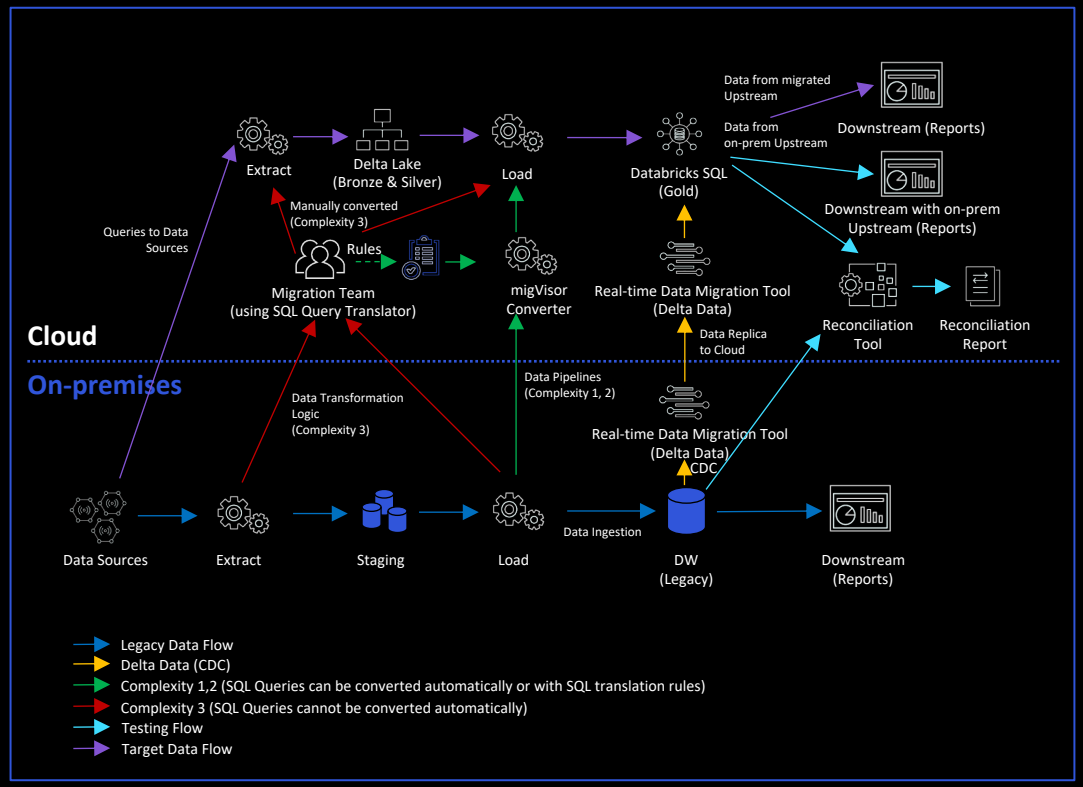
- High-complexity of legacy ETL data transformation pipelines in low-code tools
- Extremely time-consuming process of manual SQL and ETL conversion to pySpark
- High-complex process of data quality testing and reconciliation

WHAT

KEY CAPABILITIES

- Leveraged within EPAM's conversion methodology to accelerate ETL/ELT conversion
- Configurable automation tool that works with most used ETL/ELT platforms including:
  - Informatica
  - DataStage
  - Talend
  - SQL
  - Scripting Languages
- Ability to update conversion configurations to handle exception cases and iterate through ~80% automated converted code

HOW

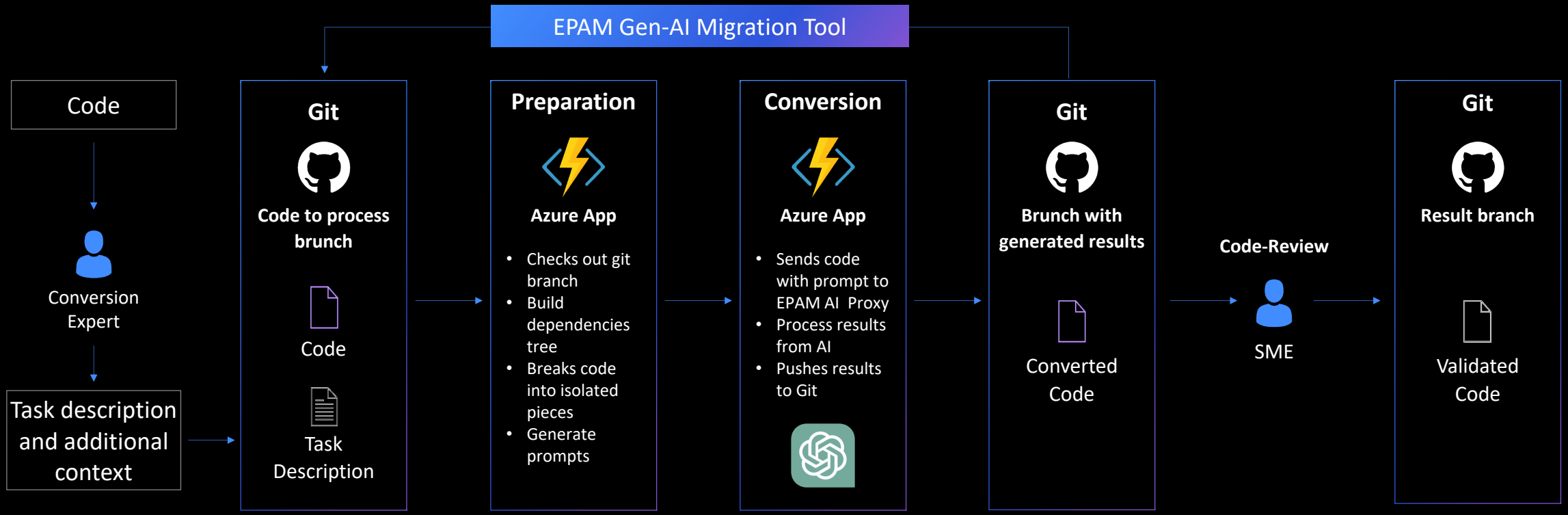


1. **Set up an environment** for ETL conversion from legacy low-code to pySpark
2. **Converter Reader Configuration** configures as per source metadata (up to 20 days depending on source)
3. **Writer Configuration** uses appropriate configuration as per target platform
4. **Convert & Iterate** perform conversion and iterate/adapt through ~80% code (convert 20% high-complexity workloads manually)

KEY DIFFERENTIATORS

- High-performance tools for automated ETL and SQL conversion from legacy low-code to pySpark
- Integrated with EPAM's framework for legacy workloads migration and reconciliation

migVisor Converter Empowered by Gen-AI



Unlock the power of seamless code processing with OpenAI, enabling effortless transformation of code, streamlined collaboration with git, and innovative integration into diverse projects.

migVisor Streaming

Empowered by migVisor Streaming

WHY

| Streaming Cloud Migration is a complex process, and full of uncertainties

| Extremely time-consuming process of manual assessment and cost estimation

| Lack of automated migration assessment, planning and implementation tools for a repeatable process

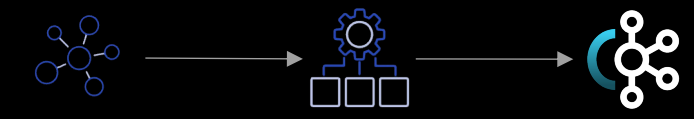
WHAT

KEY CAPABILITIES

- Accelerating & Streamlining a complex Migration Planning process through intuitive Admin UI
- Eliminating the barriers to buy by reducing the uncertainties surrounding the target streaming platform migration complexity and future runtime cost with a click of a button
- Approximately reducing streaming migration time and cost by more than 50% -based on previous manual migration experience-

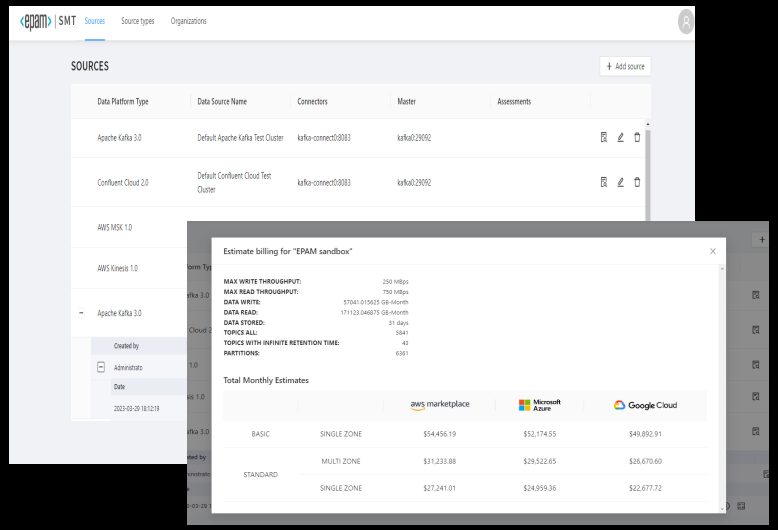
HOW

HOW TO USE IT ON A PROJECT



1. Deploy and configure the SMT Tool
2. Create the current Configuration Assessment Report by a click of a button
3. Create the Migration Plan
4. Create Estimation Report based on the Migration Plan
5. Invoke the Migration plan and create the Target Cloud Streaming Structure
6. Migrate Data

migVisor Streaming – Confluent Edition



KEY DIFFERENTIATORS

| Intuitive Migration Assessment & Planning UI Tools

| Ease of Deploy and Use

| Integrated into a complete E-2-E Cloud Migration Plan

Data Reconciliation

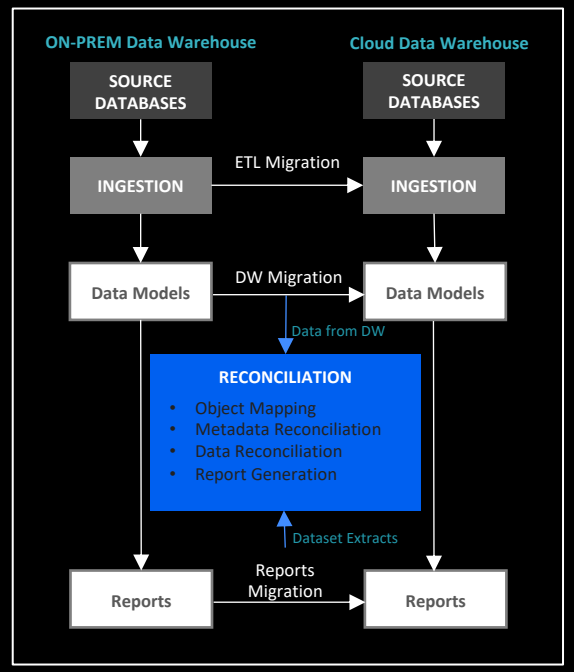
Empowered by migVisor Reconciler

WHY

- Inconsistency in scheme and database after the migration from legacy DWH
- Discrepancy in audit reports between could and legacy BI
- High complexity of Data Quality checks during the migration execution

WHAT

COMPLETELY INTEGRATED INTO MIGRATION PROCESS



RECONCILIATION CAPABILITIES

- Schema comparison (tables, columns, partitions, DB objects)
- Statistics comparison (Row count, checksum)
- Data comparison (value by column)
- Automated database scanning
- AI-driven approach for mapping tables, columns and data types
- High-performance scalable data comparison
- Several layers of reconciliation (quick, detailed, deep analysis)

Connector & Metadata Readers

snowflake, ORACLE, teradata., Amazon S3, IBM DB2, Azure Synapse Analytics, PostgreSQL, Amazon Athena, SAP S/4 HANA, Databricks

HOW

HOW TO USE IT ON A PROJECT

1. **Setup environment**
   - Deploy infrastructure
   - Configure connectors
   - Setup monitoring
2. **Create mapping for databases and reports**
   - Execute automated mapping based on AI technologies
   - Review established mapping for schema and data types
3. **Integrate with migration process**
   - Integrate with CI/CD
   - Include into regular testing
   - Add to data quality procedures
   - Add to audit process
4. **Analyze reconciliation report**
   - Setup report subscriptions
   - Review reconciliation report and provide feedback

KEY DIFFERENTIATORS

- Reconciliation on reports and data level
- Automated AI-based process of database scanning and mapping
- Scalable solution for large datasets

We are applying our accelerators to execute migration for industry leaders

GLOBAL FOOD COMPANY

migVisor analytics

ETL & Report Migration

Client engaged EPAM to perform an assessment of CBI & Perseus reporting tools and propose an efficient migration approach with a focus on business value.

Used EPAM's Migration Assessment Methodology to **investigate 60k legacy ETL pipelines, 37k reports and 16 data platforms** over 6 weeks.

Worked with application owners and global architecture team to **determine optimal migration path.**

GLOBAL TELECOMMUNICATION COMPANY

migVisor transactional

Rapid Discovery and Assessment for Database Migration

Driven by an urgent need to leave the on-prem data center, a multinational telecommunications, information technology, and consumer electronics company came to EPAM.

Executed **detailed assessments** for all source databases (1,000+), including PostgreSQL and MySQL.

Analyzed **additional 3,000** databases as part of the assessment.

Closed the project in 90 days, which likely **saved 1 year of expensive analysis.**

GLOBAL PETROCHEMICALS COMPANY

migVisor reconciler

Continuous data reconciliation during migration

Reconcile financial data sourcing from multiple SAP ERP source systems to SAP CFIN.

Reconciliation results are shown in the Power BI Dashboard PDF/Excel reports.

Reconciler automatically mapped source and target tables performed schema conversion checks and assessed data quality post-migration. **95% of the data** (**300 mln records**), was reconciled within a week. migVisor Reconciler helps speed up the reconciliation increase the reliability and accuracy of the data.

INFORMATION SERVICE, EDUCATION AND FINANCIAL COMPANIES

migVisor code converter

Code Conversion for migration streamline

Data Warehouse were migrated to a Databricks-based stack.

EPAM utilized an automated tool powered by OpenAI's Language Model (LLM), which converted **90%** of low to medium complexity code, and **50%** of highly complex code, streamlining the migration process.

The conversion significantly accelerated, reducing conversion times by **4 times** for SQL and **3 times** for SSIS components. This transformation also harnessed the capabilities of Databricks for better data management.

Thank you!

For more information, please visit

EPAM SolutionsHub