

# FUTURE OF DATA MANAGEMENT

REAL-TIME PROCESSING,  
CLOUD-NATIVE DATABASES,  
AND AUTOMATION



PRESENTED BY:  
SHIENA COMBO  
JOHN GEROME E. LUMBIS  
MICHELLE ANN TANCHUCO



# INTRODUCTION

- The digital landscape is rapidly evolving.
- Data is becoming larger, faster, and more complex.
- Modern businesses must manage **real-time, distributed, and intelligent** data systems.
- This presentation explores **future trends** that define the next era of data management.



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# LEARNING OBJECTIVES



By the end of this presentation, you should be able to:

1. Evaluate challenges of managing data in a modern digital environment.
2. Explain how real-time data processing works.
3. Identify features of cloud-native databases.
4. Describe how automation and AI transform data management.
5. Recognize future trends such as AI, blockchain, and analytics.



# CHALLENGES IN MODERN DATA MANAGEMENT

- Increasing **data volume and velocity** (Big Data).
- Maintaining **data quality and governance**.
- Ensuring **security and compliance** with regulations.
- Integrating **multiple data sources and cloud systems**.
- Handling **real-time insights and low-latency processing**.



# REAL-TIME DATA PROCESSING

Processing and analyzing data as soon as it's generated - no waiting for batch updates.

## Importance:

- Supports **instant decision-making**.
- Powers **IoT, banking transactions, and live monitoring systems**.

## Key technologies:

- **Apache Kafka** - Distributed streaming platform for handling real-time data feeds.
- **Apache Flink** - Framework for real-time computation and stream analytics.



# REAL-TIME DATA PROCESSING KEY TECHNOLOGIES

## Apache Kafka Overview

- Handles high-throughput, low-latency data streams.
- Enables communication between data producers and consumers.
- **Common uses:**
  - Log aggregation
  - Real-time monitoring
  - Event streaming in apps and services



# REAL-TIME DATA PROCESSING KEY TECHNOLOGIES

## Apache Flink Overview

- Open-source stream processing framework.
- Allows Stateful computation over unbound data streams.
- **Works well for:**
  - Real-time analytics
  - Fraud detection
  - IoT event processing



# CLOUD-NATIVE DATABASES

## Definition

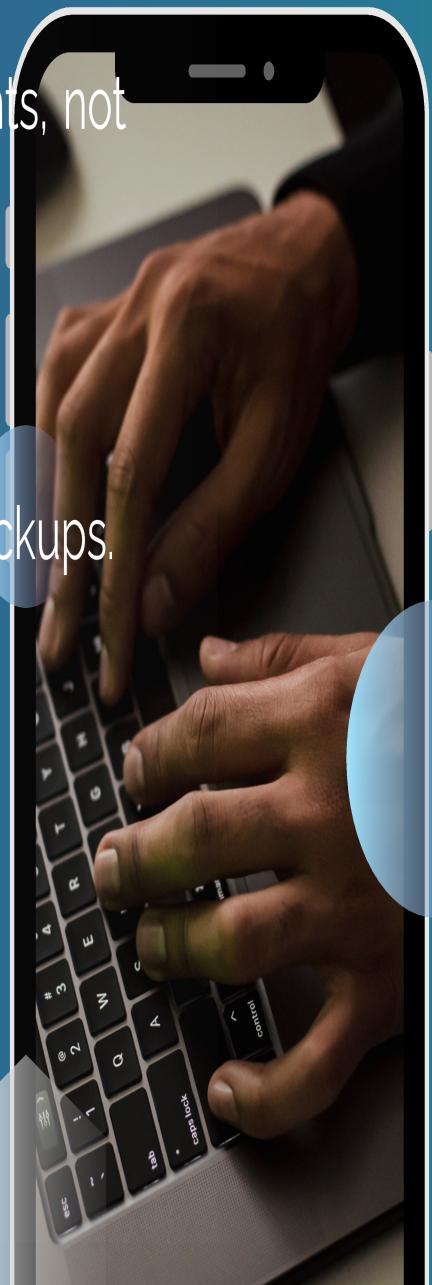
Databases designed to run in cloud environments, not just on-premises.

## Advantages:

- **Scalability** - Expand resources easily.
- **High availability** - Automatic failover and backups.
- **Cost efficiency** - Pay only for what you use.

## Challenges:

- **Data security** and **compliance** issues.
- **Complex migrations** from legacy systems.
- **Vendor lock-in** risks.



# AUTOMATION IN DATA MANAGEMENT

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## Automation involves:

- Streamlining repetitive data tasks.
- Using **AI tools** for:
  - Data pipeline automation
  - Real-time performance monitoring
  - AI-driven decision support

## Benefits:

- Reduces manual errors
- Improves processing speed
- Enables predictive and proactive maintenance



# FUTURE TRENDS



1. **Artificial Intelligence (AI)** - Predictive analytics, smart data cleanup, autonomous systems.
2. **Blockchain** - Secure, tamper-proof data sharing and verification.
3. **Real-Time analytics** - Immediate insights from live data.
4. **Edge Computing** - Processing data closer to where it's generated.
5. **Data Mesh Architecture** - Decentralized data ownership for large organizations.



# SUMMARY

- The future of data management is **real-time, automated, and intelligent.**
- Organizations must adapt to **cloud-native and AI-driven** approaches.
- Technologies like **Kafka, Flink, and blockchain** shape this future.
- Data managers must evolve from **storage focus** to **insight and innovation** focus.



**THANK  
YOU!**

