

Big Data Architecture

2027 20 – 16
Amsterdam (Netherlands)

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Big Data Architecture

R20228781 | 2207-176 | Location: Amsterdam (Netherlands) **Fees:** 5900 GBP

Why This Course

In the digital era, data is the backbone of innovation, decision-making, and competitive advantage. Organizations that effectively harness big data architectures can unlock deep insights, optimize performance, and accelerate digital transformation.

The Big Data Architecture program provides participants with a comprehensive understanding of how to design, implement, and manage modern data ecosystems.

It explores the key components of distributed data systems, real-time analytics, data governance, and cloud integration — preparing professionals to architect scalable, secure, and high-performing big data solutions.

Through a blend of technical insight, strategic design principles, and applied case studies, this program bridges the gap between data engineering and enterprise strategy — enabling participants to build architectures that support business growth and innovation.

What You'll Learn and Practice

By joining this program, you will:

- Understand the core principles and components of big data architecture.
- Learn how to design data pipelines, storage layers, and processing frameworks.
- Explore distributed systems such as Hadoop, Spark, and cloud-native architectures.
- Master concepts in data ingestion, transformation, and real-time analytics.
- Develop strategies for data governance, quality, and security.
- Understand cloud data platforms — AWS, Azure, and Google Cloud ecosystems.
- Gain hands-on insights into data lake and data warehouse integration.
- Learn to align technical architecture with business intelligence and analytics goals.

The Program Flow

Day 1: Foundations of Big Data and Architecture Design

- Understanding big data: volume, velocity, variety, and veracity.
- Big data architecture layers and system components.
- Data lifecycle and enterprise data ecosystem overview.
- On-premise vs. cloud-based architecture: pros and trade-offs.
- Case study: How global enterprises use data architecture to enable AI-driven decisions.

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Day 2: Data Ingestion and Storage Systems

- Batch and real-time data ingestion techniques.
- ETL Extract, Transform, Load vs. ELT and streaming pipelines.
- Data storage solutions — relational, NoSQL, and object-based systems.
- Building scalable data lakes and integrating data warehouses.
- Workshop: Designing a hybrid data ingestion pipeline.

Day 3: Distributed Processing and Analytics Frameworks

- Introduction to Hadoop ecosystem components HDFS, MapReduce, Hive, Pig.
- Real-time data processing with Apache Spark, Flink, and Kafka.
- Dataflow orchestration with Airflow and streaming architecture patterns.
- Hands-on exercise: Structuring a Spark-based analytics pipeline.
- Case study: Real-time analytics in e-commerce and financial systems.

Day 4: Governance, Security, and Optimization

- Data governance frameworks and metadata management.
- Ensuring data quality, lineage, and master data management MDM.
- Security principles — encryption, access control, and privacy by design.
- Compliance standards: GDPR, HIPAA, and ISO data management norms.
- Group exercise: Building a compliance-driven data architecture model.

Day 5: Cloud-Native and Future-Ready Architectures

- Cloud data ecosystems: AWS Redshift, Azure Synapse, and Google BigQuery.
- Serverless and microservices-based data architectures.
- AI and machine learning integration in data pipelines.
- Cost optimization and scalability considerations.
- Final project: Designing a full big data architecture for a digital enterprise.

Individual Impact

- Build technical and strategic mastery in big data architecture design.
- Strengthen analytical, problem-solving, and system integration skills.
- Gain confidence in managing scalable, secure, and high-performance data environments.
- Learn to align architecture frameworks with business intelligence objectives.
- Enhance your professional profile as a data-driven digital transformation leader.

Work Impact

- Enable data-driven decision-making through structured, scalable architectures.
- Improve data processing speed, accuracy, and accessibility across departments.
- Reduce operational inefficiencies through modernized data infrastructure.
- Ensure compliance and governance across complex data ecosystems.
- Accelerate organizational innovation through AI-ready data systems.

Training Methodology

This program combines technical frameworks, architectural design labs, and real-world case studies to ensure both practical and strategic expertise.

Learning methods include:

- Interactive lectures and live demonstrations of big data tools.
- Hands-on architecture design workshops and data flow modeling.
- Case studies on enterprise data modernization.
- Group simulations for data governance and performance optimization.
- Reference toolkits and architecture templates for workplace applications.

Beyond the Course

Upon completion, participants will be equipped to design and manage robust big data architectures that support innovation, efficiency, and digital transformation.

Graduates of this program will emerge as strategic data architects and engineering leaders — capable of transforming complex data ecosystems into engines of business intelligence and growth.

A graphic of a chessboard with several chess pieces (a king, a queen, and a pawn) in the foreground. The board is checkered, and the pieces are in various positions. The text 'UK Training PARTNER' is overlaid on the right side of the board.

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