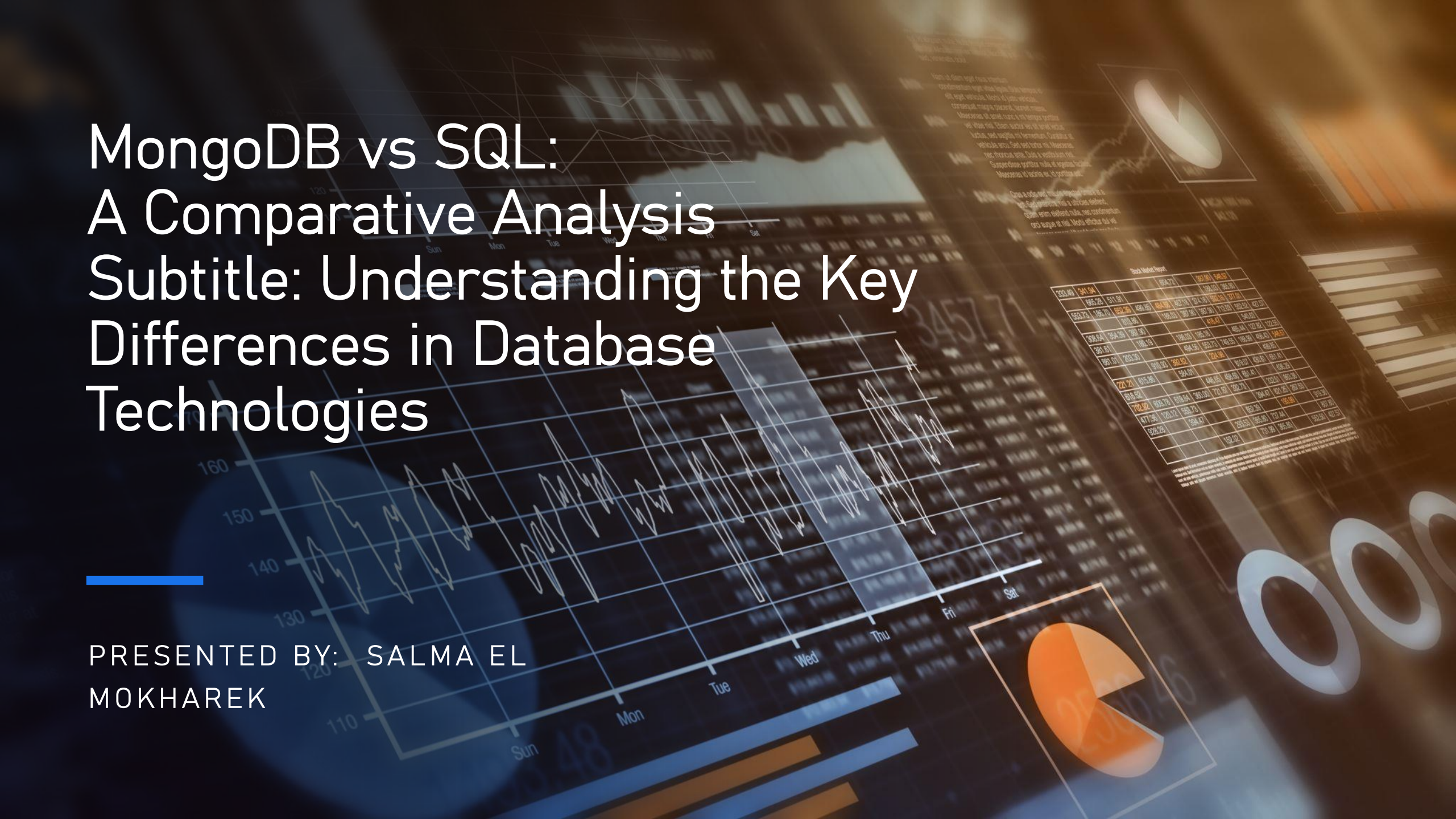
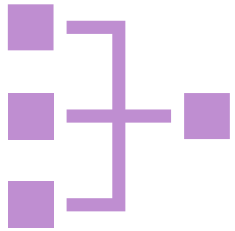


MongoDB vs SQL: A Comparative Analysis Subtitle: Understanding the Key Differences in Database Technologies

PRESENTED BY: SALMA EL MOKHAREK

Introduction to SQL



Structured Query Language (SQL):

📋 SQL is a relational database management system (RDBMS).

📂 Data is stored in structured tables with predefined schemas.

🗄️ Examples: MySQL, PostgreSQL, SQL Server, Oracle.

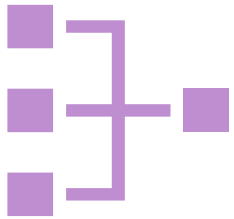
Key Features:

🏗️ Uses structured tables with rows and columns.

🔒 Ensures data integrity through ACID properties (Atomicity, Consistency, Isolation, Durability).

📊 Ideal for applications requiring complex queries and relationships between data.

Introduction to MongoDB



MongoDB:

🌐 A NoSQL, document-oriented database.

📄 Data is stored in flexible, JSON-like BSON documents.

🔍 Best suited for unstructured or semi-structured data.

Key Features:

🧩 Flexible schema design, allowing dynamic data structures.

🌍 Scales horizontally, ideal for distributed systems.

⚡ Efficient for real-time analytics and big data applications.

Key Comparisons

Feature	SQL (📋)	MongoDB (🌐)
Data Structure	📊 Tables with rows & columns *(Add table diagram)*	📄 JSON-like BSON documents *(Add JSON visual)*
Schema	📋 Fixed schema required	🧩 Flexible schema structure
Scalability	📈 Vertical scaling *(Add server rack icon)*	🌍 Horizontal scaling *(Add cluster diagram)*
Performance	⚙️ Efficient for complex queries *(Add database speed icon)*	⚡ Optimized for fast, large-scale data handling *(Add performance chart)*
Transaction Support	🔒 Strong ACID compliance *(Add lock/shield icon)*	🔄 Supports transactions since v4.0 (less robust than SQL)

Which One to Choose?

Choose SQL When:

 Data is structured and requires complex relationships.

 You need strong transactional support

 Consistency and data integrity are priorities.

Choose MongoDB When:

 Data structure is dynamic or semi-structured.

 Horizontal scalability and high performance are key

 You're handling large volumes of unstructured data.