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Experiment 1

Aim : Case Study on professional and commercial database : Summary and comparison.

Theory :

MakeMyTrip, one of India's leading online travel companies, has long relied on MongoDB as its database system. MongoDB, a NO SQL database, offers advantages like Developer UX., Scalability, Transactionality, platform maturity & an extensive ecosystem. These features have been vital for MakeMyTrip's operations. However as the company grows & the demand for realtime data processing increases, it's crucial to explore more efficient solutions.

Requirements that are crucial for MakeMyTrip's operations.

(a) Real Time Data Processing
(b) Scalability
(c) Reliability
(d) Performance
(e) Cost Effectiveness

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What MongoDB provided us ?

(a) Developer UX
MongoDB's flexible schema allows developer to work with semi-structured & structured data intuitively, accomodating changing data requirements.

(b) Scalability & Transactionality
MongoDB's horizontal scalability supports growing data volumes & transactional support, crucial for applications requiring ACID properties.

(c) Platform & Ecosystem Maturity
With a mature ecosystem & extensive community support. MongoDB has proven reliable. It integrates well with various languages, frameworks & cloud platforms

Limitations of MongoDB

(a) Joins not supported
MongoDB lacks traditional SQL join support, making complex queries with multiple collections challenging & potentially leading to slower query performance.

(b) Limited Data Size & Nesting
MongoDB may not handle extremely large datasets efficiently or complex, nested data structures.

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Comparison of MongoDB with our proposed database "Apache Druid"

Features	MongoDB	Apache Druid
(1) Real Time Data Processing	It is an excellent for transactional workloads but may not be the best fit for real time data ingestion & fast aggregation queries	It is designed specifically for real time data ingestion & can provide sub-second query responses, which is crucial for real-time data analytics
(2) OLAP workloads	It is a document-oriented database that excels in operational workloads. However, it may not be as efficient for online analytical processing workloads that require fast aggregation queries over large datasets	Apache Druid, with its column oriented storage can perform complex analytical queries more efficiently, making it better fit for OLAP workloads
(3) Data Retention & Roll up	It stores data as it comes without any roll-up feature. This could lead to	It supports data roll-up at ingestion time, which can significantly reduce

		larger storage requirements if detailed raw data needs to be retained	the size of raw data. It is beneficial when retaining detailed data is not the requirement
(4)	Query Flexibility	It's query language is powerful but may not offer the flexibility needed for complex analytical queries	It is fulfilled by Druid Apache

Conclusion :

MakeMyTrip's decision to transition to Apache Druid is not just a technical upgrade but a strategic step towards ensuring our sustained growth & excellence in the travel industry.