IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.57
Volume 4, Issue 1, August 2024

Interactive Document Editing and Distributed Synchronization Using Azure Cosmos and WebSockets

Sri Rama Chandra Charan Teja Tadi
Lead Software Developer, Austin, Texas

Abstract: *As interactive (collaborative) work transitions to real-time multi-user environments, the underlying infrastructure handling the interactions must also evolve in parallel. This architecture blends WebSocket-based streaming with Azure Cosmos DB's distributed consistency model to synchronize document states across clients at low latency. Edits are encoded as deltas, which are captured through the database's change feed and dispatched using stateless Azure Functions. Operational transforms resolve concurrent edit conflicts to maintain intent across overlapping user activity. Document histories are managed through snapshot intervals and temporal indexing, while security is enforced through stream-level isolation and scoped authentication. The result is a robust event-driven foundation for large-scale, interactive editing.*

Keywords: Interactive Editing, Collaborative Systems, Real-Time Synchronization, WebSocket Communication, Azure Cosmos DB, Operational Transforms, Change Feed, Serverless Architecture