Research plan

Introduction

ICAP is designed to be an all-encompassing enterprise scale web platform. It would replace a lot of existing separated out communities and platforms for talking about airsoft and bring it all into a single platform that allows for direct-messaging, commisioning, buying & selling, live-updating forums and group matching. An interesting aspect to look at is the combination of scalable/enterprise architecture with messaging and live-updating. Enterprise architecture mostly uses async messaging to function so how would live-updating forums and messaging function within the architecture?

Research question

The research for the project aims to provide more insight into the abovementioned combination of enterprise architecture and live messaging:

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What are the essential architectural components, technologies, and best practices
required to develop and integrate real-time, live-updating forums and messaging
systems into enterprise-scale software applications, while ensuring scalability,
reliability, and security?
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Some of the most interesting sub-questions that can be formulated based off this research question are:

1. What are the architectural design patterns and frameworks commonly used for building real-time communication features in enterprise-scale applications?
2. How can the chosen technology stack ensure scalability to accommodate a large number of concurrent users and messages in a real-time messaging system?
3. What are the best practices for ensuring data consistency and reliability in a live-updating messaging system, especially in scenarios with high data throughput and potential network failures?
4. What security measures and protocols should be implemented to protect sensitive data and prevent unauthorized access or data breaches in live-updating forums and messaging systems within enterprise software?
5. How can user experience and usability be optimized in live-updating forums and messaging systems while maintaining performance and responsiveness?
6. How can monitoring, analytics, and diagnostics tools be employed to ensure the real-time performance and health of the messaging system in an enterprise context?
7. What are the legal and compliance considerations, such as data retention policies and compliance with industry regulations, when implementing live-updating forums and messaging in enterprise software?

Methods

Using the methods provided by ICTResearchMethods we can assign some examplary straties to the sub-questions in order to get results back for the research questions that is easy to fact-check.

1. Architectural Design Patterns and Frameworks:

   - Literature Study: Conduct a thorough literature study to identify existing architectural design patterns and frameworks commonly used in real-time communication systems. Analyze their strengths, weaknesses, and applicability to enterprise-scale software.

2. Scalability of Technology Stack:

   - Available product analysis: Look at the performance of existing enterprise architecture setups and see what kind of problems they had to resolve in order to achieve their goals.
   - Design pattern research: Use this to find out which patterns to apply and which anti-patterns to avoid during development.

3. Data Consistency and Reliability:

   - Available product analysis: Examine real-world cases where data consistency and reliability have been major concerns in live-updating messaging systems. Analyze how organizations have addressed these issues.

4. Security Measures:

   - Expert interview: Conduct interviews with security experts or stakeholders to gather insights into the security measures and protocols required for live-updating messaging systems. Assess the importance of encryption, access controls, and threat detection.

5. User Experience Optimization:

   - Usability Testing: Perform usability testing with potential users of the messaging system to evaluate the user experience. Gather qualitative and quantitative feedback on interface design and responsiveness.

6. Monitoring and Diagnostics:

   - Benchmark test: Create experiments to evaluate the effectiveness of various monitoring and diagnostics tools for ensuring real-time performance and system health in live-updating messaging systems.

7. Legal and Compliance Considerations:

   - Literature Study: Review relevant literature and legal documents to understand the legal and compliance considerations when implementing live-updating forums and messaging in enterprise software. Analyze industry-specific regulations and data retention policies.