**System Limitations**

**1.** **Limitations of VXML Technology**

Rigid Call Flows: VoiceXML (VXML) is mainly designed for scripted, menu-driven dialogues, making it less effective for dynamic, conversational AI.

Limited Natural Language Understanding: VXML focuses on predefined grammars, which restricts the ability to understand complex or unstructured speech inputs.

Integration Overheads: Adapting VXML-based systems to modern AI frameworks requires extra middleware or replacement, which increases complexity.

Poor Personalization: Traditional VXML lacks built-in support for contextual and personalized experiences, unlike AI-driven systems.

**2. Issues with Scalability, Flexibility, and Maintenance**

Scalability Bottlenecks: As call volume grows, managing AI models, databases, and concurrent speech processing becomes resource-intensive.

Flexibility Constraints: Upgrading call flows or adding new services requires retraining models and redesigning workflows, which can slow deployment.

Maintenance Overhead: Continuous model retraining, grammar updates, and backend integrations demand skilled resources and increase maintenance costs.

Legacy Dependencies: Some organizations still rely on older telephony infrastructure, which limits the ability to scale seamlessly.

**3. Performance and Latency Challenges**

Real-Time Processing Demands: AI-driven IVR requires fast speech-to-text, intent recognition, and response generation, which may introduce delays.

Network Latency: Cloud-based solutions depend on internet connectivity; high latency can negatively impact call quality and user experience.

Concurrent User Load: Handling thousands of parallel calls with low response time is challenging without high-performance servers.

Hardware/Resource Limitations: Low-end hardware or insufficient bandwidth can cause speech recognition errors, slow responses, or call drops.