Quantum-Enhanced Federated B2B Intelligence Network

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

<title>Quantum-Enhanced Federated B2B Intelligence Network</title>

<style>

/\* Reset & Base \*/

\* { margin: 0; padding: 0; box-sizing: border-box; }

body { font-family: 'Segoe UI', Tahoma, Geneva, Verdana, sans-serif; background: #f4f6f8; color: #2c3e50; line-height: 1.6; }

h1, h2, h3, h4 { font-weight: 600; }

/\* Container \*/

.container { max-width: 1400px; margin: 40px auto; padding: 30px; background: #fff; border-radius: 15px; box-shadow: 0 10px 30px rgba(0,0,0,0.1); }

/\* Header \*/

.header { text-align: center; margin-bottom: 50px; }

.header h1 { font-size: 2.5rem; background: linear-gradient(90deg,#1e3c72,#2a5298); -webkit-background-clip: text; -webkit-text-fill-color: transparent; }

.header p { font-size: 1.1rem; color: #7f8c8d; margin-top: 10px; }

/\* Architecture Grid \*/

.architecture { display: grid; grid-template-columns: repeat(auto-fit,minmax(250px,1fr)); gap: 25px; margin-bottom: 50px; }

.layer { background: #fff; border-radius: 12px; padding: 25px; box-shadow: 0 8px 25px rgba(0,0,0,0.08); transition: transform 0.3s ease, box-shadow 0.3s ease; border-left: 5px solid; }

.layer:hover { transform: translateY(-5px); box-shadow: 0 15px 40px rgba(0,0,0,0.12); }

.layer.frontend { border-color: #e74c3c; }

.layer.api { border-color: #f39c12; }

.layer.business { border-color: #2ecc71; }

.layer.data { border-color: #3498db; }

.layer.quantum { border-color: #9b59b6; }

.layer.blockchain { border-color: #16a085; }

.layer h3 { margin-bottom: 20px; font-size: 1.4rem; }

.component { background: #f7f9fc; border-radius: 8px; padding: 12px 15px; margin-bottom: 10px; border-left: 4px solid #3498db; transition: all 0.2s ease; }

.component:hover { background: #e6f0ff; transform: translateX(4px); }

.component h4 { font-size: 1rem; margin-bottom: 4px; color: #34495e; }

.component p { font-size: 0.85rem; color: #7f8c8d; }

/\* Flow Diagram \*/

.section-title { text-align: center; font-size: 1.8rem; margin: 40px 0 25px 0; }

.data-flow { text-align: center; }

.flow-diagram { display: flex; justify-content: space-between; align-items: center; flex-wrap: wrap; background: linear-gradient(90deg, #74b9ff, #0984e3); border-radius: 15px; padding: 25px; color: #fff; gap: 15px; }

.flow-step { background: rgba(255,255,255,0.15); padding: 20px; border-radius: 12px; min-width: 160px; backdrop-filter: blur(5px); }

.flow-step h4 { font-size: 1rem; margin-bottom: 5px; }

.flow-step p { font-size: 0.85rem; }

.arrow { font-size: 1.8rem; color: rgba(255,255,255,0.8); }

/\* Metrics \*/

.metrics { display: grid; grid-template-columns: repeat(auto-fit,minmax(220px,1fr)); gap: 20px; margin-top: 30px; }

.metric-card { background: linear-gradient(135deg,#1e3c72,#2a5298); color: #fff; border-radius: 12px; padding: 25px; text-align: center; box-shadow: 0 10px 30px rgba(102,126,234,0.3); transition: transform 0.2s ease; }

.metric-card:hover { transform: translateY(-5px); }

.metric-card h3 { font-size: 2rem; margin-bottom: 8px; }

.metric-card p { opacity: 0.9; font-size: 0.9rem; }

/\* Tech Stack \*/

.tech-grid { display: grid; grid-template-columns: repeat(auto-fit,minmax(180px,1fr)); gap: 15px; margin-top: 25px; }

.tech-item { background: #fff; border-radius: 12px; padding: 20px; text-align: center; box-shadow: 0 5px 15px rgba(0,0,0,0.08); transition: transform 0.2s ease; }

.tech-item:hover { transform: translateY(-3px); }

.tech-item h4 { margin-bottom: 8px; font-size: 1rem; color: #2c3e50; }

.tech-item p { font-size: 0.85rem; color: #7f8c8d; }

/\* Status Indicator \*/

.status-container { margin-top: 40px; padding: 25px; background: #f7f9fc; border-radius: 15px; text-align: center; }

.status-indicator { display: inline-block; width: 12px; height: 12px; border-radius: 50%; background: #2ecc71; margin-right: 8px; animation: pulse 2s infinite; vertical-align: middle; }

@keyframes pulse { 0% { opacity: 1; } 50% { opacity: 0.5; } 100% { opacity: 1; } }

/\* Responsive tweaks \*/

@media(max-width:768px){ .architecture { grid-template-columns: 1fr; } .flow-diagram { flex-direction: column; } .arrow { display: none; } }

</style>

</head>

<body>

<div class="container">

<div class="header">

<h1>⚛ Quantum-Enhanced Federated B2B Intelligence Network</h1>

<p>Privacy-Preserving, Blockchain-Backed, Quantum-Assisted AI System</p>

</div>

<!-- Architecture -->

<div class="architecture">

<!-- Frontend -->

<div class="layer frontend">

<h3>🖥 Frontend</h3>

<div class="component"><h4>Dashboard</h4><p>Business KPIs, Recommendations</p></div>

<div class="component"><h4>Visualization</h4><p>Training rounds, accuracy, losses</p></div>

<div class="component"><h4>Quantum Insights</h4><p>Embeddings & Circuit Animations</p></div>

<div class="component"><h4>Blockchain View</h4><p>Transaction verification</p></div>

</div>

<!-- API -->

<div class="layer api">

<h3>🔗 API Gateway</h3>

<div class="component"><h4>Federated Client APIs</h4><p>Local updates exchange</p></div>

<div class="component"><h4>Authentication</h4><p>Zero-knowledge proofs</p></div>

<div class="component"><h4>Communication</h4><p>Secure gRPC/WebSockets</p></div>

</div>

<!-- Business -->

<div class="layer business">

<h3>⚙ Business Logic</h3>

<div class="component"><h4>Federated Aggregator</h4><p>Model parameter aggregation</p></div>

<div class="component"><h4>Quantum Enhancer</h4><p>Feature space transformations</p></div>

<div class="component"><h4>Recommendation Engine</h4><p>Product discovery</p></div>

</div>

<!-- Data -->

<div class="layer data">

<h3>🗄 Data Layer</h3>

<div class="component"><h4>Local Private DB</h4><p>Retailer/SME transactions</p></div>

<div class="component"><h4>Encrypted Storage</h4><p>Client-side only</p></div>

<div class="component"><h4>Metadata Logs</h4><p>Training progress & hashes</p></div>

</div>

<!-- Quantum -->

<div class="layer quantum">

<h3>🔮 Quantum Layer</h3>

<div class="component"><h4>Qubit Simulator</h4><p>Qiskit/Cirq models</p></div>

<div class="component"><h4>Hybrid ML</h4><p>Quantum-classical pipeline</p></div>

<div class="component"><h4>Embeddings</h4><p>Pattern detection</p></div>

</div>

<!-- Blockchain -->

<div class="layer blockchain">

<h3>🔗 Blockchain Layer</h3>

<div class="component"><h4>Ledger</h4><p>Immutable model updates</p></div>

<div class="component"><h4>Smart Contracts</h4><p>Contribution rewards</p></div>

<div class="component"><h4>Verification</h4><p>Consensus validation</p></div>

</div>

</div>

<!-- Data Flow -->

<h2 class="section-title">📊 Data & Model Flow</h2>

<div class="data-flow">

<div class="flow-diagram">

<div class="flow-step"><h4>Local Training</h4><p>Each SME trains privately</p></div>

<div class="arrow">→</div>

<div class="flow-step"><h4>Federated Aggregation</h4><p>Central secure aggregation</p></div>

<div class="arrow">→</div>

<div class="flow-step"><h4>Quantum Enhancement</h4><p>Advanced embeddings</p></div>

<div class="arrow">→</div>

<div class="flow-step"><h4>Blockchain Validation</h4><p>Immutable proof</p></div>

<div class="arrow">→</div>

<div class="flow-step"><h4>Recommendations</h4><p>Business insights delivered</p></div>

</div>

</div>

<!-- Metrics -->

<h2 class="section-title">🎯 System Metrics</h2>

<div class="metrics">

<div class="metric-card"><h3>92%</h3><p>Recommendation Accuracy</p></div>

<div class="metric-card"><h3>&lt;200ms</h3><p>Insight Latency</p></div>

<div class="metric-card"><h3>100%</h3><p>Data Privacy Retained</p></div>

<div class="metric-card"><h3>Immutable</h3><p>Blockchain-backed Logs</p></div>

</div>

<!-- Technology Stack -->

<h2 class="section-title">🛠 Technology Stack</h2>

<div class="tech-grid">

<div class="tech-item"><h4>Frontend</h4><p>React, Tailwind, Recharts</p></div>

<div class="tech-item"><h4>Backend</h4><p>Flask/FastAPI</p></div>

<div class="tech-item"><h4>Quantum</h4><p>Qiskit, Cirq</p></div>

<div class="tech-item"><h4>Federated ML</h4><p>TensorFlow Federated</p></div>

<div class="tech-item"><h4>Blockchain</h4><p>Hyperledger / Ethereum</p></div>

<div class="tech-item"><h4>Cloud</h4><p>AWS, GCP, Azure</p></div>

</div>

<!-- Status -->

<div class="status-container">

<h3><span class="status-indicator"></span>System Status: Active</h3>

<p>All services operational • Training rounds ongoing • Blockchain synced</p>

</div>

</div>

</body>

</html>