**Use Case Proposal**

**Proposed GenAI/ML Use Cases for Tejas Networks**

**1.Network Optimization and Predictive Maintenance**

**Objective:** Reduce network downtime and enhance operational efficiency.

**Description:** ML models analyze network performance data, predict equipment failures, and schedule proactive maintenance to prevent disruptions.

**Technology:** GenAI for simulating network conditions, ML algorithms for predictive maintenance.

**Feasibility:** Moderate due to data constraints but highly impactful for network stability.

**2.Customer Support Automation with LLMs**

**Objective:** Improve customer service efficiency and reduce response times.

**Description:** Deploy LLM-based chatbots to handle inquiries, automate ticket generation, and provide 24/7 customer support.

**Technology:** LLMs like GPT, fine-tuned for telecom-specific support questions.

**Feasibility:** High, with an extensive dataset of customer interactions available for training.

**3.Traffic Management and Bandwidth Optimization**

**Objective:** Maximize network resource utilization and improve customer experience.

**Description:** ML models analyze real-time traffic patterns to allocate bandwidth dynamically, optimizing resource usage during peak hours.

**Technology:** ML models that learn from traffic data patterns to make real-time adjustments.

**Feasibility:** High. Existing data and ML algorithms can facilitate real-time traffic management.

**4.Dynamic Pricing Models**

**Objective:** Implement responsive pricing that aligns with network usage and demand.

**Description:** ML algorithms adjust pricing in real-time based on factors like network load, customer demand, and competitor pricing.

**Technology:** ML models trained on sales and usage data for dynamic pricing.

**Feasibility:** Moderate. Requires continuous data on competitor pricing and demand trends.

**5.Enhanced Service Personalization**

**Objective:** Increase customer engagement and satisfaction.

**Description:** Analyze customer data to offer personalized plans, bandwidth upgrades, or service bundles.

**Technology:** GenAI models to generate customized offers based on user data.

**Feasibility:** High. Standard customer data can support personalized recommendation engines effectively.

**6.Automated Network Configuration**

**Objective:** Reduce manual configuration needs and operational costs.

**Description:** ML models generate optimal network configurations based on traffic patterns, reducing the need for manual adjustments.

**Technology:** GenAI for configuration generation, ML models for network optimization.

**Feasibility:** Moderate. Requires data from network configurations and traffic patterns.

**Top use cases of the competitor companies:**

**Cisco AI/ML Use Cases:**

AI-Powered Network Management

**Use Case**: Cisco uses AI to automatically detect and resolve network issues, optimize bandwidth, and enhance network performance. This is implemented in Cisco's **Network Assurance Engine** (NAE), which uses machine learning to predict potential network failures and automatically adjust the network to prevent downtime.

**Reference**: (<https://www.cisco.com/c/en/us/solutions/enterprise-networks/intent-based-networking.html>)

**AI for Security:**

**Use Case**: Cisco's **Security Analytics** platform leverages machine learning to detect unusual patterns and vulnerabilities, providing proactive threat intelligence and automated response actions.

**Reference**:(<https://www.cisco.com/c/en/us/products/security/security-analytics.html>)

2.**Ericsson AI/ML Use Cases:**

Network Automation & Predictive Maintenance:

**Use Case**: Ericsson’s **AI-Driven Predictive Maintenance** allows telecom providers to forecast network failures and optimize maintenance schedules by analyzing data from network equipment. AI is used to identify anomalies and predict failures before they occur.

**Reference**: (<https://www.ericsson.com/en/portfolio/ai-and-machine-learning>)

AI-Enhanced 5G Network Optimization:

**Use Case**: Ericsson utilizes AI to dynamically optimize its 5G networks. Their **AI-powered Radio Network Optimization** helps telecom operators adjust their network coverage and capacity based on real-time demand, improving the performance of their 5G network.

**Reference**: (<https://www.ericsson.com/en/portfolio/5g>)

3. **Nokia AI/ML Use Cases:**

AI-Powered Network Optimization:

**Use Case**: Nokia's **Cognitive Network Automation** uses machine learning to predict and resolve network problems before they impact customers. The system learns from historical data to automatically optimize network configurations and improve efficiency.

**Reference**: (<https://www.nokia.com/networks/ai-driven-networks/>)

Customer Experience Enhancement:

**Use Case**: Nokia also uses AI to enhance customer experiences by analyzing network traffic patterns and user behavior to provide personalized service offerings and improve customer satisfaction.

**Reference**:(<https://www.nokia.com/networks/customer-experience/>)

**4. Juniper Networks AI/ML Use Cases:**

AI-Driven Security with Junos Spotlight Secure:

**Use Case**: Juniper Networks uses AI in their **Junos Spotlight Secure** solution to detect security threats in real time, helping enterprises prevent cyberattacks and protect their network infrastructure.

**Reference**: (<https://www.juniper.net/us/en/dm/ai-driven-security/>)

5. **Huawei AI/ML Use Cases:**

AI-Driven 5G Optimization:

**Use Case**: Huawei’s **AI-Optimized 5G Networks** leverage machine learning to automate network configuration, predictive analytics, and real-time decision-making, optimizing network resources and improving the performance of 5G services.

**Reference**: (<https://support.huawei.com/enterprise/en/ai>)

Smart City Solutions:

**Use Case**: Huawei applies AI in their **Smart City** solutions, using machine learning algorithms to analyze traffic, manage public safety, and improve overall urban management.

**Reference**: (<https://support.huawei.com/enterprise/en/ai>)

**6. Mavenir AI/ML Use Cases:**

AI-Driven Cloud-Native Solutions:

**Use Case**: Mavenir uses AI in its **Cloud-Native 5G and AI-Powered Network Solutions** to optimize telecom services, enabling faster provisioning, automation, and network performance optimization.

**Reference**: (<https://www.mavenir.com/solutions/cloud-native-5g>)