Leaning into AI & GPT

To Automate, Protect and run your Network & Business

2024 WISPAMERICA BROADBAND WITHOUT BOUNDARIES

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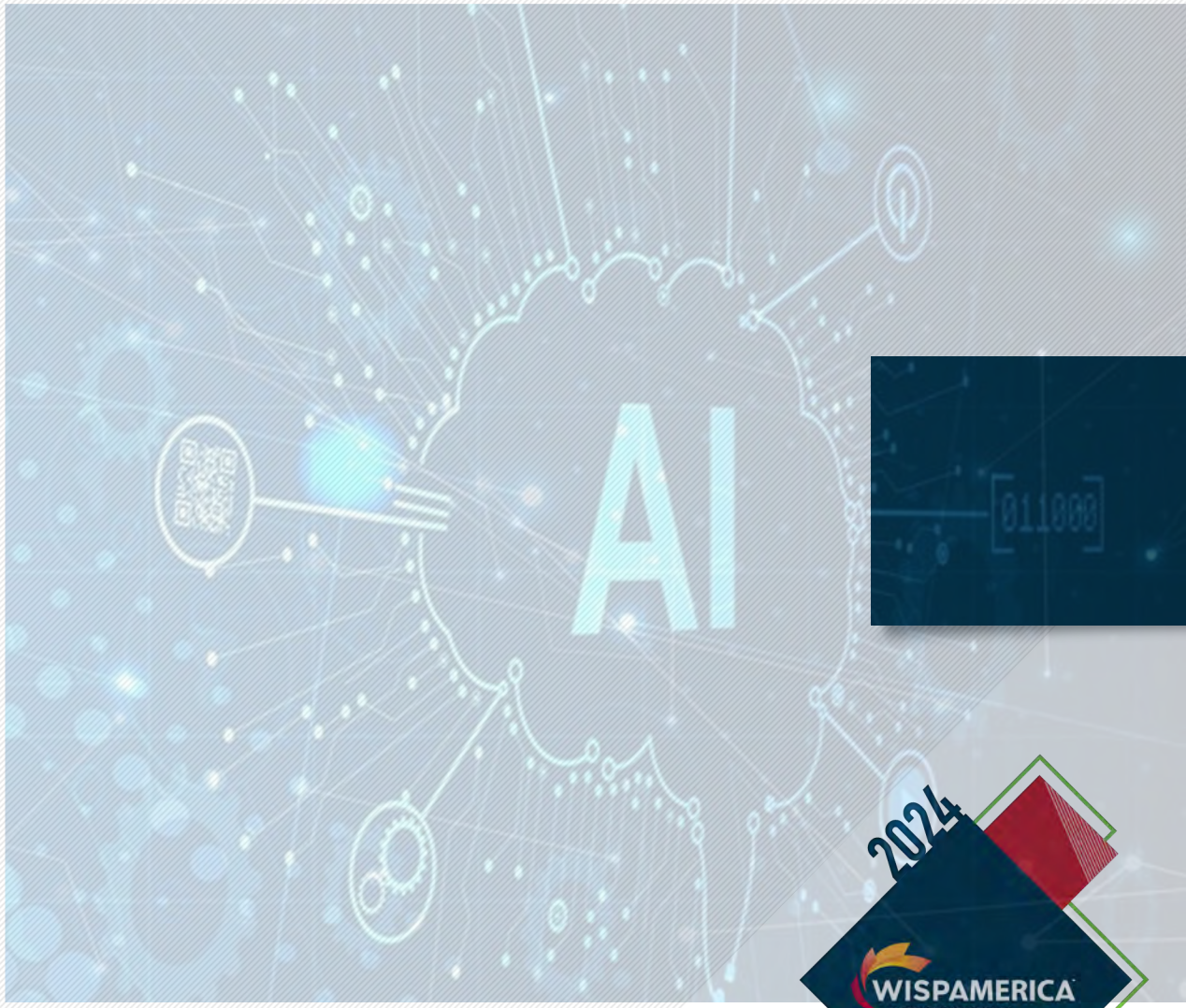

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What is AI and GPT?

An introductory explanation of AI, GPT, and their application in a Wireless Internet Service Provider Association (WISPA)

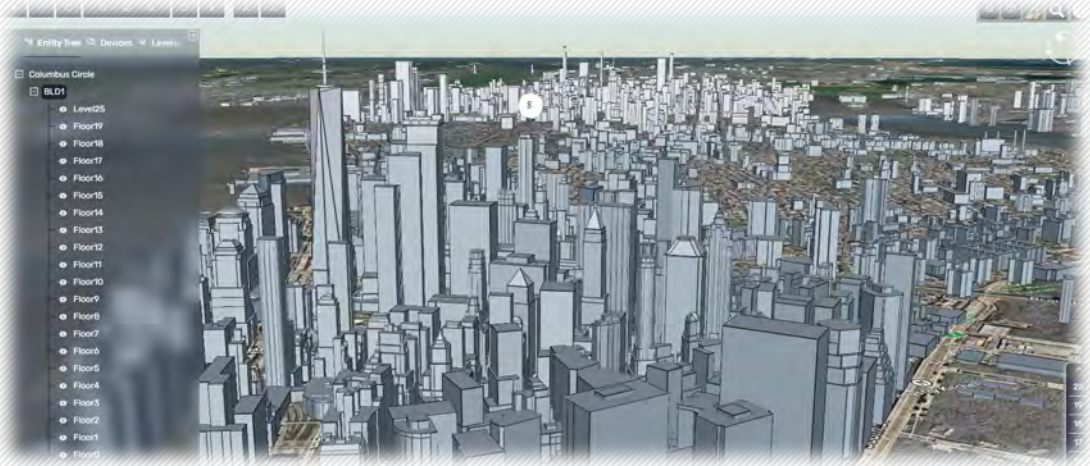
- Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think and learn

- Generative Pre-trained Transformer (GPT) is a type of AI that excels in understanding and generating human-like text based on the input it receives. It's a cutting-edge example of NLP technology, designed to interpret, predict, and create text in a way that can be indistinguishable from human writing.

Introduction

Geospatial AI SW company with focus on Unlicensed, Shared and Licensed Spectrum Technologies

Helping customers across all stages of Network Deployments from Financial Modelling, RF planning, Installation and Optimization



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What Areas of a WISP Business can AI and other AI tools help?

- **Customer Support**: AI-driven chatbots and virtual assistants can handle customer queries efficiently, providing quick responses to common issues and freeing up human resources for more complex problems.

- **Network Optimization**: AI can analyze network performance data in real-time, predicting potential issues, automating troubleshooting, and optimizing network operations to improve service quality.

- **Predictive Maintenance**: By predicting equipment failures before they occur, AI enables proactive maintenance, reducing downtime and extending the lifespan of critical infrastructure.

- **Fraud Detection and Cybersecurity**: AI algorithms can monitor network traffic for unusual patterns, identifying potential security threats and preventing fraud more effectively than traditional methods.

- **Personalized Services**: GPT and AI can analyze customer data to offer personalized service recommendations, improving customer satisfaction and potentially increasing revenue through targeted upselling.

AI in Your Support Organization

1. Chatbots for Instant Customer Service
2. Virtual Assistants for Automated Support
3. Predictive Analytics for Personalized Service
4. Automated Ticketing and Issue Resolution
5. Sentiment Analysis for Customer Feedback
6. Self-Service Portals
7. Network Issue Prediction and Notification

AI in Monitoring and Analytics

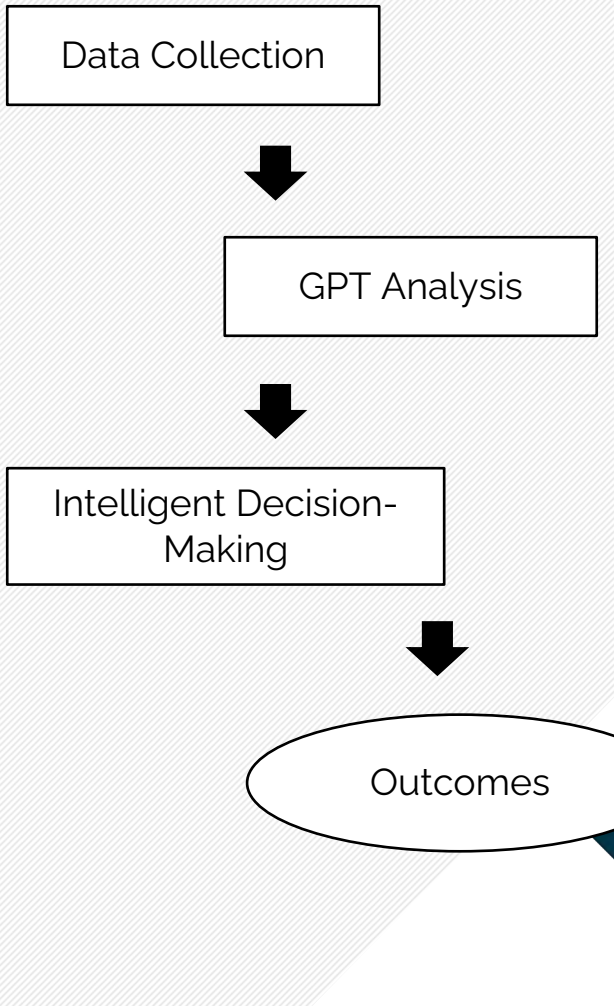
AI and GPT : Can it be used for Customer Success?

GPT : A state-of-the-art language model capable of understanding and generating human-like text.

Automation of Routine Tasks: GPT streamlines networking by automating standard operations, reducing manual workload, and increasing efficiency.

Complex Decision-Making: Leveraging its advanced natural language processing, GPT assists in complex network decision-making by interpreting data and executing informed actions.

Enhanced Network Performance: By enabling real-time optimizations and diagnostics, GPT contributes to improved network reliability and performance, paving the way for smarter network infrastructures.



AI in Your Support Organization

Examples:

•**Example**: Implementing AI tools to analyze customer feedback and social media mentions to gauge customer sentiment, helping the WISP understand overall customer satisfaction.
•**Use Case**: The AI system scans social media posts mentioning the WISP and identifies a trend of negative sentiment related to customer service wait times, prompting the company to allocate more resources to its support team.

•**Example**: AI algorithms that automatically categorize and prioritize support tickets based on urgency and complexity, directing them to the appropriate support team.
•**Use Case**: A support ticket is raised via email about a service outage. The AI system immediately categorizes it as high priority and routes it to the network operations team for rapid response.

•**Example**: Using AI to analyze customer data and interaction history to predict customer needs and provide personalized service recommendations.
•**Use Case**: The AI system identifies a customer experiencing frequent service interruptions and proactively contacts them to offer a plan upgrade with higher reliability and speeds, tailored to their usage patterns.

AI in Network Optimization

- Predictive Analytics for Traffic Management
- Dynamic Spectrum Management
- Automated Fault Detection and Diagnosis
- Self-Healing Networks
- Capacity Planning and Network Expansion
- Quality of Service (QoS) Optimization
- Energy Efficiency Improvements

AI in Network Optiimization

Examples:

•**Use Case**: AI can analyze historical network traffic data to predict future demand patterns. This allows WISPs to proactively adjust network resources, ensuring adequate bandwidth during peak times and optimizing network performance.
•**Example**: An AI system could forecast increased demand in specific areas based on historical data, enabling the WISP to dynamically allocate bandwidth to those areas in anticipation of higher usage.

•**Use Case**: AI algorithms can continuously monitor the radio spectrum for interference, noise, and availability. By dynamically adjusting the frequency channels used for wireless communication, AI can optimize spectrum use, reducing interference and improving signal quality.
•**Example**: Implementing AI for real-time spectrum analysis and allocation, ensuring optimal use of available frequencies and minimizing interference from other devices or networks.

•**Use Case**: AI can monitor network components for signs of malfunction or degradation, identifying issues before they impact service. This capability extends to diagnosing the root cause of problems, facilitating quicker resolution.
•**Example**: An AI system continuously scans for anomalies in network performance data, automatically identifying and diagnosing potential equipment failures or configuration errors, often before customers notice any service degradation.

AI and typical branches of AI that we come across

Machine Learning
Algorithms and processes that allow the Machine to learn from historical data, improving certain tasks over time without explicit programming

Deep Learning
Algorithms that use a concept called Neural networks. Are a subset of Machine Learning and leverage large amounts of data for Image processing and Object identifications

Natural Language Processing(NLP)
Involves computers to understand, interpret and generate human language. Includes applications such chatbots, sentiment analysis, text analysis etc.

There are other areas where AI is used such as Robotics, Fuzzy Logic, Expert Systems etc.

AI in System Planning and Modelling

Use Computer Vision, Deep and Machine Learning to better plan where to build, when to build and how fast to build

Accurate Mapping and install location information is critical to evaluate new financial modelling, Market entries, Capacity Planning

Rapid analysis of Detection of Assets is critical for Network Planning for Small Cells and Fixed Wireless

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AI in Predictive Maintenance

1. Equipment Failure Prediction
2. Network Health Monitoring
3. Anomaly Detection
4. Optimizing Maintenance Schedules
5. Life Cycle Management
6. Cost Reduction and Resource Allocation
7. Enhancing Customer Satisfaction

AI in Monitoring and Analytics

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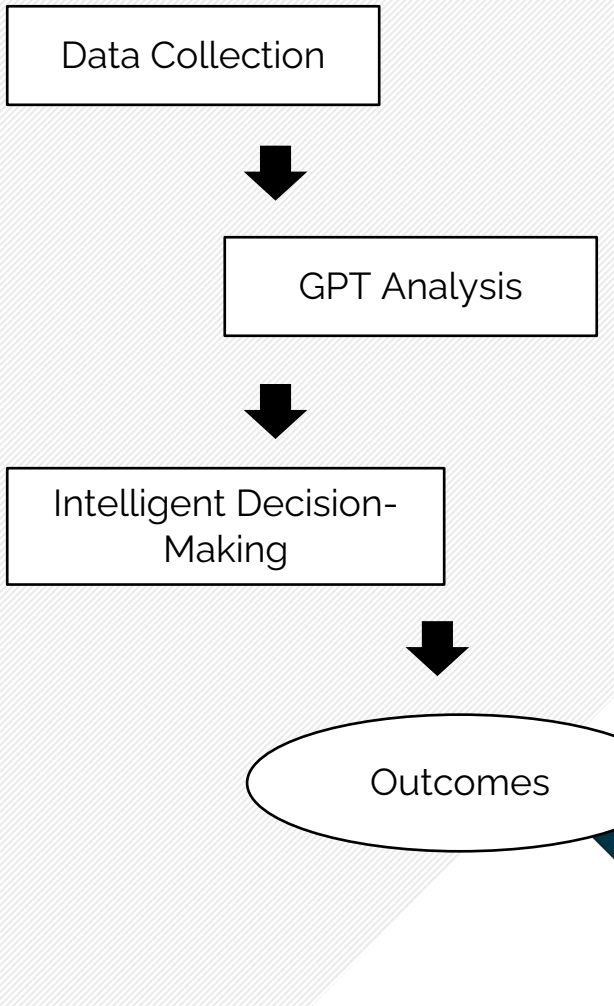
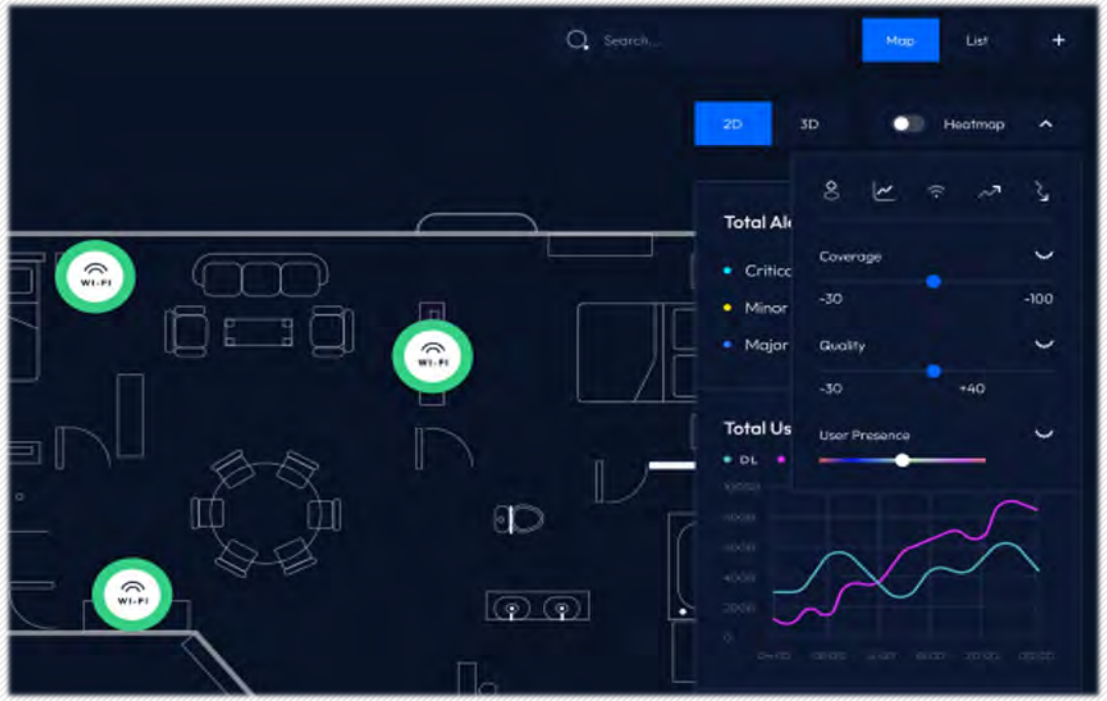
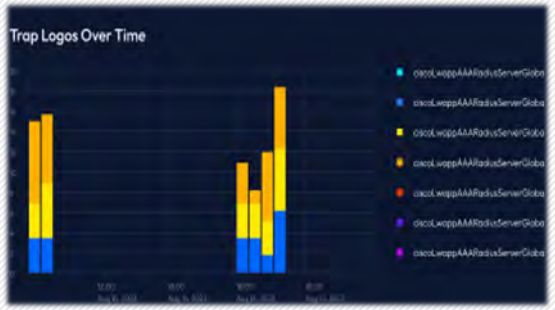


AI in Monitoring and Analytics





When you have multiple Vendors across wired and wireless network ; different protocols such as SNMP, RPC, APIs, Kafka, NetFlow etc. for Metrics, Logs and Events.

Multi-network Remote monitoring and Management across various Edge Sites

Adopting AI & GPT is essential in……

Network Optimization and Configurations

Predictive and Prescriptive maintenance to Customer experience

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AI in Monitoring and Analytics

- Predictive Maintenance: Apply ML per metric or a group of metrics to predict deviations from the a measured baseline. Predict timed failures of equipment. Proactively fix issues before customer impact

- Use GPT for building Network Topology and connections for Physical, L2, and L3 mapping

- Network Optimization:
  - Use Graph and Vector searches for troubleshooting and root cause analysis
  - Optimize Network Configurations by training network & location specific ML models

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AI in Predictive Maintenance

Examples:

•**Use Case**: AI models are trained to recognize normal operating conditions for network equipment and infrastructure. The system can then detect anomalies or deviations that may indicate a problem or an upcoming failure.
•**Example**: Using AI to monitor bandwidth usage and performance metrics across the network, detecting anomalies that could indicate an issue with a transmission line or antenna, even if the equipment is not reporting any errors.

•**Use Case**: Continuous monitoring of the network's health and performance using AI can identify signs of potential issues across the network infrastructure. This includes monitoring for signal degradation, interference, and other factors that could indicate impending equipment issues.
•**Example**: Implementing AI-driven tools that continuously assess the signal quality and throughput across various network segments to identify areas that might soon experience problems due to equipment wear or external interference.

AI in Fraud Detection and Cyber Security

- Intrusion Detection and Prevention
- Anomaly Detection
- Phishing and Malware Detection
- Real-time Threat Intelligence
- Automated Security Policy Enforcement
- Behavioral Analysis for Insider Threat Detection
- Security Orchestration, Automation, and Response (SOAR)

AI in Fraud Detection and Cyber Security

Examples:

•**Use Case**: AI systems can analyze network traffic in real-time to detect patterns indicative of cyber attacks, such as DDoS attacks, intrusion attempts, or unauthorized access. Once a threat is identified, the system can take immediate action to block the attack or alert security personnel.
•**Example**: Deploying AI-driven intrusion detection systems (IDS) that continuously monitor network traffic for signs of malicious activity, automatically isolating affected network segments to prevent the spread of attacks.

•**Use Case**: AI can identify phishing attempts and malware infections by analyzing email content, website behavior, and file characteristics. This helps in blocking harmful content before it reaches the end-users or affects the network.
•**Example**: Using AI to scan emails and web traffic for indicators of phishing, such as suspicious links or attachments, and malware signatures, preventing them from reaching users or compromising network devices.

AI in CX & Personalization

- Personalized Content and Recommendations
- Predictive Customer Service
- Automated Customer Segmentation
- Dynamic Pricing Models
- Feedback and Sentiment Analysis

AI in CX & Personalization

Examples:

•**Use Case**: AI tools can analyze customer feedback, reviews, and interactions across various channels to gauge sentiment and satisfaction levels. This insight helps WISPs to make data-driven improvements to their services and customer interactions.
•**Example**: Implementing AI to continuously monitor and analyze customer feedback from social media, support tickets, and surveys, identifying common issues and sentiment trends that can inform service improvements and customer communication strategies.

•**Use Case**: AI-driven customer segmentation allows WISPs to categorize their customers based on various criteria, such as service usage, preferences, and behavior. This enables more targeted and relevant marketing efforts and service offerings.
•**Example**: Leveraging AI to segment customers into groups based on their data usage and service preferences, allowing for targeted marketing campaigns that promote the most relevant add-ons, like security packages for businesses or gaming plans for residential customers with high latency sensitivity.

Conclusion

- AI and GPT bring extensive optimization opportunities for customer success and in improving how a Network is Optimized and maintained
- GPT models can be integrated with Customer success teams to provide relevant and pertinent information
- Specific AI types require careful consideration and Data Engineering in place to reap benefits
- Be mindful of security and ethical implications on how data is collected and trained

Questions?

THANK YOU