1. Certificate of Offeror and Statement of Understanding

TXShare
Your Public Sector Solutions Center

REQUEST FOR PROPOSALS
For
Artificial Intelligence (AI) Language Translation, Transcription, and Quality Control for 9-1-1
RFP # 2025-093

Sealed proposals will be accepted until 2:00 PM CT, **July 6, 2025,** and then publicly opened and read aloud thereafter.

Compunnel Software Group, Inc.
Legal Name of Proposing Firm

Ashish Yadav | Program Manager
Contact Person for This Proposal | Title

609-606-9010 | govt@compunnel.com
Contact Person Telephone Number | Contact Person E-Mail Address

4390 Route 1 North, Suite 302 | Princeton, NJ | 08540
Street Address of Principal Place of Business | City/State | Zip

4390 Route 1 North, Suite 302 | Princeton, NJ | 08540
Mailing Address of Principal Place of Business | City/State | Zip

Ashish Yadav | Program Manager
Point of Contact for Contract Negotiations | Title

609-606-9010 | govt@compunnel.com
Point of Contact Telephone Number | Point of Contact Person E-Mail Address

Acknowledgment of Addenda (initial): #1 AJ #2 AJ #3 _____ #4 _____ #5 _____

NOTE: Any confidential/proprietary information must be clearly labeled as "confidential/proprietary". All proposals are subject to the Texas Public Information Act.

COVER SHEET

2. A brief statement of the respondent's understanding of the work to be done or desired deliverables requested in the solicitation.

Compunnel Inc. understands that the North Central Texas Council of Governments (NCTCOG), through its TXShare Cooperative Purchasing Program, is seeking to partner with qualified vendors to deliver advanced, AI-driven language support and quality assurance capabilities tailored specifically for 9-1-1 Emergency Communications Centers (ECCs). The goal of this solicitation is to enhance the responsiveness, accuracy, and operational continuity of public safety communications through scalable AI technologies.

We recognize that the scope of this project encompasses four critical service categories:

1. **AI Language Translation for 9-1-1**: Real-time, bi-directional audio and text translation services that allow ECC call takers to communicate seamlessly with callers in multiple languages, with built-in AI-based language detection, translation memory, and robust support for pre-translated message libraries.

2. **AI Transcription for 9-1-1**: Accurate and timely transcription of live and recorded calls, with features such as keyword tagging, timestamped verbatim transcripts, optional speaker identification, noise filtering, redaction capabilities, and multilingual support.

3. **AI Quality Control for 9-1-1**: Automated evaluation of call quality using natural language processing (NLP) and voice analytics to assess adherence to protocols, emotional tone, response times, and detect potential risks or compliance issues, backed by customizable dashboards and reporting tools.

4. **Additional AI Services Relevant to 9-1-1:** Innovative or emerging AI-powered solutions that may further support ECC operations, resilience, and data-driven decision-making.

We understand that the services must meet stringent criteria for security, reliability, and performance. This includes:

- **CJIS and HIPAA compliance**;
- **99.999% uptime guarantees**;
- **US-based data hosting and encryption of data at rest and in transit**;
- **Integration with NG9-1-1 infrastructure and call handling systems**;
- And support for **multilingual access, browser-based and mobile platforms, disaster recovery, and multifactor authentication**.

Compunnel is fully prepared to support these agreements by delivering comprehensive implementation, configuration, training, and ongoing support services across all proposed categories.

Our technical team is composed of subject matter experts in AI, machine learning, natural language processing, cybersecurity, and emergency communications. We bring together certified architects, engineers, and project managers with deep domain knowledge in public sector AI deployments. Our team has successfully deployed enterprise-grade AI language services and automated QA/QC frameworks for clients with mission-

critical systems, with emphasis on usability, system integration, and regulatory compliance. We also offer implementation support, training, customization, and ongoing performance optimization to ensure client success from day one.

Compunnel's qualifications are further reinforced by recent contract awards from NCTCOG:

Artificial Intelligence (AI) Consultancy Services	*RFP #2025-023*
Artificial Intelligence (AI) Solutions for Public Sector Entities	*RFP #2025-018*

These awards affirm our alignment with NCTCOG's strategic vision and demonstrate our commitment to delivering scalable and future-ready AI solutions. As a trusted partner, we will leverage our technical depth, service excellence, and understanding of the unique demands of emergency communication environments to deliver high-impact solutions across all proposed categories.

Compunnel is excited to continue our partnership with NCTCOG and the TXShare network to strengthen the effectiveness, responsiveness, and inclusivity of 9-1-1 operations through responsible and transformative AI technology.

2. REFERENCES

Include at least four (4) recent references for customers (preferably public agencies) for whom you have provided services similar to those requested in this solicitation within the last five (5) years. Please include the organization's name (if applicable), contact person, phone number, and email address for each reference. NCTCOG reserves the right to contact or visit any of the respondents' current and/or past customers to evaluate the level of performance and customer satisfaction..

Reference #1	
Client Name	**Texas State Technical College**
Project Contact	Name: Dr. George Makiya Title: SVP- Data & Analytics Contact Number: 832-562-1782 E-Mail Id: gmakiya@tstc.edu
Project Name	TSTC Azure Data Ops and MLOps enabled Advanced Analytics
Start Date	July 2023
End Date	Ongoing

Reference #2	
Client Name	**Opticloud**
Project Contact	Name: Vijay Karia Title: Chief Executive Officer Contact Number: (401) 871-0734 E-Mail Id: vijay.karia@opticloud.com
Project Name	AI based Anomaly Detection & Notification System for GreenOps and FinOps with Agentic AI Framework
Start Date	July 2024
End Date	Ongoing

Reference #3	
Client Name	**United Nations' Alliance**
Project Contact	Name: Carlo Tortora Brayda Title: Chief Executive Officer Contact Number: +33610796584 E-Mail Id: carlo@tortorabrayda.org
Project Name	US Cyber Eagle Project
Start Date	December 2023
End Date	Ongoing

Reference #4	
Client Name	**World Bank**
Project Contact	Name: Ruby Ray Current Address: 1818 H Street, N.W. Washington, DC 20433 E-mail Address: rray@worldbank.org Telephone Number: +1 202-458-5858
Project Name	Data Strategy & Roadmap for BUs to help in auditing existing data processes
Start Date	April 2022
End Date	September 2022

3. Project-Related Experience and Qualifications

Proposals will be evaluated on the basis of experience in performing the requested goods/services. Provide a comprehensive overview of your organization's capabilities, experience, and expertise in delivering AI solutions, along with your ability to meet each requirement outlined in Section 5. Highlight any relevant past projects, particularly those involving public sector entities or similar entities.

a. Organization's Capabilities and Experience

Provide a detailed description of your organization's capabilities in delivering the requested service category(ies).

Compunnel's AI CoE

Compunnel's AI COE, which will be setup as the primary solution offering for NCTCOG, has led many strategic business transformations for its diverse clients. Our strategy for transformation marries productivity with growth and consciousness for social good. We have each industry-specific solution approach which is navigated by domain SMEs and operational excellence drivers.

Exhibit: Compunnel's AI Leadership

Our AI COE led AI transformations result in 2x faster AI development and 20-25% reduction in AI project costs. Our AICOE will help in providing advisory services for AI Initiatives Governance, AI Strategy and Roadmap Development, Industry specific Use Cases, Data Strategy and Management, Ethics and Compliance Framework, Training and Capacity Building, Change Management and Communication Plan.

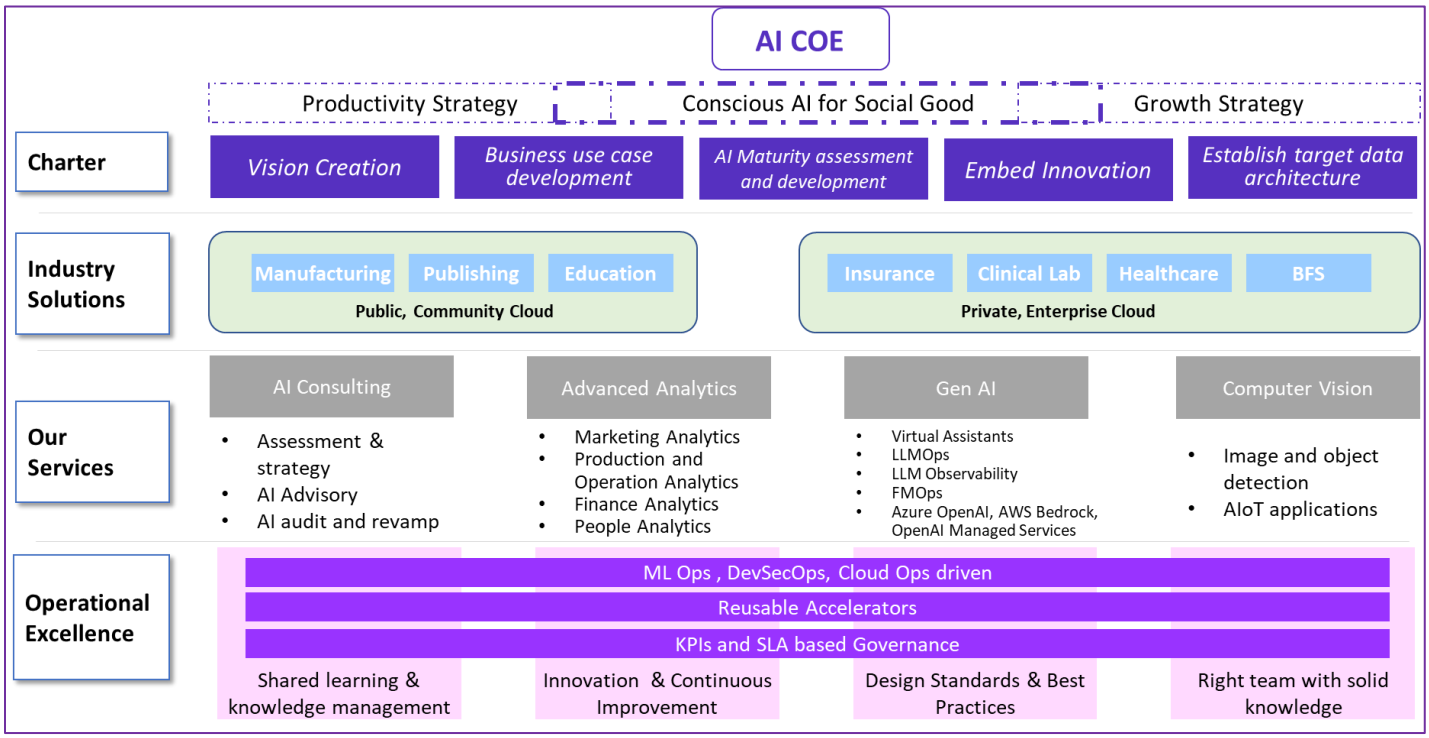


Exhibit: AI CoE structure

Project Team

At Compunnel, we believe in building strong, collaborative partnerships with our clients. We achieve this through a high-touch approach prioritizing direct communication and in-house expertise. Compunnel will assemble a highly skilled project team as follows:

Roles & Responsibilities

Role	Responsibilities
Project Manager (Business Analyst)	• Oversee the end-to-end project lifecycle, ensuring milestones are met within scope, time, and budget. • Collaborate with stakeholders to gather and refine business requirements and translate them into actionable technical tasks. • Develop and maintain detailed project plans, including timelines, resource allocation, and risk mitigation strategies. • Act as the primary communication bridge between NCTCOG stakeholders and the technical teams.
Chief AI Officer	• Provide strategic consulting on AI adoption, aligning AI initiatives with NCTCOG's long-term goals. • Lead the AI readiness discovery assessment, including data audits, organizational readiness, and capability evaluation. • Define and prioritize high-value AI use cases, ensuring alignment with NCTCOG's operational goals. • Develop an AI maturity framework and recommend improvement strategies to enhance NCTCOG's capabilities. • Drive the creation of a detailed AI strategic roadmap, outlining timelines, resources, and success metrics.
Data Scientist	• Analyze NCTCOG's data to identify trends, patterns, and insights for AI-driven decision-making.

	• Develop and train machine learning models tailored to NCTCOG's prioritized use cases. • Collaborate with the Chief AI Officer to align AI models with business objectives. • Perform data preprocessing, cleaning, and transformation to ensure high-quality inputs for model training. • Validate and fine-tune AI models through iterative testing and performance evaluation.
Software Developer	• Develop and integrate AI solutions into NCTCOG's existing systems, ensuring seamless functionality. • Create APIs and interfaces for real-time interaction with AI models. • Implement backend and frontend components for pilot and full-scale AI solutions. • Collaborate with Data Scientist to ensure model outputs are accurately processed and displayed. • Ensure code quality, security, and performance optimization in AI applications. • Work with the QA team to fix bugs and implement changes based on testing outcomes.
QA Specialist	• Develop and execute test plans and cases to validate AI solutions against project requirements. • Conduct functional, integration, and performance testing on pilot and full-scale AI implementations. • Validate data pipelines and model outputs for accuracy and consistency. • Identify, document, and track bugs through resolution in collaboration with development team. • Ensure adherence to NCTCOG's quality standards and industry best practices. • Perform regression testing to ensure updates do not impact system functionality.
L1 & L2 Support Team	• Provide first-level support to address user issues, including troubleshooting AI system errors and resolving technical glitches. • Escalate unresolved issues to the L2 team, ensuring seamless coordination between support tiers. • Monitor system health, performance metrics, and alert logs for anomalies. • Provide feedback to the implementation team on recurring issues or improvement opportunities. • Assist users with queries related to AI system functionality and usability. • Perform advanced debugging and resolution for complex system issues. • Provide periodic performance and support analytics reports to stakeholders.

• ***Project Management: Describe your approach to managing AI projects, including planning, execution, and quality assurance processes.***

Project Communication

#	Monitoring & Reporting	Frequency
1	Steering Committee Meeting	Monthly
2	Weekly Status Meeting & WSR	Weekly

- **Steering Committee Meetings** (Senior Management, Project Manager, NCTCOG's management, and other key stakeholders): These meetings are used to review all aspects of the engagement: Quality, progress viz. roadmap, communication, and any other project challenges. This meeting will also provide capacity to take major decisions regarding the project.

- **Weekly Status Meetings** (Project Manager, Offshore Delivery Manager and Offshore Technical Leads, NCTCOG's technical lead / PM): This is accompanied by a Weekly Status Report of the project sent at least a day in advance for the Weekly Status Meeting. This meeting is typically conducted through a teleconference. The weekly report's format/ template will be created and shared by the Project Manager well before the first such meeting.

Our project management approach for AI projects is a structured, iterative process that integrates industry-standard methodologies, agile frameworks, and best practices to deliver AI-driven solutions effectively. Below are the key components of our approach across planning, execution, and quality assurance phases:

1. Planning Phase: Ensuring Strategic Alignment and Readiness

We begin by establishing a strong foundation to align the project objectives with business needs:

- **Requirement Gathering & Use Case Prioritization:** Collaborate with stakeholders to identify high-value AI use cases. Conduct workshops to refine requirements and ensure alignment with business goals.
- **Feasibility Assessment:** Evaluate data readiness, infrastructure capabilities, and potential risks to validate project feasibility.
- **Strategic Roadmap:** Develop a detailed roadmap outlining key milestones, deliverables, timelines, and dependencies for pilot and full-scale implementations.
- **Team Structuring:** Assign specialized roles, including data scientists, AI engineers, QA specialists, and project managers, to ensure seamless execution.
- **Resource Planning:** Define technical, human, and data resources required for each project phase.
- **Risk Management Plan:** Identify potential risks (e.g., data quality, ethical considerations) and implement mitigation strategies.
- **Success Metrics & KPIs:** Establish measurable outcomes, such as accuracy, performance, and business impact, to track success.

2. Execution Phase: Agile and Iterative Development

Our execution methodology emphasizes agility and collaboration to ensure rapid delivery while accommodating iterative refinements:

- **Agile Framework:** Use Scrum or Kanban frameworks for iterative development, ensuring regular deliverables in the form of sprints or task cycles.
- **Data Preparation & Modeling:** Perform data cleansing, preprocessing, and feature engineering before building and training AI models.
- **Prototyping & Piloting:** Deliver proof-of-concept (PoC) or pilot solutions to validate approaches before full-scale deployment.
- **Cross-functional Collaboration:** Maintain open communication between data scientists, developers, and business analysts to address challenges in real time.
- **Continuous Stakeholder Engagement:** Conduct regular status meetings, sprint reviews, and demos to ensure alignment with stakeholder expectations.
- **Change Management:** Implement a structured process to accommodate scope changes while minimizing disruption to project timelines.
- **Scalable Solutions:** Design AI models and systems with scalability in mind to handle evolving data volumes and business requirements.

3. Quality Assurance (QA) Processes: Ensuring Accuracy and Reliability

We incorporate rigorous QA processes to ensure the quality, performance, and ethical compliance of AI systems:

- **Testing Framework:** Conduct functional, integration, and performance testing on data pipelines, AI models, and applications & perform rigorous validation of AI models for accuracy, bias, and ethical considerations.
- **Model Evaluation:** Validate models using predefined metrics (e.g., precision, recall, F1 score) to ensure they meet performance benchmarks.
- **Simulated Real-world Testing:** Use real-world scenarios and synthetic data to test AI systems under realistic conditions.
- **Regression Testing:** Ensure updates or retrained models do not negatively impact existing functionality.
- **Monitoring & Feedback Loop:** Post-deployment, monitor system performance using automated tools & gather user feedback to identify areas for improvement and retraining.

- **Documentation & Knowledge Transfer:** Maintain detailed project documentation, test reports, and training materials for operational continuity.

Tools and Technologies

We utilize modern project management, collaboration, and AI-specific tools to streamline workflows:

- **Project Management Tools:** Jira, Trello, MS Project for task tracking, sprint planning, and risk management.
- **Collaboration Platforms:** Confluence, Slack, or MS Teams for real-time updates and knowledge sharing.
- **AI/ML Tools:** TensorFlow, PyTorch, DataRobot for model development; Power BI/Tableau for visualizations.
- **Version Control:** Git and CI/CD pipelines for seamless integration and deployment of AI solutions.

Key Differentiators

1. **Proven Expertise:** Our experienced AI project managers have a track record of delivering large-scale AI projects with measurable outcomes.
2. **Scalable & Ethical AI:** Our approach ensures the solutions are robust, scalable, and ethically compliant.
3. **Iterative Refinement:** Continuous learning and improvement are embedded into the project lifecycle.
4. **Stakeholder-Centric Approach:** We prioritize clear communication and stakeholder alignment at every phase.

• Team Qualifications: Highlight the qualifications and experience of key team members who will be involved in the project(s).

Key Profiles

1. **Project Manager-AI Strategic Advisor - Dr. Ravi Changle - Director, AI and Emerging Technologies - Compunnel Inc | Forbes Technology Council**

Profile Aspect	Details
Current Position	Director, AI & Emerging Technologies at Compunnel Inc; Forbes Technology Council Member
Expertise	AI-driven transformations, Corporate Finance, ESG, Ethics, AI practices, AI Governance 
Experience	• 15+ years in AI, Data Analytics, Data Science, and Big Data in both corporate and academic sectors
Core Competencies	• Data Science • Machine Learning and Artificial Intelligence • Statistical Analysis • Predictive Modelling • Project Management • Solutions Architecture
Notable Roles	• Led a team of 22 in delivering AI solutions at Compunnel (since Jul'21) • Owned and consulted for SKA Analytics (Jun'17 - Jul'21) • Assistant Professor and AI ML Projects Lead at PIMR, Indore (Dec'12 - Mar'21) • Rhode Island AI Taskforce Committee Membership • IEEE SIGHT Membership for Humanitarian Technology and Sustainable Development

Profile Aspect	Details
Education	• PhD in Econometrics and Quantitative Economics • MBA in Investment Banking & Finance
Certifications	• Microsoft Certified Azure Data Scientist • Microsoft AI Cloud Solution Partner • PMI Certified Project & Program Management Professional, • Generative AI, Machine Learning, Deep Learning, Big Data Analytics & Visualization, Strategic Planning & Execution, Team Leadership
Achievements	• Recognized as "Manager of the Quarter" at Compunnel in November 2022 • Member of Global AI & Cybersecurity Taskforce and Global Sustainable AI and Ethics Taskforce

2. **Chief AI Officer -AI Governance and Ethics Specialist - Dr. Bhupendra Kumar Verma**

Profile Aspect	Details
Expertise	Data Science, Data Engineering, Data Strategy, AI Governance, and Ethics
Experience	• 18 years in Management Consultancy • Research & Development, and Teaching/Training across various industries including Manufacturing, FMCG, Automobile, and Academia
Core Competencies	• Machine Learning • Deep Learning • Data Governance • Digital Transformation • Bayesian Statistics • AI, Big Data and Data Visualization • Supply Chain Management • Quality Control
Education	• PhD in Climate Change and Sustainability Strategies from NITIE-Mumbai (2009-2015) • PGDIM in Industrial Management from NITIE-Mumbai (2006-2008) • M.Tech in Thermal Engineering from IIT-Chennai (2001-2002) • B.E. (Hons.) in Mechanical Engineering from BITS-Pilani (1996-2000)
Certifications	• Project Management • Lean Management, Lean Six Sigma Green/Black Belt • Digital Marketing Certified Associate • Robotic Process Automation (UiPath)
Notable Roles	• Director, Data Strategy & Architecture at Compunnel Software Group, Inc. (Jul 2022 - Present) • Freelance Consultant at Compunnel Software Group, Inc. (May 2018 - Jun 2018) • Associate Professor at CDGI, India (Sep 2014 - May 2018) • Deputy Manager at Vaayu India Power Corporation Pvt Ltd (Jan 2014 - Sep 2014) • Deputy Manager at Enercon India Ltd (Sep 2010 - Dec 2013)
Achievements	• First in Class in M.Tech • Member of ROTARACT-CLUB at NITIE and SAC at IIT Madras

b. Relevant Past Projects

Include examples of past projects that demonstrate your experience and success in delivering the requested service category(ies), especially those involving successful engagements with Emergency Communications Centers (ECCs), including specific examples and outcomes. For each project, provide:

- ***Project Description: A brief overview of the project, including objectives, scope, and outcomes.***
- ***Client: The name of the public sector or entity you worked with.***
- ***Technologies Used: The AI technologies and tools implemented in the project.***
- ***Results: The impact and benefits realized by the client as a result of your solution.***

Include examples of past projects that demonstrate your experience and success in delivering AI solutions, especially those involving public sector or similar entities. For each project, provide:

- ***Project Description: A brief overview of the project, including objectives, scope, and outcomes.***
- ***Client: The name of the public sector or entity you worked with.***
- ***Technologies Used: The AI technologies and tools implemented in the project.***
- ***Results: The impact and benefits realized by the client as a result of your solution.***

Compunnel has extensive experience delivering AI-related consulting services, particularly in assessments and strategic planning for government entities. Our AI practice is uniquely positioned to support municipalities with expertise in ethical AI, AI governance, and capacity building.

Case Study 1	
Client Name	Texas State Technical College
Project Contact	Name: Dr. George Makiya Title: SVP- Data & Analytics Contact Number: 832-562-1782 E-Mail Id: gmakiya@tstc.edu
Project Name	TSTC Azure Data Ops and MLOps enabled Advanced Analytics
Start Date	July 2023
End Date	Ongoing
Key Personnel Involved	Dr. George Makiya, Nandita Singh, Tina Skidmore from TSTC & Compunnel Consultants
Description of Assignment – Roles and Responsibility	Data Migration from OnPrem to Azure, MS Fabric Implementation, AIOPs and MLOPs, Responsible AI

Case Study 2	
Client Name	Opticloud
Project Contact	Name: Vijay Karia Title: Chief Executive Officer Contact Number: (401) 871-0734 E-Mail Id: vijay.karia@opticloud.com
Project Name	AI based Anomaly Detection & Notification System for GreenOps and FinOps with Agentic AI Framework
Start Date	July 2024

End Date	Ongoing
Key Personnel Involved	Alton Allen, Vijay Karia from Opticloud & Compunnel AI Consultants
Description of Assignment – Roles and Responsibility	Compunnel delivered advanced Data Science Operations and MLOps solutions leveraging Agentic AI across AWS, GCP, and Azure platforms. Provided sustainability reporting, monitoring, and observability while optimizing financial performance through actionable recommendations for cost savings and right-sizing. Implemented Infrastructure as Code (IaC), DevOps, AI agents, and strategies for digital waste reduction, enhancing operational efficiency.

Case Study 3	
Client Name	United Nations' Alliance
Project Contact	Name: Carlo Tortora Brayda Title: Chief Executive Officer Contact Number: +33610796584 E-Mail Id: carlo@tortorabrayda.org
Project Name	US Cyber Eagle Project
Start Date	December 2023
End Date	Ongoing
Key Personnel Involved	Carlo Tortora Brayda and Michael Thiessmeir from United Nations' Alliance (TBI, NAIC, NIST, NATO) & Compunnel AI Consultant
Description of Assignment – Roles and Responsibility	Our responsibilities included strategic oversight and decision-making for GenAI DevSecOps implementation, securing VC funding, contributing to AI & Cybersecurity Global Task Force initiatives, and driving the Green AI Initiative. Played a pivotal role in shaping policies, fostering innovation, and ensuring alignment with sustainable and secure AI practices.

Case Study 4	
Client Name	World Bank
Project Contact	Name: Ruby Ray Current Address: 1818 H Street, N.W. Washington, DC 20433 E-mail Address: rray@worldbank.org Telephone Number: +1 202-458-5858
Project Name	Data Strategy & Roadmap for their BUs to help in gauging and auditing the existing data processes
Start Date	April 2022
End Date	September 2022
Key Personnel Involved	Project Manager, Business Analyst, SMEs, Data Strategist, Data Strategy Manager

Description of Assignment – Roles and Responsibility	Compunnel successfully conducted a comprehensive discovery and assessment exercise for the World Bank, evaluating the current state of data governance and master data management. A detailed gap analysis identified critical areas for improvement and projects with maximum business benefits. Key achievements included assessing data maturity as nascent, identifying top priorities like modernizing the data platform, implementing data governance, and leveraging AI/ML, RPA, and a data catalog. Adoption of a data lake was highlighted to enhance data monetization. A milestone-driven roadmap was delivered, and a stewardship committee with designated Data Stewards was established to oversee governance and drive sustainable implementation. A milestone-based project execution roadmap was provided for data governance and management implementation. Data Stewards were identified, and a stewardship committee was created within World bank to drive this implementation and supervise the governance process further.

Special Mention: We have been recently awarded a similar contract by the **State Of Rhode Island** titled "**Artificial Intelligence Task Force'.** We have also been awarded below contracts by **NCTCOG:**

- **Artificial Intelligence (AI) Consultancy Services-RFP #2025-023.**
- **Artificial Intelligence (AI) Solutions for Public Sector Entities-RFP #2025-018.**

c. Background and Years in Business

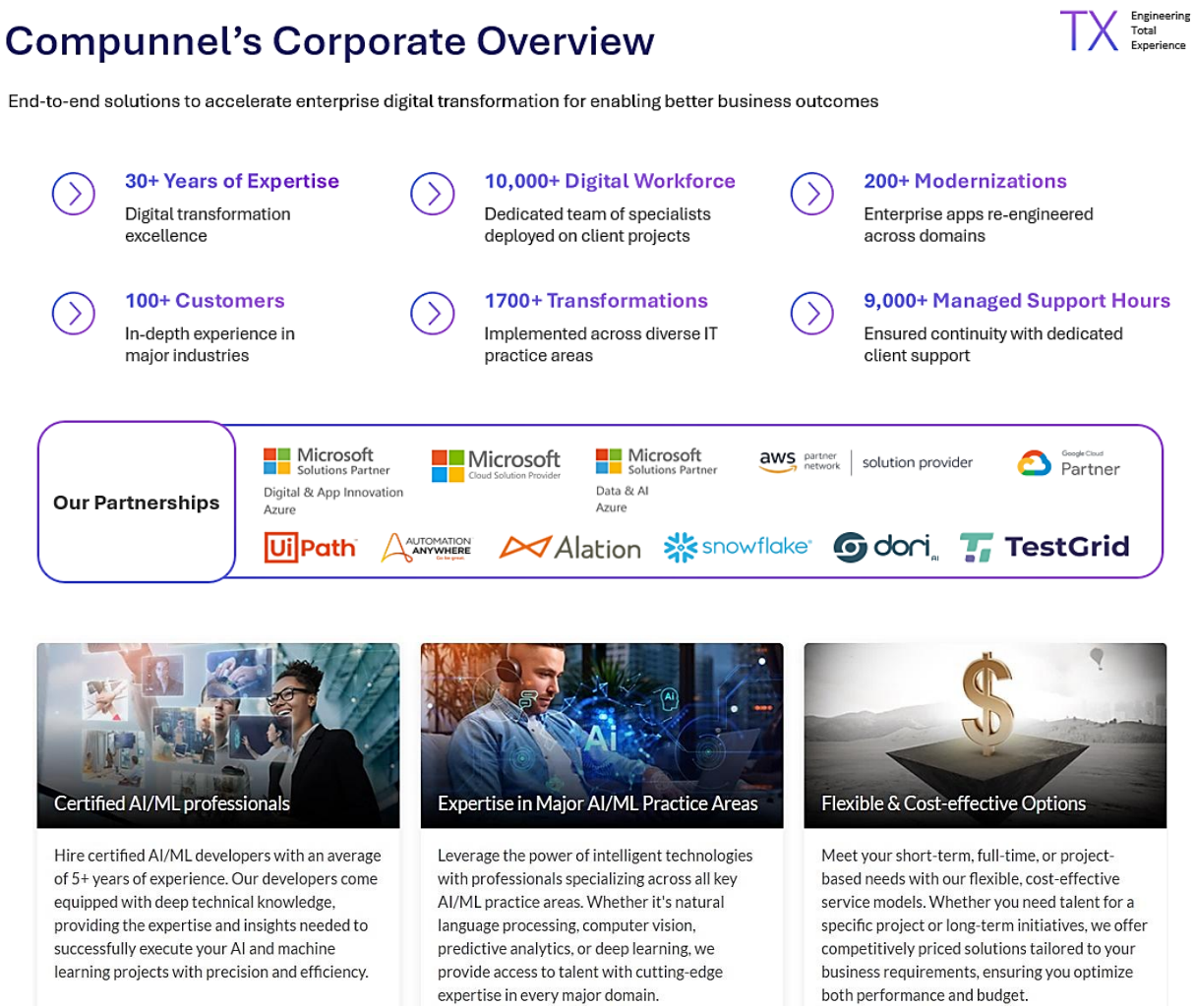
Provide a brief statement of your organization's background, including:

- ***History: A summary of your organization's history and evolution.***
- ***Years in Business: The number of years your organization has been operating, Specify years of experience in emergency translation, transcription, interpretation, and quality control services.***

Established in 1994, Compunnel has been a trusted partner in delivering advanced IT solutions and services across the U.S for over **30 years.** In the past years our core focus has evolved to support cutting-edge initiatives in Artificial Intelligence (AI) to public sector entities across U.S. Headquartered in New Jersey, Compunnel has been helping government agencies achieve real results by providing the right AI talent, training, and technologies. We enable organizations to harness the power of AI to optimize operations, accelerate innovation, and enhance growth.

Compunnel has been ranked in ***Inc. 5000*** as one of the ***fastest-growing companies***. We are a global organization with a presence in the US, Canada, Europe, and the Asia Pacific. We are ranked among the '***10 Best Technology Solution Providers'*** by **The Industry Era.**

Compunnel employs experienced ***technology professionals*** worldwide, with extensive expertise in AI technologies, including natural language processing, computer vision, and predictive analytics. Our onshore team includes over 1,700 specialists working on client engagements from ***31 delivery centres*** across the USA including **Texas**, complemented by four (4) offshore development centres in India.

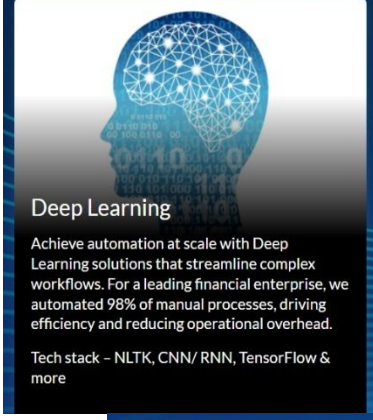


Compunnel's Digital Services Portfolio

TX Engineering Total Experience

- APP DEVELOPMENT & MODERNIZATION SERVICES
- CLOUD SERVICES
- ENTERPRISE DATA & ADVANCED ANALYTICS
- ARTIFICIAL INTELLIGENCE & MACHINE LEARNING
- QUALITY ENGINEERING

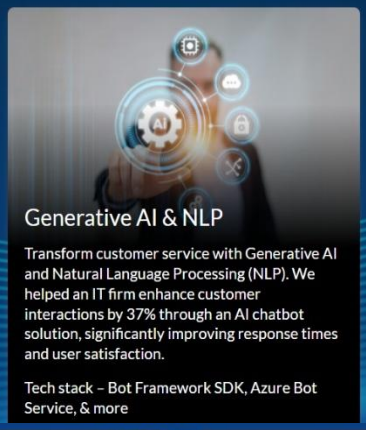
AI/ML domains we serve



Deep Learning

Achieve automation at scale with Deep Learning solutions that streamline complex workflows. For a leading financial enterprise, we automated 98% of manual processes, driving efficiency and reducing operational overhead.

Tech stack – NLTK, CNN/ RNN, TensorFlow & more



Generative AI & NLP

Transform customer service with Generative AI and Natural Language Processing (NLP). We helped an IT firm enhance customer interactions by 37% through an AI chatbot solution, significantly improving response times and user satisfaction.

Tech stack – Bot Framework SDK, Azure Bot Service, & more

Advanced Analytics

Boost decision-making with Advanced Analytics solutions that deliver actionable insights. For a financial services company, we drove a 40% increase in customer satisfaction using predictive analytics and data visualization.

Tech stack – Azure MLOps, Streamlit, Power BI

IoT

Improve operational efficiency with IoT-driven predictive maintenance (PdM) solutions. For a top manufacturer, we achieved a 33% increase in efficiency using IoT-based monitoring systems.

Tech stack – Azure IoT Hub & IoT Central, Raspberry PI/ STM32 Sensor Devices

Computer Vision

Enhance security and optimize costs with Computer Vision applications. For a logistics firm, we developed an IntelliVision-powered solution that improved surveillance and operational efficiency.

Tech stack – YOLOv8, CNN, Streamlit, OCR Libraries & more

Services we provide

Maximize AI Potential with CAIOaaS

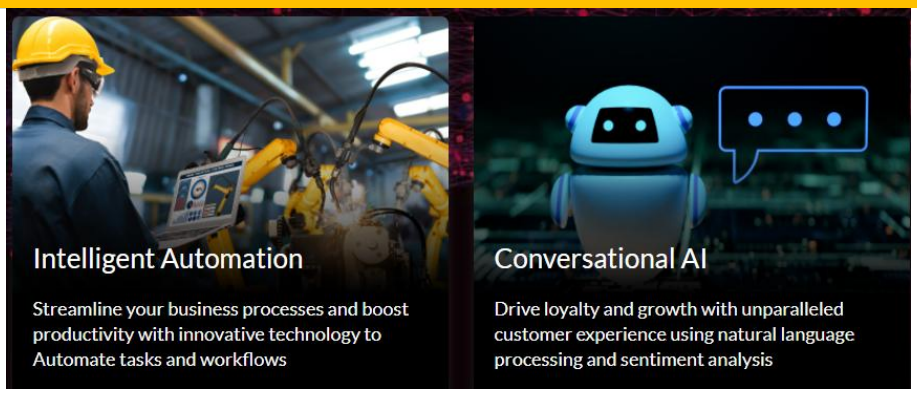
Leverage our Chief AI Officer as a Service (CAIOaaS) for expert AI leadership, strategic insights, and seamless AI integration tailored to your business needs.

Advanced Analytics

Unlock the power of your data and make informed decisions with valuable insights delivered by our experts

NLP & Text Analytics

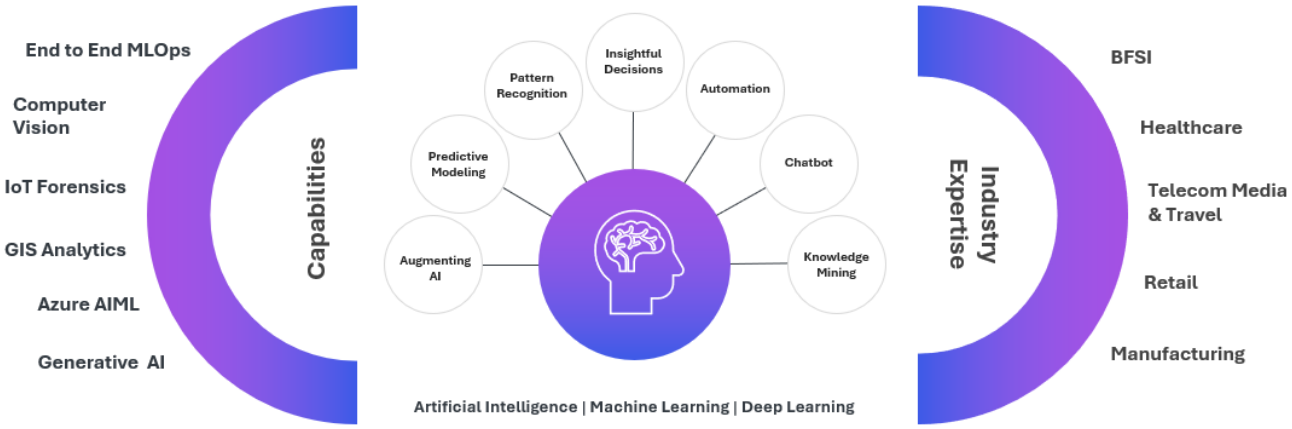
Maximize the potential of your text-based data with deep insights and actionable information



AI/ML Technology Powered Digital Services

TX Engineering Total Experience

Research | Experiment | Innovate | Co-Create



VISION

To create a future where AI and digital technologies seamlessly integrate into organizational processes, enabling smarter operations, innovation, and superior outcomes.

MISSION

To empower businesses by delivering tailored digital and AI solutions that enhance efficiency, improve decision-making, and drive sustainable growth.

- ✓ **Years in Business:** 30 years and Counting…
- ✓ **Years Of Experience In Emergency Translation, Transcription, Interpretation, And Quality Control Services:** 06 years.

If applicable, identify any subcontractors or third-party services that are utilized in the performance of fulfilling this RFP.

We don't intent to use any subcontractor or third-party services in the performance of fulfilling this RFP**.** Compunnel is able to meet all the requirements from the scope of work.

Provide a general explanation and chart which specifies project leadership and reporting responsibilities, and how the team will interface with NCTCOG and Participating Entities' project management and team personnel.
Compunnel will not utilize any subcontractor or third party services in the performance of fulfilling this RFP.

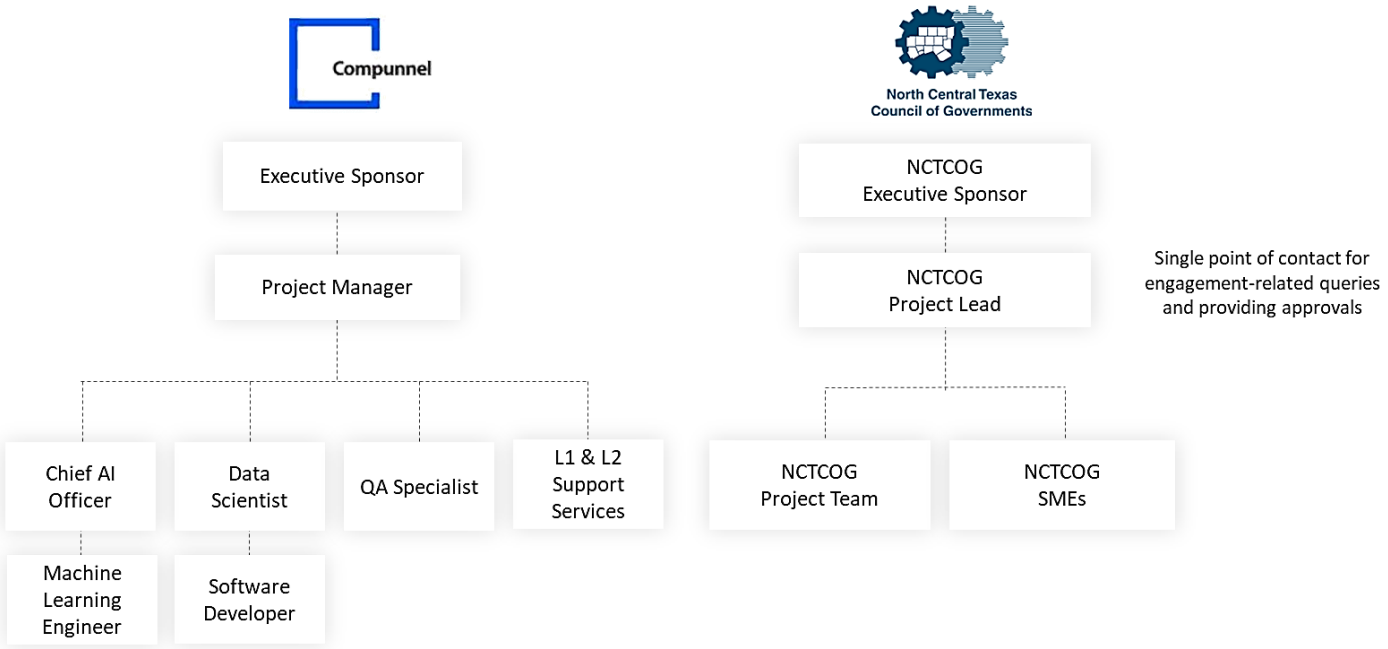


Exhibit: Project Team

The collaboration with NCTCOG and Participating Entities will commence with a comprehensive kickoff meeting led by our Project Manager/ Account Manager to align project goals, expectations, and timelines. This meeting will establish a clear communication plan, ensuring seamless coordination throughout the project.Weekly progress meetings will be conducted to review milestones, address challenges, and update project stakeholders. Monthly strategic reviews involving the Executive Sponsor will provide high-level oversight and ensure alignment with NCTCOG's objectives.

A dedicated project management tool (MS Teams) will be implemented for real-time task tracking, status updates, and efficient issue resolution. To foster collaboration, our team will conduct interactive workshops led by the Chief AI Officer to refine AI use cases and strategy. Training sessions will be organized to enhance the internal team's capacity for adopting AI solutions effectively. A structured knowledge transfer process will ensure NCTCOG's self-sufficiency in managing AI systems post-implementation. Clear and transparent reporting will include detailed weekly and monthly updates on project status, key achievements, and risk mitigation plans. This integrated communication plan is designed to ensure active participation, address concerns promptly, and deliver measurable outcomes aligned with NCTCOG's vision.

4. TECHNICAL PROPOSAL

Directions: Mandatory Sections:
Every vendor is required to fully complete the following sections of the Compliance Matrix:
Section 5.1 – General Requirements
Section 5.2 – Language Support
Section 5.6 – Other Requirements

Service Category-Specific Sections:
For the following service categories, vendors are only obligated to complete the sections that correspond to the specific services for which they seek to be considered:

Section 5.3 – Service Category #1: Translation Services for 9-1-1
Section 5.4 – Service Category #2: Transcription Services for 9-1-1
Section 5.5 – Service Category #3: Quality Control Services for 9-1-1

Failure to complete the mandatory sections or the relevant service category sections may result in disqualification from the evaluation process.

If "Complies within 6 Months" is selected, vendor shall provide a clear timeline including the feature(s) roadmap and engineering assessment that shall be compiled by the vendor's Product Team.

Section Identifier	REQUIREMENT	SELECT COMPLIES, COMPLIES WITHIN 6 MONTHS AND DOES NOT COMPLY	RESPONSE NARRATIVE Note- If selecting "Complies within 6 months,' include clear timeline including features roadmap and engineering assessment here.
5.1	**GENERAL REQUIREMENTS**		
a.	**Certifications:** List current certifications such as ISO 17100, ISO 9001. Documentation should be available upon request.	Complies	Our organization holds ISO 22301:2012, ISO/IEC 27001:2013, ISO 9001:2015, and ISO/IEC 27701:2019 certifications, demonstrating our commitment to business continuity, information security, quality management, and privacy controls. These certifications ensure our services meet the high availability, reliability, and data protection standards required for supporting 9-1-1 operations
b.	**Interpreter Training:** Ensure that language translation interpreters have received training specific to 9-1-1 call handling or possess similar call processing knowledge.	Complies within 6 Months	Our interpreters will undergo specialized training aligned with 9-1-1 call handling protocols, equipping them with the necessary skills to operate effectively in emergency communication environments. Their training will include real-time call simulation, familiarity with emergency terminology, and rapid-response communication techniques, ensuring full compliance with the requirement

c.	**Access to Interpreters:** Provide assurance of direct access to language translation interpreters without requiring unique pin codes.	Complies within 6 Months	We will provide direct access to language translation interpreters without the need for unique PIN codes, ensuring seamless and immediate connectivity during emergency situations. This approach eliminates delays and supports uninterrupted access, fully complying with the requirement
d.	**Service Availability:** Confirm the availability of services 24/7/365 to ensure continuous support.	Complies	Our services are available 24/7/365, ensuring uninterrupted support for emergency communications and aligning with the continuous availability requirement outlined in the RFP
e.	**List of Services:** Specify the range of services your company can provide. Note that not all services need to be provided by a single vendor; multiple providers may be awarded under the TX Share cooperative.	Complies	Compunnel Inc. is a full-spectrum IT solutions and workforce management company offering services across digital transformation, cloud computing, AI/ML integration, custom application development, data analytics, enterprise IT staffing, e-learning solutions, and managed services. With deep expertise in industries such as government, healthcare, education, manufacturing, and financial services, Compunnel provides end-to-end support from strategy and consulting to implementation, support, and staffing. Our solutions are built to help organizations modernize operations, scale intelligently, and accelerate innovation. Compunnel Inc. capabilities extend to multilingual support, bi-directional voice and text translation, automated call transcription with keyword tagging, court-admissible transcript generation, sentiment and anomaly detection, compliance monitoring, and advanced reporting dashboards. These services are designed to enhance 9-1-1 call handling, ensure regulatory compliance, and improve operational efficiency across emergency communications centers.
f.	**Architectural Diagram and Scalability:** Include an architectural diagram illustrating your solution and describe its scalability. Responses can include one or more models or solutions.	Complies	Yes, our solution is supported by a secure, cloud-native architecture designed to meet the demands in real-time for 9-1-1 translation and transcription services. It is fully scalable across multiple U.S.-based data centers, ensuring 99.99% uptime and low latency performance. The architecture supports integration with 9-1-1 call handling systems, offers robust encryption for data security, and leverages containerized microservices to automatically scale with call volume and user demand.
g.	**Implementation and Configuration Capabilities:** Detail the implementation, integration, and configuration capabilities available to the Customer. Clarify if software	Complies	Compunnel INC offer's comprehensive implementation, integration, and configuration support tailored to each Customer's environment. Our solution will integrate seamlessly with existing 9-1-1 infrastructure, including call handling systems and NG9-1-1 platforms, with minimal disruption.

	installation and configuration are exclusive to your company and explain why, if applicable.		Software installation and configuration are exclusively handled by our certified technical team to ensure compliance with security standards, system integrity, and optimal performance throughout deployment.
h.	**Impact Mitigation:** Assure that any loss of connectivity or failure in translation or transcription services will not affect call-taking functionality.	Complies	In the event of a disruption to translation or transcription services, the core 9-1-1 call-taking functionality remains fully operational and unaffected. Built-in safeguards and architectural separation ensure that any service interruption is isolated, while automatic failover protocols and real-time monitoring support's rapid restoration without compromising emergency response operations.
5.2	**LANGUAGE SUPPORT**	Complies within 6 Months	
i.	Provide a comprehensive list of languages supported (minimum of five) by your application and list them by the relative feature. Include your company's roadmap of languages that will be supported in the future.	Complies within 6 Months	A comprehensive list of supported languages, categorized by feature such as voice translation, text transcription, and document translation, will be provided. Our platform currently supports a wide range of commonly spoken languages used in emergency communications, with ongoing expansion guided by regional needs and customer feedback. The language support roadmap includes the planned addition of emerging and underserved languages to ensure inclusive and equitable access to 9-1-1 services across diverse communities.
5.3	**SERVICE CATEGORY #1: TRANSLATION SERVICES FOR 9-1-1**		
j.	**Real-time Audio Translation:** Provide capabilities for real-time audio translation during live 9-1-1 calls.	Complies within 6 Months	Real-time audio translation during live 9-1-1 calls will be a core feature of the platform and is available across supported languages. This functionality enables telecommunicators to engage with callers in their native language without delay, facilitating faster response and improved situational understanding. The system will be optimized for low latency and maintains high translation accuracy even in dynamic, high-pressure call environments.
k.	**Text Message Translation:** Ensure text message translation for text-to-911 platforms or over-the-top (OTT) text-to-911 and text-from-911.	Complies within 6 Months	Yes, Text message translation will be fully supported for both text-to -911 platforms and over-the-top (OTT) messaging services, including inbound and outbound communications. The system will ensure seamless, real-time translation of messages, enabling effective two-way communication between call takers and individuals with limited English proficiency through secure and compliant channels.
l.	**Operational Flexibility:** Ensure that audio and text translation operates seamlessly across all ECCs	Complies within 6 Months	Audio and text translation functions will be designed to operate seamlessly across all Emergency Communications Centers (ECCs), including primary, secondary, and backup sites. The system will

	(primary, secondary, backup), regardless of the call/text's origin or transfer points.		maintain full functionality regardless of the call or text origin, routing path, or transfer points, ensuring consistent translation quality and continuity of service throughout the 9-1-1 network.
m.	**AI Language Detection:** Demonstrate AI language detection capabilities to expedite access to language translations.	Complies within 6 Months	AI-powered language detection will be embedded within the platform to automatically identify the caller's spoken or written language at the outset of the interaction. This capability will accelerate the initiation of translation services, reduces manual intervention, and ensures a faster, more accurate response for limited English proficiency callers.
n.	**AI Voice Translation:** Provide AI voice translation capabilities between 9-1-1 call takers and 9-1-1 callers.	Complies within 6 Months	AI voice translation capabilities will be available to facilitate real-time, two-way verbal communication between 9-1-1 call takers and callers speaking different languages. This feature will enable natural, conversational interaction without the need for third-party interpreters, significantly improving response times and call clarity in critical situations.
o.	**Turnaround Time for Document Translation:** Specify the turnaround time for non-emergency document translation (e.g., incident reports, public notices).	Complies within 6 Months	Turnaround times for non-emergency document translation, such as incident reports and public notices will be defined based on document length, complexity, and language requirements. Standard requests will typically be completed within industry-accepted timeframes and expedited services will be made available for time-sensitive materials upon request. Specific service level agreements will be established with each Customer during onboarding.
p.	**Bi-Directional Translation:** Ensure all translation is bi-directional; translations of incoming audio/text must be into English for Customer's telecommunicators, and responses must be translated back into the original foreign language.	Complies within 6 Months	All translation services will be configured to operate bi-directionally, ensuring that incoming audio or text is translated into English for telecommunicators, and responses are accurately translated back into the caller's original language. This functionality will support clear, two-way communication and be maintained consistently across all supported languages and platforms.
q.	**Logging and Accessibility:** Log all translated conversations and make them available to Customer in real or near-real-time.	Complies	All translated conversations are logged automatically and will be made available to the Customer in real or near-real-time. These logs will be securely stored and easily accessible through an authorized dashboard or interface, supporting transparency, quality assurance, and post-call review needs.
r.	**Secure Connectivity:** Ensure connectivity to the translation service is diverse, secure, and actively monitored for security threats.	Complies	Connectivity to the translation service is established through a secure, redundant network infrastructure that is actively monitored for potential security threats. Multiple connection paths and encryption protocols are in place to ensure continuous, reliable service while maintaining strict compliance with cybersecurity standards.

s.	**Translation Memory/Glossary:** Support a translation memory or glossary for Customer to provide feedback on preferred translations	Complies within 6 Months	The system will support the use of a translation memory and customizable glossary, allowing Customers to provide feedback on preferred terminology and phrasing. This feature will enable continuous refinement of translations over time, ensuring consistency with local language preferences and operational context.
t.	**Handling Misspellings:** Explain how the proposed text translation solution will handle misspellings in the original language that may affect translation accuracy.	Complies within 6 Months	The text translation solution will incorporate advanced natural language processing (NLP) and context-aware algorithms to recognize and correct common misspellings in the original language. This capability will help maintain translation accuracy by interpreting intended meanings based on linguistic patterns, context, and user feedback over time.
u.	**Pre-Translated Messages:** Support the creation of pre-translated canned announcements or text messages for use by Customer in service request contexts.	Complies within 6 Months	The system will support the creation and storage of pre-translated canned announcements and text messages, enabling Customers to quickly deploy standardized communications during service requests. These messages will be customizable, ensuring alignment with specific operational needs and commonly encountered scenarios.
v.	**Handling Unidentified Languages:** Address the handling of languages that cannot be identified by the translation service.	Complies	In cases where a language cannot be identified by the translation service, the system is designed to flag the interaction for manual review and route it to a fallback protocol. This may include escalation to a live interpreter or the use of general multilingual prompts to gather additional context, ensuring continued support even when automatic identification is not possible.
w.	**Continuous Improvement:** Include a mechanism for improving the accuracy of translations over time for each supported language.	Complies within 6 Months	A continuous improvement mechanism will be built into the system to enhance translation accuracy over time for each supported language. This will include machine learning models that adapt based on real-world usage, user feedback loops, and periodic model updates to incorporate new linguistic patterns, terminology, and corrections provided by Customers.
5.4	**SERVICE CATEGORY #2: TRANSCRIPTION SERVICES FOR 9-1-1**		
x.	**Accurate and Timely Transcription:** Ensure accurate and timely transcription of live 9-1-1 calls and call recordings.	Complies within 6 Months	The platform will ensure accurate and timely transcription of both live 9-1-1 calls and recorded audio. Transcription processes will be optimized for emergency communication, delivering high fidelity, near real-time outputs that support operational efficiency and critical decision-making.
y.	**Keyword Tagging/Flagging:** Implement tagging/flagging of key words such as “gun”, “unconscious”, “drowning” to enhance search capabilities.	Complies	The system includes built-in keyword tagging and flagging capabilities that will automatically detect and mark critical terms such as “gun,” “unconscious,” and “drowning.” This functionality

			enhances searchability and allows telecommunicators and supervisors to quickly locate and review high-priority incidents for faster response and follow-up.
z.	**Timestamped Verbatim Transcripts:** Provide timestamped, verbatim transcripts with search capability to facilitate retrieval of key information.	Complies within 6 Months	The system will generate timestamped, verbatim transcripts for all transcribed 9-1-1 communications. These transcripts will be fully searchable, enabling users to quickly retrieve key information, navigate specific moments in a call, and support documentation, review, and legal compliance needs.
aa.	**Text Translation Capabilities:** Offer text translation capabilities for multilingual support.	Complies within 6 Months	Text translation capabilities will be available to support multilingual communication across all text-based channels. This will enable accurate, real-time translation of messages to and from English, ensuring inclusive access to emergency services for non-English-speaking individuals.
bb.	**Optional Speaker Identification and Redaction:** Provide optional speaker identification, noise filtering, and redaction services.	Complies	Optional features such as speaker identification, background noise filtering, and redaction services will be available to enhance transcript clarity and compliance. These capabilities will support accurate attribution of dialogue, minimize irrelevant audio, and protect sensitive information as required by regulatory standards or Customer preferences.
cc.	**Admissibility in Court:** Ensure transcripts meet legal standards for admissibility in court.	Complies within 6 Months	Transcripts will be generated in accordance with legal and evidentiary standards to ensure their admissibility in court. The system will maintain chain-of-custody protocols, accurate timestamping, and verbatim integrity to support use in legal proceedings when required.
dd.	**Logging and Storage:** Implement logging and secure storage of transcripts to ensure accessibility and security for Customer.	Complies	Logging and secure storage of all transcripts are integral to the system, ensuring that records are both easily accessible and protected in compliance with data security standards. Transcripts will be stored in encrypted formats with role-based access controls to safeguard sensitive information.
5.5	**SERVICE CATEGORY #3: QUALITY CONTROL SERVICES FOR 9-1-1**		
ee.	**Call Quality Analysis:** Evaluate calls for key performance metrics such as response time, adherence to protocols, tone of voice, empathy, accuracy of information collection, and overall call handling effectiveness.	Complies	The system includes comprehensive call quality analysis capabilities that evaluate performance metrics such as response time, protocol adherence, tone of voice, empathy, accuracy of information collection, and overall call handling effectiveness. These insights support ongoing quality assurance and help identify opportunities for training and operational improvement.
ff.	**Anomaly & Risk Detection:** Identify potential issues such as miscommunication, incomplete	Complies	The platform is equipped to identify anomalies and risks such as miscommunication, incomplete information gathering, dispatch delays, and deviations from standard operating procedures.

	information gathering, delays in dispatch, or non-compliance with standard operating procedures.		These insights are flagged in real time or through post-call analysis, enabling timely corrective action and continuous operational improvement.
gg.	**Sentiment & Stress Analysis:** Apply natural language processing (NLP) and voice analytics to assess caller and dispatcher stress levels, emotional tone, and escalation patterns.	Complies within 6 Months	Natural language processing (NLP) and voice analytics will be applied to assess both caller and dispatcher stress levels, emotional tone, and escalation patterns. These insights will support real-time situational awareness and post-call evaluation, contributing to improved response strategies and emotional intelligence training.
hh.	**Compliance Monitoring:** Ensure calls are handled in accordance with regulatory standards and internal protocols, flagging any deviations for review.	Complies	The system actively monitors call handling against established regulatory standards and internal protocols, automatically flagging any deviations for review. This ensures ongoing compliance, supports accountability, and facilitates corrective actions where necessary.
ii.	**Reporting & Dashboards:** Deliver customizable reports and interactive dashboards that provide insights into call performance, trends, and areas for improvement.	Complies	Customizable reports and interactive dashboards will be delivered to provide real-time and historical insights into call performance, emerging trends, and areas requiring improvement. These tools will support data-driven decision-making and continuous enhancement of emergency communication services.
jj.	**Continuous Learning & Model Improvement:** Regularly update and refine AI models based on feedback and new data to ensure high accuracy and relevancy.	Complies	The AI models are designed for continuous learning and will be regularly updated and refined using feedback, performance data, and new language patterns. This ongoing improvement process ensures the system maintains high levels of accuracy, adaptability, and relevance to evolving operational needs.
kk.	**Quality Assurance Standards:** At a minimum, should follow guidelines provided in the APCO/NENA ANS 1.107.1.2015 standard for the establishment of a Quality Assurance and Quality Improvement Program for ECCs.	Complies within 6 Months	The solution will adhere to the APCO/NENA ANS 1.107.1.2015 standard as a minimum benchmark for establishing a robust Quality Assurance and Quality Improvement Program for Emergency Communications Centers. This compliance will guide structured evaluations, consistent performance metrics, and continual service enhancement.
5.6	**OTHER REQUIREMENTS**		
ll.	**Connection to Service:** Ensure connection to service in < 3 seconds (preferred).	Complies	The system is designed to ensure a connection to the service in under three seconds, aligning with performance expectations for emergency communications. This rapid response capability supports seamless interaction and minimizes delays during critical 9-1-1 operations.
mm.	**Uptime Reliability:**	Complies	The platform is architected to deliver 99.999% uptime reliability, ensuring continuous availability of

	Guarantee 99.999% uptime reliability		services with minimal interruption. This high availability standard is maintained through redundant infrastructure, proactive monitoring, and automated failover mechanisms.
nn.	**Tiered Response Expectations:** Define tiered response expectations for high-traffic or crisis scenarios.	Complies	Tiered response expectations are built into the system to maintain performance during high-traffic or crisis scenarios. Resource prioritization, dynamic scaling, and load-balancing protocols ensure consistent service levels, with predefined escalation paths to handle surges in demand without compromising translation, transcription, or quality control functions.
oo.	**Accuracy of Transcription and Translation:** Ensure transcription and translation accuracy falls within a range of 95% - 100% for core languages such as Spanish, Vietnamese, Hindi, Russian, Mandarin, and Korean. Specify expected accuracy for all other languages based on actual data.	Complies within 6 Months	Transcription and translation accuracy will be maintained within a range of 95% to 100% for core languages such as Spanish, Vietnamese, Hindi, Russian, Mandarin, and Korean. For other supported languages, expected accuracy levels will be specified based on actual performance data and ongoing model refinement, ensuring transparency and consistency in service delivery.
pp.	**CJIS Compliance:** Ensure compliance with Criminal Justice Information Services (CJIS) regulations.	Complies within 6 Months	The solution will be fully compliant with Criminal Justice Information Services (CJIS) regulations, ensuring that all data handling, storage, and transmission practices meet the stringent security and access control standards required for criminal justice information.
qq.	**HIPAA Compliance:** Maintain HIPAA compliance for medical emergency translation, transcription, and quality assurance/control (QA/AC).	Complies	The system is designed to maintain full HIPAA compliance for all medical emergency-related translation, transcription, and quality assurance/control activities. This includes safeguarding protected health information through secure processing, storage, and access protocols.
rr.	**Data Encryption:** Implement data encryption for both in-transit and at-rest data. Specify encryption methods and protocols utilized.	Complies	Data encryption is implemented for both in-transit and at-rest data to ensure end-to-end security. The system uses industry-standard encryption protocols, including AES-256 for data at rest and TLS 1.2 or higher for data in transit, safeguarding sensitive information against unauthorized access and breaches.
ss.	**Secure Data Storage:** Utilize US-based servers for secure data storage. Specify retention periods, including cold storage retention.	Complies	Secure data storage is provided exclusively through US-based servers that comply with applicable federal and state regulations. Retention periods are configurable based on Customer requirements, with standard active storage followed by secure cold storage options to support long-term archival, retrieval, and compliance needs.

tt.	**Confidentiality and Non-Disclosure Agreements:** Outline the confidentiality and non-disclosure agreements used by the Vendor.	Complies	Confidentiality and non-disclosure agreements are standard practice and will be executed with all personnel, subcontractors, and partners involved in service delivery. These agreements ensure strict protection of sensitive information, prohibit unauthorized disclosure, and uphold the privacy and security standards required by NCTCOG and applicable laws.
uu.	**Proactive Security Measures:** Conduct proactive analysis of systems and networks for vulnerabilities, including independent security audits annually.	Complies	Proactive security measures are in place, including regular vulnerability assessments, continuous system monitoring, and annual independent security audits. These practices help identify and address potential risks before they impact operations, ensuring the platform remains resilient and secure.
vv.	**Multifactor Authentication:** Implement multifactor authentication for remote access into systems providing the service.	Complies	Multifactor authentication is implemented for all remote access to systems providing the service, adding an essential layer of security to prevent unauthorized entry and protect sensitive data in accordance with best practices and regulatory standards.
ww.	**Disaster Recovery Plan:** Provide a disaster recovery (DR) plan and describe the security software update policy, frequency, and procedures.	Complies	We maintain a robust disaster recovery (DR) plan that ensures service continuity through real-time data replication, automated failover mechanisms, and geographically distributed backups. Our security software is updated following a defined policy that includes weekly patch reviews, monthly scheduled updates, and immediate deployment of critical fixes. All updates are tested in staging environments before production rollout to ensure system stability and compliance.
xx.	**Data and Language Model Restrictions:** Restrict all data and language models to the Customer only, prohibiting use in other regions.	Complies	All data and language models used in our solution are strictly isolated and restricted to the specific Customer. We do not share, reuse, or train models using Customer data across other regions or clients. This ensures complete data privacy, regulatory compliance, and alignment with jurisdictional requirements.
yy.	**Compatibility with Call-Handling Systems:** Ensure compatibility with 9-1-1 call-handling systems.	Complies	Our solution is fully compatible with industry-standard 9-1-1 call-handling systems and supports seamless integration through secure APIs and over-the-top connectivity. It is designed to work within existing ECC environments without requiring significant infrastructure changes, ensuring smooth interoperability and minimal disruption during deployment.
zz.	**API Access or NG9-1-1 Integration:** Provide API access or integration with	Complies	Our solution provides secure API access and is designed to integrate seamlessly with NG9-1-1 infrastructure. It supports real-time data exchange,

	NG9-1-1 infrastructure.		interoperability with call-handling equipment, and aligns with NENA i3 standards to ensure compatibility with evolving emergency communication frameworks.
aaa.	**Access Options:** Offer browser-based, mobile, and on-premise access options.	Complies	Our solution offers flexible access through browser-based interfaces, mobile applications, and on-premise deployments. This ensures that emergency communication personnel can securely access the system from various environments, enhancing operational efficiency and adaptability across diverse 9-1-1 center setups.
bbb.	**Real-Time Monitoring Dashboard:** Include a real-time monitoring dashboard for supervisors.	Complies	Our solution offers flexible access through browser-based interfaces, mobile applications, and on-premise deployments. This ensures that emergency communication personnel can securely access the system from various environments, enhancing operational efficiency and adaptability across diverse 9-1-1 center setups.
ccc.	**Interoperability with Customer's Call Handling Equipment (CHE):** Ensure interoperability/integration of services with Customer's Call Handling Equipment (CHE); identify any required over-the-top connectivity.	Complies within 6 Months	Our solution will be designed to integrate seamlessly with the Customer's Call Handling Equipment (CHE) through standard APIs and over-the-top (OTT) connectivity where required. This allows for smooth interoperability without disrupting existing infrastructure. Any OTT components needed for integration will be clearly defined and securely deployed to maintain consistent performance and compliance.
ddd.	**Integration with Text Control Centers (TCCs):** Support interoperability with Text Control Centers (TCCs) serving Customer's ECCs for text message translation functionality.	Complies within 6 Months	Our solution will support interoperability with Text Control Centers (TCCs) to enable seamless text message translation for ECCs. Integration will be developed in alignment with industry standards to ensure compatibility, accuracy, and real-time communication across text-based emergency services.

Timeline, Feature Roadmap, and Engineering Assessment for "Complies within 6 Months" Responses

As part of our commitment to transparency and accountability, Compunnel Inc. provides the following **feature implementation roadmap and engineering assessment** for all items marked **"Complies within 6 Months"** in our response to RFP #2025-093. This roadmap outlines how we will achieve full compliance within the allowed period.

Implementation Timeline (0–6 Months)

Phase	Timeline	Key Activities
Phase 1: Planning	Month 1	Finalize technical scope, engage with NCTCOG SMEs, initiate solution design.
Phase 2: Build	Months 2–3	Develop/modify platform capabilities (real-time translation, NLP modules, etc.).
Phase 3: Integrate	Month 4	Integrate with NCTCOG's ECC infrastructure, CHE, NG9-1-1 systems.
Phase 4: QA/Test	Month 5	Conduct extensive testing for accuracy, latency, failover, compliance.
Phase 5: Deploy	Month 6	Deploy to production, onboard users, conduct training, finalize documentation.

Feature Roadmap Highlights

1. **AI Interpreter Training Program**
    - Finalize 9-1-1 call handling modules – Month 1
    - Launch online LMS-based training – Month 2
    - Certification process and simulations – Month 3
2. **Bi-Directional Real-Time Voice Translation**
    - Integrate existing NLP model with audio ingestion engine – Month 2
    - Add speaker diarization and language detection – Month 3
    - Beta release and latency tuning – Month 4
3. **Text Message Translation (OTT & Text-to-911)**
    - Enable SMS and OTT channel parsing – Month 2
    - Integration with Text Control Centers (TCCs) – Month 4
    - Logging and glossary integration – Month 5
4. **Sentiment & Stress Detection Models**
    - Refine NLP and voice analytics based on ECC case libraries – Month 3
    - Train models on tone/emotion classification – Month 4
    - Deploy with supervisor dashboard – Month 5
5. **Translation Glossary & Memory**

- Enable client-managed term lists – Month 2
- Machine learning-driven adaptive refinement – Month 5

6. **Court-Admissible Transcription Enhancements**

- Redaction and speaker ID enhancement – Month 3
- Legal standards validation and chain of custody logging – Month 5

Engineering Assessment Summary

Our internal **Product and Engineering Teams** have completed the following review and validation:

- **Feasibility**: All "Complies within 6 Months" features are achievable within timeframe using our existing platform and planned upgrades.
- **Resource Allocation**: Dedicated engineering squads (NLP, Integration, QA) are assigned. Development efforts are already underway for core components.
- **Risk Mitigation**: Early prototyping and pre-validation are being done in sandbox environments to reduce go-live risks.
- **Testing**: Testing will follow CI/CD pipelines, with regression, UAT, and field validation against real 9-1-1 scenarios.

This roadmap demonstrates our proactive approach and readiness to deliver all required features within six months of contract award. Compunnel will also provide monthly progress updates and coordinate closely with NCTCOG's project managers to ensure transparency and agility throughout the rollout process.

The following sections articulate our approach and readiness to address the two key service categories outlined in the RFP:

- **Category 1**: AI Language Translation for 9-1-1
- **Category 2**: AI Language Transcription for 9-1-1

Each response is structured to provide detailed insights into our architecture, feature set, workflows, compliance strategy, performance benchmarks, and operational scalability. We are confident that our proposed solution not only meets the needs of NCTCOG and its TXShare cooperative members—but positions them at the forefront of **AI-enhanced emergency response** in the nation.

Category #1: AI Language Translation for 9-1-1

To address the multilingual needs of modern Emergency Communication Centers (ECCs), Compunnel proposes a real-time, AI-powered language translation solution - branded as **Compunnel LiveTranslate AI**, built on our proprietary **VoxNova** framework. This next-generation solution seamlessly combines **Twilio Voice & Media Streams** with **OpenAI's Realtime API**, embedded within a modular and secure cloud-native architecture optimized for 9-1-1 operations.

VoxNova acts as the intelligence backbone of our offering—accelerating development, ensuring integration compatibility, and providing pre-built components for translation, routing, compliance, and auditability. By operationalizing multilingual communication at sub-second speeds, Compunnel LiveTranslate AI empowers telecommunicators to respond to emergency calls across diverse linguistic backgrounds without disruption or delay.

Key Features – LiveTranslate AI (Powered by VoxNova)

- **Real-Time Bidirectional Translation**
  Seamless, low-latency translation of live audio streams between callers and dispatchers in their native languages, enabling fluid two-way conversation during critical incidents.

- **Language Auto-Detection via IVR**
  Leveraging Twilio Studio IVR workflows or agent-initiated prompts, callers can select from supported languages, with future capability for dynamic auto-detection based on speech patterns.

- **VoxNova-Powered Translation Intelligence**
  Domain-tuned AI models trained on emergency terminology, regional phrases, and dispatcher communication patterns to ensure high fidelity and contextual accuracy.

- **Agent-Centric Integration**
  Compatible with leading 9-1-1 consoles (e.g., **Solacom Guardian**, **Motorola VESTA**, **Carbyne**), with lightweight API-based embedding that preserves existing telecommunicator workflows.

- **Minimal Latency Architecture**
  Direct ingestion and output of audio streams via Twilio → VoxNova → OpenAI Realtime API, bypassing traditional STT → MT → TTS processing chains to deliver sub-second response times.

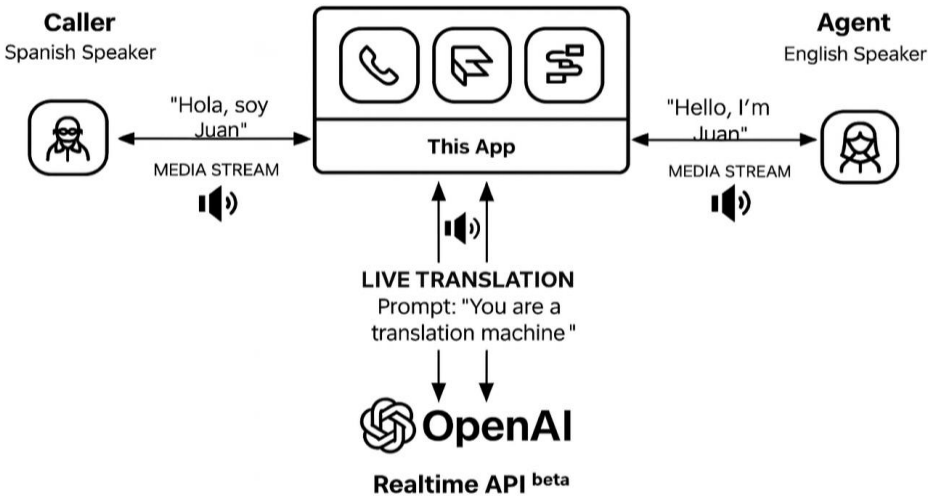
- **Fallback Language Handling**
  Intelligent logic to recognize unsupported or unidentifiable languages and escalate to a live interpreter or designated Tier 2 support resource based on configuration.

- **Translation Glossary Integration**
  Incorporates a custom translation glossary curated for 9-1-1 use cases—covering emergency codes, incident classifications, landmark locations, and jurisdictional terms—to maintain consistency and reduce ambiguity.

- **Secure Translation Logging & Storage**
  Every translated utterance is timestamped and archived securely, with full audit trails available for supervisory review, training, legal admissibility, and post-incident investigation.

This AI-enabled multilingual capability is not a bolt-on tool, but an operational asset integrated into the core fabric of ECC communications. By combining **Compunnel's VoxNova architecture**, **Twilio's telephony stack**, and **OpenAI's advanced language models**, our solution delivers the performance, compliance, and reliability required to meet—and exceed—the objectives of RFP 2025-093.

Solution Workflow



1. **Language Detection**:
   - Caller is greeted by IVR (Twilio Studio) and selects preferred language.
   - System confirms and initializes Realtime API prompts.
2. **Session Initialization**:
   - Call audio is streamed using Twilio Media Streams.
   - Middleware connects to OpenAI Realtime API with translation instructions.
3. **Live Translation**:
   - Caller and call taker speak in their own languages.
   - AI translates audio in real-time and plays translated response to the other party.
4. **Real-Time Monitoring**:
   - Supervisor dashboard displays session metrics: uptime, latency, active calls, translation accuracy.
5. **Post-Call Storage**:
   - Logs of conversations, including original/translations, are stored securely.
   - Metadata includes language, timestamps, response time.

Technology Stack

Component	Description
Twilio Voice	Manages PSTN connectivity and captures live audio streams
Twilio Studio	Presents multilingual IVR options
OpenAI Realtime API	Enables low-latency translation of live voice in both directions
Compunnel Middleware	Orchestrates interaction between Twilio and OpenAI, manages logs, prompts
Azure / AWS / GCP	Cloud infrastructure for data storage and compute (US-based only)
Optional Add-ons	Glossary training, fallback to human interpreters, supervisor dashboards

Compliance & Security

Given the sensitive and high-stakes nature of 9-1-1 communications, ensuring end-to-end compliance and data security is foundational to our solution. Compunnel's architecture has been designed with a strong emphasis on **CJIS, HIPAA, and NENA-aligned best practices**, safeguarding every voice stream, translation event, and system interaction. The following section outlines the robust security controls, data governance policies, and regulatory compliance measures embedded within our AI-powered translation solution for emergency services.

- CJIS & HIPAA Compliant.
- Data encrypted at rest & in transit.

- No offshore data access.
- Access controls and audit logging enabled.
- Realtime translation logs stored in US-based, SOC2-compliant data centers.

Performance Metrics

In mission-critical environments like 9-1-1 Emergency Communication Centers, the success of any AI-driven translation solution hinges on its ability to perform with speed, precision, and reliability—at scale and under pressure. To that end, Compunnel has established a clear set of measurable performance indicators that ensure our solution consistently delivers on the expectations of real-time responsiveness, translation accuracy, uptime, and user satisfaction. The following metrics serve as a benchmark for system performance and as a commitment to operational excellence throughout the engagement.

- **Connection latency**: < 3 seconds
- **Translation accuracy**: ≥ 95% for core languages
- **Uptime**: 99.999%
- **Concurrent sessions supported**: Scalable cloud infrastructure with elastic auto-scaling

Category #2: AI Language Transcription for 9-1-1

Compunnel's **LiveTranscribe AI** delivers real-time, secure, and multilingual transcription capabilities purpose-built for 9-1-1 Emergency Communication Centers (ECCs). Built upon the same robust integration of **Twilio Voice & Media Streams** and **OpenAI's Realtime API**, this solution is architected for both **live transcription during calls** and **post-call documentation**, with high accuracy, time-stamping, and legal auditability.

At the core of this capability lies **VoxNova**, Compunnel's proprietary AI framework, which orchestrates advanced language models, compliance controls, and audio pipeline processing into a cohesive, production-grade transcription engine. **VoxNova** ensures that every utterance—from routine calls to high-stress emergencies—is captured, contextualized, and securely archived to support dispatcher workflows, quality assurance, legal requirements, and after-action reviews.

Key Capabilities – LiveTranscribe AI (Powered by VoxNova)

- **Real-Time Multilingual Transcription**
  Live audio streams are transcribed on the fly with high accuracy, including support for all designated emergency languages. This allows dispatchers and supervisors to **view transcripts in parallel** with ongoing calls.

- **Speaker Diarization & Role Tagging**
  VoxNova's AI engine distinguishes between caller and dispatcher voices, assigning role-specific tags (e.g., "Caller," "Operator") and speaker turns—critical for forensic clarity and training purposes.

- **Sentiment & Stress Detection (Optional)**
  Leveraging OpenAI's Realtime NLP capabilities, the system can tag conversational segments with **emotion and stress indicators**, providing early warnings and contextual cues for situational escalation.

- **Court-Admissible Audit Trails**
  Transcriptions are timestamped, digitally signed, and stored in tamper-proof logs, ensuring admissibility for court proceedings, compliance with state/federal mandates, and transparency in investigations.

- **Post-Call Summary Generation**
  VoxNova-powered LLM agents can automatically generate **call summaries**, highlighting key actions, named entities (locations, names), and flagged terms—improving incident reporting efficiency.

- **Multimodal Access & Visualization**
  Transcriptions are made available through operator dashboards, supervisor consoles, and via secure APIs for downstream systems (CAD, RMS, QA tools).

- **Custom Vocabulary & Glossary Support**
  Just like LiveTranslate, LiveTranscribe integrates a **custom glossary**, allowing regional dialects, local landmarks, and ECC-specific codes to be transcribed correctly and consistently.

- **Scalable & Secure Cloud Architecture**
  The solution runs within a FedRAMP-compliant, HIPAA-ready cloud environment, with built-in support for multi-agency use, redundancy, and disaster recovery.

By embedding these capabilities within the **VoxNova framework**, Compunnel not only accelerates time-to-value but also ensures extensibility, customization, and enterprise-grade governance for NCTCOG and its TXShare cooperative members. LiveTranscribe AI is not just a transcription tool it's an intelligent operational ally that supports **safer, faster, and more accountable emergency response.**

Transcription Workflow

Transcribing 9-1-1 calls in real-time requires more than converting speech to text—it demands a workflow that is **fast, reliable, and context-aware**, capable of handling multilingual audio, background noise, and high emotional intensity. Compunnel's **LiveTranscribe AI** has been carefully architected to streamline each stage of the process, from audio ingestion to secure log storage, ensuring that every word spoken is accurately captured, timestamped, and ready for review. The following section outlines how our transcription engine functions seamlessly within live call environments to support post-event analysis, training, and legal compliance.

1. **Live Audio Capture**:
   - Audio from caller and dispatcher streamed via Twilio Media Streams.
2. **Simultaneous Transcription**:
   - OpenAI Realtime API processes incoming audio and generates text with sub-second delay.
3. **Transcription Output**:
   - Text is rendered with timestamps, optional speaker tags, and searchable metadata.
4. **Storage & Retrieval**:
   - Transcripts saved in secure storage with configurable retention policies.
   - Searchable portal for past call retrieval.

Use Cases

AI-powered transcription within 9-1-1 environments unlocks significant value beyond real-time documentation. From enhancing **call taker performance and compliance**, to supporting **post-incident investigations**, **training**, and even **legal proceedings**, the use cases span across operational, supervisory, and administrative functions. Compunnel's transcription

solution has been purpose-built to align with these real-world needs, enabling Emergency Communication Centers to extract actionable intelligence, ensure quality assurance, and maintain auditable records with ease. The following section highlights key scenarios where our solution delivers measurable impact across the 9-1-1 ecosystem.

- ECC QA teams for protocol adherence.
- Legal team for admissibility in litigation.
- Post-event analysis for training and continuous improvement.

Security & Compliance

AI-powered transcription within 9-1-1 environments unlocks significant value beyond real-time documentation. From enhancing **call taker performance and compliance**, to supporting **post-incident investigations**, **training**, and even **legal proceedings**, the use cases span across operational, supervisory, and administrative functions. Compunnel's transcription solution has been purpose-built to align with these real-world needs, enabling Emergency Communication Centers to extract actionable intelligence, ensure quality assurance, and maintain auditable records with ease. The following section highlights key scenarios where our solution delivers measurable impact across the 9-1-1 ecosystem.

- CJIS-compliant transcription
- HIPAA protection for medical calls
- Role-based access control
- Redaction of PII and audio anomalies where needed

Optional Add-ons

While the core transcription capabilities of Compunnel's solution address the primary needs of 9-1-1 Emergency Communication Centers, additional advanced features can significantly enhance operational insight and decision-making. These **optional add-ons** are designed to provide extended functionality such as emotion detection, compliance scoring, and automated reporting empowering agencies to go beyond transcription and derive deeper value from every interaction. The following enhancements can be integrated based on agency needs, helping ECCs stay ahead of evolving challenges in public safety communication.

- Emotion & Sentiment Detection.
- Compliance Scoring.
- Agent Tone & Escalation Tracking.
- Automated Incident Report Drafting.

Approach to Language Model Training

Delivering high-fidelity language translation in emergency contexts requires more than generic AI models—it requires **precision-tuned, domain-aware, and dynamically improving language models**. At **Compunnel**, we have architected a hybrid approach that leverages foundational capabilities of **LLMs (Large Language Models)** like OpenAI's Realtime API, and augments them with **Compunnel's language domain adaptation techniques** to meet the stringent requirements of ECCs.

Multistage Language Model Training Framework

Ensuring high-fidelity AI translation for 9-1-1 Emergency Communication Centers (ECCs) requires far more than off-the-shelf language models. It demands a carefully orchestrated approach that understands not only the linguistic complexity of real-world speech but also the critical context in which that speech occurs often in high-stress, life-or-death situations. At Compunnel, we recognize this imperative.

To address the unique challenges of multilingual 9-1-1 communication including dialectal variance, emergency-specific terminology, audio distortions, and emotional volatility Compunnel has designed a Multistage Language Model Training Framework. This framework is engineered to elevate AI models from generic multilingual engines to mission-optimized, context-aware translation agents tailored for the emergency services domain.

Our multistage approach blends:

- The robustness of pre-trained foundation models.
- The precision of domain-specific fine-tuning.
- The relevance of live ECC scenarios, and
- The agility of feedback-driven continuous learning loops.

Through this framework, we are able to deliver real-time language translation and transcription that meets and exceeds the accuracy, latency, and reliability expectations laid out in the RFP.

The following section details each stage of the training pipeline, outlining how Compunnel ensures the models are not only linguistically fluent but situationally intelligent and contextually aware capable of interpreting meaning under pressure, across languages, and in real time.

Stage 1: Foundation Model Ingestion

- We begin with industry-leading foundation models (e.g., OpenAI GPT Realtime, Whisper, Gemini, etc.), which already support **100+ global languages** with multi-accent resilience.
- These models are pre-trained on billions of multilingual tokens, offering robust base capabilities in translation, speech-to-text, and natural conversation understanding.

Stage 2: Domain-Adaptive Fine-Tuning

To align the models with the **specific needs of 9-1-1**, we perform **Domain Adaptation**:

- Ingest datasets from publicly available and licensed **emergency response transcripts**, **incident reports**, and **first responder manuals**.
- Special focus on **ten core languages** (e.g., Spanish, Mandarin, Vietnamese, Hindi, Arabic, Farsi, Russian, Korean, Brazilian Portuguese, French).
- Example prompts used in fine-tuning:

  "Translate emergency call involving a car accident in Spanish, preserving urgency and context."

Stage 3: Language Pair Customization

- For each target language pair (e.g., Spanish↔English, Arabic↔English), we build **contextual language adapters** that:
  - Handle **colloquial phrases** and **dialect-specific nuances** (e.g., Latin American vs. Iberian Spanish).
  - Train on **parallel corpora** using **BLEU score** optimization.
  - Use **CTC loss and phoneme alignment** techniques for audio-based models.

Translation Memory & Glossary Enforcement

Translation Glossary Integration

Accurate and consistent translation in emergency scenarios relies not just on linguistic fluency but also on the correct usage of domain-specific terminology. To ensure clarity, standardization, and rapid comprehension, **Compunnel integrates a customizable Translation Glossary** into its AI translation pipeline. This glossary acts as a real-time reference for preferred phrases, abbreviations, and critical terms allowing 9-1-1 telecommunicators to receive translations that reflect **operational language, not just literal meaning**.

The following section outlines how the glossary is defined, maintained, and enforced to ensure communication is precise, compliant, and contextually accurate across all supported languages.

- Each ECC can define **preferred terminology**, **abbreviations**, and **standard phrases**.
- These are integrated into a **translation memory module**, so AI respects terms like:
  - "Unconscious" → Always mapped to medically appropriate phrase.
  - “Unit en route” → Retained in its professional terminology rather than literal translation.

Real-Time Prompt Injection

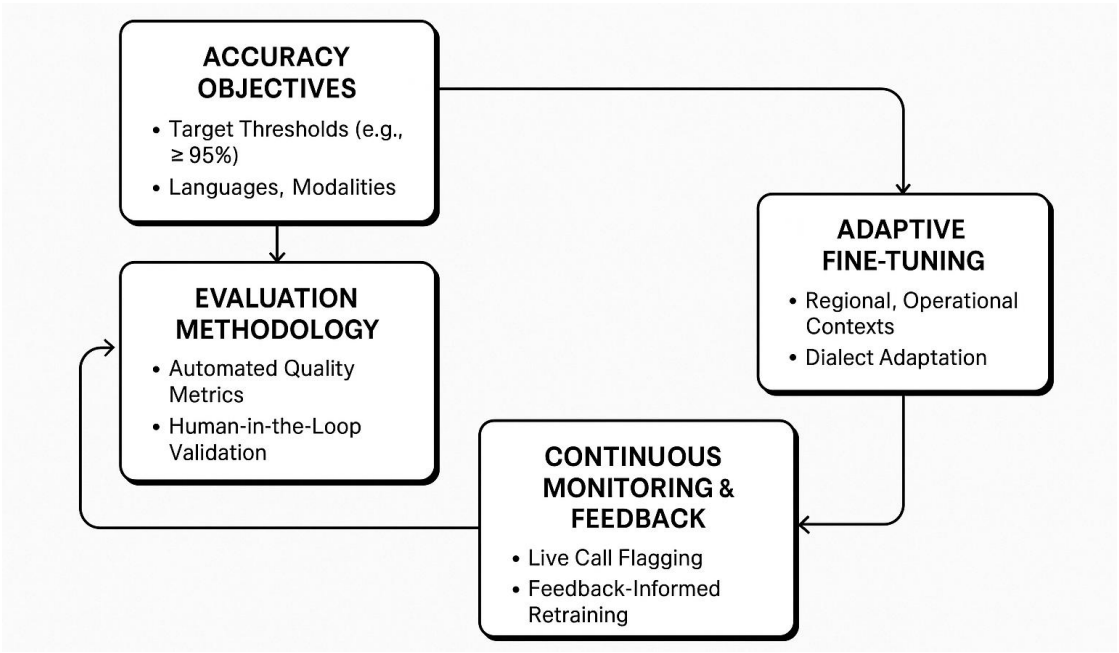
- AI translation is guided using **dynamic prompt chaining**:

"You are a real-time translator for a 9-1-1 dispatcher. Maintain medical terminology accuracy, avoid literal errors, and use this glossary..."

Accuracy Assurance Framework

In high-stakes emergency communication environments such as 9-1-1 ECCs, **translation and transcription accuracy is not optional it is vital**. A misinterpreted phrase, a delayed translation, or an incorrect transcription can result in misrouted responses, delayed interventions, or even loss of life. To address this, **Compunnel has developed a robust and auditable Accuracy Assurance Framework** tailored specifically to the needs of emergency services using AI.

Our framework is designed to continuously measure, validate, and improve the precision of translation and transcription across multiple languages and diverse call scenarios.



Accuracy Objectives and Thresholds

Compunnel defines target thresholds based on operational risk, linguistic complexity, and public sector benchmarks:

Accuracy Metric	Target Threshold
Real-time Translation Accuracy	≥ 95% for core languages
Transcription Word Error Rate (WER)	≤ 8% (for clear speech)
Sentence BLEU Score	≥ 0.85 for emergency phrases
Latency (Speech-to-Translation)	≤ 500ms (low latency)
Glossary Adherence Rate	100% (on defined terminology)

These thresholds are monitored and enforced across all supported languages and call modalities (voice, text, over-the-top text apps).

Multi-Layered Evaluation Methodology

At Compunnel, we recognize that the implementation of AI-based translation and transcription systems for 9-1-1 Emergency Communication Centers (ECCs) demands a rigorous, evidence-based evaluation framework. The high-stakes nature of emergency communications where human lives, legal accountability, and public trust converge necessitates more than just performance metrics. It calls for a **multi-layered, iterative, and transparent methodology** that ensures not only **technical excellence** but also **functional relevance**, **linguistic inclusivity**, and **user confidence**.

Our **Multi-Layered Evaluation Methodology** is a structured framework designed to validate every component of our solutionranging from language model accuracy and system latency to operational usability and legal compliance. Each layer targets a specific quality dimension and is backed by well-defined KPIs, scenario-based testing, and continuous improvement loops.

This methodology is embedded into every stage of deployment from initial Proof of Concept (PoC) to production rollout allowing stakeholders at NCTCOG and participating ECCs to make **data-driven decisions**, identify gaps proactively, and ensure the solution evolves in sync with real-world operational demands.

The following section outlines the core layers of this evaluation framework, including:

- **Technical Performance Metrics** (e.g., latency, uptime, throughput).
- **Linguistic Accuracy & Comprehension Validations** (across supported languages).
- **End-User Acceptance Testing** (ECC call takers, supervisors).
- **Compliance & Security Conformance** (e.g., CJIS, HIPAA, NENA i3 standards).
- **Continuous Feedback Loop Mechanisms** (driven by VoxNova's adaptive learning modules).

Together, these layers form the backbone of our **trust-by-design** deployment approach—ensuring that AI capabilities not only meet contract requirements but consistently deliver **high-trust, mission-critical outcomes** in dynamic, multilingual 9-1-1 environments.

a. Automated Quality Metrics

- **BLEU, METEOR, ROUGE**: Applied for translation quality across language pairs.
- **WER/CER**: Used for transcription assessments.
- **F-Score**: For keyword tagging and term recognition.

- Evaluation performed across 3 tiers:
  - Standard conversations.
  - Emergency-specific utterances.
  - Noisy/stress-heavy environments.

b. Human-in-the-Loop (HITL) Validation

- Bilingual evaluators from public safety backgrounds assess real and synthetic calls.
- Accuracy scoring includes **tone preservation, dialect accuracy**, and **intent equivalence**.

c. Synthetic Scenario Testing

- Simulated emergency calls are generated (e.g., fire, medical, assault, disaster).
- Translations and transcriptions are evaluated by SMEs for correctness under pressure.

Continuous Accuracy Monitoring & Feedback Loops

In the dynamic and high-stakes environment of 9-1-1 emergency communications, language models must go beyond static performance. They must adapt continuously learning from evolving linguistic patterns, regional dialects, caller behavior, and dispatcher feedback. At Compunnel, we understand that **accuracy is not a one-time benchmark**, but a **living metric** that must be constantly evaluated, calibrated, and enhanced.

To ensure sustained excellence, Compunnel's solution incorporates a **Continuous Accuracy Monitoring and Feedback Loop Framework**, designed to track real-world performance, identify contextual anomalies, and fine-tune models in near real-time. This system operates as an intelligent overlay across both **translation and transcription pipelines**, enabling the platform to evolve with every interaction.

Built into our proprietary **VoxNova AI framework**, this feedback loop architecture captures quantitative performance data (e.g., BLEU scores, WER, glossary hit rates), qualitative dispatcher inputs (flagged errors, low-confidence segments), and supervisor insights (QA reviews, post-call audits). These inputs are synthesized through automated monitoring tools and routed into **model retraining workflows** on a recurring schedule.

a. Live Call Feedback Flagging

- Call takers can flag:
  - Incorrect translations.
  - Missed phrases.
  - Poor transcription formatting.

b. Feedback-Informed Retraining

- Flagged events are reviewed weekly and batched for monthly fine-tuning cycles.
- Updates include glossary refinements, phonetic misclassification correction, and cultural nuance tuning.

c. Quality Reports

- Monthly accuracy performance reports are generated per ECC.

- Include KPIs, outlier incidents, glossary hit/miss rates, and language-specific trends.

This continuous loop ensures that Compunnel's AI solution does not just maintain performance it **learns, adapts, and improves**, becoming more accurate, context-aware, and resilient with every call handled.

Adaptive Fine-Tuning for Regional & Operational Contexts

Language in a 9-1-1 setting is more than vocabulary it is a living, situational construct influenced by **regional dialects**, **cultural nuances**, **local landmarks**, and **agency-specific operational phrases**. A translation engine that performs well in one region may misinterpret intent or terminology in another. Recognizing this, Compunnel has embedded an **Adaptive Fine-Tuning Layer** within our VoxNova AI framework, purpose-built to align model behavior with **regional and agency-specific communication patterns**.

Our fine-tuning approach ensures that the system does not rely solely on generic, out-of-the-box large language models (LLMs), but instead continuously calibrates its outputs based on:

- **Linguistic diversity across Texas counties and municipalities.**
- **Operational codes, emergency lingo, and abbreviations used by local ECCs.**
- **Local accents, stress-influenced speech variations, and cultural semantics.**

Key Adaptation Strategies

1. Region-Specific Language Corpora Integration

We integrate **localized language datasets**, including call transcripts, regional news broadcasts, and community forums, to train and reinforce language models that reflect how people actually speak in each target area (e.g., Tex-Mex Spanish, Vietnamese-English blends, Creole expressions).

2. Custom Glossary Expansion per ECC

Each participating ECC can contribute to a **custom glossary** of frequently used codes, localities, responder unit names, and jurisdiction-specific terms (e.g., "PD," "10-33," "Old Denton Road"). These are injected into the model's prompt structure and embedded token weighting schema.

3. Call-Type Context Modeling

Transcription and translation behavior is modulated based on **incident context** (e.g., medical, fire, domestic, road accident). VoxNova's AI agents dynamically adjust interpretation patterns to prioritize relevant language constructs for each scenario.

4. Phonetic Adaptation for Local Accents

Through **speaker embedding models and phoneme alignment layers**, the system adapts to regional speech patterns, background noise conditions, and even emotion-influenced pronunciations (e.g., slurred speech during distress).

5. ECC-Centric Prompt Engineering

We tune the prompt architecture for OpenAI's Realtime API to reflect **operational hierarchy and tone**. For instance, prompts are designed to enforce "short, precise, law-enforcement-style" transcriptions or "empathetic, emotionally sensitive" translations based on the agency's communication style.

Learning from the Field: Real-Time Feedback Informed Adaptation

Feedback from call takers, supervisors, and QA analysts is looped back into the model retraining cycles ensuring the fine-tuning process is **grounded in field realities** and not static assumptions.

- Flagged mistranslations are stored, categorized, and prioritized for tuning.
- Repetitive correction patterns across calls initiate adaptive model weighting.
- Custom tuning datasets are created from agency-labeled segments.

Case Example: Dallas County vs. Denton County

For example, Spanish speakers in **Dallas County** often use a blend of Central American Spanish and local slang, whereas in **Denton County**, the usage is more aligned with Mexican Spanish. Our adaptation engine fine-tunes the translation layer to recognize and translate each dialect with appropriate tone, vocabulary, and sentence structure.

Similarly, terminology like "DFR" (Drone First Responder) or “TC” (Traffic Collision) may be used differently across counties our glossary tuning ensures accurate preservation and understanding of these codes in both transcription and translation pipelines.

Result: Operational Trust & Accuracy at Scale

By embedding these adaptive strategies within our AI pipeline, Compunnel ensures that each ECC receives a **context-aware**, **linguistically precise**, and **operationally aligned** solution delivering translations and transcriptions that resonate with **local expectations**, reduce dispatcher confusion, and build public confidence.

This level of fine-tuning is only possible due to the modularity and extensibility of the **VoxNova framework**, which transforms every AI model from a generic tool into a **mission-specific communication asset** tailored for each region within NCTCOG’s purview.

Fail-Safe & Escalation Protocols

In mission-critical environments such as 9-1-1 Emergency Communication Centers (ECCs), any failure in translation or transcription accuracy can lead to **delays, miscommunication, or compromised response effectiveness**. Recognizing the zero-tolerance threshold for ambiguity in emergency services, Compunnel has embedded **robust fail-safe mechanisms and escalation protocols** within the architecture of its AI-powered language platform, powered by the VoxNova framework.

Our solution is designed to be **resilient under edge-case scenarios**, and proactively shifts into **fallback or assisted modes** when AI confidence thresholds drop below defined safety margins. This ensures that telecommunicators always have access to accurate, usable, and contextually appropriate language support regardless of system anomalies, language gaps, or real-time processing challenges.

Key Components of Compunnel’s Fail-Safe Architecture

1. Confidence Score Threshold Monitoring

- Every translation or transcription event is evaluated using **confidence scoring algorithms**.
- If the system detects a score below the defined threshold (e.g., 85%), it triggers real-time alerts and activates an escalation path.

- Low-confidence responses are visually flagged on the dispatcher console (e.g., color-coded segments or warning icons).

2. Automated Human Escalation Pathways

- When the system detects unrecognized speech patterns or unsupported languages, it can **automatically reroute the call to a live interpreter**—either internal or through a third-party partner configured by the ECC.
- The switch can happen in less than 3 seconds, using Twilio's programmable voice logic and integrated SIP fallback routing.

3. Pre-Configured Language Escalation Matrix

- Each ECC can define a **language-specific escalation plan**. For example:
  - **Recognized, supported language with low confidence** → Retry & alert operator
  - **Unsupported or unrecognized language** → Direct to human interpreter
  - **Partial translation failure (e.g., silence or garbled segments)** → Annotate with a warning + log event for QA.

4. Dynamic Reversion to Monolingual Mode

- In case of sustained translation disruption, the system notifies the dispatcher and reverts to **standard call handling mode**, avoiding reliance on questionable translations.
- This reversion is logged with metadata for quality and compliance review.

5. Redundancy & Fallback Infrastructure

- VoxNova includes **multi-region redundancy** for OpenAI and Twilio API calls.
- If the primary endpoint fails or slows down, the system automatically switches to a **secondary fallback node or model**.
- Audio data is buffered securely during transition to ensure no loss in transcription or communication continuity.

Supervisor Escalation, Logging & Feedback

- All failover events, low-confidence translations, or fallback activations are:
  - **Logged with time stamps and call IDs.**
  - **Pushed to supervisor dashboards** with detailed annotations.
  - **Available for post-incident QA analysis**, retraining inputs, and SLA compliance audits.

Supervisors are notified immediately when:

- Escalation thresholds are triggered multiple times for a specific language or model.
- A pattern of fallback events suggests the need for retraining or glossary expansion.
- Translation errors are flagged by dispatchers during or post-call.

Customization for Local Agency Protocols

Compunnel recognizes that each ECC may have its own escalation preferences based on staffing, language availability, or regional SOPs. As such, **VoxNova's escalation logic is fully customizable** to reflect:

- Preferred interpreter vendors or internal bilingual staff
- Language priority mapping (e.g., Spanish → fallback to bilingual operator; Vietnamese → escalate to vendor)
- Jurisdictional compliance for when and how human intervention is mandated

Outcome: Reliability Under Pressure

With these safeguards in place, Compunnel ensures that its AI-based language platform is not only **accurate under ideal conditions**, but also **gracefully degrades with protection mechanisms** when risks arise. This builds trust among dispatchers, meets legal accountability standards, and ensures ECCs are never left unsupported **even when technology alone cannot guarantee 100% certainty.**

Compliance & Audit Readiness

Compunnel's AI-powered translation and transcription platform is built on a foundation of **compliance-by-design**, ensuring that every interaction whether live or post-call is captured, processed, stored, and retrievable in accordance with **federal, state, and agency-specific legal frameworks** applicable to emergency communication services.

As part of our commitment to **trust, security, and operational transparency**, we have embedded robust audit trails, data governance protocols, and compliance checkpoints across the entire solution lifecycle. From model invocation to call completion, every critical step is logged, timestamped, and made reviewable through dedicated supervisor dashboards, APIs, and compliance reports.

Key Compliance Frameworks Addressed

- **CJIS (Criminal Justice Information Services)** — All data exchanges, including transcription and translation logs, adhere to CJIS security policy guidelines.
- **HIPAA** — Where applicable, protected health information (PHI) within 9-1-1 calls is encrypted and access-controlled to prevent unauthorized disclosure.
- **FERPA / GLBA** — Educational and financial institution-related emergency calls follow federal data privacy norms.
- **NENA i3 Standards** — Integration with NG9-1-1 ecosystems respects the i3 framework for interoperable emergency services.
- **Texas Public Information Act (TPIA)** — Ensures records are retained and accessible in accordance with public disclosure mandates, with redaction workflows supported as needed.

Comprehensive Audit Trail Logging

Every interaction through Compunnel's **VoxNova framework** is logged with complete metadata, including:

- Call ID, language selected/detected, and translation confidence scores.
- Timestamps for speech segments, transcribed text, and translated output.
- AI model version, glossary references invoked, and fallback/escalation events.
- Dispatcher feedback tags or flags (manual overrides, low-confidence alerts).
- Post-call summary generation and access history.

This metadata is stored securely and exposed through:

- **Supervisor dashboards** with advanced filtering & export capabilities.
- **APIs for integration with CAD/RMS systems.**
- **Monthly compliance reports** for legal and QA reviews.

Retention, Redaction & Reproducibility

- Transcriptions and translations are **stored for agency-defined retention periods**, with version history support for any manual adjustments or annotations.
- **Redaction tools** are available to prepare transcripts for public or legal use.
- **Immutable logs** ensure all outputs can be reproduced and verified as admissible in court or administrative investigations.

Accuracy & SLA Monitoring for Regulatory Assurance

To support ongoing oversight, Compunnel delivers a **Monthly Accuracy Dashboard** as part of its QA and compliance package. This dashboard provides:

- Per-language translation/transcription accuracy metrics (WER, BLEU)
- Low-confidence event frequency and response time
- Escalation statistics (e.g., # of calls escalated to live interpreter)
- Dispatcher feedback loop closure rate
- Uptime, latency, and call flow success ratios
- Glossary term usage compliance

These dashboards serve as both an **internal performance management tool** and an **external audit artifact**, supporting readiness for regulatory reviews, contract reporting, and grant accountability.

Sample Monthly Accuracy Dashboard

Language	BLEU	WER	Glossary Match	Avg. Latency	Flagged Calls
Spanish	0.89	6.2%	100%	420 ms	1
Vietnamese	0.83	7.4%	100%	460 ms	0
Russian	0.87	5.9%	98%	430 ms	2

Compunnel's Accuracy Assurance Framework is purpose-built for the **unique linguistic, emotional, and legal complexity of 9-1-1 communication**. Through a combination of **high-precision modeling, constant feedback incorporation, and transparent auditability**, we ensure that every translated or transcribed interaction is trustworthy, timely, and tailored for public safety outcomes.

Continuous Learning and Feedback Loop

In high-stakes emergency communication environments, a language model's success is not defined solely by its initial performance but by its ability to **continuously learn, improve, and adapt** to the nuances of real-world interactions. At

Compunnel, we embed this philosophy into the core of our AI platform through a **multi-tiered Continuous Learning and Feedback Loop**, powered by the modular intelligence of our proprietary **VoxNova framework**.

Our learning architecture ensures that the AI models evolve based on **actual dispatcher experiences, language pattern shifts, local terminology**, and **edge-case incidents**. Through structured post-call review workflows, adaptive retraining pipelines, and offline simulation of complex linguistic scenarios, we enable the system to become smarter and more context-aware over time.

Post-Call Review Feedback

- **Dispatcher-Centric Flagging Mechanism**

  During or after a call, telecommunicators can **flag specific translations or transcriptions** that were inaccurate, ambiguous, or potentially misleading.

- **Annotation-Based Feedback Logging**

  These flags are stored with contextual metadata (call type, language, timestamp, error type) and sent to a **model improvement queue** managed by Compunnel's AI Ops team.

- **Biweekly Review Cycle**

  Every two weeks, flagged segments are reviewed to extract corrective inputs that directly inform prompt tuning, glossary adjustments, or LLM retraining routines.

Adaptive Model Retraining

- **ECC-Specific Fine-Tuning Every 30 Days**

  Using de-identified and pre-authorized call transcripts from each ECC, VoxNova initiates **monthly retraining of model weights and glossary embeddings**—ensuring alignment with evolving regional language usage, emergency codes, and conversational patterns.

- **Human-in-the-Loop Validation (RLHF)**

  Dispatcher thumbs-up/down feedback on real-time translations feeds into a **Reinforcement Learning with Human Feedback** (RLHF) pipeline, helping to calibrate confidence scoring and improve model behavior for frequently flagged terms or scenarios.

- **Continuous Prompt Engineering Optimization**

  Dynamic prompts used in the OpenAI Realtime API are updated monthly to reflect insights from recent call data, including changes in phrasing, urgency cues, and linguistic expressions tied to specific call types (e.g., medical vs. fire vs. law enforcement).

Offline Reinforcement via Simulated Learning

- **De-Identified Call Logs for Error Expansion**

  With agency approval, anonymized call data is used to simulate a **wider range of challenging linguistic environments**including overlapping speakers, rapid code-switching, and non-standard phrasing.

- **Stress-Induced Speech & Noisy Audio Recovery**
  These logs help retrain models on:
  - Distorted or slurred speech under emotional duress.
  - Regional accents with strong inflections.
  - Background interference such as sirens, yelling, or ambient street noise.

- **Scenario-Driven Model Stress Testing**
  Our ML team builds synthetic test cases to **pressure-test the models' limits**, and strengthen model robustness across underrepresented or high-risk call scenarios.

Feedback Loop Impact

This continuous learning loop ensures that:

- Each ECC's system gets **smarter and more relevant over time**
- AI models remain responsive to **community-specific communication styles**
- Feedback from actual users is treated as a **first-class signal** for model enhancement
- NCTCOG and its member ECCs benefit from a **self-improving AI ecosystem**, backed by rigorous governance and documented audit trails

Through this **multi-stage learning architecture**, Compunnel ensures that our AI solution doesn't merely meet today's standards but keeps pace with the **dynamic nature of language**, **changing community needs**, and **real-world operational complexities** of emergency communications.

Security, Privacy & Regional Data Controls

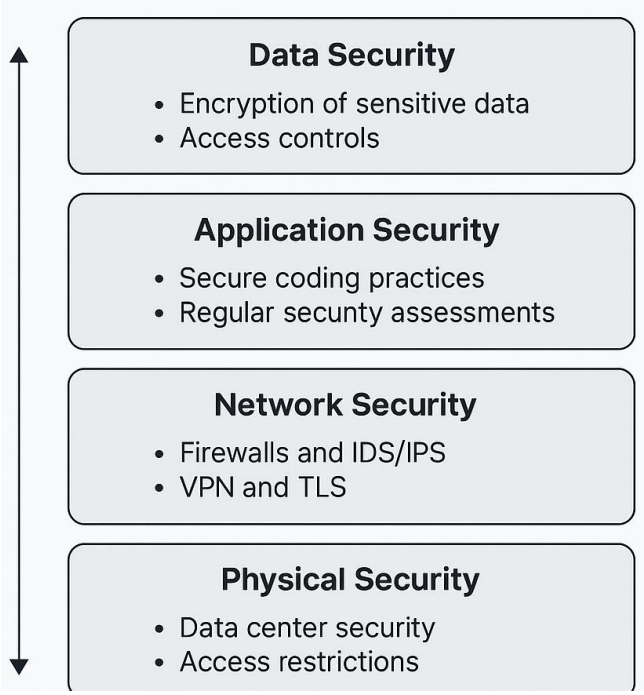
When deploying AI-powered translation and transcription within 9-1-1 Emergency Communication Centers (ECCs), **security and privacy are non-negotiable**. Compunnel understands the mission-critical nature of public safety operations and the sensitive information contained within emergency calls. Our approach to data protection, residency, and regional model training is **designed from the ground up to align with CJIS, HIPAA, and Texas-specific data governance mandates**, ensuring complete confidence from dispatch to audit.

Our proprietary **VoxNova framework** embeds layered security mechanisms, multilingual privacy tools, and regional control protocols across the AI lifecycle enabling ECCs to confidently deploy advanced language models without compromising confidentiality, compliance, or operational autonomy.

Data Residency & Regional Compliance

- **US-Based Infrastructure**
  All training data, audit logs, and inference activities are hosted within **hardened, U.S.-based cloud environments** that comply with **CJIS**, **FedRAMP Moderate**, and **State of Texas DIR cybersecurity standards**.

- **State-Scoped Data Control**
  For Texas ECCs, all data is retained within regional availability zones—ensuring compliance with **Texas Government Code Chapters 552 & 2054**, and protecting ECCs from regulatory or jurisdictional conflicts.



Zero Retention Modes for Real-Time Operations

- For agencies that prioritize real-time assistance without post-call storage, **Compunnel supports configurable Zero Retention Modes**, where:
  - Audio streams are processed in-memory and never written to disk
  - No transcripts or logs are retained beyond session duration
  - Full functionality is still supported (e.g., live translation, glossary matching)

This mode is ideal for **low-risk or privacy-sensitive scenarios**, and can be toggled per call or per agency based on configuration preferences.

Multilingual PII Redaction Engine

- Before storing any text-based output (transcripts, translations, summaries), Compunnel applies a **PII Redaction Layer** trained to detect and mask:
  - Names, addresses, phone numbers, SSNs, license plates, health info
  - In **over 20 languages**, including Spanish, Vietnamese, Arabic, Korean, and others commonly encountered across Texas ECCs
- Redaction actions are timestamped and logged, ensuring traceability and legal defensibility in case of audits or public records requests.

Custom Regional Language Models

- Compunnel deploys **custom-trained AI models per geographic region**, tailored to local dialects and linguistic behaviors (e.g., **Tex-Mex Spanish**, **South-Central Vietnamese**, **Creole-inflected English**).
- These models are fine-tuned using **de-identified, ECC-approved datasets**, and continuously updated via feedback loops that reflect **localized communication patterns**, emergency terminologies, and real-life call complexities.

Secure Training Architecture

Compunnel's AI training methodology blends the power of **frontier LLMs** (via OpenAI Realtime APIs) with **ECC-specific contextual grounding**—reinforced through:

- Dispatcher feedback-driven fine-tuning
- Simulated learning from stress-induced, noisy, or dialect-rich environments

- Auditable, permissioned training logs retained for agency review

Outcome: Accuracy + Accountability

This security-first, privacy-preserving approach ensures not only **robust multilingual capability**, but also:

- **Accuracy thresholds aligned with public safety standards**
- **Configurable transparency for supervisory and compliance needs**
- **Trusted performance under the highest-stakes conditions**

Compunnel's goal is not just high performance but **trustworthy, explainable AI** that meets the real-world needs of ECCs where **every word matters** and **every call can be life-altering**.

Language Adoption Roadmap

This roadmap ensures a **phased, controlled, and quality-assured rollout** of multilingual capabilities for 9-1-1 Emergency Communication Centers (ECCs), balancing technical readiness, dispatcher training, and compliance needs.

Phase	Timeline	Activities	Deliverables
Phase 1: Foundation	**Week 1 – Week 4**	• Deploy base infrastructure (Twilio + OpenAI + VoxNova) • Enable 2 priority languages • Train glossary models and redaction engine • Conduct UAT for Translation & Transcription pipelines • Dispatcher onboarding for Phase 1 languages	• LiveTranslate + LiveTranscribe activated for 2 languages • Security & audit controls live • Training completion reports
Phase 2: Expansion	**Week 5 – Week 8**	• Add 4 new languages (based on call volume) • Conduct adaptive model tuning based on Phase 1 feedback • Expand dispatcher training • Begin model performance tracking & accuracy dashboards for all 6 languages	• Multilingual dashboard activated • Language-specific model accuracy baseline reports • Mid-rollout stakeholder review
Phase 3: Full Adoption	**Week 9 – Week 12**	• Onboard final 4 languages • Activate fallback language detection • Begin optional add-ons (emotion tagging, call summaries) • Finalize escalation paths and feedback loop integration	• 10-language support enabled Final system sign-off • Continuous improvement process (RLHF) fully deployed

Ongoing Activities Throughout All Phases

- **Glossary refinement** (emergency-specific codes, addresses, medical terminology)
- **Dispatcher feedback collection** via UI or feedback buttons
- **Fine-tuning pipeline** runs every 2 weeks

- **PII redaction testing** for every new language
- **Call log analysis** to identify edge cases and retrain

Language Onboarding Prioritization (Sample)

Batch	Languages	Selection Logic
Batch 1	Spanish, Vietnamese	Highest call volume (per Addendum), already Tier-1 tested
Batch 2	Arabic, Mandarin, Korean, Tagalog	Common urban ECC needs, regionally diverse
Batch 3	Urdu, Russian, French, Hindi	Full coverage + dialectic variation

This roadmap allows **controlled expansion with measurable benchmarks** at each step, ensuring that **Compunnel's VoxNova solution** is adaptable, safe, and trusted by the 9-1-1 workforce.

Category #3: Artificial Intelligence (AI) Quality Control for 9-1-1

AI systems used in 9-1-1 Emergency Communication Centers (ECCs) must not only provide high-speed translation and transcription but also **demonstrate consistent reliability, fairness, and explainability under real-world stress conditions**. Compunnel's approach to AI Quality Control is governed by a **multi-layered assurance model** ensuring that models deployed via our proprietary **VoxNova framework** continuously meet ECC performance, compliance, and accountability benchmarks.

This includes automated and human-in-the-loop checks to detect AI drift, accuracy dips, or contextual errors, especially in high-stakes multilingual or high-noise calls. Our quality framework aligns with dispatch-specific KPIs such as **Call Processing Time (CPT)**, **Caller Comprehension Index (CCI)**, and **Accuracy-Adjusted Turnaround Time (AATT)**—ensuring the AI enhances operational efficiency, not hinders it.

Key Components of the AI Quality Control Solution

1. Real-Time Confidence Monitoring

- Every transcription and translation operation is accompanied by a **confidence score**, generated per sentence or phrase.
- Dispatcher consoles flag low-confidence output visually (e.g., red/yellow markers).
- Confidence thresholds are configurable (e.g., Spanish > 92%, Vietnamese > 85%) based on language and historical performance.

3. Multilingual Accuracy Benchmarking

- BLEU, WER (Word Error Rate), and TER (Translation Edit Rate) are tracked for each supported language.
- Dashboards provide per-language accuracy trends, outlier detection, and glossary adherence tracking.
- Regular model evaluation datasets are refreshed with anonymized, de-identified ECC call logs.

4. Human-in-the-Loop Audits

- Supervisors can review random call transcripts or those flagged by dispatchers.
- Post-call audit forms allow tagging of AI-generated content as accurate/inaccurate/ambiguous.
- These reviews directly feed model retraining and glossary refinement pipelines.

5. **Bias & Drift Detection**

- VoxNova includes bias monitoring tools to detect if specific language pairs or demographics are underperforming.
- AI drift (over time or due to evolving dialects) is tracked via delta comparisons on rolling accuracy datasets.

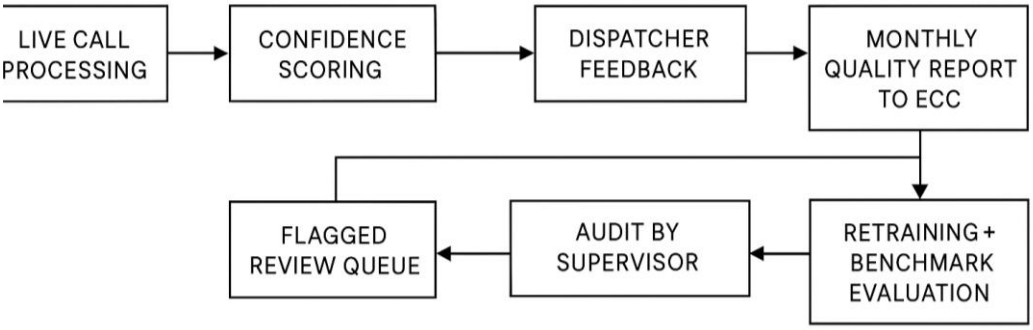
6. **Quality Threshold Alerts**

- ECC stakeholders can set **SLA thresholds** for AI output quality (e.g., 95% translation accuracy for Spanish).
- If thresholds are not met for a given week/month, alert flags are raised on the Quality Dashboard and trigger root-cause analysis.

Key Performance Indicators (Aligned with CCMetricsKPIs)

KPI	Description	Target / Metric
Translation Accuracy Rate (TAR)	Percentage of correctly translated phrases vs ground truth	≥ 90% for Tier-1 languages
Transcription Accuracy Rate (WER)	Word Error Rate of auto-transcripts in live and post-call environments	≤ 15% average per month
Call Comprehension Index (CCI)	Dispatcher rating of how well translation enabled understanding	≥ 4.5/5 on feedback forms
Glossary Utilization Accuracy	% of required glossary terms matched in context	≥ 95% adherence to emergency code terms
AI Uptime SLA	Availability of the translation/transcription engine	≥ 99.9% monthly uptime
Escalation Avoidance Ratio	% of calls that did not require human interpreter escalation	≥ 92% per reporting cycle
Feedback Loop Resolution Time	Avg. time to incorporate dispatcher feedback into AI tuning	≤ 2 weeks

Continuous Quality Control Workflow



Automation Meets Human Oversight

While Compunnel leverages advanced OpenAI models for real-time capabilities, **human governance remains central** to our QA philosophy:

- All changes to prompts, model parameters, or glossary logic are reviewed by a QA Manager.
- Call logs selected for audit are randomized with bias checks to ensure diverse sample representation.
- Quarterly model health check reports are submitted to ECC leadership with recommendations for improvement.

Security and Audit Readiness

- Every AI decision point is **fully traceable**, with logs stored in CJIS-compliant environments.
- Supervisor overrides and dispatcher flags are recorded for auditability.
- Compunnel offers **custom audit reports** per language, agency, or timeframe on request.

Compunnel's **AI Quality Control System** ensures that the use of artificial intelligence in 9-1-1 communications is **responsible, explainable, and continuously optimized**. We are not just deploying AI we are curating a **high-trust intelligence framework** that performs reliably under pressure and **improves with every call**, empowering ECCs to meet their critical mission: saving lives.

Category #4: Additional 9-1-1 AI Services

As Emergency Communication Centers (ECCs) modernize with AI-powered translation and transcription, the next frontier lies in **actionable intelligence derived from those interactions**. Compunnel's **VoxNova AI Suite** extends beyond voice understanding to deliver **advanced analytical, summarization, and automation capabilities** that enhance operational decision-making, improve training effectiveness, and ensure strategic readiness.

Our AI services in this category offer **real-time, post-call, and trend-based insights**, allowing 9-1-1 administrators, supervisors, and quality assurance teams to **optimize workflows, identify bottlenecks, and elevate service standards**.

Core AI-Powered Add-on Capabilities

1. Call Analytics Dashboard

- Interactive dashboards showcasing:
  - Call volume by language, region, and time.
  - Translation/transcription success rate.
  - Flagged incident volume and severity index..
  - Dispatcher-wise performance statistics
- Configurable filters by ECC, shift, call type, or language.
- Visual heatmaps for operational workload prediction.

2. Sentiment & Stress Detection

- Real-time emotional tone analysis of caller voice
- Stress spike detection (panic, aggression, distress)
- Alert integration for high-risk call types
- Tagging for post-call review prioritization

3. Automated Call Summarization

- AI-generated summaries of translated and transcribed conversations.
- Highlights critical elements (e.g., location, medical condition, threat level).
- Available in dispatcher interface for quick review and report filing.
- Configurable to agency summary templates or CAD integration.

4. Court-Admissible Audit Trails

- Time-synced logs of original audio, transcribed content, and translation streams.
- Redacted and non-redacted versions for legal compliance.
- Chain-of-custody metadata embedded for each call record.

5. Pattern & Anomaly Detection

- NLP-driven clustering to identify:
  - Recurrent emergencies in specific geographies.
  - Language-specific challenges.
  - Dispatcher-specific drop-off points or intervention needs.
- Suggests dispatcher upskilling areas or glossary updates.

6. Incident Forecasting & Simulation

- AI models to predict surge conditions (e.g., storm calls, mass emergencies).
- Scenario playback tools to simulate multilingual emergency situations.
- Helps ECC managers prepare staffing and escalation protocols.

How It Works: Modular Architecture Built into VoxNova

Layer	AI Services Enabled
Voice & Text Ingestion	Multi-language transcription & translation, metadata tagging
Context Understanding	Sentiment tagging, keyword recognition, stress/emotion tracking
Summarization Layer	Real-time auto-summaries, dispatcher-view insights
Analytics Engine	Performance metrics, operational heatmaps, escalation trend detection
Security Layer	Redaction, encryption, audit trails, role-based access controls
Feedback Loop	Call flagging, dispatcher thumbs-up/down, monthly model retraining insights

Benefits to ECCs & NCTCOG

Operational Benefit	How It's Delivered
Dispatcher Efficiency Boost	Auto-summaries and flag-based triage reduce post-call workload
Performance Management	Metrics by ECC, dispatcher, language help supervisors target training
Faster Legal Response	Court-ready transcripts reduce legal preparation time
Strategic Resource Planning	Trend analytics support ECC staffing and policy adjustments
Bias & Equity Monitoring	Language-specific outcome tracking helps ensure fair treatment across communities

5. PRICING

Respondents should furnish a proposal that specifies pricing for the solutions and/or services they propose. For more information, please refer to Exhibit 1. Points will be awarded based on the competitiveness and clarity of the Price Proposal.

We have uploaded the complete pricing information as a separate attachment on the portal under tab “Vendor Pricing”.

6. Proposed Value-Add – 5 additional points

Respondents are encouraged to include a Value-Add section in their submission to showcase innovative approaches or supplementary functionalities that could enhance the efficiency and effectiveness of our public sector operations beyond the primary scope of this RFP. This section should highlight any additional capabilities or services not explicitly detailed in the Scope of Work but that the respondent believes would be of benefit.

Compunnel is pleased to highlight a range of innovative capabilities and supplementary functionalities that we believe will significantly enhance the efficiency, effectiveness, and long-term impact of NCTCOG's operations. While the primary focus of this proposal is to address the core requirements outlined in the RFP, we have identified several value-added features that can provide NCTCOG with a competitive edge, improve operational agility, and deliver superior outcomes for both internal teams and the communities served.

1. Advanced Predictive Analytics for Proactive Decision-Making

- **Innovation:** By leveraging advanced predictive analytics, we can equip NCTCOG with AI-driven insights that not only react to existing data but also predict future trends, challenges, and opportunities. For example, AI models can forecast transportation demands, traffic congestion, environmental hazards, or resource needs with high accuracy.
- **Value Add:** These predictive capabilities will allow NCTCOG to proactively plan and allocate resources, ensuring that the organization stays ahead of future challenges. Instead of reacting to issues as they arise, NCTCOG can leverage predictive analytics to optimize workflows, enhance public safety, and improve infrastructure management.

2. AI-Powered Chatbots and Virtual Assistants for Public Engagement

- **Innovation:** We propose the integration of AI-powered chatbots and virtual assistants that can serve as the first point of contact for citizens, answering common questions and providing essential information about government services. These AI solutions can handle a wide range of requests, from traffic inquiries to public event details, and even assist with basic administrative tasks.
- **Value Add:** The chatbot or virtual assistant can operate 24/7, reducing call center volumes, enhancing citizen engagement, and providing immediate support. By incorporating natural language processing (NLP) and sentiment analysis, the virtual assistant can ensure that responses are contextually relevant and empathetic, improving user satisfaction.

3. AI-Enhanced Resource Allocation and Optimization

- **Innovation:** Implementing AI models for dynamic resource allocation and optimization can drive significant efficiencies across various NCTCOG operations. These models can be particularly useful in managing public infrastructure, such as waste management, road maintenance, and public transport services. By continuously analyzing real-time data, AI can dynamically adjust resources to meet evolving demands.
- **Value Add:** This approach will help reduce operational costs, improve resource utilization, and ensure that NCTCOG's services are delivered in the most effective manner possible. For example, AI algorithms could optimize fleet management for public transport or schedule maintenance for critical infrastructure based on predicted usage patterns, avoiding unnecessary delays and minimizing downtime.

4. AI-Driven Public Policy Impact Analysis

- **Innovation:** AI models can be used to simulate and evaluate the potential impact of public policies before they are implemented. By analyzing historical data and trends, these models can predict how different policy decisions could affect communities, resources, and long-term goals, such as sustainability targets or economic growth.
- **Value Add:** This will empower NCTCOG to make data-driven, informed policy decisions and test various scenarios to understand potential outcomes, ensuring that the decisions made are in the best interest of the communities.

Furthermore, this functionality can support more transparent and accountable decision-making processes, increasing trust within the public sector.

5. AI-Based Environmental Monitoring and Sustainability Initiatives

- **Innovation:** Integrating AI-based environmental monitoring systems that leverage IoT sensors and real-time data can provide insights into air quality, water usage, waste management, and other environmental factors. By continuously tracking environmental data, AI can identify areas for improvement, suggest interventions, and even automate sustainability initiatives.
- **Value Add:** This capability will help NCTCOG meet sustainability goals, reduce its carbon footprint, and improve the quality of life for residents. With predictive AI models, the system can anticipate environmental issues before they reach critical levels, enabling timely interventions and contributing to long-term environmental sustainability.

6. AI-Powered Traffic and Infrastructure Monitoring

- **Innovation:** AI-driven traffic and infrastructure monitoring systems can use real-time data from sensors and cameras to optimize traffic flows, reduce congestion, and predict maintenance needs across NCTCOG's transportation networks. The AI solution can even integrate with existing systems like traffic signals to improve efficiency.
- **Value Add:** This technology can significantly enhance the public sector's ability to manage traffic and reduce congestion, improving the overall commuter experience and reducing emissions from idle traffic. Furthermore, it provides actionable insights to prioritize infrastructure upgrades and maintenance in real-time.

Additional High Level Use cases for consideration

Department	AI Focus Area	Proposed Initiatives	Steering Responsibility	Expected Outcome
Transportation	Smart Mobility & Infrastructure	• AI for traffic forecasting and optimization • Predictive maintenance for infrastructure • Sustainable transit solutions	Real-time monitoring, route optimization, and regional coordination using AI tools.	Reduced congestion, improved commute efficiency.
Environment & Development	Green AI for Sustainability	• AI for water resource management • Flood prediction models • Emission reduction strategies	Steering AI integration into environmental monitoring and disaster mitigation programs.	Enhanced sustainability and resource management.
Emergency Preparedness	Disaster Response and Risk Mitigation	• AI-powered threat detection • Disaster simulations and preparedness • Resource allocation optimization	Steering the development of real-time dashboards for risk management and emergency response.	Faster and more effective disaster response.
Workforce Development	Employment Analytics and Skill Mapping	• AI-based skill matching • Job market forecasting • Real-time workforce analytics	Steering development of workforce planning platforms and career tools powered by AI.	Improved employment rates and economic development.
Research & Information	Advanced Analytics and Data Insights	• AI-powered GIS tools • Regional demographic forecasting • Performance metrics using AI	Steering data harmonization and advanced insights generation	Better planning and decision-making processes.

7. Required Attachments

We have uploaded all the attachments on the portal under tab “NCTCOG Standard Attestations”.