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Small Business Innovation Research(SBIR) Program - Proposal Cover Sheet

Disclaimer

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SBIR Phase I Proposal

Proposal Number:	**F244-0001-0114**
Proposal Title:	**Generative AI-Augmented Knowledge Graphs: Streamlining User-Directed Data Structuring and Ontology Updates via LLMs for Rapid Situational Awareness**

Agency Information

Agency Name:	**USAF**
Command:	**AFMC**
Topic Number:	**AF244-0001**

Firm Information

Firm Name:	**Clara Copilot AI Inc**
Address:	**134 Louisiana Ave, Corpus Christi, TX 78404-1702**
Website:	**https://claracopilot.ai/**
UEI:	**NFPHFMA3S2F9**
CAGE:	
SBA SBC Identification Number:	**002659254**

Firm Certificate

OFFEROR CERTIFIES THAT:

1. It has no more than 500 employees, including the employees of its affiliates.	**YES**
2. Number of employees including all affiliates (average for preceding 12 months)	**4**
3. The business concern meets the ownership and control requirements set forth in 13 C.F.R. Section 121.702.	**YES**
4. Verify that your firm has registered in the SBAS Company Registry at www.sbir.gov by providing the SBC Control ID# and uploading the registration confirmation PDF:	**SBC_002659254**

Supporting Documentation:

- SBC_002659254.pdf

5. It has more than 50% owned by a single Venture Capital Owned Company (VCOC), hedge fund, or private equity firm	**NO**
6. It has more than 50% owned by multiple business concerns that are VOCs, hedge funds, or private equity firms?	**NO**
7. The birth certificates, naturalization papers, or passports show that any individuals it relies upon to meet the eligibility requirements are U.S. citizens or permanent resident aliens in the United States.	**YES**
8. Is 50% or more of your firm owned or managed by a corporate entity?	**NO**
9. Is your firm affiliated as set forth in 13 CFR Section 121.103?	**NO**
10. It has met the performance benchmarks as listed by the SBA on their website as eligible to participate	**YES**
11. Firms PI, CO, or owner, a faculty member or student of an institution of higher education	**NO**
12. The offeror qualifies as a: [ ] Socially and economically disadvantaged SBC [ ] Women-owned SBC [ ] HUBZone-owned SBC [ ] Veteran-owned SBC [ ] Service Disabled Veteran-owned SBC [**X**] None Listed	
13. Race of the offeror: [ ] American Indian or Alaska Native [ ] Native Hawaiian or Other Pacific Islander [ ] Asian [**X**] White [ ] Black or African American [ ] Do not wish to Provide	
14. Ethnicity of the offeror:	**NON-HISPANIC**
15. It is a corporation that has some unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have not been exhausted or have not lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability:	**FALSE**
16. Firm been convicted of a fraud-related crime involving SBIR and/or STTR funds or found civilly liable for a fraud-related violation involving federal funds:	**NO**
17. Firms Principal Investigator (PI) or Corporate Official (CO), or owner been convicted of a fraud-related crime involving SBIR and/or STTR funds or found civilly liable for a fraud-related violation involving federal funds:	**NO**

Signature:

Printed Name	Signature	Title	Business Name	Date
Alexandria Moffitt	Alexandria Moffitt	Co-Founder & CEO	Clara Copilot AI Inc	08/30/2024

Audit Information

Summary:

Has your Firm ever had a DCAA review?**NO**

VOL I - Proposal Summary

Summary:

Proposed Base Duration (in months):	**6**

Technical Abstract:

Technical Abstract: Enhancing Knowledge Graphs with Real-Time User Interaction and LLM Augmentation

Knowledge graphs (KGs) are valuable for structuring and visualizing complex datasets, aiding decision-making in fields such as defense and national security. However, existing KG systems often face limitations in user interaction, requiring manual updates and lacking real-time adaptability. Analysts struggle to update KGs, extract insights, and adjust to dynamic contexts, leading to delays and outdated information. This project addresses these challenges by integrating Large Language Models (LLMs) with real-time graph modification and enhanced user interaction tools.

Key Innovations:

1. User-Directed Graph Modifications:
   This feature allows users to directly modify the KG in real time—adding/removing nodes, defining relationships, and resolving conflicts. LLM-generated suggestions will guide these modifications, improving graph structure and data accuracy. This real-time adaptability ensures KGs remain relevant, enabling rapid, data-driven decision-making.
2. User-Centric Visualization and Interaction Tools:
   Intuitive visualization techniques will allow users to efficiently navigate and interact with the KG. Users will be able to modify the graph, request summarized views, and receive LLM-driven recommendations for ontology updates. These features reduce cognitive load and facilitate quick extraction of meaningful insights from large, complex graphs.

By enabling real-time, user-driven updates and interactions, this project will improve decision-making across military and commercial applications. It bridges the gap between unstructured data and actionable insights, empowering users to manage and adapt KGs for dynamic situational awareness.

Phase I Technical Objectives

Phase I will focus on two key tasks aimed at developing the LLM-augmented KG platform:

1. **Task I: User-Directed Graph Modifications (3 months)**
   This task will develop tools for users to modify the KG in real time—adding/removing nodes and relationships—and will incorporate LLM-generated recommendations. The goal is to enable flexible updates to the KG, keeping it accurate and adaptable to changing data.

   Deliverables:

   - Interactive Graph Modification Tool
   - LLM-Enhanced Suggestions for Modifications
   - Real-Time Ontology Update Module

2. **Task II: User-Centric Graph Interaction and Visualization Tools (3 months)**
   This task will create user-friendly interfaces for navigating and interacting with the KG, including LLM-powered summarization and real-time updates. These tools will streamline the process of graph interaction, allowing users to quickly extract relevant insights.

   Deliverables:

   - Graph Visualization Interface
   - Interactive Graph Editing Tool
   - LLM-Driven Summarization Engine

This project will significantly improve the efficiency and accuracy of decision-making by enhancing KG systems with real-time user interaction and dynamic updates, enabling faster and more informed responses in complex environments.

Anticipated Benefits/Potential Commercial Applications of the Research or Development:

This research will deliver significant benefits across both government and commercial sectors, improving real-time data analysis, decision-making, and operational efficiency. By integrating generative AI with dynamic, user-driven knowledge graphs (KGs), Clara Copilot aims to revolutionize how organizations manage and act on complex data, particularly in high-stakes environments.

Government and Defense Applications

1. **Enhanced Decision-Making for DoD and Intelligence Agencies**
   Clara Copilot's platform will enable the DoD and Intelligence Community to process and analyze open-source and classified data in real-time, improving situational awareness and supporting faster, more accurate decision-making in military operations and crisis management.
2. **Support for Special Operations**
   The platform will help Special Operations Forces (SOF) identify vulnerabilities, assess risks, and improve mission planning and execution. By automating data aggregation and analysis, the system will enhance operational effectiveness in complex, high-risk environments.
3. **Agility in Command & Control**

Real-time updates and predictive AI will improve command and control by enabling military units to quickly adapt to changing conditions. The system will provide actionable insights, reducing decision delays and improving operational flexibility.

Commercial Applications

1. **Risk Management for Private Sector**
   Clara Copilot's tools will help industries like travel, tourism, and energy improve crisis management and risk assessment. The platform will enable Global Security Operations Centers (GSOCs) to analyze data from both open-source and proprietary sources, enhancing operational security and continuity.
2. **Energy Sector Safety and Compliance**
   The energy industry will benefit from Clara Copilot's automated data analysis for asset management and regulatory compliance. By providing real-time insights, the platform will help energy companies ensure safety and optimize operations in high-risk environments.
3. **Competitive Intelligence**
   Clara Copilot's open-source analysis tools will help businesses track industry trends and competitors, providing insights into market shifts and enabling faster, data-driven decisions.

Scalability and Market Potential

The platform's scalability positions it for wide adoption across multiple sectors. Target industries include defense, energy, and travel, which together represent multi-trillion-dollar markets. A modest penetration could generate substantial revenue, with $5M ARR from the travel sector alone. As the platform evolves, it will continue to meet the needs of dynamic, data-driven environments.

Attention:

Addition:

Enter the page numbers separated by a space of the pages in the proposal that are considered proprietary:

List a maximum of 8 Key Words or phrases, separated by commas, that describe the Project:

User-Directed Data Structuring, Ontology Updates, Situational Awareness

VOL I - Proposal Certification

Summary:	
1. At a minimum, two thirds of the work in Phase I will be carried out by your small business as defined by 13 C.F.R Section 701-705. The numbers for this certification are derived from the budget template. To update these numbers, review and revise your budget data. If the minimum percentage of work numbers are not met, then a letter of explanation or written approval from the funding officer is required. Please note that some components will not accept any deviation from the Percentage of Work (POW) minimum requirements. Please check your component instructions regarding the POW requirements.	**YES**
Firm POW	**100%**
Subcontractor POW	**0%**
2. Is primary employment of the principal investigator with your firm as defined by 13 C.F.R Section 701-705?	**YES**
3. During the performance of the contract, the research/research and development will be performed in the United States.	**YES**
4. During the performance of the contract, the research/research and development will be performed at the offerors facilities by the offerors employees except as otherwise indicated in the technical proposal.	**YES**
5. Do you plan to use Federal facilities, laboratories, or equipment?	**NO**
6. The offeror understands and shall comply with export control regulations.	**YES**
7. There will be ITAR/EAR data in this work and/or deliverables.	**NO**
8. Has a proposal for essentially equivalent work been submitted to other US government agencies or DoD components?	**NO**
9. Has a contract been awarded for any of the proposals listed above?	**NO**
10. Firm will notify the Federal agency immediately if all or a portion of the work authorized and funded under this proposal is subsequently funded by another Federal agency.	**YES**
11. Are you submitting assertions in accordance with DFARS 252.227-7017 Identification and assertions use, release, or disclosure restriction?	**YES**
12. Are you proposing research that utilizes human/animal subjects or a recombinant DNA as described in DoDI 3216.01, 32 C.F.R. Section 219, and National Institutes of Health Guidelines for Research Involving Recombinant DNA of the solicitation:	**NO**
13. In accordance with Federal Acquisition Regulation 4.2105, at the time of proposal submission, the required certification template, "Contractor Certification Regarding Provision of Prohibited Video Surveillance and Telecommunications Services and Equipment" will be completed, signed by an authorized company official, and included in Volume V: Supporting Documents of this proposal. NOTE: Failure to complete and submit the required certifications as a part of the proposal submission process may be cause for rejection of the proposal submission without evaluation.	**YES**
14. Are teaming partners or subcontractors proposed?	**NO**
15. Are you proposing to use foreign nationals as defined in 22 CFR 120.16 for work under the proposed effort?	**NO**

16. What percentage of the principal investigators total time will be on the project?	**50%**
17. Is the principal investigator socially/economically disadvantaged?	**NO**
18. Does your firm allow for the release of its contact information to Economic Development Organizations?	**YES**

VOL I - Contact Information

Principal Investigator

Name:	**Mr. Tyson Myhres**
Phone:	**(360) 453-7981**
Email:	**tyson.myhres@claracopilot.ai**
Address:	**134 Louisiana Ave, Corpus Christi, TX 78404 - 1702**

Corporate Official

Name:	**Mrs. Alexandria Moffitt**
Phone:	**(571) 426-5249**
Email:	**alex.moffitt@claracopilot.ai**
Address:	**522 Michelson Road, Monterey, CA 93940 - 6208**

Authorized Contract Negotiator

Name:	**Mrs. Alexandria Moffitt**
Phone:	**(571) 426-5249**
Email:	**alex.moffitt@claracopilot.ai**
Address:	**522 Michelson Road, Monterey, CA 93940 - 6208**

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Department of Defense (DoD)
Small Business Innovation Research (SBIR) and
Small Business Technology Transfer (STTR) Program

Generative AI-Augmented Knowledge Graphs: Streamlining User-Directed Data Structuring and Ontology Updates via LLMs for Rapid Situational Awareness

An investigation of Generative AI, and LLMs in particular, as tools for user-directed data structuring and ontological evolution, expediting analysis and enhancing situational awareness.

Volume 2: Technical Volume

1. Identification and Significance of the Problem or Opportunity.

Knowledge graphs (KGs) are powerful tools for structuring and visualizing relationships between data points, allowing decision-makers to comprehend large datasets more effectively. However, current KG systems are not equipped with efficient user interaction mechanisms, which can significantly hinder their effectiveness. Analysts often face challenges when manually updating KG's or interacting with them to extract meaningful insights, leading to delays in response times and potential gaps in information.

The emphasis of this project is to enable efficient user interaction with KGs. Current KGs often lack dynamic adaptability, requiring manual effort for ontology[1] updates, relationship refinement, and error correction. As a result, critical information may remain outdated, limiting the system's ability to respond in real-time to evolving data or changes in operational context. Moreover, existing systems suffer from data disorganization and user interaction friction, making it difficult to navigate large graphs and understand their content.

We propose to address these challenges by integrating Large Language Models (LLMs) with real-time graph augmentation and dynamic user interaction tools. The key innovations include:

User-Directed Graph Modifications: Provide users with tools to directly interact with and modify the KG in real time, allowing them to add or remove nodes, define relationships, and resolve conflicts. These user-driven changes will be supported by LLM-generated suggestions for enhancing the graph's structure and accuracy. This interactive capability ensures that the KG remains adaptable and responsive to real-time data, empowering users to refine the graph according to their operational needs. By enabling flexible and immediate modifications, the system enhances its ability to support rapid, data-driven decision-making.

User-Centric Graph Visualization and Interaction Tools: Implement advanced, intuitive visualization techniques that allow users to interact with the graph efficiently. Users will be able to directly modify the graph structure, request summarized views, and receive LLM-generated recommendations for ontology updates. These features will streamline user interaction with the KG, reducing manual effort while improving the accuracy and relevance of the data.

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[1] An ontology is a formally defined representation of knowledge that sets out the concepts and relationships within a particular domain

By enhancing user interaction and enabling dynamic, real-time updates to KGs, this project will significantly improve the speed and accuracy of decision-making processes in both military and commercial applications. The proposed solution bridges the gap between unstructured data and structured insights, empowering users with efficient tools to manage and adapt KGs for rapid situational awareness.

2. **Phase I Technical Objectives.** Phase I work will be divided into two (2) major milestones, each contributing toward the overall development of an LLM-augmented KG platform.

***Task I: Implement User-Directed Graph Modifications* - Duration 3 Months**

Description: The first task focuses on developing tools that allow users to directly interact with and modify the KG in real time. Users will have the ability to add or remove nodes and relationships, resolve conflicts, and suggest updates. This interaction will be supported by LLM-generated recommendations to enhance the graph's structure and data accuracy. The modifications made by users will immediately reflect in the graph and adjust its ontology as needed.

Importance: User-directed modifications are critical for empowering analysts and decision-makers to tailor the KG according to their specific needs and real-time data inputs. By giving users the ability to make direct changes, the system provides flexibility and adaptability, ensuring that the graph remains relevant and accurate. This feature will significantly reduce dependency on technical personnel for graph maintenance, enabling more responsive and efficient decision-making.

Task I Deliverables:

1. Interactive Graph Modification Tool: A tool integrated into the user interface that allows users to add, remove, and modify nodes and relationships within the KG.

2. LLM-Enhanced Suggestions for Modifications: A back-end engine powered by LLMs that provides intelligent suggestions and conflict resolutions when users make changes to the graph.

3. Real-Time Ontology Update Module: A system that dynamically updates the underlying ontology based on user-directed modifications, ensuring that the graph remains consistent and accurate.

			1	2	3	4	5	6
1	Implement User-Directed Graph Modifications	3Mo						
1.1	Interactive Graph Modification Tool	1Mo						
1.2	LLM-Enhanced Suggestions for Modifications	1Mo						
1.3	Real-Time Ontology Update Module	1Mo						
2	Intelligent Process Automation for Data EnrichmentCreate User-Centric Graph Interaction and Visualization Tools	3Mo						
2.1	Graph Visualization Interface	1Mo						
2.2	Interactive Graph Editing Tool	1Mo						
3.1	A/B Testing and Cross-Validation	1Mo						

***Task II: Create User-Centric Graph Interaction and Visualization Tools* - Duration 3 Months**

Description: The final milestone involves the development of intuitive tools for user interaction and visualization. This task will build user interfaces that allow for efficient navigation of the KG, graph modification, and real-time updates. Users will have the ability to manually interact with and refine the graph, request summarized views generated by the LLM, and receive actionable recommendations on ontology modifications.

Importance: The ability for users to efficiently interact with the KG is a key component of this project. By providing intuitive and powerful tools for graph manipulation and visualization, users are empowered to make data-driven decisions with greater speed and accuracy. These tools will reduce the cognitive load on users, enabling them to focus on high-value tasks such as situational analysis and decision-making.

Task II Deliverables:

1. Graph Visualization Interface: A user-friendly interface that visually represents the KG, including real-time updates and LLM-generated summaries.

2. Interactive Graph Editing Tool: A tool that allows users to directly modify the graph by adding or removing nodes and relationships, with LLM-assisted suggestions.

3. LLM-Driven Summarization Engine: A backend engine that uses LLMs to generate concise summaries of specific sections of the graph based on user queries.

3. **Related Work.** The Co-Founder & CTO of Clara Copilot, and Principal Investigator for this Phase I project, is an experienced technologist with 10+ years of experience at the crossroads of Computer Science, Data Science, Machine Learning, and Cybersecurity. Prior successes include time as a Technical Program Manager (TPM) in Amazon's Inventory Planning and Control (IPC) organization, optimizing Inbound Freight, resulting in a $100MM annualized savings after launching World-wide in 2014. Most recently, as the engineering lead for customer onboarding and account management at Zipwhip (a Series C & D, SMS as a Service startup), he

re-architected account/tenancy flows resulting in +6% MoM growth moving into a $850MM acquisition by Twilio Inc in 2021.

The Co-Founder & CEO of Clara Copilot leverages over a decade of experience as a Special Operations Veteran. During a 2022 deployment to East AFrica, she identified critical challenges in real-time data management. She dedicated countless nights to manually scraping open-source information, striving to understand the operational landscape, identify vulnerabilities for missions, and gauge local sentiments. This commitment to thorough data analysis highlighted the importance of effective information management in dynamic environments.

The team has conducted over 100 customer discovery interviews with the Department of Defense, Intelligence Community, and Department of State to tailor solutions to their needs and has been invited to prominent events, including JIFX 24-3, JIFX 24-4, JIFX 25-1, Army Applications Laboratory VERTEX, and TIDE 2024, showcasing our engagement with cutting-edge developments. These activities ensure our solutions are aligned with current technological needs and advancements. Our founders' extensive technical background and high-impact solutions, DoD experience, and our ongoing customer interactions directly inform our project's direction, demonstrating our awareness of state-of-the-art practices and our commitment to addressing real-world challenges in data management.

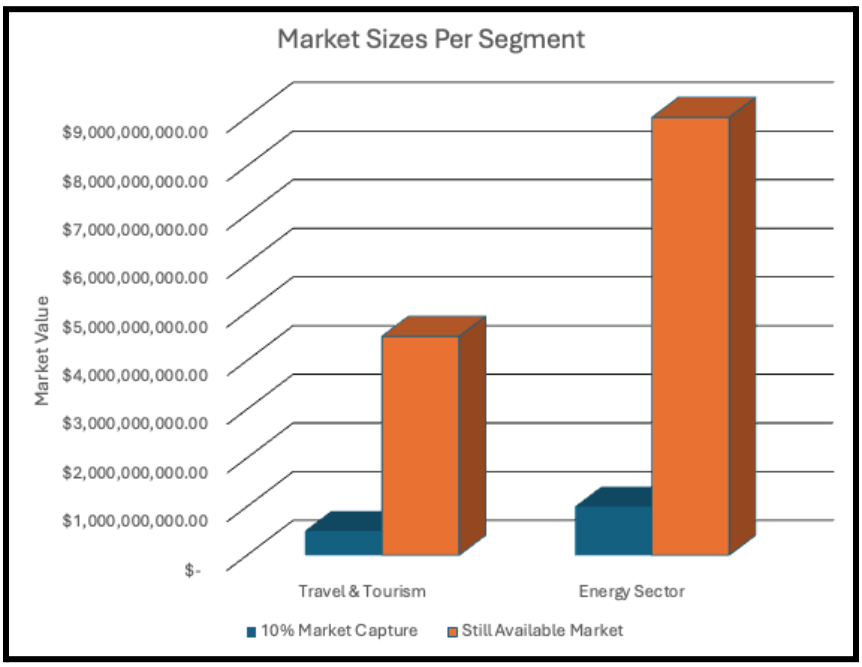
4. **Relationship with Future Research or Research and Development** The completion of Phase I will serve as a critical foundation for future research and development aimed at enhancing the capabilities of the Generative AI-Augmented KG system. A key area for future exploration is Advanced AI-Assisted Ontology Evolution, where more sophisticated AI techniques will allow the ontology to autonomously adapt to new trends and data types, reducing manual interventions. This will ensure the system remains responsive to rapidly changing data environments, especially in fields like military intelligence and corporate risk assessment. Another focus will be Context-Aware Graph Modifications and Predictions, enabling the system to predict user actions and offer contextually relevant suggestions, reducing the cognitive load on users while enhancing their operational efficiency.

Additionally, Automated Feedback Loops and Continuous Learning will be a critical component of future development. By creating mechanisms that allow the system to learn from user interactions and real-world data, the platform will continuously improve its performance. This will empower the system to better tailor its recommendations and predictive capabilities, making it an indispensable tool for dynamic, real-time decision-making. These advancements will ensure that the system not only remains flexible and scalable but also continually evolves to meet the demands of various industries and complex operational environments.

5. **Commercialization Strategy** Clara Copilot is developing a suite of advanced data management and analysis tools to address critical needs in real-time data processing for both the Public (DoD, DHS, & Federal Civilian) and Private (Commercial & NGO) Sectors. These tools address the urgent need for advanced data analytics in dynamic environments, where timely and accurate information is crucial for military and business decision-makers that focus on security and risk management. The technology includes:

1. **Real-Time Open-Source Information Analysis Tool:** Aggregates and analyzes news and social media data, providing automated recommendations for action.

2. **Hierarchical Open-Source Tool:** Analyzes industry, competitor, and firm-specific data for commercial applications.
3. **Real-Time Proprietary Tool:** Processes sensitive, proprietary data for high-security applications, providing automated recommendations for action.
4. **Integration Tool:** Merges open-source data with closed-source environments for cohesive data management, providing automated recommendations for action..



Market Size and Segments: Our initial focus is on DoD Special Operations and information operations, which require sophisticated real-time data analysis. The broader DoD market offers opportunities for scaling and additional applications through the intelligence and command & control warfighting functions. In addition to the DoD, Federal Civilian agencies such as the Intelligence Community, Department of Homeland Security, and the Department of State have substantial needs for advanced data management tools because of the increase in information warfare by our adversaries.

In the private sector, the travel and tourism industry is increasingly reliant on data analytics to enhance customer experiences, optimize operations, and manage risks. The global travel and tourism market was valued at approximately $9 trillion in 2019 and is projected to reach over $11 trillion by 2026. This sector includes hotels, airlines, travel agencies, and leisure services. Companies like Lyft, Disney, and major hotel chains operate Global Security Operations Centers (GSOCs) to monitor real-time events and security threats. However, these operations lack robust data analysis, risk assessment, and mitigation strategies. The integration of our analytics tool can transform thes GSOCs by enhancing risk analysis, management of misinformation, and operational efficiency. Conservatively, a capture of 10% of the travel and tourism analytics market valued at $5 billion would be an Annual Recurring Revenue (ARR) of $5M.

The global energy market, which includes oil, gas, renewables, and utilities, is valued at over $8 trillion. The energy sector faces significant challenges related to data, including asset management, regulatory compliance, and environmental concerns as a result of their locations in typically dangerous or high-risk regions. Data analytics is crucial for optimizing resource allocation and ensuring operational safety. Energy companies establish GSOCs to monitor infrastructure and manage crises. These operations often deal with a large amount of data but are not fully utilizing analytics for crisis management to increase lead time to better responses during

outages, emergencies, and safeguarding operations and public safety. Conservatively, a capture of 10% of the energy sector analytics market valued at $10 billion would be an Annual Recurring Revenue (ARR) of $1B.

Commercialization Plan and Schedule:

Q4 2025: Complete development of the real-time open-source tool and initiate pilot programs with select DoD units. Begin commercial-focused customer pilots and sign initial contracts with commercial clients.

Q1 2026: Launch the hierarchical open-source tool for commercial clients in the travel & tourism industry and expand pilot programs in the DoD. Accelerate participation in key industry and combat evaluation events (e.g. JIFX, TIDE, Trident Spectre, CyberFlag, Vigilant Shield, AEWE & Bold Quest) to showcase technology and gather feedback.

Q1 2027: Deploy the closed-source tool in high-security environments (e.g AWS GovCloud, NIPRNet) and finalize integration tool development towards achieving Initial Operational Capability (IOC). Scale up marketing efforts and begin expansion into broader federal agencies, travel and tourism, and energy sectors.

Q1 2028: Achieve commercialization (TRL 9) with deployment of all tools within initial target markets. Begin formal market expansion into additional DoD sectors and allied partners upon achieving Full Operational Capability (FOC).

Quantitative Commercialization Results:

- **By End of Q4 2025:** Secure 5 pilot contracts within DoD and secure 3 commercial-focused pilot contracts.
- **By End of Q1 2027:** Reach $5 million in revenue with 5+ active contracts across DoD, other federal agencies, and commercial sectors.
- **By End of 2029:** Expand to 10+ federal agency contracts and capture 10% of the commercial market segment.

Clara Copilot's strategy ensures a structured approach to product development and market expansion, leveraging initial success in niche areas to scale across broader markets, thereby addressing pressing needs in both government and commercial sectors.

6. Key Personnel

Tyson Myhres

University of Colorado, Master of Science: Data Science & Engineering Mgmt., Expected 2025

Accepted with 4.0 GPA on Data Structures & Algorithms Pathway

University of Arizona, Bachelor of Science: Computer Science, 2012

Relevant Experience: As an engineering leader with over 10 years of experience in the technology industry including Amazon, Microsoft, and one Series-D startup acquisition by

Twilio Inc, Tyson brings an extensive background focused at the crossroads of Computer Science, Data Science, Machine Learning, and Cybersecurity.

Alexandria Moffitt

The Wharton School - University of Pennsylvania, MBA, Expected 2025

United States Military Academy, Bachelor of Science: Political Science, 2013

Relevant Experience: A U.S. Army Special Operations Civil Affairs Veteran with 10 years of military experience, identified critical challenges in real-time data management during a 2022 deployment in East Africa.

7. **Foreign Citizens** None

8. **Facilities/Equipment** We anticipate the following expense allocations as they apply directly to our research efforts:

Infrastructure - $18,000: We estimate that our cloud infrastructure shall cost no more than $3000/mo at any point of the 6mo project taking into account our current cloud infrastructure operating costs.

Equipment - $8,544: Generative AI requires our development team to have latest generation hardware to perform the necessary work on their local machines.

9. **Subcontractors/Consultants** Clara Copilot AI intends to be the primary contractor for this SBIR Phase 1 project and will be directly subcontracting any/all consultants as a part of our own payroll. We intend for no additional firms to be involved/sourced for the duration of this Phase I.

10. **Prior, Current or Pending Support of Similar Proposals or Awards**

No prior, current, or pending support has been provided for proposed work.

11. **Technical Data Rights** None

DSIP Defense SBIR/STTR Innovation Portal

Cost Volume

SBIR Phase I Proposal

Proposal Number	F244-0001-0114
Topic Number	AF244-0001
Proposal Title	Generative AI-Augmented Knowledge Graphs: Streamlining User-Directed Data Structuring and Ontology Updates via LLMs for Rapid Situational Awareness
Date Submitted	11/04/2024 07:12:51 PM

Firm Information

Firm Name	Clara Copilot AI Inc
Mail Address	134 Louisiana Ave, Corpus Christi, Texas, 78404
Website Address	https://claracopilot.ai/
UEI	NFPHFMA3S2F9
Cage	

Total Dollar Amount for this Proposal	$139,370.32

Base Year	$139,370.32
Year 2	$0.00
Technical and Business Assistance(TABA)- Base	$0.00
TABA- Year 2	$0.00

Base Year Summary

Total Direct Labor (TDL)	$112,826.56
Total Direct Material Costs (TDM)	$0.00
Total Direct Supplies Costs (TDS)	$18,000.00
Total Direct Equipment Costs (TDE)	$8,543.76
Total Direct Travel Costs (TDT)	$0.00
Total Other Direct Costs (TODC)	$0.00
G&A (rate 0%) x Base (TDL)	$0.00
Total Firm Costs	$139,370.32
Subcontractor Costs	
Total Subcontractor Costs (TSC)	$0.00
Cost Sharing	-$0.00
Profit Rate (0%)	$0.00
Total Estimated Cost	$139,370.32
TABA	$0.00

Year 2 Summary

Total Direct Labor (TDL)	$0.00
Total Direct Material Costs (TDM)	$0.00
Total Direct Supplies Costs (TDS)	$0.00

Total Direct Equipment Costs (TDE)	$0.00
Total Direct Travel Costs (TDT)	$0.00
Total Other Direct Costs (TODC)	$0.00
G&A (rate 0%) x Base ()	$0.00
Total Firm Costs	$0.00
Subcontractor Costs	
Total Subcontractor Costs (TSC)	$0.00
Cost Sharing	-$0.00
Profit Rate (0%)	$0.00
Total Estimated Cost	$0.00
TABA	$0.00

Base Year

Direct Labor Costs

Category / Individual-TR	Rate/Hour	Estimated Hours	Fringe Rate (%)	Fringe Cost	Cost
Software Developer/ Principal Investigator (Tyson Myhres)	$78.91	416			$32,826.56
Software Developer/ UX/UI Designer	$80.00	1000			$80,000.00

Subtotal Direct Labor (DL)	$112,826.56
Labor Overhead (rate 0%) x (DL)	$0.00
Total Direct Labor (TDL)	**$112,826.56**

Direct Supplies Costs

Cloud Infrastructure Expenses	$18,000.00
Total Direct Supplies Costs (TDS)	**$18,000.00**

Direct Equipment Costs

Software Engineer in AI workstation	$8,543.76
Total Direct Equipment Costs (DE)	**$8,543.76**

G&A (rate 0%) x Base (TDL)	$0.00
Cost Sharing	-$0.00
Profit Rate (0%)	$0.00
Total Estimated Cost	$139,370.32
TABA	$0.00

Year 2

Direct Labor Costs

Category / Individual-TR	Rate/Hour	Estimated	Fringe Rate	Fringe Cost	Cost

			Hours	**(%)**		
	Software Developer/ Principal Investigator (Tyson Myhres)	$1.00	0			$0.00
Subtotal Direct Labor (DL)						$0.00
Labor Overhead (rate 0%) x (DL)						$0.00
Total Direct Labor (TDL)						**$0.00**

Direct Supplies Costs

N/A	$0.00
Total Direct Supplies Costs (TDS)	**$0.00**

Direct Equipment Costs

N/A	$0.00
Total Direct Equipment Costs (DE)	**$0.00**

G&A (rate 0%) x Base ()	$0.00
Cost Sharing	-$0.00
Profit Rate (0%)	$0.00
Total Estimated Cost	$0.00
TABA	$0.00

Explanatory Material Relating to the Cost Volume

The Official From the Firm that is responsible for the cost breakdown

Name: Alexandria Moffitt
Phone: (571) 426-5249
Phone: alex.moffitt@claracopilot.ai
Title: Proposal Owner

If the Defence Contracting Audit Agency has performed a review of your projects within the past 12 months, please provide: No

Select the Type of Payment Desired: Partial payments

Cost Volume Details

Direct Labor

Base

Category	Description	Education	Yrs Experience	Hours	Rate	Fringe Rate	Total
Software Developer	Principal Investigator	Bachelor's Degree	10	416	$78.91		$32,826.56
Software Developer	UX/UI Designer	Bachelor's Degree	10	1000	$80.00		$80,000.00

Are the labor rates detailed below fully loaded? **YES**

Please explain any costs that apply.
26 weeks X 40 hours per week X (percent of time dedicated) at a rate of $80.00 for UX/UI and PI is $79.81.

Provide any additional information and cost support data related to the nature of the direct labor detailed above.
N/A

Labor rate Documentation:

- BLSGOVSoftwareDeveloperRate (1).pdf

Direct Labor Cost ($): $112,826.56

Year2

Category	Description	Education	Yrs Experience	Hours	Rate	Fringe Rate	Total
Software Developer	Principal Investigator	Bachelor's Degree	10	0	$1.00		$0.00

Are the labor rates detailed below fully loaded? **NO**

Provide any additional information and cost support data related to the nature of the direct labor detailed above.
I am tracking that this proposal is a 6 month proposal so we are only adding information for the first 6 months. If there is an opportunity to extend we can build that in from there.

Direct Labor Cost ($):	$0.00
Sum of all Direct Labor Costs is($):	$112,826.56

Overhead

Base

Labor Cost Overhead Rate (%)	**0**
Apply Overhead to Direct Supplies Cost?	**NO**
Apply Overhead to Direct Equipment Cost?	**NO**
Overhead Comments:	
Overhead Cost ($):	**$0.00**

Year2

Labor Cost Overhead Rate (%)	**0**
Apply Overhead to Direct Supplies Cost?	**NO**
Apply Overhead to Direct Equipment Cost?	**NO**
Overhead Comments:	
Overhead Cost ($):	**$0.00**
Sum of all Overhead Costs is ($):	**$0.00**

General and Administration Cost

Base

G&A Rate (%):	**0**
Apply G&A Rate to Overhead Costs?	**NO**
Apply G&A Rate to Direct Labor Costs?	**YES**
Apply G&A Rate to ODC- Supply?	**NO**

Apply G&A Rate to ODC- Equipment? **NO**

Please specify the different cost sources below from which your company's General and Administrative costs are calculated.

G&A Cost ($): **$0.00**

Year2

G&A Rate (%): **0**

Apply G&A Rate to Overhead Costs? **NO**

Apply G&A Rate to Direct Labor Costs? **NO**

Apply G&A Rate to ODC- Supply? **NO**

Apply G&A Rate to ODC- Equipment? **NO**

Please specify the different cost sources below from which your company's General and Administrative costs are calculated.

G&A Cost ($): **$0.00**

Sum of all G&A Costs is ($): **$0.00**

ODC-Supplies

Base

Description: Cloud Infrastructure Expenses

Vendor: Amazon Web Sevices

Quantity: 6

Total Cost($): $18,000.00

Consumable? yes

Competitively Sourced? yes

Exclusive for this Contract? yes

Supporting Documents:

- 05. Cloud Infrastructure Explanation.pdf

Year2

Description: N/A

Vendor: N/A

Quantity: 0

Total Cost($): $0.00

Consumable? no

Competitively Sourced? no

Exclusive for this Contract? no

Supporting Comments:
N/A

ODC-Equipment
Base

Description: Software Engineer in AI workstation

Vendor: Apple AI

Quantity: 1

Total Cost ($): $8,543.76

Competitively Sourced? yes

Exclusive for this Contract? no

Supporting Comments:

Supporting Documents:

- single-developer-workstation.pdf

Year2

Description: N/A

Vendor: N/A

Quantity: 0

Total Cost ($): $0.00

Competitively Sourced? no

Exclusive for this Contract? no

Supporting Comments: **N/A**

ODC-Summary
Base

Do you have any additional information to provide? **NO**

Year2

Do you have any additional information to provide? **NO**

Profit Rate/Cost Sharing
Base

Cost Sharing ($): **-$0.00**

Cost Sharing Explanation:
N/a

Profit Rate (%): **0**

Profit Explanation:
0

Total Profit Cost ($): **$0.00**

Year2

Cost Sharing ($): **-$0.00**

Cost Sharing Explanation:
0

Profit Rate (%): **0**

Profit Explanation:
0

Total Profit Cost ($): **$0.00**

Total Proposed Amount ($): **$139,370.32**

Clara Copilot AI Inc.

Modularity of Retrieval Augmented Generation (RAG) Workflows

Codification, Refinement, and Evaluation of commonly observed actions in RAG workflows to promote modularity, composability, and advancement of intelligence analysis in the Post-GenAI Information Environment.

Principal Investigator: Tyson Myhres / CTO

Key Personnel: Alex Moffitt / CEO

A244-P037 Artificial Intelligence/ Machine Learning (AI/ML) Focused Open Topic

BLUF: Bottom Line Up Front

BLUF:

1. Company Information and Background:
    a. Clara Copilot AI Inc. incorporated in April 2024 and is a cutting-edge AI tool that provides live and comprehensive analysis from open & closed source data for military and business leaders
        i. By processing open & closed source data leveraging Retrieval Augmented Generation (RAG)
        ii. By generating a vulnerability assessment of the Narratives in the information space
        iii. By generating recommended courses of action through an AI Narrative Report
        iv. By assigning a trust index associated with users and sources of the information
2. Customer and Competition:
    a. Target Market (Government): Special Operations Forces, DoD, USG (IC, DoS, DoJ, DoT, DHS)
    b. Target Market (Commercial): Hotel Industry, Travel & Tourism, Energy Sector
3. Market:
    a. 1 Year: Department of Defense - SOF 1% Market Share (70,000 Personnel), Commercial Sector: Hotel Industry $2M ARR
    b. 5 Year: SOF 10% Market Share & 1% DoD, 10% Hotel Sector $13.2B ARR & Energy Sector $106M ARR
4. Intellectual Property: Codifying proprietary ‘workflows’, Training of ‘expert’ Agentic LLMs, and Curation of Domain-Specific Open-Source data over time
5. Financing / Revenue: Government - Working to get a co-sponsor to support necessary solution & pre-seed venture capital raise
6. Assistance and mentoring:Leveraging regional DoD Procurement Technical Assistance Centers

Company Information and Background

1. Core Competencies and areas of specialization.
    a. Develop a cutting-edge AI tool that provides live and comprehensive analysis from open & closed source data for military and business leaders
    b. Transforms real-time data:
        i. By processing open & closed source data leveraging Retrieval Augmented Generation (RAG)
        ii. By generating a vulnerability assessment of the Narratives in the information space
        iii. By generating recommended courses of action through an AI Narrative Report
        iv. By assigning a trust index associated with users and sources of the information
2. Products with significant sales.
    a. N/A
3. A concise history of previous Federal and non-Federal funding/investments.
    a. N/A
4. Regulatory experience.
    a. N/A
5. Past commercialization successes.
    a. N/A
6. Past failure and how you overcame.
    a. N/A

Customer & Competition

- Description of key technology objectives
  - Develop RAG Workflow Techniques; Implement class-based Ai Tooling domain modeling and composability
  - Evaluate RAG Workflow Techniques; Leverage Observability/
  - Scale RAG Workflow Techniques; Interoperability of Foundational LLM models within privately administered Cloud Infrastructure via Infrastructure as Code.
- Current competition and/or alternative solutions
  - Meltwater - Social Media listening platform that generates analysis
  - Vannevar Labs - generates Narrative Intelligence of Intelligence Documents
- Advantages of company's offer compared to competing products or services
  - Generates real-time narrative intelligence of social media & news sources to determine themes and messages
  - Identifies users & sources of narratives in real-time and assigns trust index
  - Generates vulnerability assessment and courses of action analysis
- Hurdles to acceptance of the proposed innovation
  - Need to navigate complex regulatory environments within the Department of Defense for Fedramp and compliance requirements, which can slow down or complicate the adoption for government customers.
- Description of possible areas where your technology may be utilized or is under utilized
  - Special Operations - Information Operations / Influence Operations
  - Department of Defense - Information Operations, Open-Source Intelligence Public Affairs
  - Intelligence Community, Department of State, Department of Transportation, Department of Homeland Security

Market

- Analysis of market size and 1 and 5 year forecasted market share
  - 1 Year:
    - Department of Defense: Special Operations 1% Market Share (70,000 Personnel)
    - Commercial Sector: Hotel Industry $2M ARR
  - 5 Year: 10%
    - Department of Defense; Special Operations 10% Market Share & 1% DoD
    - Commercial Sector: Hotel Sector $13.2B ARR & Energy Sector $106M ARR
- Explanation of milestones and target dates of plan to obtain that market share
  - End of Q425: Secure 5 pilot contracts within DoD and 3 commercial contracts.
  - End of Q127: Reach $5 million in revenue with 5+ contracts across DoD, other federal agencies, and commercial sectors.
  - End of 2029: Expand to 10+ federal agency contracts and capture 10% of the commercial market segment.
- What experience do you have with marketing to this target market?
  - Professional connections in the Hotel industry to drive impactful initiatives and ensure success.
- What commercialization strategy appears to be the best for bringing this product to the target market?
  - Pilot with professional connections through DoD/SOF over the last 9 months
- What experience do you have with bringing products to market
  - Tyson (CTO): 10+ years of technical experience; Achieved over $100MM annualized savings; Drove +6% Month over month growth at Zipwhip resulting in trigger of Twilio acquisition.
  - Alex Moffitt (CEO): 10+ years of military experience securing $1.5M in DoD & DoS funding for deployed operations

Intellectual Property

- **Codifying proprietary ‘workflows’**; of which each workflow’s value is determined by experimentation over time. This SBIR Phase 1 project intends to demonstrate the feasibility of composing these workflows modularly; however, *composing them well, quickly, and with potential markup is considered Clara Copilot IP*.
- **Training of ‘expert’ Agentic LLMs** - special training of open-source Foundational Models for specific purposes can be integrated into specific workflows. These models, once trained beyond their ‘Foundational’ open-source state will become Clara Copilot IP.
- **Curation of Domain-Specific Open-Source data over time** - as a part of building out our ‘publicly available information’ featureset, we intend to establish retention, aggregation, and archival policies to maximize our customers’ needs. This data cannot be considered Clara Copilot IP per sé (as we may not hold the copyright of the data); however, we will leverage this as a competitive advantage baked into the cost of running a data-centric analytics platform.

Financing

- Plan for securing non-SBIR, private, or government funding necessary to enter low rate of production of anticipated technical solution
  - Government Funding:
    - Working to find a co-sponsor to support necessary funding for solution
      - Continued attendance at ‘invite only’ government events (JIFX 24-3, JIFX 24-4, TIDE 2024, SOCOM Technical Experimentations, Thunderstorm, Innovative Solutions Forums)
      - Engagement/support from SOCOM & SOF component stakeholder network - SOFWERX, SOCOM S&T, AFSOC, USASOC, MARSOC
      - Pilot with end-users for feedback and letters of support
    - Venture Capital (Pre-seed raise)
      - Diluted funding for speed and scale of product development
- Describe your revenue stream generation to include but not limited to:
  - Forecasted Revenue Stream:
    - Travel & Tourism industry enterprise subscriptions for AI Tool (monthly)
    - Energy enterprise subscriptions for AI Tool (Monthly)
    - Contracts with government stakeholders
      - Initial with Special Operations
      - Expand within the service branches

Assistance & Mentoring

- Plan for securing needed technical or business assistance through mentoring, partnering, or arrangements with government sponsored (e.g., SBIR funded Discretionary Technical and Business Assistance, etc.)
  - Leveraging regional DoD Procurement Technical Assistance Centers
  - SOFWERX / SOCOM tech tuesdays

CERTIFICATE OF COMPLETION

THIS CERTIFICATE IS PRESENTED TO

Alexandria Moffitt, Clara Copilot AI Inc

FOR SUCCESSFULLY COMPLETING FRAUD, WASTE AND ABUSE TRAINING AND MEETING ALL REQUIREMENTS SET FORTH BY THE OFFICE OF SMALL BUSINESS PROGRAMS

Oct 21, 2024
COMPLETION DATE

Oct 21, 2025
EXPIRATION DATE