Automated, Artificial Intelligence (AI) –Enabled Help Desk

(AI Help Desk)

Cyber Innovation Challenge (CIC) #5

Assessment Event

Request for Solutions (RFS)

18 AUG - 26 SEP 2025

Submit NLT 26 SEP 2025 at or before 11:59 PM ET

U.S. Citizens Only

Background/Synopsis

This RFS solicits innovative solutions via a white paper submission in Vulcan for the development of an automated, artificial intelligence-enabled Help Desk for the Persistent Cyber Training Environment (PCTE).

PCTE Overview

The PCTE provides the Department of Defense (DoD) Cyberspace Workforce and Allied partners with a secure, configurable, and real-time virtual environment for cyber training and mission rehearsals across all classification levels. PCTE is a distributed capability to DoD Cyberspace Workforce and its International Partners to "train as they fight" in a relevant, configurable, and real-time virtual environment. Through this ability to standardize, simplify, and automate the training management lifecycle seen by the Cyber Mission Force (CMF) operators, PCTE supports United States Cyber Command (USCC) mission readiness priorities.

PCTE Platform and Architecture

PCTE consists of a suite of Commercial-Off-The-Shelf (COTS) software products that are hosted on a fleet of geographically dispersed data centers managed by the Government with bespoke hardware architecture. At the highest level, a PCTE system, referred to as an Enterprise Compute and Storage node (ENT), is divided into the Control Plane (CP) and one or more Event Plane(s) (EP):

- CP: Logically isolated cluster of servers hosting the security-hardened and accredited applications/services that provide the core user-facing functionality of PCTE. The CP hosts applications and services such as the training portal, Help Desk ticketing service, chat application, platform monitoring dashboards, and more. From the CP, the PCTE Platform provisions computing resources in the EP to support individual, team, and force-level training.
- EP: Logically isolated cluster of servers hosting virtual machines, containers, and software-defined networking components that make up the dynamic "ranges" for cyber training environments. The EP is unaccredited which grants users total flexibility to incorporate vulnerable systems, upload malicious software, and design their environments however needed to conduct cyber training and rehearsal. Virtual machines and containers deployed within the EP are unable to reach the outside internet or network transports to ensure that potentially malicious artifacts cannot escape the training environment.

Compute, storage, and networking resources are provided by COTS hardware and do not currently integrate with cloud-based storage or compute resources. Of note for this contract, ENT systems do not currently have any Graphics Processing Unit (GPU) resources available. CP applications are hosted as virtual machines on a vCenter hypervisor or as containers on Tanzu Kubernetes Grid (TKG).

Users access PCTE via a web browser over the unclassified internet as well as on classified networks. Users authenticate via RedHat Single Sign On (SSO) and access each PCTE application based on assigned permission roles.

Current PCTE Tools Related to Help Desk Operations

The following tools and technologies are hosted on the platform today that support Help Desk operations. The Help Desk Solution proposed is expected to augment or replace some of these capabilities. The PCTE program office anticipates that these tools could also serve as sources of data to inform responses to user queries although current implementation is not explicitly designed with that use case in mind.

The PCTE program has traditionally used the Atlassian suite of products for knowledge management and Help Desk capabilities.

- **Wiki:** Atlassian Confluence is provided as a collaboration space for users as well as a repository for user guides, documentation on processes and procedures, information on upcoming events and training opportunities, and more. Individual pages or files could be exported for ingestion into the Help Desk

Solution although not all files are actively maintained or assessed for relevance to the most recent platform capabilities.

- **Help Desk Ticketing:** Atlassian Jira Service Management (formerly known as Jira Service Desk) has served as PCTE's Help Desk management software since program inception. More than 54,000 support tickets have been submitted during the program's lifecycle. Support analysts are expected to describe the steps they took to resolve the issue within these tickets. It also serves as the platform to request and approve new user accounts and platform resources to support large training events. Jira Service Management tickets can be exported in bulk to RSS, CSV, HTML, or XML documents or accessed via API.
- **PCTE User Documentation Application:** PCTE implements a standards-based documentation system for user guides that is presented as an application to users. PCTE software vendors provide user guides in markdown language to a central git repository that the program office maintains and serves in each CP as an MKDocs application. These documents are authoritative references for ingestion by the Help Desk Solution.
- **Chat:** Each instance of PCTE hosts a "Chat" service (currently Mattermost Chat) that is primarily intended to facilitate intra-team communication during training events. However, chat is on occasion used by the Help Desk to support the userbase if other means of communication are not available.

Key Technologies

The following table lists some of the specific technologies utilized in the PCTE platform today. This list is provided to aid prospective future developers in integrating their capabilities into the platform.

Capability	Technology Used	Purpose
Kubernetes	VMWare TKG	Containerization platform for hosting software applications
Identity Manager	Red Hat Identity Manager (IDM)	Source of truth for user attributes and credentials
Single Sign-On (SSO)	Red Hat (SSO)	Authentication tool utilizing OpenID Connect (OIDC) to allow users to sign into the platform once and access all applications (based on platform roles)
Hypervisor	VMware vSphere	Hosting virtual machine clusters that serve the infrastructure and services in ENT systems and that dynamically deploy virtual machines for cyber ranges
Software-Defined Networking	VMware NSX-T	Dynamic networking tool that logically isolates Range Deployments and provides the networking infrastructure within each Range Deployment
Firewalls	F5 products	User-facing firewall that controls access to the PCTE platform from the open internet and firewall that isolates the EP

Solution Constraints

- Operate in a Closed Restricted Network (e.g. - no commercial cloud connectivity)
- NIST, ISO 27001, FedRAMP, etc. cyber security standards compliance
- No dedicated AI/ML GPUs in existing infrastructure (but program can adjust as needed)

Purpose

The Cyber Fusion Innovation Center (CFIC), in collaboration with the Program Executive Office Simulation, Training and Instrumentation (PEO STRI) invites qualified industry partners to submit solutions in the form of a white paper for the development of an automated, AI-enabled Help Desk. The intent of the RFS is to identify, evaluate, and select capable companies through the CIC #5 contract vehicle. Aligned to address emerging USCC operational priorities, this RFS seeks candidate prototypes across best-of-breed AI-enabled Help Desk solutions amongst various companies to incrementally integrate into the PCTE platform through its agile acquisition methodology, to optimize Help Desk personnel workload by reducing initial manual effort, improving response times, and increasing ticket resolution at the lowest tier level.

Statement of Need

PCTE's current Help Desk system is manually intensive and limited by the capacity and skillset of personnel. Additionally, it can be difficult for users that are new to the platform to locate relevant documentation and troubleshooting resources. These factors can increase the time to resolve Help Desk tickets, as well as increase frustration of PCTE users, no matter their role. The PCTE platform needs to evolve by leveraging emerging technologies to assist in performing human-centric tasks, with minimal human intervention, considering all aspects of the platform. Applications of these technologies should streamline routine tasks, reduce processing time, and increase productivity. Additionally, it should enhance current capabilities and provide new insights.

As a result, PCTE is seeking to improve the current training platform and introduce Artificial Intelligence and Machine Learning (AI/ML) solutions via this CIC. For this RFS, PCTE is seeking to enhance end user support via an **Intelligent Help Desk Support Chatbot** and Machine Learning-assisted **analytics for Help Desk ticketing trend analysis and prioritization**.

This AI-enabled Help Desk chatbot supports platform users and Help Desk staff in resolving issues at the following tiers of support, with the objective of resolving each issue at the lowest possible tier, with the minimum amount of Help Desk staff time as possible:

- **Tier 0** (Self Service): Users access knowledge base, FAQs, chatbot, guided tools to resolve common issues without engaging Help Desk staff
- **Tier 1** (Basic Service): Password resets, routine onboarding, simple troubleshooting
- **Tier 2** (Intermediate Service): More technical fixes, network issues, complex software failovers
- **Tier 3** (Advanced Service): Specialist support, development teams, in-depth debugging
- **Tier 4** (External Service): Vendor/escalation support for unresolved or vendor-specific issues

It is expected that, over time, the AI-enabled Help Desk will "learn" and increase the types of Help Desk requests that can be resolved at the lower tiers. Additionally, it must be able to "forget" obsolete information such as troubleshooting steps for a deprecated platform capability.

The future vision of the added AI-enabled Help Desk includes:

- An interface that is intuitive for PCTE users in any role; including those with limited technical knowledge seeking training, those overseeing training, and those setting up training environments
- Utilization of mature AI technologies, algorithms, and approaches as appropriate, such as:
    - Natural Language Processing (NLP)
    - Retrieval Augmenting Generation (RAG)
    - Agentic AI
    - ML
    - Chatbot for providing interactive "chat" for users

  - Knowledge Base Optimization
- AI/ML system that learns common issues and how to describe their respective fixes
- AI-assistant for users seeking guidance before engaging Help Desk staff (allowing staff to concentrate on tickets requiring human intervention to resolve)
- AI-assistant for Help Desk staff to provide knowledge and guidance when resolving issues in tickets
- AI/ML assistance in Help Desk ticket tagging, triaging, and assignment to the most appropriate tier
- Ability to identify gaps in knowledge base where Help Desk staff intervention could be avoided with additional documentation or guidance to users
- ML-based identification of trends in trouble tickets

Key Capabilities and Requirements

PCTE requires the implementation of Help Desk enhancements that use state-of-the-art AI technologies and techniques to maximize timeliness and accuracy of help to users of PCTE. PCTE acknowledges that this is a relatively new and emerging capability and therefore has separated the requirements into initially minimally viable requirements and additional requirements that may be added through iterative improvements. Companies should address all requirements in the whitepaper, including what is currently in the solution being proposed and the feasibility of adding the functionality in a reasonable time frame.

CORE REQUIREMENTS

The white paper solution submitted must address how the solution provides the following:

1. **AI-Enabled Help Desk:** Deploy existing, mature AI/ML-enabled Help Desk integration tailored to PCTE usage.

2. **Self-Service AI Help Desk Assistant:** Implement AI powered, virtual assistant/chatbot for self-service help (Tier 0).

3. **Natural Language Processing of help requests:** Conversational prompting is processed, including continuing clarification and for contextual understanding. Responses should be tailored to the user through clarifying interactions.

4. **Tiered AI Help Desk Assistant:** Recognizes, tags, and directs Help Desk requests to the most appropriate tier for support. Classifies and auto-tags tickets by type, urgency, prioritization, user sentiment, and other categories as appropriate, including escalation triggers to appropriate tiers.

5. **Escalation Logic:** Precision escalation to higher tiers based on severity, SLA, unresolved context, and mission criticality.

6. **Accuracy and Completeness (including clarifying prompting):** Responses reflect current and PCTE-relevant information. Controls are in place to prevent hallucinations or irrelevant responses.

7. **Help Desk Ticket Enrichment:** Enriches tickets with context-relevant tags and labels to aid in trend analysis as well as links to relevant Knowledge Base (KB) articles for potential self-remediation.

8. **Knowledge Base and Self Service:** AI-augmented, interactive self-service portal that provides tailored responses and identifies relevant existing KB articles.

9. **Management and Monitoring Dashboard:** Provides an interactive means for configuring, managing, and monitoring the usage and performance of the chatbot and queries received from users. Includes management features such as modifying the data from which the chatbot retrieves information (for example, removing outdated information).

10. **Analytics and Predictive Insights:** Continually analyzes and provides trend analysis on Help Desk usage and metric reporting at the Dashboard such as frequent query topics, how often users must provide additional context or corrective prompts before finding resolution, etc.

11. **Continuous Machine Learning Model:** Continuous retraining from new and historical tickets, knowledge base updates, and feedback loops for AI improvement.

12. **Data Assurance and Security:** Precautions and security controls are in place to ensure that any information retrieved by the AI system including user queries and chatbot responses are secure in a Controlled Unclassified Environment (CUI)-compliant environment.

INTEGRATION REQUIREMENTS

PCTE includes multiple COTS and proprietary products and prototyped capabilities in the platform. The Stakeholder will work with the selected company(ies) to integrate the company's AI-enabled Help Desk solutions into the modular PCTE baseline. The candidate technologies will be embedded into the agile scrum integration processes whereby each company iteratively and incrementally enhances their capability within the PCTE platform. Accompanied by its agile scrum execution, companies are expected to demonstrate and deliver usable and shippable products at agreed to sprint increments that increase breadth and depth of capabilities within the PCTE ecosystem. This continued rapid development of the platform is necessary to meet the evolutionary and rapidly adapting delivery requirements and immediate user needs.

The Stakeholder intends to integrate the selected company's solution(s) into the modular PCTE baseline that currently includes other commercial and proprietary products. Integration will require technical data exchange, dialogue, and software/hardware integration of proposed solutions within the Stakeholder's DevSecOps environment. It is expected that a company may have to work directly with other companies under the Stakeholder's integration oversight to help establish and extend PCTE.

The white paper should address any integration considerations or requirements for the solution, such as:

- Integration into the PCTE enterprise
- Integration with an existing IT Service Management (ITSM) and Customer Relationship Management (CRM) tool (e.g., ServiceNow, Jira, HRIS) using out-of the-box COTS connectors or standardized APIs/webhooks
- Ability, constraints, and technical approach for ingesting other data into the AI used for Help Desk processing

OPERATIONS AND SOLUTION MANAGEMENT REQUIREMENTS

- AI solution available within same interface as Help Desk
- Provides user-friendly, state-of-the-art user interface and user experience.
- Features and user experience are easily configurable without the need for detailed knowledge of the internal workings of the tool
- Scalable to handle 250-1,000 simultaneous users/requests

Deliverables

The selected contractor(s) shall provide the following deliverables:

1. An incremental, functional prototype of the AI-enabled Help Desk assistant.
2. Documentation, including user manual, installation/configuration guides, and relevant API and architectural documentation needed for extensibility.
3. A detailed report outlining the design and implementation of the AI algorithms, machine and/or reinforcement learning methodology used in the solution (i.e. RAG, Vector Search, conventional indexed search, etc.).
4. Periodic demonstration, as requested by the Stakeholder, of the platform's AI-enabled automated Help Desk capabilities and performance.
5. Documentation of security controls in place to ensure Risk Management Framework compliance.
6. Software Product Licensing Cost Estimate Projection.
7. Software Product Data Rights, Life Cycle Sustainment Terms and Conditions.

Assessment Criteria

Solution white papers and demonstrations will be evaluated with consideration given to the vendor's ability to provide a clear description of the proposed solution aspects. Each criterion will be scored on a scale of 0 to 5 where 5 = Excellent; 4 = Good; 3 = Satisfactory; 2 = Marginal; 1 = Unsatisfactory; and 0 = Lack of applicable content.

#	Criteria
0	General Submission Quality
1	Operational Relevancy
2	Technical Approach
3	Development and Integration
4	Operations and Maintenance
5	Schedule and Price

What happens after white paper submission?

(Grading and downselect for a Virtual Assessment Event)

Prospective solutions will be evaluated by a team of the Stakeholder's choosing through a multi-phased process with the intent to competitively award one or multiple Other Transaction Agreements (OTAs) for prototype projects in accordance with 10 U.S. Code §2371b.

The Stakeholder will subsequently down select companies whose white paper solution has the highest value. Then, those companies will be invited to present and/or demonstrate their capability in a private, virtual pitch / demo session hosted through an online platform with stakeholders on a specific date.

Current Initiative Timeline

Phase 1: 04 June 2025 – Collaboration Event

Industry, academia, and government partners met in-person, in a workshop format, to identify current limitations

and refine the definition of the topic areas for CIC #5. The AI-Enabled Help Desk capabilities discussed during that event have been used in formulating this RFS.

Phase 2: 18 August - 26 September 2025 – Submission Window / Q&A Session
The resulting RFS is distributed via the sam.gov website and Vulcan submission portal to notify any/all interested industry partners/companies so that they can submit whitepapers/responses. The white paper submission window will open, information will be distributed via the sam.gov website, CFIC website, and Vulcan submission portal, and then white paper documents will be accepted through the Vulcan portal for approximately 30 days. Submitting companies MUST have a Vulcan account to submit.

Industry, academia, and government partners MUST submit a maximum 8-page submission response white paper document through this link – **CLICK HERE**. Submit NLT (No Later Than) 11:59 p.m. Eastern on 26 September 2025.

During the white paper preparation period, prospective respondents may **submit clarifying questions** to the Stakeholder through **this form**. The form will be open until 3:00p.m. Eastern on 08 September 2025. An anticipated response to these clarifying questions will be sent out via email by CFIC on or about 12 September 2025. The Stakeholder may choose to supplement their responses with a 1-hour, virtual Q&A Response Session and make any response session video recording available to all potential respondents on the CFIC website. Please visit cyberfic.org to stay informed.

Phase 3: On or about 29 September - 14 October 2025 – Submissions Reviewed & Downselects
The Assessment Team (chosen and managed by the Stakeholder) will review and assess each submission using the requirements and assessment criteria defined herein for grading and making down-selects of those respondents/submissions they feel have the highest potential to satisfy the PCTE needs. Some number of favorably evaluated submissions will receive an invitation to attend Phase 4. The exact number of submittals receiving this invitation will be decided at a later date. Grading and downselecting will take place in the Vulcan system and be led by the Assessment Team. CFIC will facilitate notification to the downselected companies and assist in coordinating dates/times for virtual demos noted in Phase 4. Notifications are tentatively slated to be sent on or near 20 October 2025.

Phase 4: On or about 03 November - 06 November 2025 – Virtual Demonstration Presentations and Evaluation
Selected companies will conduct a virtual Solution Demonstrations for PCTE Stakeholders and the CIC #5 evaluation team. Within this evaluation phase, selected companies will have an allocated 1-hour timeslot to discuss their solution and conduct a demonstration, showcasing how it meets the operational requirements. It is expected that the demonstration will be recorded. The Stakeholder will complete their evaluations with consideration given to the same set of evaluation criteria, as a reinforcement or clarification of the white paper response. Sample datasets for ingestion by the potential solutions may be provided by the Stakeholder prior to demonstrations to aid in evaluating capability effectiveness. Demonstration presentations will be held virtually through MS Teams. Each company will be notified of their presentation time by a member of the CFIC team.

Phase 5: Selection, Award, and Execution/Follow-On
Following review of initial submissions and solutions via virtual demonstrations, the Stakeholder may award one or more prototype project(s) to the company(ies) whose solution(s) is/are determined to be the most advantageous to the Stakeholder. The Stakeholder may elect to purchase all, some, and/or none of the solutions from Phase 4 for incorporation into PCTE, or for further projects. This may include the solution as an off-the-shelf solution or may include further incremental refinement to meet the needs of PCTE. The Stakeholder has several acquisition/contract vehicles (i.e., various IDIQ contracts, purchase orders, etc.) to potentially contract for the solution, and or further capability development for the solution, if operationally viable.

The Stakeholder reserves the right to award to a company that does not meet all the requirements but provides attributes or partial solutions of value.

How You Can Participate

Submissions will be accepted through the Vulcan platform – **CLICK HERE TO SUBMIT**.
Whitepaper submission format and template along with a Vulcan submission instruction sheet are on our website at http://www.cyberfic.org/events/pcteaihelpdeskae.

Interested in **teaming opportunities** with other companies? Fill out **this form** NLT 5:00pm Eastern on 29 August 2025. Your capabilities and information will be shared with other companies interested, as well. All information provided will be sent out on or about 03 September to any company filling out the form.

To learn more about how to use Vulcan, please refer to this information on the CFIC website - https://www.cyberfic.org/joinvulcan.

Questions?

For submission-related questions, please contact Brandon Sizemore at bsizemore@cyberfic.org and Amanda Green at agreen@cyberfic.org.

DISCLAIMERS:

An award under 10 U. S. Code, Section 2371b may result in award of a follow-on production in accordance with 10.U.S.C. 2371(f). Upon determination that the competitively awarded prototype project(s) has been successfully completed, and subject to the availability of funds, the prototype project(s) may result in the award of a follow-on production contract or transaction without the use of competitive procedures. Such awards may include multiple phases.

Non-Government advisors may be used in the evaluation of submissions and will have signed Non-Disclosure Agreements (NDAs) with the Government. The Government understands the information provided in this announcement is presented in confidence and may contain trade secret or commercial or financial information and agrees to protect such information from unauthorized disclosure to the maximum extent permitted and as required by law. An organization's participation in any part of the selection process under this announcement indicates concurrence with the aforementioned use of contractor support personnel.

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