

SUNI Review Complete
Template=ADM-013
E-RIDS=ADM-03

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Comment (4)
Publication Date:
7/5/2022
Citation: 87 FR 39874

As of: 8/19/22, 9:55 AM
Received: August 18, 2022
Status: Pending Post
Tracking No. 16z-clrl-sykk
Comments Due: August 19, 2022
Submission Type: Web

PUBLIC SUBMISSION

Docket: NRC-2022-0095
NRC’s Fiscal Years 2023-2027 Artificial Intelligence Strategic Plan

Comment On: NRC-2022-0095-0001
NRC’s Fiscal Years 2023–2027 Artificial Intelligence Strategic Plan

Document: NRC-2022-0095-DRAFT-0005
Comment on FR Doc # 2022-14239

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General Comment

Please see the comments and recommendations from Gunnison Consulting Group in the attached file.

Attachments

Gunnison Response to NRC Artificial Intelligence Strategic Plan

Gunnison Consulting Group Response to NRC Artificial Intelligence Strategic Plan FY 2023-2027



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Executive Summary

The United States Nuclear Regulatory Commission (NRC) plays a critical role protecting the American population and environment while ensuring the safe use of radioactive materials. As a federal contractor supporting NRC, Gunnison Consulting Group (Gunnison) is pleased to submit questions and comments to the Nuclear Regulatory Commission Artificial Intelligence Strategic Plan, Fiscal years 2023-2027. This document includes inputs from our partner Capital Technology Group (CTG). Delivering advanced automation and intelligence, digital services, and cybersecurity solutions to our customers enables us to provide NRC with specialized experience and insights for Artificial Intelligence application to NRC mission needs and operational requirements.

Gunnison Consulting Group (Gunnison) provides expert consulting services in numerous areas including Big Data Management and Analytics, Agile Development and DevSecOps, Cybersecurity, Enterprise Mobile Solutions, Quality Assurance and Automated Testing, Geospatial Information Systems, IT Service Management and Infrastructure Management. Each of these areas are increasingly driven to maximize operations, improve performance, and reduce lifecycle maintenance through continuous advances in automation and the application of artificial intelligence capabilities. Gunnison has established itself with sensitivity to all aspects of business and mission objectives, safety and risk management, quality control and delivering solutions that meet customer needs.

Capital Technology Group (CTG) is a trusted Gunnison partner and provides expert consulting services in the areas of data analytics & visualization, data engineering, data science, and custom software development capabilities that have been proven in challenging and high impact government projects. Our multidisciplinary team uses agile methodologies to rapidly deliver incrementally value to our clients. CTG's quality of our work and commitment to excellence have been recognized by their customers and industry peers. They have delivered machine learning models to US Citizenship and Immigration Services (USCIS) to assess biometric fingerprint quality; and partnered with Harvard Medical School and the Dana-Farber Cancer Institute to develop open-source deep learning models to automatically perform organ segmentation on medical imagery.

Purpose

This document provides Gunnison Consulting Group and Capital Technology Group insights, thoughts feedback and recommendations to the NRC Artificial Intelligence Strategic Plan, FY 2023-2027. We anticipate that this will be an evolutionary process as this technology space continues to advance. Our response is intended to provide NRC with ideas for a "Best in Class" approach to supporting the nuclear community and the mission of the NRC. Our view is not limited to a 5-year plan (2023-2027); we anticipate that solutions available today and in the future will affect how NRC does business well into the future. Thoughtful consideration today will provide a framework that is flexible and adaptive to changing needs over that extended lifecycle.

Summary

Gunnison Consulting Group and Capital Technology Group have reviewed the NRC Artificial Intelligence Strategic Plan, FY 2023-2027 and are pleased to support NRC as they begin the journey into Artificial Intelligence. This technology is truly in its infancy and already demonstrates significant potential for benefits to mankind. We look forward to supporting NRC on this journey as a committed partner to advancing operational improvements, reducing human error, and ensuring the highest quality standards for safety.

Question 1

1.1 Reference

General

1.2 Question

How does this strategic plan influence the already ongoing procurements (SOL_31310022R0041, SOL_31310022Q0064, and SOL_31310022R0037) around AI concepts?

1.3 Comments/Suggestions

We recommend that NRC engage all parts of the organization to establish a unified approach to obtain industry support and improve the procurement processes. We ask that NRC consider pursuing a larger contract or vehicle which would support AI/ML efforts over a longer period of time and better engage Industry, Technology, Research and Standards Organizations.

2. Question 2

2.1 Reference

General

2.2 Question

Would the NRC please elaborate on how this Strategic Plan for AI will be applied and implemented in a contractual sense across the various communities of interest across NRC? How is this standardized and normalized against FCEB standards and policy guidance from all Government organizations responsible for defining these standards?

2.3 Comments/Suggestions

There will be elements of technology specifications and interfaces that should be common and standardized, there will be institutional and operational guidance that should be standard internal to the organization, and externally to organizations that interface with NRC and its communities of interest.

3. Question 3

3.1 Reference

Page 24 of 40, Line 27

3.2 Question

Would NRR please specify the specific NRC organizations that will be involved in developing strategy, approach, and governance to this Artificial Intelligence Strategy (e.g. ADM, OCIO, NSIR, etc.). Has the NRC considered how this AI Strategic Plan will be developed in coordination with Licensees and other stakeholders across the community?

3.3 Comments/Suggestions

NRC will certainly need to support an internal community of interest and external organizations when instituting an AI Strategic Plan. Identifying the structures and mechanisms in this Strategic Plan to support governance, standards, organizational responsibilities and management oversight would all help to establish this importance and commitment of NRC to this AI Strategic Plan.

4. Question 4

4.1 Reference

Page 24 of 40, Line 35

4.2 Question

Would NRR please specify the importance of “explainability and uncertainty”?

4.3 Comments/Suggestions

We believe data collection, analysis, summarization and visualization are essential tools when considering “explainability and uncertainty” as it applies to design, implementation, decision making and near-real time operation of complex models and solutions. We highly recommend avoiding black box models in this environment. It is critical to conduct post-mortems when failures occur. Overly complex models that cannot readily be summarized present risks to operations and overall safety.

5. Question 5

5.1 Reference

Page 25 of 40, Lines 15-16

5.2 Question

Would the Government consider establishing an Advisory Board consisting of leaders from Industry, Technology, Research and Standards Organizations to provide NRC with a mechanism to balance advances in AI with the operational, business and organizational needs of the Government?

5.3 Comments/Suggestions

Relevant areas of interest across the participants could include best practices and centralized resources for areas such as Standards, Governance, Security, Education, Safety, Incident Response, Emergency Management, and periodic investigations supporting NRC strategies and future plans. We recommend that the NRC define the organization modeling from other Government Advisory Boards and solicit participation of Industry, Academia Technology, Research and other Government Agencies to serve the best interests of NRC and the American public over an extended period of time. This advisory board would be best positioned to help define requirements, validate the application of technology to satisfy mission and operational requirements, and continuously provide insights across the spectrum of advances in the AI field and technologies over an extended period of time.

6. Question 6

6.1 Reference

Page 25 of 40, Lines 15-16

6.2 Question

How will the NRC Strategic Plan for AI be applied across the various communities of interest both within NRC and external to NRC? What governance model will NRC employ to best deliver the promise of AI to this community?

6.3 Comments/Suggestions

There will be elements of technology specifications and interfaces that should be common and standardized, there will be institutional and operational guidance that should be standard internal to the organization, and externally to organizations that interface with NRC and its communities of interest.

7. Question 7

7.1 Reference

General

7.2 Question

Would NRC please provide specify where to locate their respective AI Use Cases in support of this Strategic Plan or where they will be provided when they are developed? How will these Use Cases mature, evolve and be maintained with advances in technology, and improvements from operational lessons learned?

7.3 Comments/Suggestions

For reference: EO 13960, “Promoting the Use of Trustworthy Artificial Intelligence in the Federal Government”, requires all FCEB agencies to publish their AI use cases. FCIO Council led coordination on this and provided further direction that all should be published on the respective agency websites at [[https://\[agency\].gov/data/AI_Inventory](https://[agency].gov/data/AI_Inventory)]. An advisory board, as previously mentioned, would be an excellent partner in establishing these AI Use Cases.