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Request for Information: Development of a 2025 National Artificial Intelligence Research and Development Strategic Plan

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Submitter Information

Organization: JELLYSPACE INC

General Comment

On behalf of JELLYSPACE INC, we submit this comment in support of the 2025 National Artificial Intelligence Research and Development Strategic Plan.

Our company's work focuses on AI-driven, Blockchain-secured Supply Chains across Aerospace, Satellite, TTN/NTTN/SatCom, Dual-Use, and Defense sectors. Our AURA-HRI system (currently at TRL 5) is an example of how advanced edge-deployed AI copilots, human-robot collaboration layers (including voice, gesture, and tablet inputs), and Blockchain-backed compliance can bolster national security and economic competitiveness.

We recommend that the Federal Government prioritize:
A) Foundational AI algorithms beyond current deep learning (symbolic, hybrid AI, Embodied Agents).
B) AI for national security and mission-critical operations, including Blockchain-backed compliance systems.
C) Human-AI interaction and explainability for high-stakes environments.
D) Dual-use research testbeds and public-private collaborations to strengthen the national industrial base.

JELLYSPACE is committed to partnering with Federal agencies and academia to pilot these systems on existing Machinery and Robotics infrastructure, ensuring that national security and economic priorities are advanced through trustworthy, explainable, and secure AI systems.

Attachments

2025_National_Artificial_Intelligence_Research_and_Development_Strategic_Plan

Title:
Submission in Response to the Request for Information on the 2025 National Artificial Intelligence Research and Development Strategic Plan

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Esteemed Officers of the National Science Foundation and the National Coordination Office,

On behalf of JELLYSPACE INC, I submit this response with earnest regard for the development of the 2025 National Artificial Intelligence Research and Development Strategic Plan, acknowledging the profound role of the Federal Government in stewarding the future of artificial intelligence for the prosperity and security of our nation.

JELLYSPACE, an emerging enterprise dedicated to the democratization of space and connectivity technologies, endeavors to bridge the chasm between advanced digital tools and the exigencies of complex Supply Chains across pivotal sectors, including Aerospace, Satellite, Terrestrial and Non-Terrestrial Networks (TTN and NTTN/Satcom), Dual-Use applications, and the Defense sector. Through the confluence of artificial intelligence, distributed ledger technology, and automation, we aim to elevate the capabilities of small and medium enterprises within these critical industries.

Our solutions address essential challenges in these domains, encompassing:

- Aircraft maintenance and repair, wherein AI-driven predictive insights minimize operational disruptions.
- Propulsion system design, enhanced by AI simulations that refine efficiency and material performance.
- Satellite manufacturing and launch vehicle integrity, safeguarded through Blockchain-secured tracking and procurement systems.
- Commercial off-the-shelf (COTS) production, where smart contracts facilitate transparent and efficient sourcing.
- Secure and resilient communications infrastructure for TTN, NTTN/Satcom, and Defense-grade deployments, supported by AI-driven operational excellence.

Principal Challenges and Federal Role

While our private initiatives have illuminated significant potential, certain enduring challenges transcend the reach of immediate commercial incentives and warrant the stewardship of the Federal Government.

These challenges include:

- The development of explainable and trustworthy AI systems that can operate reliably within mission-critical contexts across Defense and dual-use applications.
- The pursuit of next-generation AI hardware and architectures beyond the boundaries of conventional deep learning models, tailored to dynamic Aerospace and Satellite environments.
- The fortification of cybersecurity and data integrity within highly regulated and sensitive Supply Chains spanning TTN, NTTN/Satcom, and Defense-grade networks.
- The orchestration of multi-agent, real-time AI systems capable of collaborative operation in the fast-paced and high-stakes domains of national security and Aerospace.

These endeavors, though critical to national interest and economic security, often extend beyond the near-term incentives that drive private sector investments.

Proposed Federal Priorities and Recommendations

In light of these observations, we respectfully advance the following Federal AI R&D priorities, tailored to the unique challenges and opportunities of the Aerospace, Satellite, TTN, NTTN/Satcom, Dual-Use, and Defense sectors:

- Foundational AI Algorithms and Architectures

We urge robust Federal support for the exploration of novel algorithms and architectures, including symbolic reasoning, hybrid AI models, and physically embodied AI agents capable of adaptive operation across the Aerospace and Satellite landscapes.

- AI for National Security and Critical Infrastructure

Given the national significance of these industries, we advocate prioritization of:

- AI systems that monitor and predict Supply Chain disruptions in Aerospace components and Defense procurement.
- AI for mission-critical compliance and regulatory audits across dual-use and Defense applications.

- Blockchain-secured AI applications that safeguard Satellite launches, TTN and NTTN/Satcom operations, and Defense networks from adversarial threats.

🔹 Human-AI Interaction and Explainable AI

Federal efforts should encourage research into transparent AI systems that effectively interact with human operators, ensuring auditable decision-making processes that meet the stringent standards of Aerospace and Defense missions.

🔹 AI-Blockchain Integration for Compliance and Resilience

We propose the establishment of Federal research grants and testbeds dedicated to AI-driven smart contracts that streamline compliance, automate auditing, and strengthen resilience within regulated environments spanning Aerospace, Satellite, TTN, NTTN/Satcom, and Defense operations.

🔹 Public-Private Research Partnerships

We recommend the creation of collaborative frameworks—including testbeds and pilot programs—that enable startups like JELLYSPACE to:

- Test agentic AI systems for Aerospace and Satellite Supply Chain optimization.
- Validate secure, Blockchain-led AI architectures for Defense and dual-use scenarios.
- Conduct dual-use R&D relevant to both commercial and national security applications, thereby reinforcing U.S. leadership in these domains.

Incorporation of the AURA-HRI Pilot Project

A salient example of our contribution to these domains is AURA-HRI (Augmented Unified Resilience Architecture for Human-Robot Interaction), which has been developed by JELLYSPACE to address the challenges of human-robot collaboration in Aerospace, Satellite, TTN/NTTN, and Dual-Use manufacturing and logistics environments.

Key Features of AURA-HRI:

☑ Secure edge-deployed GPT copilots enabling real-time decision intelligence in low-connectivity TTN and NTN environments.

☑ Human-robot collaboration layer, integrating voice, gesture, and tablet inputs into AI-guided robotic systems (ROS2-enabled), fostering seamless human-machine synergy.

☑ Designed to integrate with existing machinery and robotics infrastructure, enabling advanced digital twin simulations, ergonomic feedback, and predictive maintenance without requiring extensive hardware overhauls.

☑ Blockchain-powered traceability using Hedera and Lisk ledgers, ensuring compliance and immutable audit trails for mission-critical operations.

Measured Impact:

- 30% reduction in task reconfiguration time.
- 15% ergonomic risk improvement.
- >60% operator trust in pilot simulations and early-stage deployments across Aerospace maintenance and Satellite ground stations.

Technology Readiness Level:
Currently at TRL 5, AURA-HRI is advancing towards higher readiness through continuous validation and iterative pilot testing.

These tangible results underscore the alignment of AURA-HRI with federal imperatives to advance trustworthy, explainable, and secure AI systems that strengthen national security, economic competitiveness, and the American industrial base.

Credentials

Headquartered in **San Jose-CA**, **JELLYSPACE INC,** has received multiple recognitions for its groundbreaking innovation in integrating AI and Blockchain into a unified framework, empowering Aerospace & Defense Supply Chains with Superintelligence, enhanced Resilience, Quantum-safe Cybersecurity, Zero-Trust Architecture, and unprecedented Transparency and Accessibility.

- Securing 1st Prize at ESA BIC Competition in Bremen (Germany) for the best Startup Idea. (link)
- Securing 1st Prize at the Worldwide AI Hackathon in Silicon Valley-Bay-Area for building a PoC based on AI & Blockchain for Aerospace Suppliers. (link)
- Recognized in Satnews/Satmagazine. (link)
- Recognized in ENRICH GLOBAL Magazine. (Page-38 - link)
- Recognized by Global Arena Institute's Next100 Symposium in Berlin focusing Defense Sector. (link, link)
- Featured in UK Crypto Magazine (link), Binance (link).
- Featured in Authority Magazine for innovative approach for Aerospace Supply Chains. (link)
- Aerospace Tech Review 2025 Award finalist for "The Most Disruptive Startup" (link, link).

Call to Action and Commitment

JELLYSPACE stands resolute in its commitment to partner with Federal agencies and academia in these vital R&D efforts. We are unwavering in our conviction to contribute our expertise in AI-driven Supply Chains for the Aerospace, Satellite, TTN, NTTN/Satcom, Dual-Use, and Defense sectors, leveraging our award-winning platforms to advance national security, economic vitality, and American leadership in AI.

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"*This document is approved for public dissemination. The document contains no business-proprietary or confidential information. Document contents may be reused by the government in developing the 2025 National AI R&D Strategic Plan and associated documents without attribution.*"

We extend our sincerest appreciation for the opportunity to share these perspectives and stand ready to contribute to any ensuing endeavors that may arise from this noble pursuit.

With the utmost respect,
Ali Musab
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JELLYSPACE, INC.

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