

FlexHEG Devices to Enable Implementation of AI IntelSat

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Problem Statement

As part of an international collaboration on governing and equitably benefitting from the positive effects of transformative AI, the IntelSat model requires that there be reliable governance put in place to manage the involvement of private organizations. All of the participating members need secure and reliable ways to monitor each other member's involvement and fulfillment of their commitments.

Background - Relevant Context and History

AI governance faces a global challenge: while risks and benefits affect everyone, development remains concentrated among few actors with minimal transparency. The Intelsat model, which successfully balanced US technological leadership with meaningful international participation through weighted voting from 1964-2001, provides a proven template for AI cooperation. Many previous international frameworks have struggled with verification issues. Hardware-enabled governance creates technical guardrails through tamper-evident systems and standardized monitoring at the physical infrastructure level. By implementing compute tracking and tamper-resistant mechanisms, an Intelsat-like framework becomes feasible by creating objectively verifiable compliance protocols that build the mutual trust necessary for countries to balance technological progress with responsible development and economic growth.

Policy Options - Analysis of Possible Approaches

These policy options could be easily modified to focus on California rather than the federal government.

FlexHEG refers to Flexible Hardware Enabled Governance

Tax Credits for FlexHEG Implementation

The Treasury Department could institute a targeted tax credit program for companies that upgrade existing data centers or build new facilities with FlexHEG-compliant hardware above specified capacity thresholds, providing financial incentives that offset the additional costs of

implementing tamper-resistant systems while accelerating private sector adoption. These credits would be structured with a sliding scale that rewards early adopters with higher incentives that gradually decrease over a five-year transition period, creating market motivation for rapid compliance while allowing the tax benefits to be phased out once FlexHEG implementation becomes standard industry practice across the AI sector.

Actions that would be incentivized:

- Installation of tamper-evident and tamper-responsive secure enclosures for AI accelerators in data centers, including retrofitting existing infrastructure with physical security mechanisms that can detect unauthorized access attempts and protect the integrity of guarantee processors.
- Deployment of compliant network infrastructure that enables secure, authenticated communication between FlexHEG devices, including specialized network interface controllers (NICs) that can enforce verification protocols and implement cryptographic controls for sensitive model weights and data transfers.
- Conversion of large-scale deployment clusters from standard hardware to FlexHEG-compliant systems, particularly for companies operating inference services where controlled deployment of models is essential for the IntelSat governance framework.

Key Benefits of the Tax Credit Program: The tax credit program creates market-driven FlexHEG adoption by aligning commercial interests with security goals without imposing mandates. By offsetting capital costs for secure hardware implementation, this policy removes economic barriers to participation in the IntelSat framework. The sliding scale incentive structure drives rapid implementation while establishing a predictable transition period for companies to incorporate compliance costs. Working through the tax code rather than creating new regulations minimizes bureaucratic expansion while leveraging existing Treasury Department infrastructure, making it both politically viable and administratively efficient.

Technical Assistance Grant Program

The National Science Foundation could create a technical assistance grant program for small and medium enterprises to implement FlexHEG-compliant systems, ensuring that compliance costs don't create barriers to market entry or innovation while broadening the ecosystem of compliant hardware. This program would fund hardware upgrades, technical consulting, and staff training specifically focused on FlexHEG implementation best practices, with priority given to startups and academic institutions working on safety-enhancing AI applications, creating pathways for broader ecosystem participation in the IntelSat governance framework without disadvantaging smaller organizations with limited compliance resources.

Projects that grants could be dedicated towards:

- Development and implementation of custom guarantee verification software that enables small organizations to create and validate privacy-preserving claims about their AI workloads while maintaining intellectual property protection.
- Integration consulting and staff training on FlexHEG operational protocols, including security best practices, maintenance procedures, and proper documentation for compliance reporting to governance authorities.
- Development of open-source interface libraries that allow smaller organizations to effectively utilize FlexHEG verification capabilities without requiring specialized engineering resources, democratizing access to the governance framework.

Key Benefits of the Technical Assistance Grant Program: The technical assistance grant program addresses the knowledge gap smaller organizations face when implementing hardware security systems, preventing an AI scenario where only well-resourced companies can participate. By funding expertise, training, and implementation support—not just hardware—this program builds lasting institutional knowledge around secure computing practices. Targeting startups and academic institutions working on safety-enhancing AI creates a multiplier effect where public funding advances both governance and beneficial innovation. This approach establishes a community of practice that develops standardized solutions and best practices, creating shared resources that improve the entire governance framework.

References - Citations for Data and Research

<https://www.forethought.org/research/intelsat-as-a-model-for-international-agi-governance>

https://www.rand.org/pubs/working_papers/WRA3056-1.html

https://yoshuabengio.org/wp-content/uploads/2024/09/FlexHEG-Interim-Report_2024.pdf