



**Artificial Intelligence (AI) Based Operational Earthquake Forecasting and Nowcasting  
Action Plan**

This submission applies to the

*Request for Information on the Development of an Artificial Intelligence (AI) Action Plan*

On behalf of the

**Office of Science and Technology Policy (OSTP) and the  
Networking and Information Technology Research and Development (NITRD) National  
Coordination Office (NCO), National Science Foundation**

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## Response to OSTP & NITRD NCO on AI Action Plan Development

### Advancing AI for National Security & Disaster Resilience: AI-Based Earthquake Forecasting and Nowcasting Action Plan

The United States has a critical opportunity to **leverage AI-driven forecasting technologies** to strengthen **national security, infrastructure resilience, and disaster preparedness**. Precursor SPC's **AI-based Earthquake Forecasting and Nowcasting** deliver **high-confidence, deterministic, real-time warnings** that shift earthquake response from **reactive to proactive**.

Current earthquake warning systems **fail to provide location- and time-specific alerts**, leaving governments, businesses, and insurers unable to **mitigate risk or take protective action**. Unlike traditional seismology-based methods that only detect earthquakes after they occur, AI-based forecasting and nowcasting identifies **pre-seismic energy buildup** days in advance, allowing for **risk mitigation, preparedness, and strategic response planning**. Precursor's AI-based technology is **operational, proven, and ready for immediate deployment** to reduce **economic losses, infrastructure damage, and loss of life**.

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### Policy Actions for AI Leadership & Innovation

To ensure the U.S. remains at the forefront of AI innovation, the **AI Action Plan for Earthquake Forecasting and Nowcasting** must:

#### 1. Establish strong Public-Private Collaboration for AI-Based Earthquake Forecasting and Nowcasting

Federal agencies must **collaborate with AI innovators** like Precursor SPC to integrate **Earthquake Forecasting and Nowcasting** into national resilience frameworks. A **public-private partnership (PPP)** would:

- ✓ Enable **deterministic, days-in-advance earthquake forecasting and nowcasting** to protect lives and infrastructure.
- ✓ Modernize USGS's **ShakeAlert system** from a **reactionary seismology-based system** into an **AI-driven forecasting and nowcasting platform for disaster preparedness**.
- ✓ Provide governments, businesses, and insurers with **actionable intelligence for risk management, infrastructure protection, and operational continuity**.

#### 2. Remove Regulatory Barriers to AI-Driven Earthquake Forecasting

Current U.S. regulations **do not recognize AI-based earthquake forecasting as a viable alternative** to outdated seismology-based methods. The AI Action Plan must:

- ✓ Direct USGS, FEMA, and DHS to establish a regulatory pathway for AI-driven earthquake forecasting and nowcasting.
- ✓ Prevent bureaucratic inertia from delaying life-saving forecasting solutions.
- ✓ Ensure AI-based forecasting systems are fast-tracked for validation and deployment.

### 3. Prioritize AI for Infrastructure Resilience & Risk Mitigation

AI-based nowcasting is a **strategic asset** for **national disaster preparedness and risk management**. The AI Action Plan must:

- ✓ Expand funding for **AI-driven Earthquake Forecasting and Nowcasting**, ensuring **resilient infrastructure and economic stability**.
- ✓ Support AI integration into **government and private-sector risk mitigation frameworks**, providing **high-confidence, location-specific alerts** that allow for early action.

### 4. Provide Immediate Appropriations for Operational Deployment

The AI Action Plan must **provide specific appropriations for the immediate operational deployment** of AI-driven earthquake forecasting and nowcasting capabilities rather than restricting funding to **long-term R&D initiatives**. AI-based Earthquake Forecasting and Nowcasting are **proven technologies at TRL 7-8**, ready for **national-scale implementation**. Appropriations must:

- ✓ Fund **real-time operational deployment to protect critical infrastructure, commercial enterprises, and government agencies**.
- ✓ Ensure **rapid fielding of AI-driven earthquake forecasting solutions** within **DHS and state/local emergency management agencies**.
- ✓ Support **multi-agency AI partnerships** to scale operational capabilities without unnecessary delays.

### 5. Incentivize Private Sector & Insurance Industry Engagement

The AI Action Plan must **require active and financial support from private insurance and reinsurance providers** to drive the adoption of **Earthquake Forecasting and Nowcasting solutions** within commercial and industrial markets. AI-driven forecasting offers insurers and risk managers a **revolutionary tool to enhance resilience, reduce losses, and improve financial modeling of seismic risk**. The Plan should:

- ✓ Incentivize **private insurers and reinsurers** to introduce **AI-driven earthquake forecasting products** to their commercial and industrial clients.



- ✓ Establish **industry-wide collaboration between the federal government, insurers, and AI solution providers** to ensure widespread adoption and risk management integration.
  - ✓ Require insurance-backed **earthquake resilience strategies** to leverage AI-driven forecasts for **pre-event mitigation and preparedness** rather than solely relying on post-event claims and recovery efforts.
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## **Precursor SPC: A Proven Solution for AI-Driven Earthquake Forecasting and Nowcasting**

**Precursor SPC delivers real-time, AI/ML-driven Earthquake Forecasting and Nowcasting, providing actionable intelligence to mitigate risk, enhance operational resilience, and enable proactive decision-making.**

- **AI-Based Earthquake Nowcasting** provides deterministic, **location- and time-specific earthquake warnings** by identifying pre-seismic energy buildup, offering governments, businesses, and insurers the ability to **prepare and mitigate economic losses** [Precursor SPC, 2013, 2017, 2018].
- **Peer-reviewed research** supports the viability of ionospheric anomalies as precursors to seismic activity, a foundation of Precursor SPC's forecasting model [Precursor SPC, 2017, 2022].
- **The European Space Agency's INSPIRE project** has also validated pre-seismic energy buildup as a verified approach to earthquake forecasting, further affirming the potential of Precursor SPC's methods [INSPIRE, ESA, 2021].
- **Unlike traditional seismology-based methods**, AI-driven forecasting offers **high-confidence alerts days in advance**, allowing for **disaster preparedness, emergency planning, and risk reduction**.

By integrating **AI-driven Earthquake Forecasting and Nowcasting, OSTP and NITRD NCO** can position the U.S. as a **global leader in AI-based disaster forecasting**, ensuring **lives saved, infrastructure protected, and economic resilience sustained**.

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## **Conclusion: AI Earthquake Forecasting & Nowcasting Are Critical for U.S. AI Leadership**

The **AI Action Plan** must **remove barriers to AI-driven disaster forecasting and enable public-private collaboration** to deploy **Earthquake Forecasting and Nowcasting at scale**. The **West Coast and Alaska** face **inevitable seismic catastrophes**, with **billions in economic losses and thousands of lives at risk**. AI-driven forecasting provides a **viable, operational solution that must be deployed now**.



**The time to act is now—AI-based Earthquake Forecasting and Nowcasting can transform resilience, protect critical assets, and save lives. OSTP must champion AI-driven forecasting innovation and ensure that immediate appropriations support the deployment of operational AI capabilities, not just additional R&D. This will enable the U.S. to lead in AI-driven disaster preparedness, infrastructure resilience, and national security.**