# Lockheed Martin, NVIDIA Demonstrate AI-Driven Digital Twin With Potential To Advance Predictive Forecasting

*Demo Marks One-Year Milestone for Digital Twin Project which Fuses Earth's Ocean Surface Temperatures to Support the National Oceanic and Atmospheric Administration's Mission*

**DENVER, Jan. 30, 2024** – In a year where the National Oceanic and Atmospheric Administration (NOAA) has reported record ocean temperatures, an innovative project from Lockheed Martin (NYSE: LMT), built in collaboration with NVIDIA, is showing how artificial intelligence can be used to fuse data and detect anomalies in current environmental conditions.

Since 2022, Lockheed Martin has collaborated with NVIDIA to build a prototype of an AI-driven Earth and Space Observing Digital Twin that can:

- Process live streams of incoming weather data, apply AI and machine learning to analyze the data,
- Display current global environmental conditions from satellite and ground-based observations and output from weather forecasting models.

Recently, the project achieved a significant milestone, demonstrating one of NOAA's critical data pipelines – sea surface temperatures – to highlight multi-sensor fusion from satellite and model data along with short term temperature anomalies.

The Earth and Space Observing Digital Twin aims to provide NOAA with an efficient and centralized approach to fuse and visualize data from various space and earth sensors. The demo showed NOAA and other government customers the potential of using AI to display high-resolution, accurate, and timely depictions of satellites and sensor data.

"A platform such as our digital twin could serve as a one-stop-shop for global weather monitoring and could enable more accurate initial conditions for predictive forecasting," said Lynn Montgomery, AI research engineer at Lockheed Martin. "Every day, NOAA receives terabytes of weather data from numerous space and Earth-based sensors, and this project helps fuse this information accurately to support timely depiction of global conditions."

The project uses Lockheed Martin's OpenRosetta3D software and the NVIDIA Omniverse development platform to build applications that aggregate data in real time. The Digital Twin uses these technologies to advance 4D visualizations and display this information in a digestible format.

"From monitoring current environmental conditions to predicting them, digital twins can help climate and weather enterprises tackle their toughest AI and forecasting challenges," said Dion Harris, director of accelerated computing product solutions at NVIDIA. "This latest milestone in our collaborative efforts demonstrates how NVIDIA Omniverse can quickly synthesize terabytes of NOAA data from a large number of sources to speed up global weather monitoring and prediction."

Lockheed Martin's next plans are to incorporate additional data streams — such as space weather and sea ice concentrations — into the Earth and Space Observing Digital Twin next year.

This project was funded by NOAA SAE Joint Venture Partnerships for the exploration of possibilities for a future state and not a mission itself.

**About Lockheed Martin**

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