Briefing Document: Project Guardian Platform

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Subject: Overview of the Project Guardian AI Wreck Assessment and Monitoring Platform

1. Executive Summary

Project Guardian is a next-generation threat intelligence platform designed to address the global challenge of Potentially Polluting Wrecks (PPWs). It solves the critical problem of "prioritization paralysis" by providing a clear, data-driven framework for action, ensuring that resources are focused on the most significant threats first. The platform is built on a powerful triad of capabilities: a rapid **AI Assessment Engine**, a workflow for **Expert-in-the-Loop Enhancement**, and a **Dynamic Monitoring System**. This powerful combination of artificial intelligence, human expertise, and real-time data transforms the management of high-consequence wrecks from a slow, static, and reactive process into a dynamic, proactive, and intelligence-led global operation.

2. The Problem: The Limitations of Static Analysis

Historically, managing the thousands of legacy shipwrecks has been a significant challenge. The conventional approach relies on static, project-based analysis which leads to:

- **Data Silos:** Information is scattered across historical archives, academic papers, and disparate databases, making a holistic view nearly impossible.
- **Prioritization Paralysis:** With thousands of potential threats, determining which wrecks to survey first is a monumental task, often leading to inaction.
- **Outdated Intelligence:** A report generated today is outdated tomorrow. Static assessments cannot account for new environmental stressors that can dramatically alter a wreck's risk profile, such as a nearby earthquake or an unusually severe storm season.
- **Reactive Management:** Action is typically taken only *after* a leak is detected, by which time significant and often irreversible environmental and economic damage has already occurred.

3. The Solution: A Three-Pillar Intelligence Platform

Project Guardian provides a complete, end-to-end solution for wreck management through a web-based platform. It integrates three core pillars to create a continuously evolving intelligence ecosystem.

Pillar 1: AI-Driven Assessment Engine (The "Brain")

At its heart, the platform uses an AI agent powered by Gemini to conduct a comprehensive **Phase 1 (OSINT) assessment** of any wreck in the world. Following the scientifically validated **Wreck Environmental Risk Prioritization (WERP) protocol**, the AI performs deep research to analyze a wreck's history, construction, pollutant load (PHS), and the sensitivity of its location (ESI). The result is a detailed, quantitative risk score and report, generated in minutes, not months, which populates a centralized intelligence database.

Pillar 2: Expert-in-the-Loop Enhancement (The "Synergy")

The platform is designed to augment, not replace, human expertise. It features a two-stage workflow that allows subject matter experts to directly enhance the AI's findings.

- **Initial Assessment (Phase 1):** The AI's OSINT analysis provides a rapid, preliminary risk score.
- **Expert** Enhancement **(Phase 2):** When physical, in-situ data is gathered (e.g., from an ROV survey), an expert can upload this new information directly to the wreck's report. The AI agent then performs a sophisticated secondary analysis, **intelligently re-evaluating all WERP scores** based on this higher-quality data and generating a final, high-confidence "Completed Assessment." This creates a seamless workflow from initial remote analysis to final ground-truthed intelligence.

Pillar 3: Dynamic Monitoring System (The "Sentry")

The most critical innovation is the platform's ability to provide real-time intelligence. This is enabled by the **"Guardian Sentry,"** an automated backend component.

- **Continuous Monitoring:** The Sentry runs on a 24-hour schedule, automatically ingesting data from real-time feeds, such as the USGS Earthquake Catalog API.
- **Proactive Alerting:** It cross-references these events with the coordinates of every wreck in the database. If a significant event (e.g., a Magnitude 6.5 earthquake) occurs within a predefined radius of a wreck, the Sentry **automatically generates an environmental alert** that flags the wreck in the UI.
- **Dynamic Risk Management:** This alert instantly notifies operators that a wreck's risk profile may have changed, prompting a re-assessment or prioritizing it for an immediate in-situ survey.

4. A Holistic Solution for a Global Challenge

Project Guardian moves beyond static reports and creates a living, dynamic intelligence ecosystem. The powerful combination of **rapid AI analysis** to overcome prioritization paralysis, **human expert enhancement** to ensure the highest level of accuracy, and **real-time monitoring** to manage evolving threats provides an unparalleled solution.