Stanford’s Jef Caers Drives AI Innovation at Mineral-X to Accelerate Critical Minerals Discoveries

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March 26, 2025 — Professor Jef Caers, founder and director of Stanford’s Mineral-X initiative, is driving Silicon Valley innovation into the critical minerals sector. In an interview at PDAC 2025 with InvestorNews.com host Tracy Hughes, Caers explained that Mineral-X leverages advanced artificial intelligence (AI) techniques to expedite mineral discoveries essential for the global energy transition. Highlighting a notable success, Caers detailed a partnership with KoBold Metals in Zambia, where Mineral-X developed an innovative AI algorithm that guided drill targeting, significantly accelerating a major copper discovery. “KoBold used our algorithm and made this huge discovery of copper; now we’re starting to look at mine planning together,” Caers emphasized.

Building on his extensive academic and industry experience, Caers underscored Mineral-X’s approach of transferring sophisticated decision-making methods from the oil and gas industry—where he previously worked extensively with 35 major companies—into mineral exploration. He described current collaborations with other industry leaders, including Ero Copper in Brazil, where AI-driven analysis of large datasets directs drilling operations toward promising targets, reducing exploration costs. Caers explained that Mineral-X is strategically concentrating on critical minerals such as copper, cobalt, nickel, lithium, and rare earth elements, all crucial

for sustainable energy solutions and advanced technologies.

The Stanford Mineral-X initiative, established by Caers as a community-focused effort, aims to ensure a resilient and sustainable mineral supply chain necessary for a decarbonized future. Caers stressed the importance of collaboration with top-tier industry players, expressing eagerness to partner with companies like BHP and Rio Tinto. Mineral-X has rapidly attracted attention beyond traditional scientific circles, earning coverage in prominent media outlets including Bloomberg, the Financial Times, and Vanity Fair. Caers affirmed, “Our immediate objective is to accelerate discoveries and improve industry decision-making—faster, cheaper, and smarter.”

To access the complete interview, click here

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