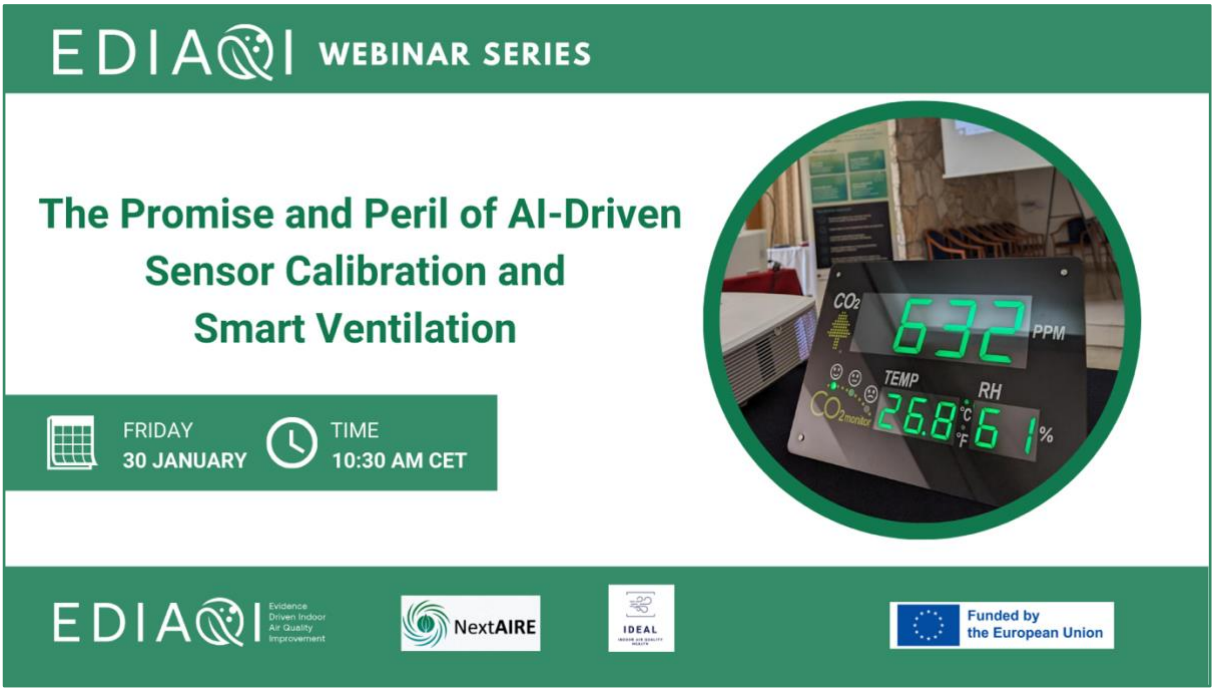
The Promise and Perils of AI-Driven Sensor Calibration and Smart Ventilation Management



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AI-driven calibration is increasingly seen as a means to improve the precision of affordable sensors, address challenges such as environmental interference and sensor drift, and reduce reliance on costly reference equipment. By improving data quality, these techniques could help shift indoor air quality management from simple measurement towards prediction and more informed, data-driven responses. Studies suggest that AI-based approaches can significantly reduce calibration errors and bias, creating the conditions for more proactive building management.

At the same time, many familiar AI risks also apply. Models may perform well under controlled conditions but fail in real-world indoor environments, often without transparent explanations. Sensor variability further limits scalability, while ethical and trust concerns arise where air quality data, such as CO_2 levels, may act as proxies for occupancy. In sensitive settings such as healthcare, failures or misuse of AI-driven calibration and automated building responses could, under the definitions of the EU AI Act, potentially be considered high risk.

In this context, the NextAire and EDIAQI projects are convening the latest episode of the EDIAQI Webinar Series to explore:

- What promises does AI-driven sensor calibration hold for indoor air quality monitoring and building management?
- What technical, ethical and regulatory risks must be addressed to ensure reliable and trustworthy deployment?
- How can transparent, well-governed calibration approaches support more informed, data-driven decisions in real-world indoor environments?

Date: Friday 30th January at 10:30 CET

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Agenda:

- **10:30-10:35:** Welcome and Introduction
- **10:35-10:45:** From Sensors to Signals: The Practical Promise and Limits of AI-Driven Calibration
- **10:45-10:55:** Learning from Data: AI, Calibration and Uncertainty in Real-World Indoor Environments
- **10:45-10:55:** Why Calibration Matters: From Data Quality to Actionable Indoor Air Management
- **11:05-11:15:** From Evidence to Trust: Scientific Validation of AI-Supported IAQ Calibration
- **11:15-11:40:** Panel Discussion
- **11:40-11:55:** Interactive Dialogue and Questions from the Audience
- **11:55-12:00:** Concluding Remarks

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