

BUILDS THE RECORD · INVENTS THE INSTRUMENT · TEACHES THE METHOD

Raphael Garcia da Costa

The air we breathe deserves the same rigour as the money we move. Raphael designed the transaction ledger used by 20M+ people in 70+ countries, then turned that discipline on dust, air and roads.

20M+
people use the FinTech ledger he architected, across 70+ countries

ZA 2021/10088
granted South African patent, plus international filing WO 2020/250007

7
awards and recognitions for his ventures, 2015–2026

Ventures

Sentinel AI · Co-founder & CTO · 2019 –

Environmental intelligence for mining: DustScout sensors on haul trucks record dust, silica risk and road condition in real time; RoadScout AI and VoltScout AI extend the platform. Partners include Anglo American, Rio Tinto, Fortescue and Whitehaven.

SensusAir · Co-founder & CTO · 2020 –

Indoor air intelligence for hospitals, schools and workplaces, measuring viral, mould and ventilation risk. Deployed in the USA, South Africa, the UK, Australia and the Philippines.

Hashtag AI Labs · Founder · 2010 –

AI and software engineering lab. Work delivered for clients including Halliburton, Nike, Anglo American, FNB, BMW, Hollard, Red Bull, Sasol, Fortescue and Rio Tinto.

FinTech ledger · Engineering & architecture lead · 2015 –

Architected from the ground up the transaction ledger behind a pan-African remittance and wallet platform serving 20M+ customers in 70+ countries.

The Ledger Method™

An original framework that records physical signals (dust, air, roads, energy) with the discipline financial systems apply to money: every entry kept, every entry in context, nothing overwritten. **Record** every reading as a timestamped entry; **Connect** it to its site, process and moment; **Reveal** patterns with AI, turning them into action on the ground and proof for regulators and boards. In production at Sentinel AI and SensusAir.

> **"Why are we so rigorous about money, but not about what keeps us alive?"**

Invention

22 Feb 2023	**South African patent 2021/10088 granted**: *Environmental Management System*. Inventors: Raphael Garcia da Costa and Ian Neil Clarke.
2019 / 2020	**PCT/IB2019/054841**, published as **WO 2020/250007** on 17 December 2020: computer-implemented environmental management and monitoring system for mines, plants, hospitals and schools.

Awards & recognition

2026	Innovation Excellence Award 2026
2025	GHP Innovation Excellence Award: SensusAir (GHP, Global Health & Pharma)
2025	Best Environmental Risk Management & Disease Prevention Specialists, USA: SensusAir
2025	Best Air Quality Solutions Provider, South Africa: SensusAir
2025	Leading Innovators in Environmental Intelligence for Mining: Sentinel AI
2025	Outstanding Contribution to Industrial ESG Innovation: Sentinel AI
2015	SWIFT Innotribe Semi-Finalist (Growth Stage): GreenModel®, engineering led by Raphael
Recognised	Section 11D R&D recognition, Government of South Africa (Sentinel AI) · NVIDIA Inception Program member (Sentinel AI)

Stages

2026	APIC 2026 Annual Conference, USA: attended as a thought leader in AI for infection prevention
2026	Le Bonheur Children's Hospital, Memphis · University of Guelph CESRF, Canada · St. Luke's Medical Center, Philippines: invited engagements
2025	Healthcare Innovation Summit Africa: invited talk *When Air Becomes Data*
2025	APIC 2025 Annual Conference, Nashville: breakout-room sessions · African Mining Week, South Africa: invited to present
2024	APIC Conference, Baptist Memorial Hospital, Memphis: *Utilization of an AI-Based Environmental Sensing Solution in Infection Prevention*

Research

Four white papers on SSRN (2021–2025), including a mine-site dust-suppression field study at Christmas Creek Mine, Western Australia, and a multi-year indoor-air trial with one of Africa's largest banks.

Education

MSc Artificial Intelligence, University of Hull (in progress)
Executive Education, AI in Healthcare, Harvard Medical School (2025)
Machine Learning Specialization, Stanford University · DeepLearning.AI (2025)
Data Science with Python, University of Cape Town (2020–2021)
Early career: software development at Fiocruz, Rio de Janeiro

Giving back

Founder, AI4DFuture (non-profit mentorship and AI labs for young founders) · Mentor, VC4Africa and Founder Institute (since 2013) · Mentor, National Mentorship Movement (since 2017) · Mentor, Greater Tygerberg Partnership · Member, JCSE, Wits University (since 2012) · Member, South African Artificial Intelligence Association

INVITE RAPHAEL

Keynotes, workshops and pilots · **me@raphaelcosta.com** · raphaelcosta.com/contact · linkedin.com/in/raphacosta