FOR ORGANISERS

Talk abstracts

Each talk can run as a keynote or be adapted into a panel contribution or a working session. Raphael tailors examples and data to the audience. To book, email me@raphaelcosta.com.

HEALTHCARE · AI · INDOOR AIR

When Air Becomes Data: Harnessing AI for Safer Healthcare Systems

Every hospital tracks medicines, money and beds to the minute, yet the air patients and staff share often goes unrecorded. Raphael opens with a simple live demonstration, a clear and a cloudy bottle of water, and makes the invisible visible. He then shows how continuous sensing of CO_2, particulates and volatile compounds, read by AI as a ledger rather than a snapshot, reveals ventilation failures, crowding and early risk signals before they become infections. Drawing on SensusAir deployments, he gives healthcare leaders a practical path from guessing about air to acting on evidence.

Audience: hospital executives, infection-prevention teams, facilities and health-tech leaders · **Delivered at:** Healthcare Innovation Summit Africa 2025

INFECTION PREVENTION · ENVIRONMENTAL SENSING

AI-Based Environmental Sensing in Infection Prevention

Infection preventionists audit hands, surfaces and devices, but the air remains the least measured route of exposure. This session presents how an AI-based environmental sensing solution can be used inside clinical settings: what to measure, where to place sensors, how risk tiers are built from continuous readings, and how alerts connect to the actions an infection-prevention team already takes. Raphael uses examples from SensusAir's healthcare work in the United States to show how environmental data becomes part of everyday infection-prevention practice, and what it takes to make that data trustworthy enough to act on.

Audience: infection preventionists, epidemiologists, clinical engineering and environmental services · **Delivered at:** APIC Conference, Baptist Memorial Hospital, Memphis (2024)

MINING · ESG · OCCUPATIONAL HEALTH

Dust Becomes Data: AI for Mine Dust, Silica and Haul Roads

Dust on a mine is a health risk, a water cost and a compliance question, yet it is usually measured with periodic samples that miss the moments that matter. Raphael shows how Sentinel AI's DustScout sensors, mounted on haul trucks, record dust and road condition metre by metre, and how SilicaSense infers respirable crystalline silica risk from those particulate signatures. He shares findings from a dust-suppression field study at Christmas Creek Mine in Western Australia and explains how continuous evidence supports targeted suppression, water savings and reporting that regulators and boards can rely on.

Audience: mining operators, ESG and environmental managers, occupational health and safety leaders, investors · **Invited to:** African Mining Week 2025

LEADERSHIP · DATA TRUST · ESG

The Ledger Method: What Banks Know About Trust, Applied to the Planet

“Why are we so rigorous about money, but not about what keeps us alive?” Raphael asked that question during the pandemic, after years building ledgers that move money for millions of people. The answer is a framework: record every physical signal as an entry that is never overwritten, connect it to its place, process and moment, and let AI reveal the patterns. In this talk he explains the four principles of The Ledger Method, shows them running in mining and healthcare, and gives leaders a way to turn ESG and safety data from a quarterly snapshot into a living record that holds up to audit.

Audience: executives, boards, ESG and risk leaders, technology audiences · **Formats:** keynote, or a working session that maps the audience's own data into Record, Connect, Reveal

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