

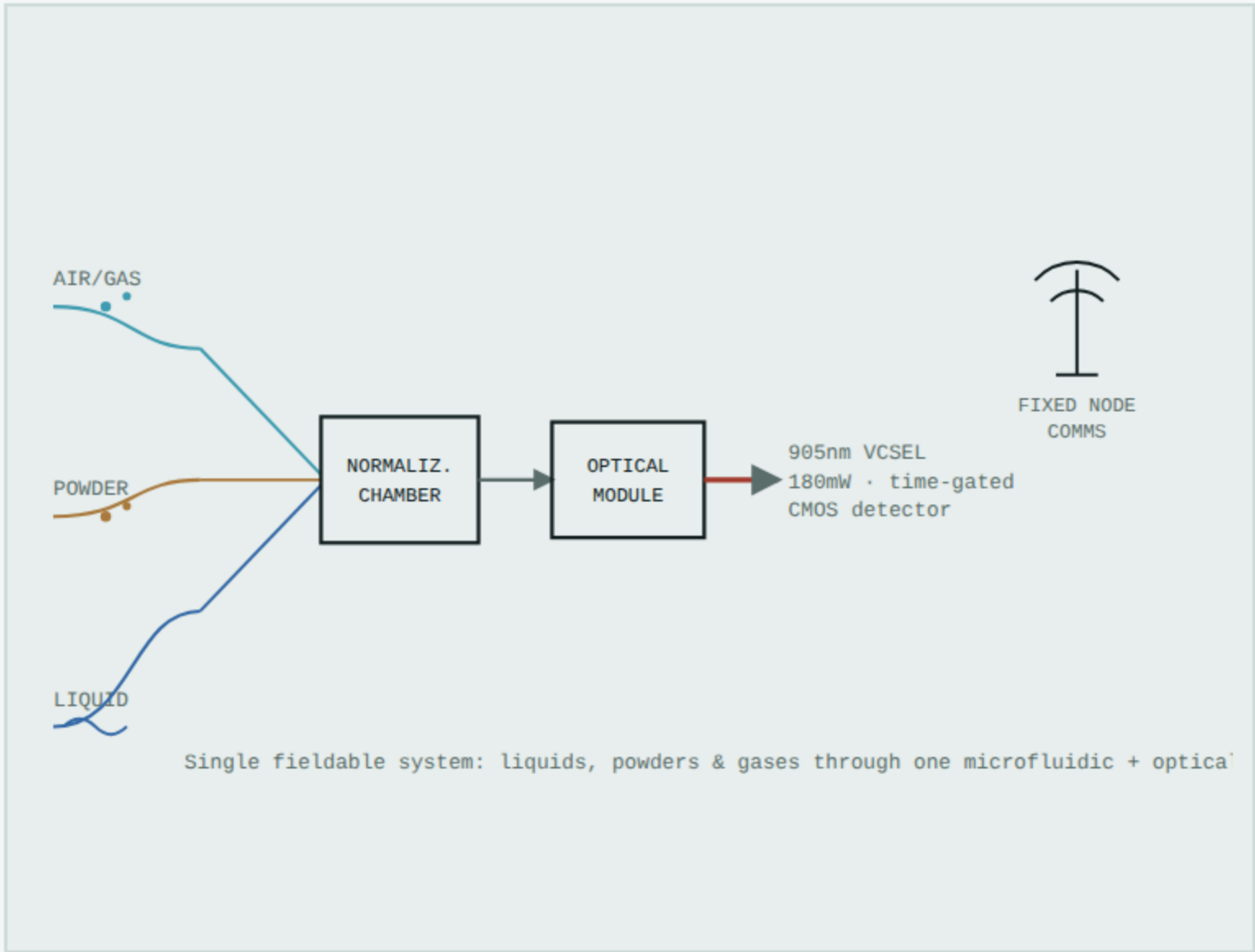
Environmental & Fixed-Node Threat Detection

Universal Threat Detection Platform · one fieldable engine for liquid, powder, aerosol/gas and water/wastewater samples.

QUAD CHART · ENVIRONMENTAL / 2 OF 2

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01 · OVERVIEW



- Fixed-node or portable coverage of **ports, airports, borders, wastewater sites** and critical infrastructure.
- Aerosol cyclone concentrator captures airborne biothreat plumes for continuous perimeter surveillance.
- Sealed powder module dissolves anthrax-spore-class unknowns with operator-safe disposal.
- Water/wastewater filtration screens for waterborne pathogens, aquatic toxins and chemical contamination.

02 · TECHNICAL APPROACH

Same four-layer converging-funnel architecture, tuned for environmental matrices: **ingestion** → **normalization** → **modular cartridge** → **upconversion optical detection**. Time-gated readout removes matrix background from soil, dust and wastewater samples.

Ingestion module	Primary application
Aerosol / gas cyclone	Airborne biothreat plumes, fixed-node perimeter surveillance
Sealed powder chamber	Anthrax spores, ricin, abrin, suspicious powders
Liquid + filtration	Chemical contamination, surface swabs
Water / wastewater	Waterborne pathogens, aquatic toxins (e.g. microcystin-LR)

15–30 min
aerosol → answer

TRL 3–5
aerosol cyclone module

TRL 4
normalization core

03 · DEVELOPMENT ROADMAP

- PH 0**
0–3 mo Finalize DHS/Army target panels; align on SRI optical-engine scope and DEVCOM CBC testing parameters.
- PH I**
3–6 mo Core detection demo — liquid-input cartridge and optical detection against biological/chemical targets.
- PH II**
6–12 mo **Powder module, aerosol cyclone, and cross-modality normalization; field dashboard.**
- PH III**
12–18 mo Radiological & viral cartridges; DEVCOM CBC target-panel validation across environmental matrices.
- PH IV**
18–24 mo **Ruggedized handheld/portable units; fixed-node pilot; interoperability & cybersecurity testing.**

04 · PARTNERS, ROM COST & POC

- NovaVera/IMS** UCP crystals, platform architecture, system integration
- Leiden Univ.** Infectious-disease assay expertise (Dr. Paul Corstjens)
- Maxim Bio** Assay development, optimization, manufacturing & scale-up
- SRI Intl.** Updated VCSEL / detector optical engine; prior anthrax, ricin work
- DEVCOM CBC** Biodefense target guidance & testing pathway

Phase I prototype demo	\$750K–\$1.5M
Full platform integration	\$2M–\$4M
Fixed-node system	\$25K–\$250K / node
Assay cartridges	\$15–\$250 / cartridge

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