

NL-SWI

Natural Locking Standing Wave Imaging

One patent-pending acoustic measurement core that decouples imaging **reach** from **resolution** — at any depth, with no ionizing radiation. Pre-prototype. Seeking one strategic partner per domain.

STAGE

Pre-prototype. No NL-SWI device has been built or tested yet. The baseline physics stands on independent, peer-reviewed research (NASA Langley) — a study that did not test NL-SWI itself.

IP

Patent pending — U.S. Provisional Application No. 63/996,286, filed March 2026. The founder holds 26 patents, many medical. Conversion to non-provisional / PCT is a planned milestone.

FOUNDER

Arie Ariav — 35+ years in precision measurement and sensor architecture. The prior sensing platform shipped in 100+ units to global enterprises; baseline methods passed due diligence at four industry leaders (GE, J&J, Samsung).

THE ASK

One strategic partner per domain: premier product development & biomedical engineering to build the first regulatory-compliant prototype — then ISO 13485 manufacturing, FDA/CE validation, and global distribution.

The problem

For a century, acoustic imaging forced a choice: high frequencies give detail but die at bone; low frequencies reach deep but blur. The industry built around the limit — chambers, radiation, needles.

The core insight

Frequency chooses reach. Time chooses accuracy. NL-SWI forms a closed phase-locked loop that locks onto the target's own resonance and counts picosecond arrival times — so precision comes from timing electronics, not wavelength.

Independent proof

- **NASA Langley (2018)** — ultrasonic phase measurement resolved a thickness error of $\sim 0.04 \mu\text{m}$ in dense solids (Haldren et al., Rev. Sci. Instrum. 89, 054902). Not NL-SWI, and not in tissue.
- **A 1954 physical law** — the speed of sound in a fluid shifts deterministically with dissolved-sugar concentration (Pryor & Roscoe, Phil. Mag.) — unmeasured non-invasively for 70+ years.

These are design consequences, not measured results. No device has been built.

One core · eleven mapped applications — four in detail

- **Brain** — bedside stroke assessment through the intact adult skull.
- **Glucose** — needle-free metabolic tracking through the eyelid.
- **Heart** — the “virtual catheter”: deep-vessel metrics from outside the body.
- **Arteries** — multi-layer plaque audits, with zero ionizing radiation.

Plus oncology/healing, obstetric, lung, skin and more — any bounded space the wave can reach. All design targets, not built devices.

We engineered the baseline physics. We are looking for the partner to build the devices — and to answer the only question that matters: can it see inside a living body, without touching it?

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