

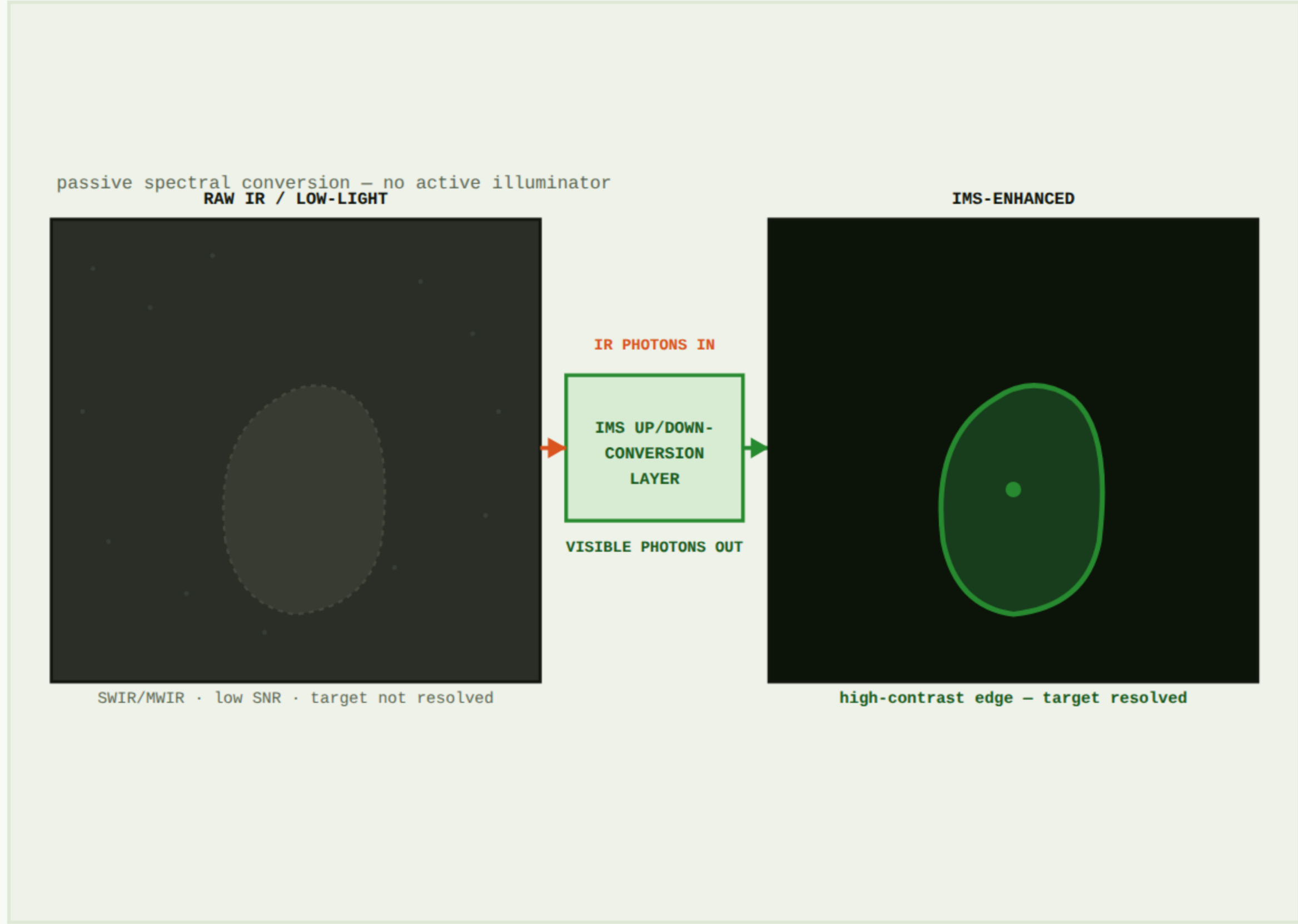
NoctaLux — Upconversion Night Vision & IR Imaging Enhancement

NovaVera/IMS upconversion & downconversion rare-earth materials convert IR and low-light scenes into high-contrast, high-SNR visible imagery — passively, without active illumination.

QUAD CHART · CONCEPT ADAPTATION – PILOT

NovaVera Corp. / Intelligent Material Solutions, Inc.
core materials capability

01 · OVERVIEW



- IR→visible upconversion enables passive night imaging — no active illuminator, low probability of detection.
- Spectral enhancement lifts contrast in low-SNR scenes; tailored emissions are tuned specifically for high-contrast edge detection.
- Better SWIR/MWIR band separation improves detection of camouflaged or low-contrast objects that current tubes miss.
- Same NovaVera/IMS rare-earth conversion-materials core as SolarFlex and PhotonArmor — redirected here to detector-side spectral conversion for more sensitive, lower-power night vision than current image-intensifier tubes.

02 · TECHNICAL APPROACH

One tunable materials platform, four fielded use cases:

Use case	Materials role	Value
Soldier-worn NVG	Thin-film upconversion overlay on tube/sensor optics	Lower power draw than current I ² -tubes
Sniper/marksman det.	Tailored emission for edge/contrast enhancement	Resolve camouflaged shooters at range
UAV imaging payload	SWIR/MWIR band-separation coatings	Cleaner multispectral discrimination from air
Border / maritime	Passive IR upconversion, no active illum.	Persistent low-light watch, low SWaP

passive
no active IR illuminator

lower power
vs. image-intensifier tubes

tunable
emission bands

Builds on NovaVera/IMS's core rare-earth up/downconversion platform — shared lineage with the SolarFlex photon-conversion coating work, applied here to detector-side imaging instead of power generation.

03 · PROGRAM TASKS

- TASK 1
MATERIAL

Formulate & tune upconversion/downconversion emitters for target IR/SWIR/MWIR bands and high-contrast edge response.
- TASK 2
INTEGRATE

Apply as thin-film/coating on NVG tube, camera sensor, or UAV payload optics; characterize SNR/contrast gain vs. baseline.
- TASK 3
FIELD TEST

Bench and field comparison against fielded image-intensifier tubes for camouflaged-object detection range and contrast.
- FINAL
TRANSITION

Down-select the strongest use case — soldier NVG, UAV payload, or fixed-site surveillance — for a funded pilot.

04 · PARTNERS, FACILITIES & POC

- Basis

NovaVera/IMS core up/downconversion rare-earth materials platform — shared lineage with SolarFlex & PhotonArmor
- Facility

SRI International site, Princeton, NJ — the historic RCA Sarnoff Labs
- NovaVera/IMS

Materials synthesis, thin-film coating, spectral & contrast characterization

TRL	Concept adaptation – pilot
IP basis	Core IMS up/downconversion IP
Funding	N/A – pre-proposal
Period	Material tuning – bench characterization

Same rare-earth conversion-materials core as NovaVera's SolarFlex and PhotonArmor programs, redirected to detector-side night-vision enhancement.

Viva Bell
Director of Operations, NovaVera Corp.
v@nova-vera.com · 609-955-0175
201 Washington Road, Princeton, NJ 08540