

— BLUE BASTION / DEMONSTRATOR 2026

PORTSHIELD

Sovereign C-UAS laser countermeasure system for critical maritime infrastructure.

A Belgian-built directed laser effector on a high-speed turret, with simulation-based swarm defence validation and GeoAI placement analysis.

Evarest Schoofs – CEO OneBonsai



ONEBONSAI



CONCEPT VISUALISATION

Why this matters now

Belgian ports and maritime infrastructure face low-cost Class 1 FPV drones and coordinated attacks, contraband or terrorist actions. Kinetic interceptors and RF jamming create collateral risk close to ships, cranes and people, and cost per engagement does not survive contact with a swarm.

PORTSHIELD answers with a compact, Belgian-built directed laser effector under human control.



COORDINATED FPV APPROACH

THE CAPABILITY GAP

G1

No sovereign Belgian ground-based laser C-UAS

Belgium has no operational capability of this type today.

G3

Safe deployment around ships, cranes and people

A working port has difficulty absorbing kinetic or RF side effects.

G2

Affordable defence against Class 1 FPV threats

Cost per engagement has to survive contact with swarms.

G4

Proof defensive capacity without unsafe live tests

Five to ten simultaneous threats cannot be tested safely.

One threat. Three pillars.

PORTSHIELD combines proven components into a deployable sovereign capability, not experimental technology.

PILLAR 01 / HARDWARE	PILLAR 02 / SIMULATION	PILLAR 03 / PLACEMENT
Integrated C-UAS system Directed Laser Effector on a high-speed 360° turret, with passive visual, infrared and acoustic sensor fusion. Human authorisation for every engagement. EFFECTOR _____ Fergus DLE PLATFORM _____ DOMS turret AUTHORITY _____ Human in the loop	Simulation-based validation A digital twin of the real system tests 1, 2, 5 and 10 simultaneous threats and generates the synthetic data that trains detection and prioritisation models. OWNER _____ OneBonsai PORT TWIN _____ LOD 2/3 SIM-TO-REAL _____ within 10%	GeoAI deployment optimisation Line-of-sight, engagement envelopes, coverage zones and blind spots turn turret placement into a measured decision rather than a guess. OWNER _____ UGent GeoAI BASE _____ GOTCHA / IM-PORT-ANT OUTPUT _____ Placement report

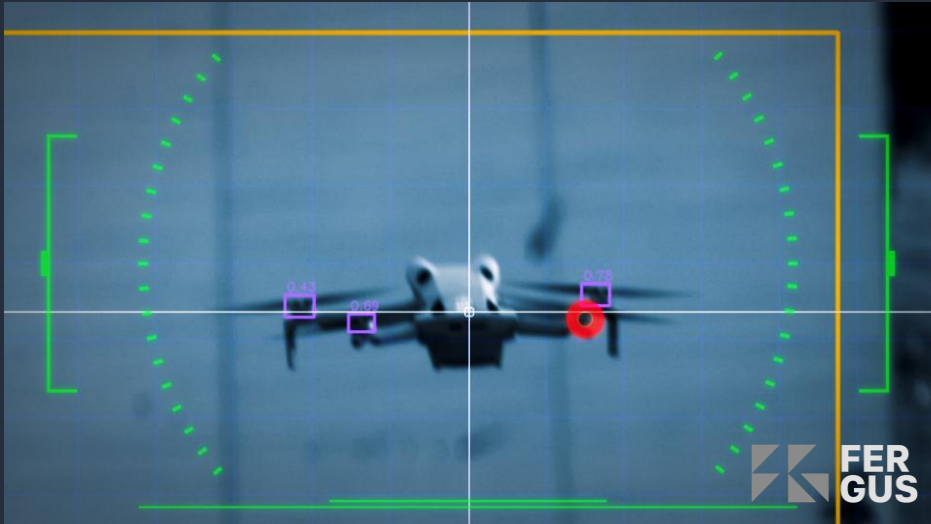
OUTCOME	A compact physical demonstrator, a validated simulation proof, and placement recommendations for a real port.
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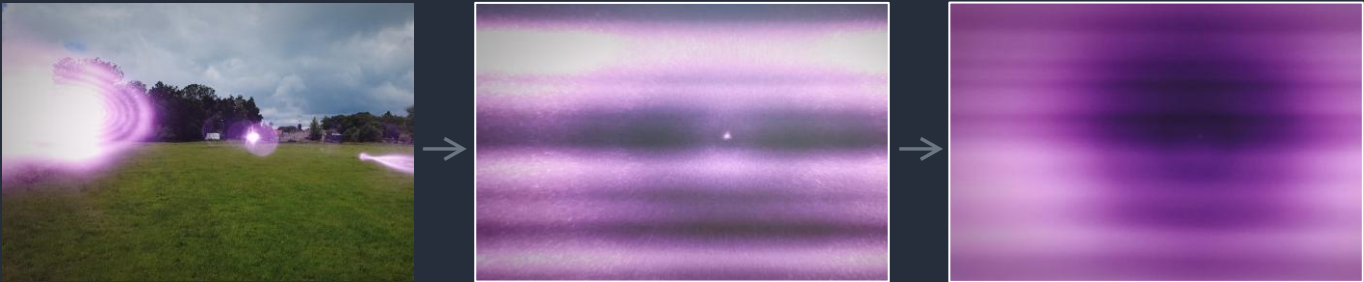
A modular Belgian laser effector

Fergus Engineering builds the Directed Laser Effector. DOMS builds the multi-axis turret and the 360° detection dome. Integration turns two products into one defensive system.



EFFECTOR · SPECS	
EFFECT	Sensor Destruction
RANGE	300 m+
REACTION	under 2 s
TRACKING	Closed loop
POWER	<3kW HEL
PLATFORM	Servo turret
DETECTION	IR + acoustic
BUILD	Industrial-grade
SAFETY	IEC 60825





Sensor Destruction

OBJECTIVE Track and disable a hovering Class 1 drone at minimum 300 m, within two seconds of target designation.

Drone disabled with laser

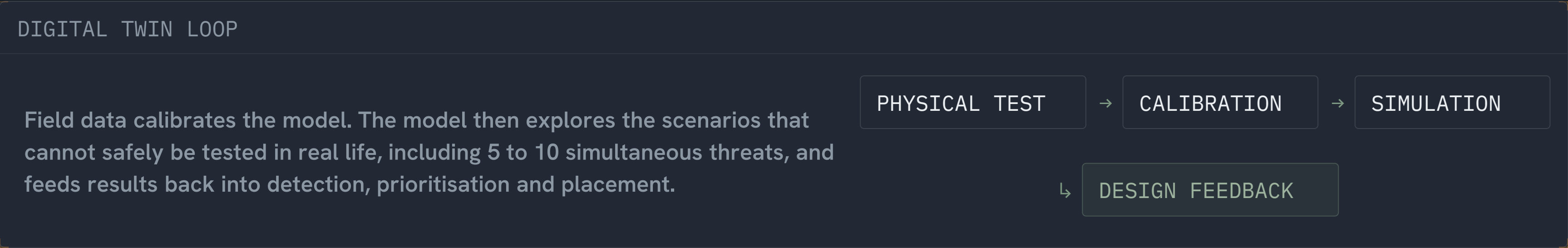
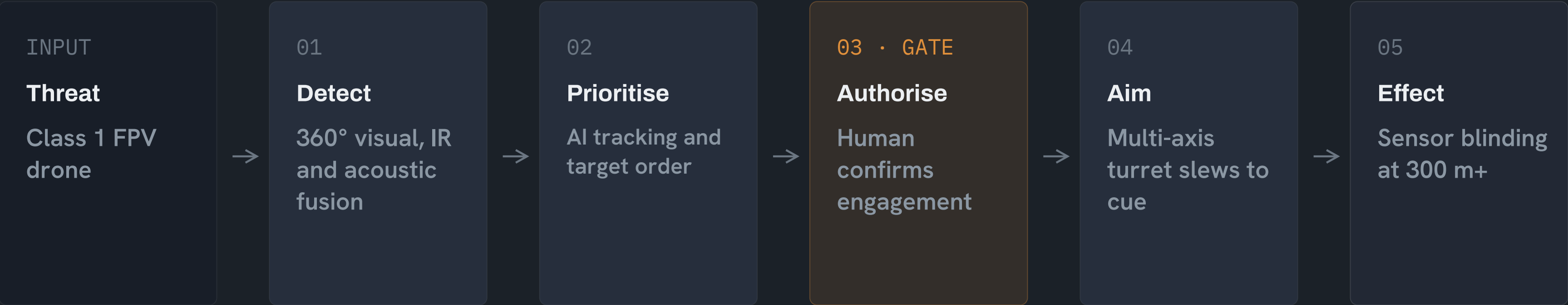


Low power green laser as fallback scenario



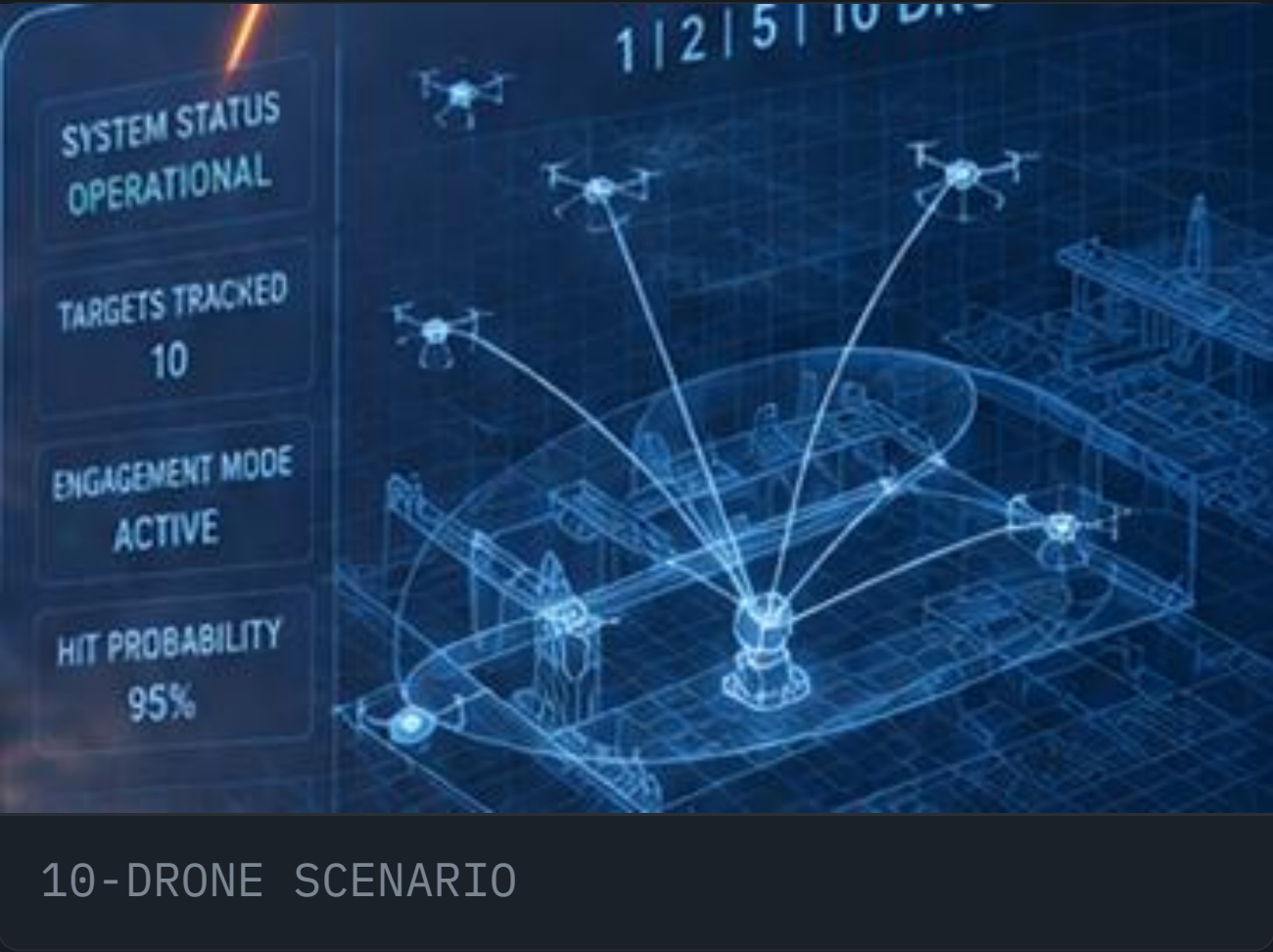
Detect, decide, engage

A human-authorized engagement chain, supported by AI recommendations and validated in simulation.



Simulation turns field tests into scalable proof

The physical test answers whether it works. The digital twin answers where it works, against how many threats, and where the limits are.



10%

SIM-TO-REAL

PORTSHIELD

1·2·5·10

DRONES / SCENARIO

01 Replicates the laser system

Beam characteristics, turret kinematics and tracking dynamics to an acceptable degree, not just a generic laser model.

02 Validated against field data

Target accuracy within 10% of measured physical engagement performance, over at least three test campaigns.

03 Runs coordinated scenarios

Run the system against 1000's attack scenarios and various defensive configurations.

04 Learn from (virtual) failures

Find the best and most optimal configuration of your defensive units for maximal effectiveness and lowest collateral damage risk.

GeoAI makes deployment decisions measurable

UGent models the port as a tactical geometry problem: visibility, distance, occlusion, coverage and blind spots.

01

3D visibility

Which areas can be seen from candidate turret positions?

02

Engagement envelope

Where can the DLE realistically affect the drone?

03

Coverage map

Which assets are covered, uncovered or fragile?

04

Placement recommendation

Which position gives the best protection trade-off?

DELIVERABLES

GeoAI coverage and vulnerability analysis: candidate configurations, blind-spot assessment and placement recommendations.

Four partners. One deployable demonstrator.

One knowledge institution and three Belgian SMEs. Laser, turret, simulation and GeoAI must come together to deliver the capability.



OneBonsai

Simulation & AI

Digital twin, scenario engine, operator interface and overall coordination.



University of Ghent

GeoAI & spatial analysis

Line-of-sight, coverage, vulnerability and placement analysis.



Fergus Engineering

C-UAS laser systems

Directed Laser Effector design, build and performance optimisation.



Gebroeders DOMS

Turret systems

Multi-axis turret, detection dome, drone targets and field testing.

No single partner can deliver it alone.

A laser without a turret cannot aim. A turret without a laser has no effector. Hardware without simulation cannot be tested against swarms, and simulation without hardware has nothing to validate against.

Contact us for more details

onebonsai.com

Evarest Schoofs

evarest@onebonsai.com

+32 478 262 357



BLUE BASTION
MARITIME SECURITY

Call for proposals 2026

PORTSHIELD

SOVEREIGN C-UAS LASER COUNTERMEASURE SYSTEM

WITH SIMULATION-BASED SWARM DEFENCE VALIDATION
FOR CRITICAL MARITIME INFRASTRUCTURE



DETECT & IDENTIFY

AI-driven tracking and classification
in simulation



RESPOND

High Energy Laser engagement
with human-in-the-loop authority



OPTIMISE

GeoAI-based analysis for
optimal placement and coverage



VALIDATE

Digital twin and swarm simulation
(1, 2, 5, 10 drones) in port environment

A SOVEREIGN BELGIAN SOLUTION

Built, tested and validated by Belgian
industry and research for the
protection of our ports and
critical infrastructure.



ONEBONSAI

Simulation & AI



**UNIVERSITEIT
GENT**

GeoAI & Spatial Analysis



**FERGUS
ENGINEERING**

C-UAS Laser Systems

DOMS
MANUFACTURING SOLUTIONS

Turret Systems



PROTECTING WHAT MATTERS. SECURING OUR MARITIME FUTURE.

2026