GEODYN SOLUTIONS™

$2 BILLION PROGRAM: ADVANCED FLOATING FISH & SHRIMP FARMS + GREEN MARINE TANKER/SUPPORT FLEET

www.geodynsolutions.com

OBJECTIVE

BUILD A PROPRIETARY, MODULAR, OPEN-OCEAN AQUACULTURE AND LOGISTICS FLEET USING THE LATEST MARINE SCIENCE AND LOW-CARBON VESSEL TECHNOLOGY TO MAXIMIZE FOOD SECURITY AND ROI, WHILE CUTTING CAPEX RISK, EMISSIONS, AND PERMITTING FRICTION.

CONTINGENCY

20% OF PROGRAM CAPEX EMBEDDED (SCOPE BELOW).

HORIZON

10-YEAR BUILD-OUT IN THREE PHASES WITH MILESTONE GATES.

EXECUTIVE SUMMARY

- **Demand tailwinds:** Sustainable aquaculture is on track to be a trillion-dollar industry by 2050 and could generate ~22 million jobs globally.
- **Tech maturity:** Offshore cages, submersible systems, and land-based RAS hatcheries are commercially proven; hybrid/methanol-ready propulsion, air-lubrication, and wind-assist technologies yield verified savings.
- **Policy pull:** IMO 2023 GHG targets, EU ETS for maritime, and national “blue economy” programs support the economics of green fleets and farms.

Thesis: Combine deep-water floating/submersible farms and coastal RAS hatcheries with a green logistics fleet (live-fish wellboats, feed/reefer tankers, service craft) to secure biological performance, biosecurity, and premium-grade seafood while lowering delivered cost per kilogram.

PORTFOLIO ARCHITECTURE

A. AQUACULTURE PRODUCTION

- **Open-ocean pens (salmon, seriola, cobia):** Submersible, storm-resistant systems for thermal refuge and reduced parasite pressure.
- **Warm-water shrimp modules (IMTA-ready):** Floating raceways with solids capture and optional seaweed/mollusk co-culture for nutrient recycling.
- **RAS hatchery & nursery hubs:** AI-controlled feeding/aeration, biochar filtration for nutrient recovery, and high survival rates.

B. MARINE LOGISTICS & SERVICE FLEET

- Live-fish wellboats with RSW chilling, UV/ozone treatment, and sludge recovery.
- Hybrid/methanol-capable tankers and reefers for feed, harvest, and cold chain operations.
- Energy-saving retrofits: rotor sails, air-lubrication systems, advanced hull coatings, and voyage optimization software.

TECHNOLOGY STACK

ENERGY & PROPULSION:

- Wind-assist rotors (5–25% fuel/emission cuts)
- Air-lubrication (5%+ net fuel savings)
- Battery-hybrid integration (engine optimization & OPEX cuts)
- Methanol dual-fuel now, ammonia-capable from 2027+

AQUACULTURE SYSTEMS:

- Submersible/offshore cages for resilience and reduced mortality
- AI-enhanced RAS facilities for optimal feed conversion ratios (FCR) and water quality
- Integrated Multi-Trophic Aquaculture (IMTA) for environmental compliance

DIGITAL:

- Full operational digital twin from hatchery to harvest
- AI voyage optimization with CII/ETS compliance tracking

ESG & ENVIRONMENTAL SAFEGUARDS

- IMTA and effluent polishing to limit nutrient discharge
- Closed-loop biosecurity from hatchery to harvest
- IMO 2030 carbon-intensity compliance with class-verified emission reductions

SITES & INCENTIVES COMPARISON

REGION	INCENTIVES	PROS	CONS
U.S.	NOAA Sea Grant, MARAD Title XI, USDA B&I	Large market, vessel finance support	Complex permitting, Jones Act limits
Norway/EU	Enova grants, EU ETS cost savings	Mature aquaculture tech, strong subsidies	ETS compliance admin
Singapore/SEA	*MPA grants, IFC blue finance*	*Strategic location, lower OPEX*	*Tropical disease risk (mitigable)*

BUDGET & PHASING

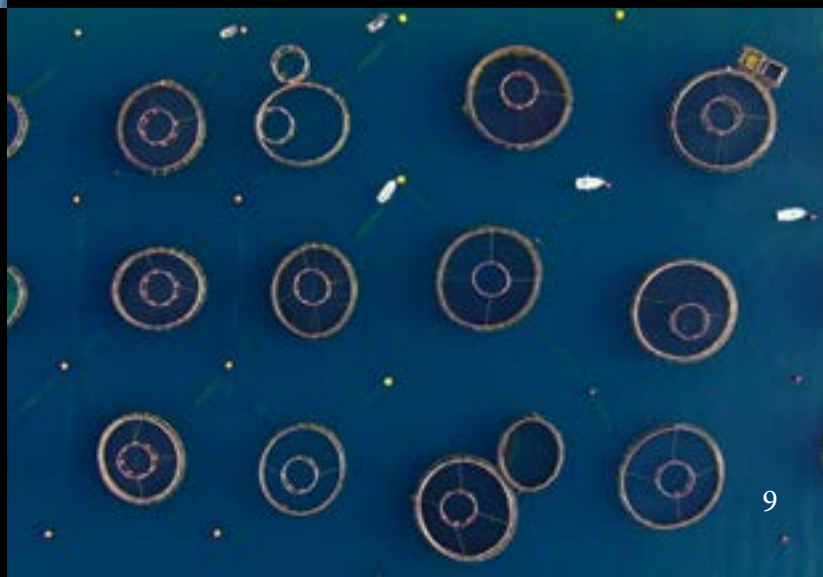
PHASE	TIMELINE
PHASE 1 (Y1–2) $500M CAPEX + $100M CONTINGENCY	• 2 RAS hubs, 4 offshore pens, 2 hybrid wellboats, 1 reefer • Gate: 90% survival in salmonid pilot, 10% fuel savings verified
PHASE 2 (Y3–5) $900M CAPEX + $180M CONTINGENCY	• Scale to 16 pens, 4 more wellboats, 2 feed tankers, ammonia-capable ships
PHASE 3 (Y6–10) $600M CAPEX + $120M CONTINGENCY	• Regional duplication, processing facilities, branded product line

ROI OUTLOOK

- **TARGET LEVERED IRR:** 18–22% WITH GRANTS AND DEBT GUARANTEES

- **PAYBACK:** 5–7 YEARS IN GRANT-RICH REGIONS; 7–9 IN HIGH-PERMITTING LOCALES

- **OPEX REDUCTION:** 8–20% FLEET-WIDE FUEL/ EMISSION SAVINGS



JOBS & ECONOMIC BENEFITS

DIRECT JOBS: 1,500–2,500 FTES GLOBALLY AT SCALE
INDIRECT JOBS: SHIPBUILDING, FEED SUPPLY, COLD CHAIN LOGISTICS, PORT SERVICES
STIMULATES LOCAL ECONOMIES AND SUPPORTS COASTAL COMMUNITIES

RISK MANAGEMENT

- **BIOLOGICAL RISK:** MITIGATED BY SUBMERSIBLE CAGES, IMTA, RAS BIOSECURITY
- **WEATHER RISK:** DEEP-WATER MOORINGS, DYNAMIC POSITIONING, MULTI-REGION SITING
- **FUEL PRICE RISK:** GREEN TECH STACK, ETS COMPLIANCE STRATEGIES
- **PERMITTING RISK:** LAUNCH IN REGIONS WITH STREAMLINED PROCESSES FIRST

ACTION PLAN (NEXT 90 DAYS)

- Approve Phase 1 funding ($600M incl. contingency)
- Initiate grant and loan guarantee applications in US, Norway, Singapore
- Secure shipyard MoUs for hybrid/methanol vessels
- Engage with tech partners (Innovasea, AKVA, class societies)

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