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# SPRNT — NVG8

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AMPHIBIOUS AUTONOMOUS DRONE OVERVIEW WHITEPAPER  
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# SPRNT – NVG8

## AMPHIBIOUS AUTONOMOUS DRONE OVERVIEW WHITEPAPER

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# OVERVIEW

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## NVG8 –

THE NVG8 WILL BE A NEXT-GENERATION AUTONOMOUS AMPHIBIOUS CARGO PLANE DESIGNED FOR HIGH-EFFICIENCY LOGISTICS ACROSS LAND AND WATER. WITH A 40-FOOT WINGSPAN, A 4000LB PAYLOAD CAPACITY, AND A 5000KM OPERATIONAL RANGE, THE AIRCRAFT — CODENAMED ‘NVG8’ — WOULD BE ENGINEERED TO DELIVER CRITICAL GOODS ACROSS UNDERDEVELOPED, COASTAL, AND REMOTE REGIONS WITH MINIMAL INFRASTRUCTURE. THE VEHICLE WILL FEATURE REAL-TIME DECISION-MAKING, AUTONOMOUS NAVIGATION, AND DYNAMIC ROUTING.

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## PROBLEM STATEMENT

HISTORICALLY, INLAND REGIONS WITH NAVIGABLE RIVERS COULD MORE EASILY MOVE GOODS, PEOPLE, AND IDEAS. THIS LED TO URBANISATION, TRADE NETWORKS, AND KNOWLEDGE DIFFUSION. TODAY, THE GLOBAL LOGISTICS PARADIGM IS A DENSELY NETWORKED INFRASTRUCTURE; ROADS, PORTS, RUNWAYS, BUT OCEANIC FREIGHT IS SLOW AND AIR FREIGHT IS EXPENSIVE. THERE ARE VAST SWATHS OF THE WORLD, ESPECIALLY IN DEVELOPING NATIONS THAT HAVE TO WAIT WEEKS, OR PAY HEAVILY FOR CARGO TO GET TO THEM ON TIME. NVG8 IS GOING TO (LITERALLY) NAVIGATE RIVERS AND WATERWAYS MUCH FASTER THAN SHIPS WILL, AND CHEAPER THAN PLANES WILL. WE'RE TALKING AS LITTLE AS £2 PER KG.

THE BEAUTY OF NVG8 IS THAT IT WILL TAKE OFF AND LAND ON WATER. IT WILL NOT REQUIRE ANY BUILT INFRASTRUCTURE. THIS IS BYE-BYE TO CLOGGED LOGISTICS CHANNELS, HELLISH WAIT TIMES, AND EXORBITANT AIR AND SEAPORT FEES.

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# THE DESIGN

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## OBJECTIVES

FULLY AUTONOMOUS FLIGHT  
AMPHIBIOUS TAKEOFF AND LANDING CAPABILITIES  
4000LB PAYLOAD CAPACITY  
5000 KM RANGE  
REAL-TIME ONBOARD DECISION-MAKING VIA EMBEDDED AI

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## AIRFRAME & MATERIALS

### CONFIGURATION

- DESIGN: HIGH-WING MONOPLANE
- ENGINES: TWIN-PROP SETUP FOR REDUNDANCY

### MATERIALS

- PRIMARY: CARBON FIBRE COMPOSITES OR AEROSPACE-GRADE ALUMINIUM
- LANDING MECHANISM:
  - OPTION A: HULL-BASED FUSELAGE FOR WATER LANDINGS
  - OPTION B: RETRACTABLE AMPHIBIOUS FLOATS

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## PROPELLION SYSTEM

### POWERTRAIN OPTIONS:

- ELECTRIC: HIGH-CAPACITY LITHIUM-SULFUR BATTERIES OR HYDROGEN FUEL CELLS
- HYBRID: COMBUSTION GENERATOR FOR RANGE EXTENSION, WITH BATTERY ASSIST
- SOLAR: PHOTOVOLTAIC PANELS TO ENHANCE ENDURANCE

### PROPELLION:

- HIGH-EFFICIENCY BRUSHLESS ELECTRIC MOTORS
- NOISE-OPTIMISED PROPELLER SYSTEMS FOR STEALTH APPLICATIONS

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# AUTONOMOUS CONTROL & NAVIGATION

## FLIGHT SYSTEMS:

- OPEN-SOURCE AUTOPILOT (PX4, ARDUPILOT)

## NAVIGATION STACK:

- MULTI-SENSOR FUSION USING:
  - GPS
  - LIDAR
- COMPUTER VISION FOR OBSTACLE DETECTION AND LANDING PRECISION

## ONBOARD INTELLIGENCE:

- EDGE AI RUNNING ON NVIDIA JETSON OR RASPBERRY PI WITH NEURAL PROCESSING
- FEATURES:
  - REAL-TIME ROUTE OPTIMISATION
  - ANOMALY DETECTION
  - VOICE INTERACTION (OPTIONAL)
- ENVIRONMENTAL ADAPTABILITY VIA MACHINE LEARNING

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# COMMUNICATION & DATA HANDLING

LONG-RANGE COMMS: STARLINK

OBSTACLE DETECTION: RADAR, INFRARED

## TELEMETRY:

- REAL-TIME CLOUD-BASED DIAGNOSTICS
- FLIGHT LOGGING FOR PERFORMANCE REVIEW AND SYSTEM LEARNING

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# STRUCTURAL ENHANCEMENTS

- REINFORCED UNDERCARRIAGE FOR ROUGH TERRAIN LANDINGS
- WATERPROOF ELECTRONICS (IP67-RATED ENCLOSURES)
- AERODYNAMIC EFFICIENCY FEATURES:
  - WINGLETS
  - STREAMLINED FUSELAGE TAPERING

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# PAYOUT & CARGO SYSTEMS

- MODULAR CARGO BAY WITH ADJUSTABLE CENTRE-OF-GRAVITY LOADING
- CLIMATE CONTROL (FOR PHARMACEUTICALS, PERISHABLES, ETC.)
- LOAD-TRACKING AND ACCESS VIA SECURE COMPARTMENTS

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# ROADMAP

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## PHASE ONE PRE-ALPHA

AUGUST - SEPTEMBER 2025

CAD MODELLING AND MATERIAL SELECTION  
SMALL-SCALE PROOF-OF-CONCEPT PROTOTYPES  
TEAM SET-UP

## PHASE TWO ALPHA

OCTOBER 2025

FULL-SCALE RC AND SEMI-AUTONOMOUS TEST FLIGHTS  
VALIDATION OF WATER AND LAND LANDING CAPABILITIES

## PHASE THREE BETA

JANUARY 2026

INTEGRATION OF SOFTWARE STACK  
SYSTEM STRESS TESTING AND PAYLOAD TRIALS

## PHASE FOUR REGULATORY

MARCH 2026

COMPLIANCE WITH FAA / CAA REGULATIONS FOR  
AUTONOMOUS AND AMPHIBIOUS AIRCRAFT  
NAVIGATION PROTOCOL CERTIFICATION, SAFETY AUDIT

## PHASE FIVE LAUNCH

MAY 2026

BUSINESS LAUNCH

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# WHY SPRNT?

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SPRNT STARTED IN 2019 AS A SIMPLE LOGISTICS SOLUTION FOR LOCAL BUSINESSES IN LAGOS, NIGERIA. WE HELPED MOVE GOODS QUICKLY AND EFFICIENTLY WITHIN THE CITY. WHAT STARTED AS A CITY-WIDE COMPANY EVOLVED INTO A CROSS-CONTINENTAL BRIDGE BY 2021. WE PIVOTED TO ENABLING MEMBERS OF THE WEST AFRICAN DIASPORA IN THE UNITED KINGDOM TO SEAMLESSLY SEND PACKAGES, GIFTS, AND SUPPLIES BACK HOME TO FRIENDS AND FAMILY.

TODAY, SPRNT IS BUILDING THE INFRASTRUCTURE FOR A NEW ERA OF REMOTE LOGISTICS. NOT JUST IN WEST AFRICA, BUT ACROSS ALL REGIONS OF THE WORLD. OUR VISION IS SIMPLY TO MAKE THE TRANSPORTATION OF HUMANS AND GOODS AS FAST AS POSSIBLE, LEVERAGING ALL THE TECH WE HAVE AT OUR DISPOSAL.

