

PROPVR SPATIAL OS

Spatial OS for Maritime

The real-time digital twin platform for ports, vessels, shipyards and marine infrastructure.

One digital twin · plan it, operate it, sell it, crew it, simulate it. Eight maritime opportunities, one Spatial OS core.

PORT TWINS

EXPERIENCE CENTRES

SIMULATORS

BUILT ON SPATIAL OS

01 WHITEPAPER

Contents

01	EXECUTIVE SUMMARY	03
02	WHY NOW · THE MARITIME SUPERCYCLE	04
03	THE PROPVR DIFFERENCE	06
04	PORT DIGITAL TWIN · HOW WE BUILD IT	07
05	THE DASHBOARD LAYER	08
06	1. PORT DIGITAL TWINS	09
07	2. SMART PORT EXPERIENCE CENTRES	10
08	3. MARITIME TRAINING SIMULATORS	11
09	4. SHIPYARD DIGITAL TWINS	12
10	5. INTERACTIVE VESSEL SALES PLATFORM	13
11	6. OFFSHORE ENERGY VISUALISATION	14
12	7. MARITIME METAVERSE / VIRTUAL PORT	15
13	8. AUTONOMOUS VESSEL SIMULATION	16
14	SMART PORT OPERATIONS IN DEPTH	17
15	GCC MARKET OPPORTUNITY	19
16	VESSEL & CONTAINER JOURNEY ON TWIN	20
17	A DAY IN THE LIFE · MANAGING DISRUPTION	21
18	ROI & BUSINESS IMPACT	22
19	DATA, INTEGRATION & GOVERNANCE	23
20	IMPLEMENTATION ROADMAP	24
21	GET STARTED & CONTACT	25

01 EXECUTIVE SUMMARY

More than 80% of global goods travel by sea.

The maritime industry moves the world. A modern container terminal coordinates vessels, berths, quay cranes, yard equipment, trucks, customs, rail and tens of thousands of containers in continuous motion — and it does so while expanding, automating and decarbonising under intense competitive and national pressure. Yet the people who plan, build, operate and sell these assets still rely largely on 2D drawings, spreadsheets, siloed control systems and disconnected CCTV.

PROPVR closes that gap with one core strength: **visualisation**. We build a photoreal, real-time digital twin of the maritime asset — a port, terminal, vessel, shipyard or offshore facility, whether it already exists or is still being planned — and wrap it in intuitive dashboards that let every stakeholder see, simulate and act on their data inside an accurate 3D model.

“

One real-time digital twin of the port — built once, then used to plan it, operate it, sell its expansion, train its crews and simulate its future.

Global seaborne trade exceeded **USD 35T in 2025**. DP World posted record revenue of **USD 24.4B**, Jebel Ali and Khalifa Port are expanding hard, Saudi Mawani handled **8.3M TEU**, and the fully automated **Port of NEOM opens its first terminal in 2026**.

02 WHY NOW · THE MARITIME SUPERCYCLE

Record trade on automating ports.

Three forces make visualisation and the digital twin a maritime necessity rather than a novelty: record trade flowing through expanding infrastructure, a regional build-out of unprecedented scale, and a market that has decided digital twins are core infrastructure.

RECORD TRADE ON AUTOMATING, EXPANDING PORTS

Maritime carries over **80% of world goods by volume**, and global trade surpassed **USD 35T in 2025**, up 7% YoY. Container throughput set records, with monthly global volumes repeatedly exceeding **16M TEU**. As ports push toward these volumes while automating equipment and tightening emissions, complexity outgrows the 2D control screens and siloed systems built for a simpler era. Visibility — seeing the whole port as one live picture — becomes the constraint on performance.

A GULF PORT BUILD-OUT OF HISTORIC SCALE

DP World handled **93.4M TEU globally in 2025** on record revenue of **USD 24.4B**, with Jebel Ali alone moving 7.7M TEU in H1 and setting monthly records. AD Ports grew container volumes **23% to 7.7M TEU** and is expanding Khalifa Port toward **10.5M TEU capacity**. Saudi Mawani handled **8.3M TEU**, and the **Port of NEOM opens Terminal 1 in 2026** with 1.5M TEU capacity and the Kingdom's first fully automated ship-to-shore cranes — a port conceived as digital infrastructure first.

02 WHY NOW · CONTINUED

Twin is now core infrastructure.

A MARKET THAT TREATS THE TWIN AS CORE INFRASTRUCTURE

Analysts now size the port digital-twin visualisation market at roughly **USD 1.47B in 2026**, growing above 20% a year toward **USD 3.1B by 2030**, with the broader digital-twin-for-ports market growing even faster. The maritime simulator market adds a further **USD 1.9B in 2026**, with VR, AR and digital-twin-based training displacing legacy methods.

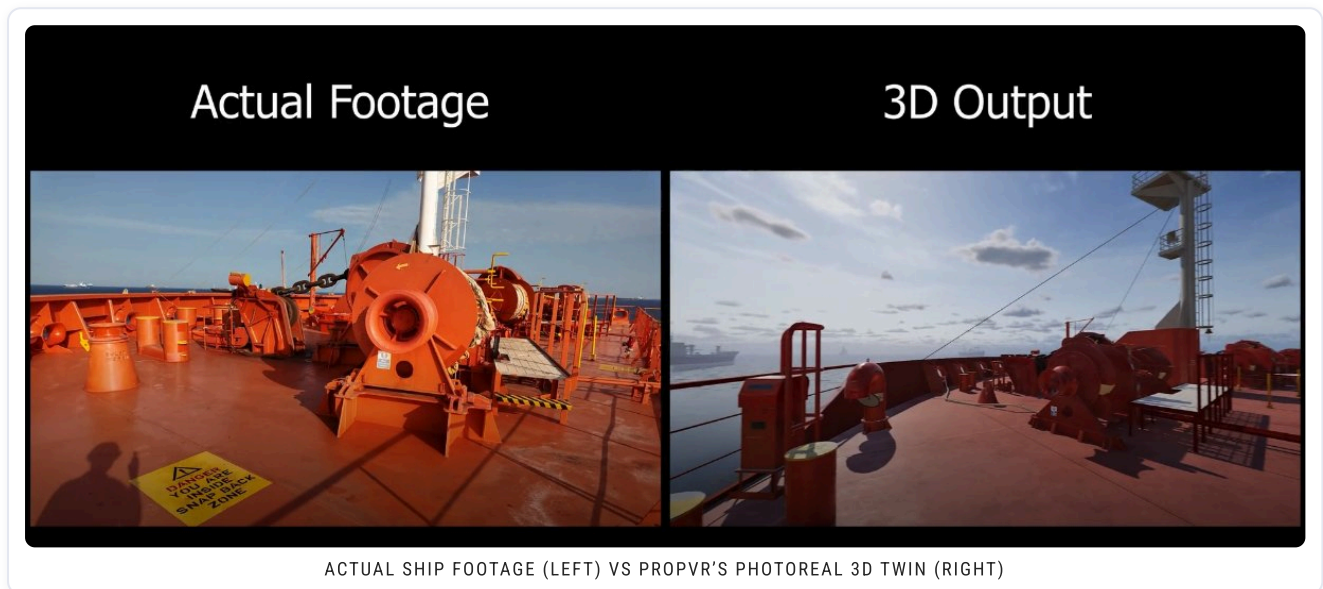
Digital twins have moved from pilot projects to board-level and ministry-level expectations — and the question is no longer whether to build one, but how well it visualises what decision-makers actually need to see.

“

Every new and expanding Gulf port is a digital twin before it is a quay. PROPVR lets authorities and investors walk the future port, simulate its traffic and sell its expansion years before the first vessel berths.

03 THE PROPVR DIFFERENCE

Visualisation as core strength.



Most maritime technology leads with data — sensors, AIS feeds, terminal operating systems, integration middleware. The data matters, but data that cannot be seen and understood quickly is a cost, not an asset.

PROPVR begins from the opposite end. Our strength is taking the overwhelming complexity of a maritime operation and rendering it as one beautiful, navigable 3D model anyone can grasp instantly. We do not hand a port authority a congestion report; we show vessels queuing at the anchorage and berths filling in real time, in the actual port. We do not give an investor a slide of throughput projections; we let them stand inside a 15-metre LED wall and fly through the expansion. We do not give a cadet a manual; we put them on a photoreal bridge.

“

Data tells you what happened at the port. The twin shows you what is happening, where, and what to do about it — to anyone, regardless of technical background.

This is why PROPVR builds the twin first and the capabilities second. The same Spatial OS content pipeline and digital-twin core underpin all eight maritime opportunity areas. A new capability is a new view of a model the organisation already trusts — not a new system, a new vendor and a new integration project.

04 THE PORT DIGITAL TWIN · HOW WE BUILD IT

Centimetre-faithful. Live-data bound.

FOR EXISTING PORTS AND ASSETS

We reconstruct the asset from the best available source data: engineering and layout drawings, BIM, hydrographic and survey data, laser scans, drone and ground photogrammetry. The result is a centimetre-faithful model of the port as it actually is — real quays, real crane rails, real yard blocks and real constraints.

FOR NEW AND EXPANDING PORTS

For greenfield and expansion projects, the twin is built from masterplan and engineering intent and becomes a living design and investment instrument. Authorities and investors walk the future terminal, test vessel and traffic flows, and validate the masterplan long before construction commits the capital.

The same model that wins ministerial approval and investor commitment becomes the operational twin on opening day.

BRINGING THE TWIN TO LIFE WITH LIVE DATA

Geometry alone is a model; geometry plus live data is a twin. PROPVR binds the 3D model to the port's operational nervous system — AIS and vessel-traffic feeds, the terminal operating system, crane and equipment telemetry, gate and truck systems, IoT and environmental sensors, reefer monitoring, weather and tide data, CCTV and access control. Each stream appears where it physically belongs.

Location becomes the interface, so there is nothing to translate between an alarm and the place it describes.

05 FROM SCAN TO TWIN

Capturing an existing vessel or asset.

When the subject already exists — a ship, a quay, a crane, an offshore platform — PROPVR brings it into the twin through a reality-capture pipeline that converts the physical asset into an accurate, photoreal 3D model.

01

Capture

Terrestrial LiDAR records interiors as dense, millimetre-accurate point clouds. High-resolution photogrammetry captures surface detail. Drone-based aerial capture covers hull, superstructure and large exterior areas. Existing CAD / class drawings / BIM ingested to anchor and accelerate.

02

Registration

Individual scans and photo sets registered into one coordinated point cloud, cleaned of noise and occlusions, aligned to a common coordinate system so every space relates correctly to every other.

03

Reconstruction

Point cloud converted into accurate 3D geometry — hull, decks, compartments, equipment — rebuilt as a real-time Unreal Engine model with photoreal materials and lighting derived from captured imagery. Navigable at true-to-life scale.

04

Data Binding

Finished model connected to the asset's live data — sensors, systems, telemetry — each stream bound to its true location, turning the geometric model into a living twin.

“

For an existing ship, the twin starts with a scan. For a ship still on the drawing board, it starts with the design — and the same model serves construction, sales, operations and training thereafter.

06 CASE STUDY · BAHRI & NCC

From a scanned vessel to a fleet twin.

Bahri, the national maritime carrier of Saudi Arabia, is the world's largest owner and operator of Very Large Crude Carriers (VLCCs) — a fleet of **100+ vessels** spanning crude, chemical, product, dry bulk and multipurpose ships, with total handling capacity around **15.5M deadweight tonnes**. Its affiliate, National Chemical Carriers (NCC), operates one of the largest chemical tanker fleets in the Middle East. PROPVR's work for the group spans both ends of the maritime challenge: a full scan-to-twin of a single vessel, and a real-time operational twin of an entire moving fleet.

THE VESSEL: A FULL SHIP, SCANNED TO TWIN

PROPVR captured one of Bahri's vessels in full — exterior to interior — and reconstructed it as a photoreal, real-time digital twin on Spatial OS. The complete ship was scanned on site: hull, superstructure, bridge, engine spaces, decks and accommodation. Captured data was registered and processed into an accurate model; the result was rebuilt as a real-time Unreal Engine twin **explorable space by space at true-to-life scale**.

Crucially, the twin includes **dynamic climate and weather simulation** — the vessel can be experienced under calm and heavy seas, day and night, fair weather and storm, rather than as a static model. Bahri uses this twin two ways: to **train its employees**, with crews moving through the exact vessel in a safe, repeatable virtual environment, and as a **presentation tool**, bringing investors, clients and partners inside the ship to experience its scale first-hand.

06 BAHRI & NCC · THE FLEET TWIN

Chemical tankers & operational intelligence.

A harder problem followed with NCC: a fleet that never stops moving, carrying cargo that is itself a risk variable. A chemical tanker is not one cargo hold but many segregated tanks, each potentially carrying a different grade with its own handling rules.

The twin had to understand which grades can sit beside each other, how cargo temperature behaves across a two-week voyage through changing seas, and whether a tank that carried one product can safely load another at the next port without contamination. PROPVR built a real-time twin of the fleet on Spatial OS that brings these variables into one operating picture:

ROUTE

Tracking

Live vessel location, voyage progress and ETA across the entire fleet.

WEATHER

Sea-State Overlay

Storm exposure mapped against each vessel's route.

CARGO

Tank Monitoring

Grade allocation, segregation, temperature and contamination risk per tank.

COMPAT

Compatibility

Real-time chemical compatibility matrices and hazmat compliance by port.

ENGINE

Performance

Machinery health and fuel efficiency for every vessel.

SCENARIO

What-If

Voyages, port reshuffles and tank-cleaning sequences run before committing.

“

The photoreal model is the door; the operational intelligence is the room. Across Bahri and NCC, the twin's value lies not in how the ship looks, but in the training it enables and the decisions it lets operators make before they commit.

05 THE DASHBOARD LAYER

From twin to decisions.

On top of the twin, PROPVR builds the dashboards stakeholders live in — pairing the 3D model with the KPIs, alerts and controls each role needs. The model answers “where”; the dashboard answers “how much, how fast, and what next.”

01

Role-Aware Views

Harbour master, terminal operator, commercial director and minister each open the same twin to a different, relevant picture.

02

Spatial-First

Metrics anchored to locations in the model; numbers always one click from the place they describe.

03

Live · Past · Future

Monitor the present, replay the past to investigate an incident, simulate the future — all in one environment.

04

Anywhere a Decision Is Made

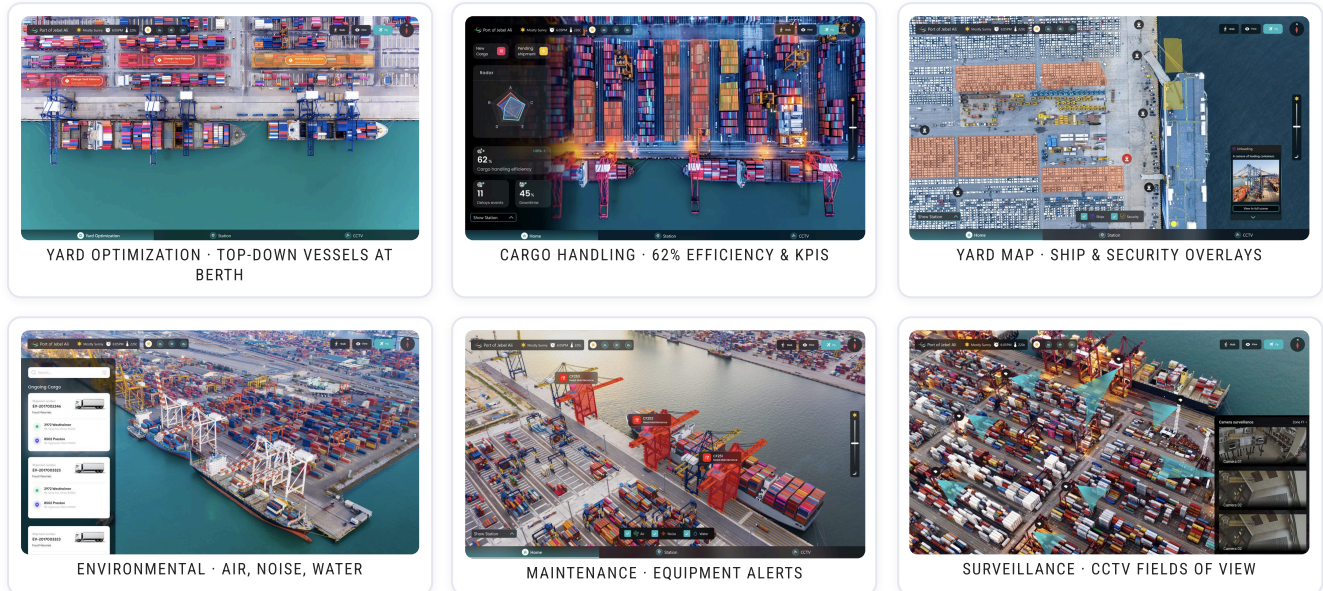
Operations-centre video walls, desktops, quayside tablets, immersive rooms, VR — same twin, every surface.

“

Because every dashboard reads from one twin, a decision in the operations centre, a masterplan reviewed by planners, and an expansion shown to an investor are versions of the same truth.

06 1. PORT DIGITAL TWINS

The highest-potential opportunity.



The flagship application. A real-time 3D digital twin of the port itself — terminals, container yards, logistics areas, cargo movement and vessel traffic, all rendered in one accurate, navigable model fed by live data. The foundation on which most of the other opportunities build, and the single capability that most transforms how a port is run.

Live vessel tracking places every ship on its real position in the channel, anchorage and berth; berth-occupancy visualisation shows which berths are free, occupied or about to turn over; container-movement monitoring follows boxes through the yard; operational dashboards surface the KPIs that matter, all anchored in the 3D model. The twin is also a **simulation engine** — operators can run predictive congestion simulations and rehearse emergency plans before they are needed.

Value: A single live operating picture for the whole port, anticipatory congestion management, faster emergency response, and a planning-grade model that de-risks every operational decision.

07 2. SMART PORT & VESSEL EXPERIENCE CENTRES

Holo + Touch + Cave, around one twin.



TOUCH + HOLO · COMBINED BAHRI CENTRE



BAHRI EXPERIENCE CENTRE · FULL LAYOUT

Ports — and the vessels that serve them — are sold as much as they are operated, to investors, partners, shippers and governments who must be persuaded to commit to an expansion, a free zone, a new terminal or a fleet. This aligns precisely with PROPVR's experience-centre expertise: bringing the digital twin into a physical space where decision-makers can see, explore and be convinced by the asset at full impact.

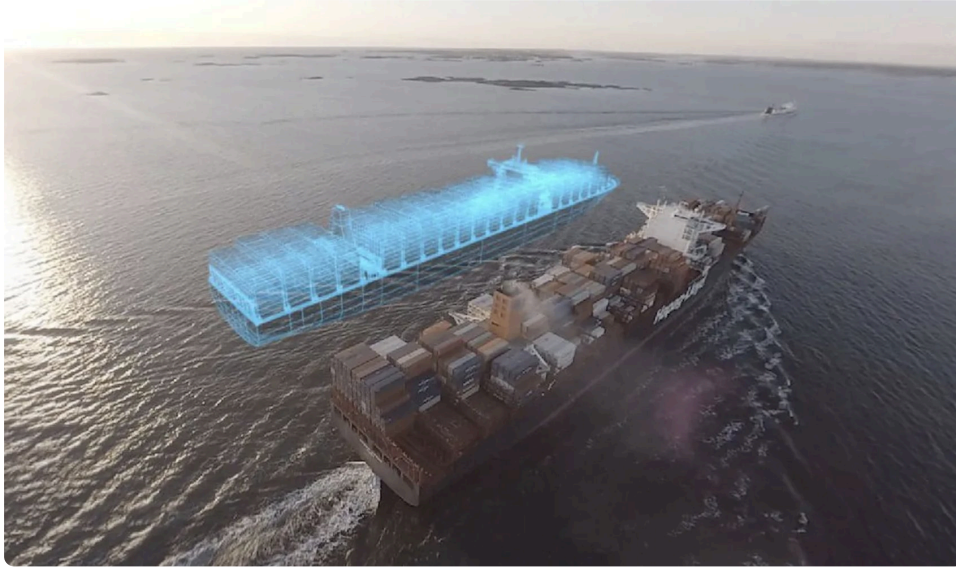
A maritime experience centre combines several PROPVR products around the same twin: **Spatial Holo** presents a ship or port as a photoreal 3D model inside a holographic display — the centrepiece visitors gather around. **Spatial Touch** brings large-format touchscreens (kiosk, table or wall) for full, self-driven exploration of the twin. **Spatial Cave** is an immersive LED or projection room that lets stakeholders step inside the asset — walking a ship's interiors or standing within the future port.

There is no fixed size for any of this. The immersive room or LED wall is configured to the venue and the ambition — a focused boardroom installation and a flagship visitor centre are both built from the same twin, scaled up or down to suit the space. Target clients: port authorities, maritime ministries, economic and free zones, shipbuilders and shipping lines.

Value: Persuasive, data-connected presentation of port and vessel masterplans to the highest-value audiences; reusable asset for every investor and government engagement.

08 | 3. MARITIME TRAINING SIMULATORS

Bridge, engine room, port crane, emergency.



MARITIME TRAINING SIMULATORS – LIVE DEPLOYMENT

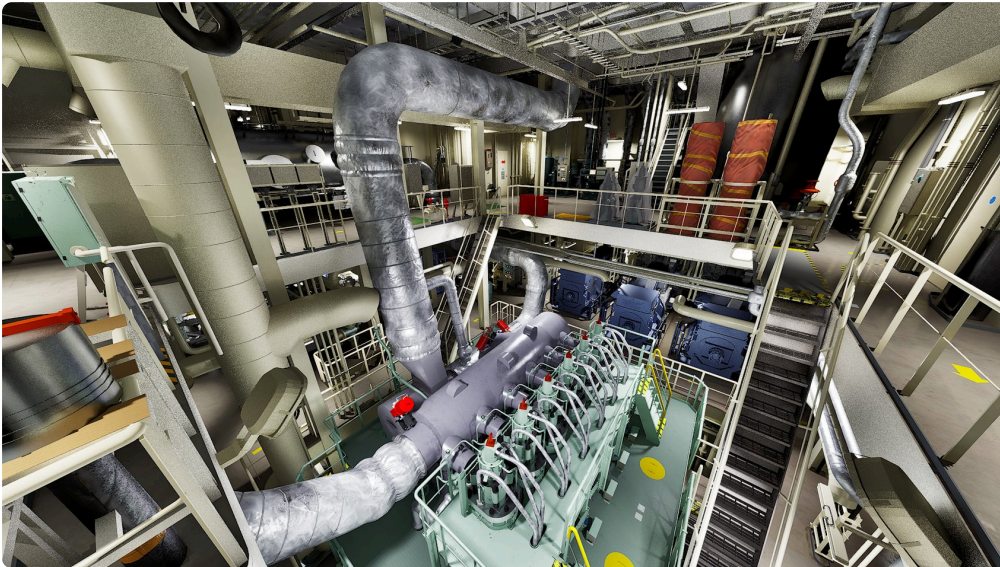
Maritime is a safety-critical, heavily regulated industry that must train large workforces on complex equipment and rare emergencies. The maritime simulator market is approaching **USD 2B** and shifting rapidly toward VR, AR, AI and digital-twin-based training.

PROPVR develops the full range on one platform: **bridge simulators** for navigation and ship handling, **engine-room simulators** for machinery operation, **port-crane simulators** for quay and yard equipment, and **scenario-based emergency-response** and oil-spill-response training. Because these run on photoreal real-time environments — and can be built on the same twin as the actual port or vessel — trainees rehearse in their real operating environment.

Clients: maritime academies, coast guards, naval training centres and shipping companies. **Value:** realistic, repeatable training; faster competency; regulatory-grade record of crew preparedness.

09 4. SHIPYARD DIGITAL TWINS

Construction progress, made visible.



SHIPYARD DIGITAL TWINS – LIVE DEPLOYMENT

Shipbuilding and repair are among the most complex construction projects on earth, coordinating thousands of workers, parts and processes across a vast yard. Shipbuilders increasingly use digital twins during design and production planning to reduce rework.

A shipyard twin makes the build visible and manageable: **construction-progress tracking** against the plan, real-time construction monitoring, safety management across a hazardous environment, and asset management of yard equipment and infrastructure. Coordinating naval architects, class societies, owners and yard teams around one shared 3D model replaces fragmented drawings with a single, current picture.

Value: Less rework and fewer delays; safer yards; better multi-stakeholder coordination; single spatial record across build, maintenance and repair.

10 5. INTERACTIVE VESSEL SALES PLATFORM

The cabin walkthrough, the configurator, the fleet.



VESSEL CLOSE-UP – THE ASSET BEING SOLD

Selling a vessel — a cruise ship, a superyacht, a commercial carrier — faces the same problem as selling off-plan real estate: the asset is enormous, expensive and often not yet built, and buyers must commit on the basis of drawings and renders.

PROPVR delivers an interactive, photoreal vessel sales and visualisation platform: a **3D vessel configurator** for layouts and options, **cabin and interior walkthroughs** at photoreal quality, **technical visualisation** of systems and capabilities, **fleet comparison** across vessels, and interactive specifications. Buyers explore the vessel from anywhere, on any device, and configure or compare options before committing.

Clients: cruise operators, yacht manufacturers, commercial shipbuilders. **Value:** faster, more confident vessel sales; richer technical communication; one reusable 3D asset across configurator, marketing and owner presentations.

11 6. OFFSHORE ENERGY VISUALISATION

Twin the platform; train onshore; manage from shore.



OFFSHORE ENERGY VISUALISATION – LIVE DEPLOYMENT

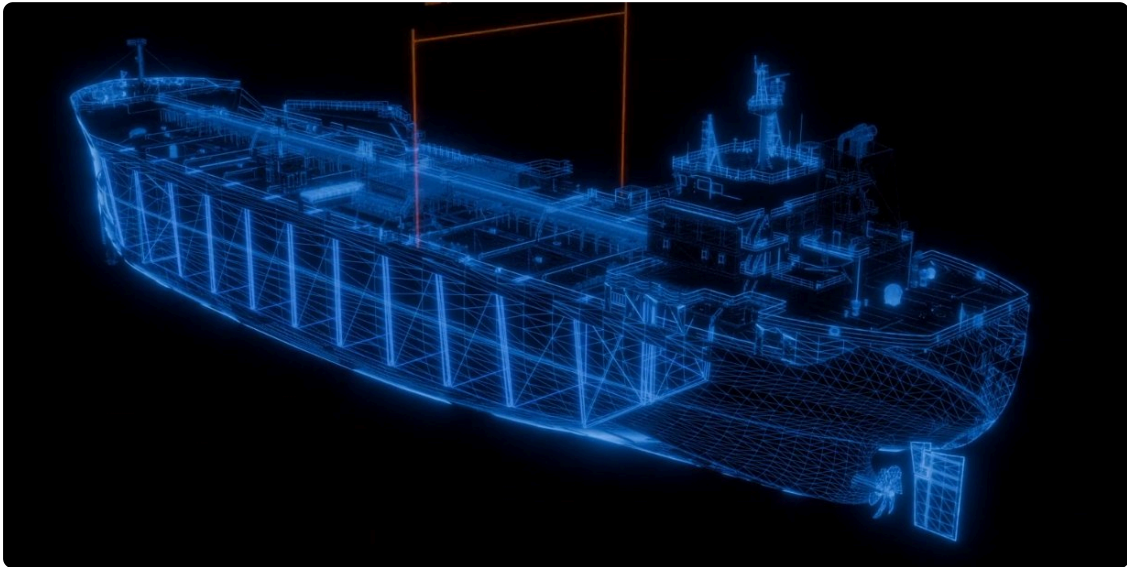
The marine energy sector — offshore wind farms, oil-and-gas platforms and supporting marine infrastructure — operates remote, hazardous, high-value assets where physical access is costly and risky. A natural fit for the digital twin.

PROPVR delivers **digital twins of offshore assets** for monitoring and planning, **VR training** for hazardous remote procedures crews must perform, **asset monitoring** that binds live condition data to the 3D model, and **maintenance simulation** that rehearses complex interventions before they are attempted offshore.

Value: Lower-risk, lower-cost management of remote marine-energy assets; safer crews through rehearsed procedures; onshore visibility of offshore infrastructure.

12 7. MARITIME METAVERSE / VIRTUAL PORT

A persistent, multi-user port.



MARITIME METAVERSE / VIRTUAL PORT – LIVE DEPLOYMENT

Very few companies do this well, which makes it a potential **flagship PROPVR offering**: an entire port replicated in Unreal Engine as a persistent virtual environment that stakeholders join remotely. It is the digital twin elevated into a shared, multi-user space — the natural extension of everything else in this whitepaper.

In the virtual port, geographically dispersed stakeholders gather inside the same model: investors explore expansion plans together, operators simulate traffic and test scenarios, and teams run emergency-response drills collaboratively, regardless of where they physically are. It combines the experience-centre, simulation and operations capabilities into one persistent, always-current environment.

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The virtual port unifies the experience centre, the simulator and the operations twin into one persistent space. Build the twin once; everyone can stand inside it, from anywhere.

13 8. AUTONOMOUS VESSEL SIMULATION

AI testing in a photoreal twin of real waters.



AUTONOMOUS VESSEL SIMULATION – LIVE DEPLOYMENT

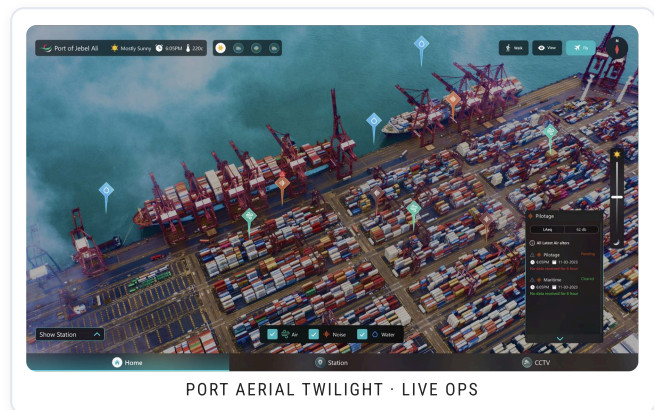
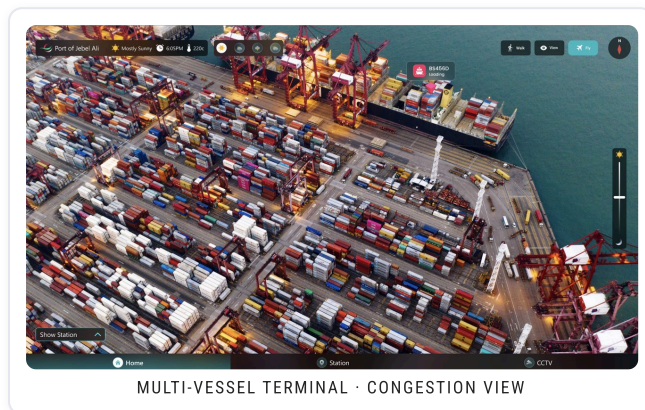
The most future-focused opportunity: supporting the autonomous maritime systems the industry is racing toward. Digital twins are becoming key enablers for autonomous vessels and advanced operations.

On the same real-time platform, PROPVR creates **AI vessel-testing environments, navigation simulations, and collision-avoidance scenarios** in which autonomous systems are exercised against countless conditions safely and repeatably – and generates the **training datasets** that machine-learning models for autonomous navigation depend on. Testing an autonomous system in a photoreal, physics-aware twin of real waters is faster, cheaper and far safer than testing at sea.

Value: Safe, repeatable testing and validation of autonomous maritime systems; scalable training-data generation; a foothold at the frontier of maritime technology.

14 SMART PORT OPERATIONS IN DEPTH

Six functions, one twin.



The port digital twin becomes most powerful when it is broken down into the specific operational functions a terminal runs every day. The six capabilities that follow are not separate systems — each is a view of the same twin, fed by the same live data, and together they turn the model from a picture of the port into the instrument that runs it.

CONTAINER YARD OPERATIONS

The container yard is where a port wins or loses efficiency. PROPVR visualises the entire yard as a live 3D map — every block, row, tier and slot — with each container shown in its real position and status. Operators see utilisation at a glance, spot imbalances and hot blocks before they choke equipment, and coordinate yard cranes, straddle carriers and reach stackers from one picture. The twin simulates stacking strategies against real arrival profiles, reducing costly re-handles.

STREAMLINING CARGO FLOW

Beyond the yard, the twin makes the end-to-end movement of cargo visible — from vessel discharge, through the yard, to the gate, rail and inland connections. Flow analytics overlaid on the model reveal where cargo slows, where dwell time accumulates, and where a bottleneck in one area propagates downstream. Connecting discharge, yard and landside as one flow shortens dwell time and lifts throughput from the same infrastructure.

14 SMART PORT OPERATIONS · SECURITY, TRAFFIC, ENVIRONMENT, SUPPLY CHAIN

Four more functions. Same twin.

PORT SECURITY

Security is critical and heavily regulated, and poorly served by a wall of disconnected camera feeds. In the twin, every camera is an object oriented to what it sees, access-control and intrusion data are bound to their real locations, and CV alerts (perimeter breaches, restricted-area intrusion, unattended cargo) arrive pinned to the exact spot in 3D. Incidents are located instantly; the nearest cameras, gates and response teams light up around them — supporting ISPS and national-security requirements.

VEHICLE TRAFFIC MANAGEMENT

A working port is a city of vehicles — external trucks, internal terminal vehicles, rail and service traffic. The twin visualises vehicle movement and gate queues in real time, integrates truck-appointment systems, and exposes where and when congestion forms. Operators route traffic, balance gate lanes and adjust appointments to cut truck turn-times; the model anticipates the landside surge a vessel discharge will create before the trucks arrive.

ENVIRONMENTAL MONITORING

Ports face rising pressure to decarbonise, control emissions and protect the marine environment. PROPVR brings environmental data into the twin as visible layers: air- and water-quality readings, emissions, noise, spill detection, and equipment / reefer energy draw — each shown where it occurs. Consumption and emissions visualised zone by zone reveal where to target efficiency investment, and make sustainability reporting spatial and evidence-based.

SUPPLY CHAIN MANAGEMENT

A port is one node in a longer logistics chain, and its value multiplies when it is connected to that chain rather than ending at the gate. The twin extends visibility beyond the terminal — linking sea, yard, rail, road and inland connections — so cargo status is visible across the journey and the port coordinates with shippers, logistics partners and inland hubs.

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Six operational functions, one twin. The port digital twin is not a dashboard bolted onto operations — it is the operation, made visible and optimisable.

14 THE GCC MARKET OPPORTUNITY

UAE, Saudi, Qatar, Oman.

The strongest near-term market for PROPVR's maritime platform is the Gulf, where port investment, digital transformation and logistics ambition are concentrated as nowhere else.

UNITED ARAB EMIRATES

The region's maritime powerhouse. DP World operates Jebel Ali (**7.7M TEU in H1 2025**) within a global network handling **93.4M TEU on USD 24.4B revenue**. AD Ports grew container volumes **23% to 7.7M TEU** and is expanding Khalifa Port toward **10.5M TEU capacity**.

SAUDI ARABIA

Vision 2030 scale. Mawani handled **8.3M TEU** across its network, up more than 10%, and the Kingdom is creating entirely new maritime assets: the fully automated **Port of NEOM** (first terminal 2026 with automated STS cranes), the **Oxagon industrial port complex**, and the **Red Sea developments**.

QATAR AND OMAN

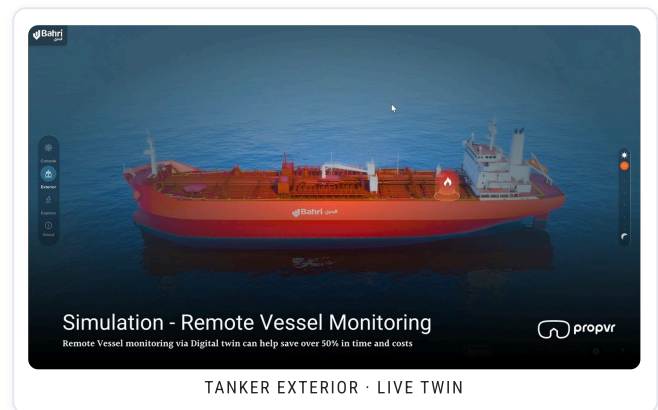
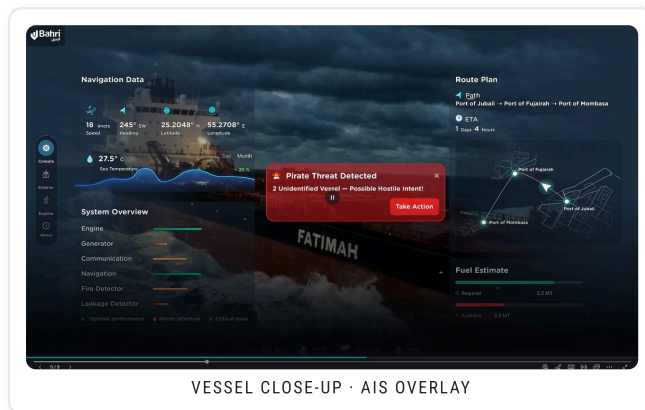
Qatar's **Hamad Port**, one of the region's largest greenfield ports, anchors the country's logistics ambitions. Oman's **Duqm and Sohar** are major industrial and transshipment hubs central to national diversification.

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The same pattern repeats: huge, fast-growing, increasingly automated ports that must be planned, sold, operated and crewed more intelligently.

15 THE VESSEL & CONTAINER JOURNEY ON THE TWIN

From anchorage to the gate.



The capabilities are easiest to understand as they touch a single vessel call and the cargo it carries. Because they all share one model, the port experiences them as **one continuous operation** rather than a series of disconnected systems handing off to one another.

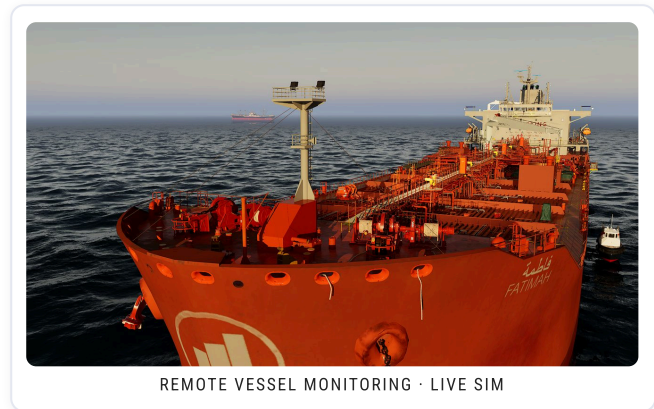
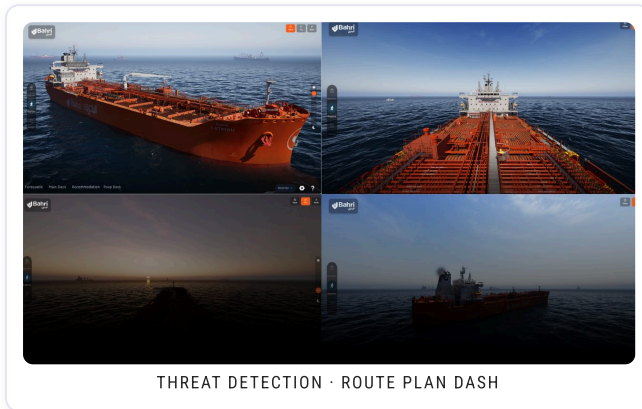
It begins offshore. As a vessel approaches, live tracking places it on its real position in the twin; the operations team sees its estimated arrival against berth availability. Predictive simulation has already modelled the yard and gate load. The vessel is guided to its berth, which lights up as occupied in the model the moment it is alongside. As quay cranes discharge, container-movement monitoring follows each box from ship to yard slot. A jam appears as a located event the operator can respond to precisely, not a code on a schematic.

“

The container is never lost between systems. In the twin it has a position, a status and a place — from the anchorage to the gate.

16 A DAY IN THE LIFE · MANAGING PORT DISRUPTION

One closure, seen whole.



A weather front forces a temporary closure of the channel, then clears, releasing a cluster of vessels to arrive in a compressed window. In a conventional port this is the start of a bad week that each department discovers separately. In a twin-run port it begins as a **single visible event**.

Predictive simulation models the surge across berths, yard and gate, flagging exactly where congestion will form. With that foresight the response is coordinated rather than reactive: berths and quay cranes are re-allocated in the model, yard blocks are pre-staged, gate and truck appointments are adjusted, and the equipment plan is rebalanced — all before the first delayed vessel berths. If something goes wrong mid-recovery, surveillance and the operations twin locate it instantly in 3D and bring the right teams to bear.

“

Fragmented systems turn one closure into many problems discovered separately. The twin turns it into a single problem, seen whole, solved together.

17 ROI & BUSINESS IMPACT

Value compounds across the value chain.

Because every maritime capability reads from one digital twin, value compounds: a single investment serves planning, operations, sales, training and investor engagement at once.

AREA	WHERE ROI SHOWS UP
Port Operations	Anticipatory congestion management; one live operating picture; faster incident response.
Investor & Government	Multi-billion-dollar commitments accelerated; experience-centre persuasion at ministry level.
Crew & Cadets	Faster competency; safer drills on bridge, engine room, port-crane and emergency scenarios.
Shipyards	Less rework; fewer delays; safer yards; better multi-stakeholder coordination.
Vessel Sales	Faster, more confident sales; richer technical communication; one reusable 3D asset.
Offshore Energy	Lower-risk, lower-cost access to remote assets; safer crews via rehearsed procedures.
Autonomous Systems	Safe, repeatable AI testing; scalable training-data generation; frontier foothold.
Strategic Position	One platform vs. a stack of point systems; foundation every future capability extends.

18 DATA, INTEGRATION & GOVERNANCE

Visibility, without loss of control.

01

Augments, Does Not Replace

TOS, AIS, equipment telemetry, gate systems, CCTV and IoT all stay in place. PROPVR connects to them and presents the unified picture on top. Protects prior investment; no rip-and-replace.

03

Security & Sovereignty

Role-based access; sensitive functions restricted and auditable. Ports are strategic national assets — PROPVR sits within the operator's security perimeter and supports data-residency requirements across the UAE, Saudi Arabia and wider GCC.

02

Open Integration

Ingests from heterogeneous mix — different vendors, ages and protocols. Standard interfaces and established maritime data sources. The twin becomes where siloed systems finally meet.

04

Compliance by Design

Sovereign-fund and ministry requirements treated as design constraints, not afterthoughts. The platform earns its place by being additive, open and governed.

19 IMPLEMENTATION ROADMAP

Five phases. Value early.

PROPVR delivers the maritime twin in phases so value arrives early and the platform grows with the asset, scaled to the size and ambition of the port or organisation.

PHASE	WINDOW	SCOPE & OUTCOME
Phase 1	Months 1–3	Build the Twin – reconstruct port, vessel or facility as spatially accurate 3D from drawings, BIM, survey and scan data. Stand up core visualisation environment & first dashboards.
Phase 2	Months 3–6	Connect Live Data – integrate AIS & vessel traffic, TOS, equipment telemetry, gate & IoT data. Each bound to true location. Model becomes a live operational twin.
Phase 3	Months 6–12	Deploy Priority Capabilities – typically operations twin and investor experience centre. Add simulation and predictive congestion modelling.
Phase 4	Months 12–24	Expand Across the Value Chain – training simulators, shipyard or offshore twins, vessel sales platforms and the virtual port layered on, all on the same twin.
Phase 5	Months 24+	Future-Proof – AI-driven optimisation and autonomous-vessel simulation. Extends the twin as the port grows, automates and adds capacity.

20 WHY A PLATFORM, NOT POINT SOLUTIONS

Eight versions of the port vs. eight views of one port.

Each of these eight capabilities can be bought separately — a twin vendor here, a simulator supplier there, an experience-centre integrator, a web agency. The result is the fragmentation maritime knows too well: every vendor holds a different model of the asset, nothing stays in sync, and every new need means another procurement, another integration and another silo.

PROPVR inverts this. The integration happens once, at the digital twin, and every capability inherits it. The operations twin, the investor experience centre, the training simulator and the virtual port are all views of the same model and the same data — so adding the next capability is configuration on a trusted foundation, not a new project.

DIMENSION	8 POINT SOLUTIONS	ONE TWIN
Integration	8 separate projects	Done once at foundation
Models of the Port	8 versions to reconcile	One shared picture
Adding Capability 9	New procurement / integration	Configuration on trusted base
Operator Tool-Sprawl	8+ tools to learn	One model everyone reads

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Eight point solutions give you eight versions of the port. One twin gives you eight views of the one port you actually run.

GET STARTED

What would you most want to see, if you could see your entire port at once?

Whether you operate an established hub, are building a digital-first port, run a shipyard or academy, or are bringing an offshore asset online, PROPVR can begin with a focused proof of value: a twin of one terminal, vessel or facility, connected to your priority data, demonstrating two or three capabilities your teams will feel immediately.

EMAIL

info@propvr.ai

WEBSITE

www.propvr.ai

PRESENCE

India · UAE · Saudi Arabia

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