The intelligent orchestrator

Rewiring maritime agencies to navigate disruption

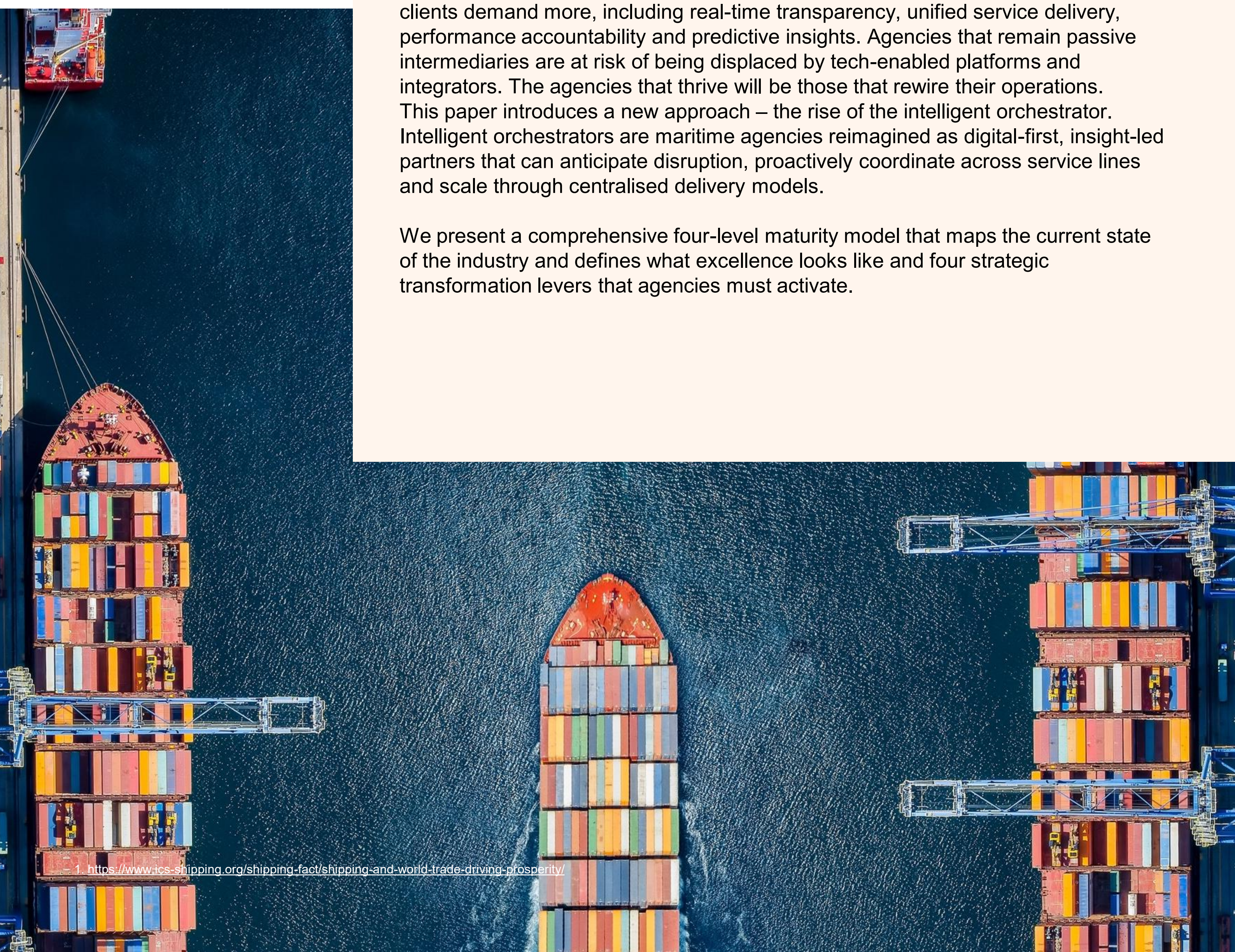
Executive summary

Maritime agencies are the hidden connectors of global trade – linking ports, shipping lines, authorities and service providers. With US$14trn[1] in goods moving across seas each year, the stakes are immense. Yet most agencies still operate in fragmented and manual ways.

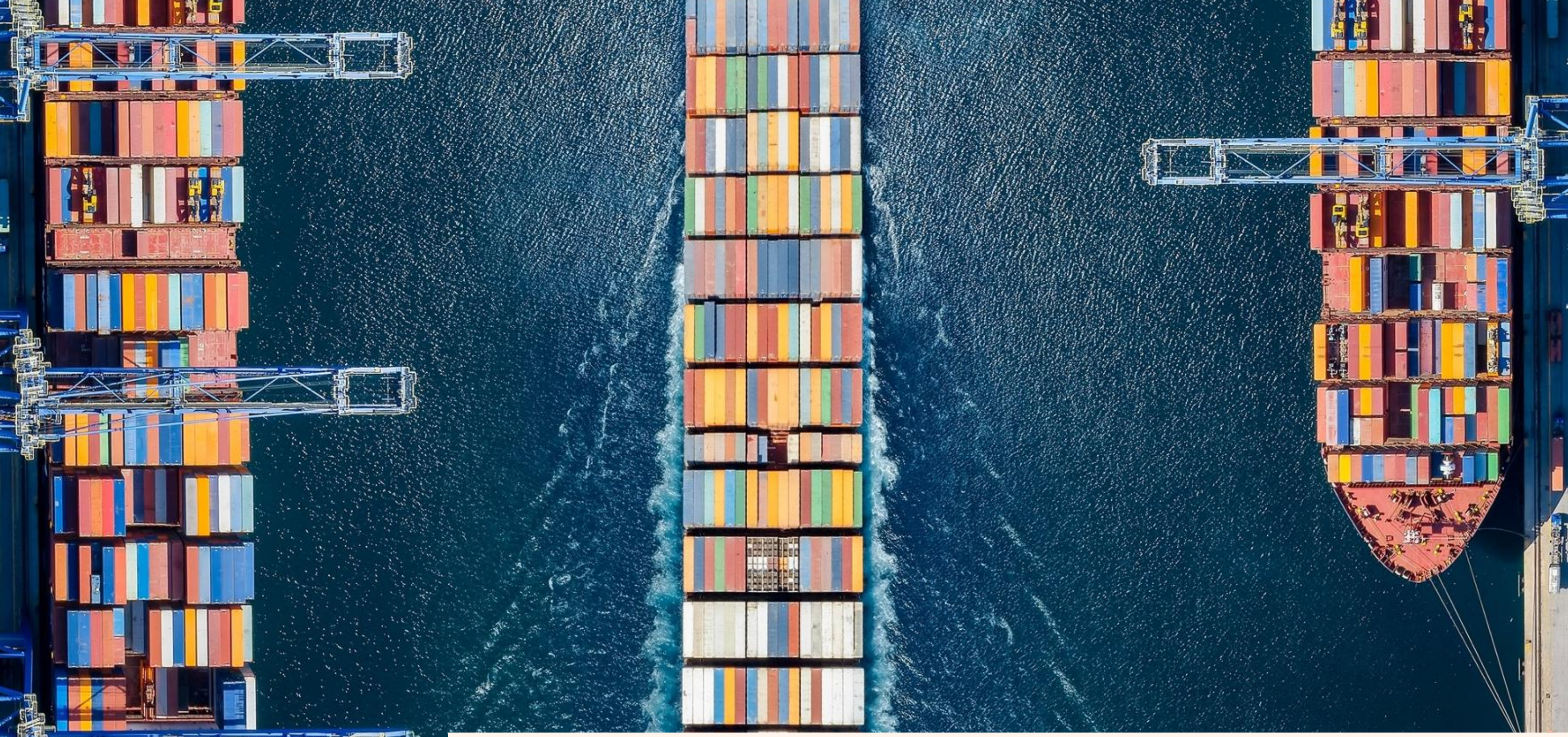
The cost of inefficiency is significant. Every minute of unplanned delay can cost thousands of dollars. The impact of every litre of fuel burned while waiting for a berth and every crew misallocation ripples across shipping lines, cargo owners, ports, customs and logistics partners – adding friction and eroding value.

In times of uncertainty, rising client expectations and operational volatility, maritime agencies can no longer rely on fragmented, port-by-port execution models. Today's clients demand more, including real-time transparency, unified service delivery, performance accountability and predictive insights. Agencies that remain passive intermediaries are at risk of being displaced by tech-enabled platforms and integrators. The agencies that thrive will be those that rewire their operations. This paper introduces a new approach – the rise of the intelligent orchestrator. Intelligent orchestrators are maritime agencies reimagined as digital-first, insight-led partners that can anticipate disruption, proactively coordinate across service lines and scale through centralised delivery models.

We present a comprehensive four-level maturity model that maps the current state of the industry and defines what excellence looks like and four strategic transformation levers that agencies must activate.



1. https://www.ics-shipping.org/shipping-fact/shipping-and-world-trade-driving-prosperity/



Strategic transformation levers for agencies

01 Establishing a centralised intelligence layer
Creating a unified, real-time view across vessel calls and services to support faster decision making

02 Rewiring the operating model
Shifting from fragmented port-by-port delivery to centralised and technology-augmented orchestration, without losing the human trust that anchors maritime relationships

03 Scaling intelligence through AI
Moving from dashboards to decision-making with predictive analytics and prescriptive planning

04 Bridging the execution – commercial divide
Aligning front-office quoting and chartering with port operations and billing in real time

Together, these levers form the blueprint for transformation. Agencies that execute against them will gain speed, margin, resilience and loyalty.

They won’t just **survive**,
they’ll **lead**.

Setting the scene:
The maritime industry today

The scale of the maritime landscape:

10.9bn
metric tonnes of cargo transported by sea annually (UNCTAD, 2023)[2]

Over **100,000**
ocean-going ships, including tankers, container ships and bulk carriers[3]

A single port call can involve up **40+** to services and **100+** documents exchanged[4]

1,000+
ports across all continents, many operating near full capacity[5]

This scale brings massive complexity. Each port call involves dozens of stakeholders: shipowners, ship managers, charterers, port authorities, terminals and freight forwarders. Maritime agencies are responsible for ensuring all these actors work in sync.

Despite this central role, many agencies continue to operate as they did decades ago, using email chains, spreadsheets and paper documents. While digitisation has touched parts of the ecosystem (for example, smart terminals and customs clearance), maritime agencies often remain the weak link in the digital chain.

The moment to lead:

To remain relevant, agencies must transform from local operators to platform-enabled global partners – delivering insight, trust and seamless execution across jurisdictions.

This paper makes the case for why maritime agencies must step into a new role, not just as port agents, but as trade orchestrators capable of delivering seamless, data-driven, global coordination.

2. https://www.sipotra.it/wp-content/uploads/2025/04/Maritime-transport-Data-insights.pdf
3. https://www.sipotra.it/wp-content/uploads/2025/04/Maritime-transport-Data-insights.pdf
4. https://geodataviewer.com/datasets/transportation/world-port-index/?
5. https://geodataviewer.com/datasets/transportation/world-port-index/?

How the maritime agency ecosystem works

Maritime agencies perform six core functions, each critical to a vessel's port call and operational turnaround:

01. Liner commercial services

Release of bill of lading and delivery order

02. Port agency services

Including berthing coordination, documentation, compliance, and disbursement account (DA) handling

03. Husbandry services

Crew changes, cash-to-master, medical care, provisioning and spares

04. Shorex and turnaround services

Management of cruise passengers, excursions and transit services

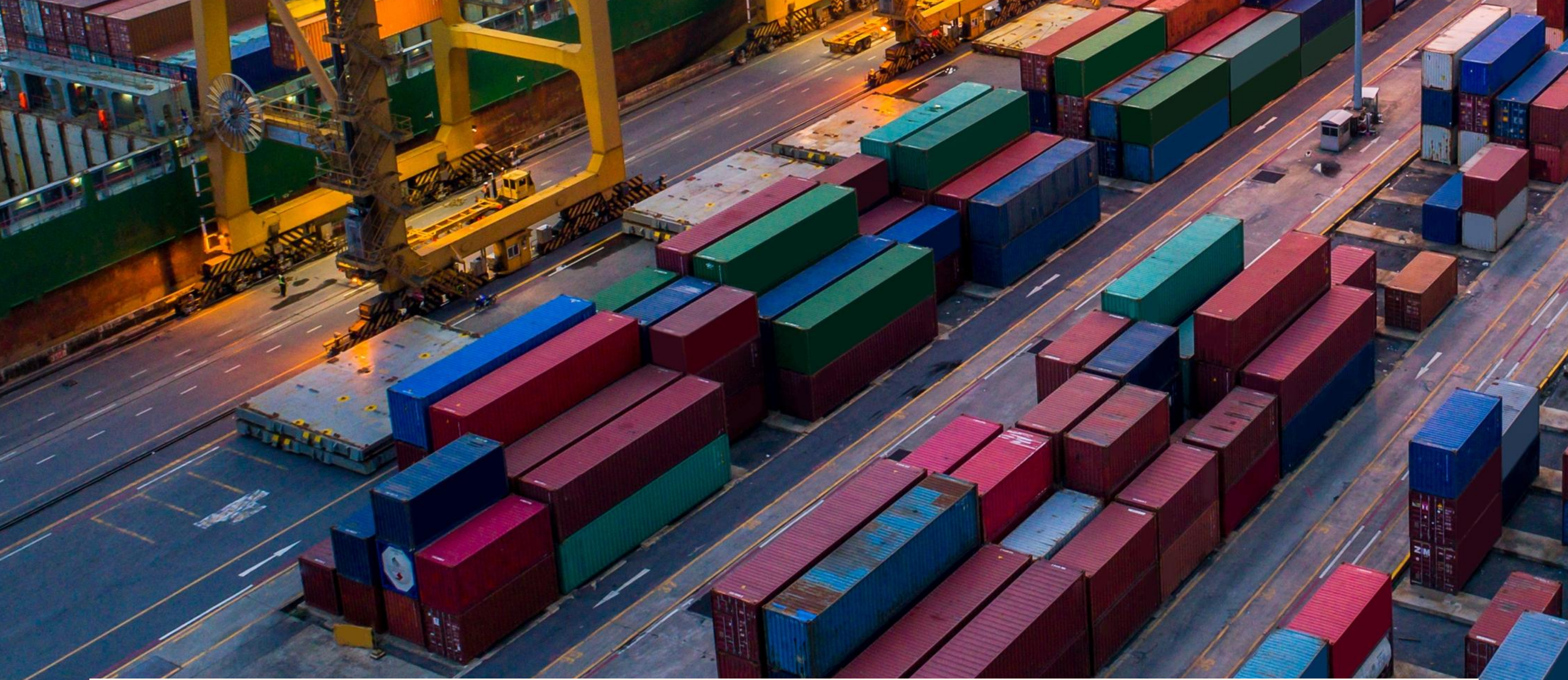
05. Specialised services

Handling of breakbulk, reefer cargo, offshore logistics, emergency operations

06. Chartering (brokerage)

Facilitating vessel-cargo matching, freight negotiation, laytime planning and post-fixture operations

Traditionally, each service was delivered by a small team of local agents. But today's clients – especially global liners and integrated logistics providers – expect unified service, seamless technology integration and global service level agreements (SLAs).



The ecosystem of stakeholders

Shipping lines or owners	Ship managers	Terminal operators	Customs or government bodies	Third-party services such as surveyors or inspectors

Without orchestration, this ecosystem becomes a patchwork of last-minute phone calls, email chains and missed windows. The result:

Wasted time, excessive cost and customer dissatisfaction.

In many ports, the agency is the only entity with a full view across all stakeholders. In the Middle East, these agencies are also the legally designated representatives of these stakeholders, accountable for coordination and compliance. That makes them uniquely positioned to drive real-time coordination, data sharing and disruption mitigation, if they have the right capabilities in place.

The case for change – coordination isn’t enough

Three structural shifts are forcing the industry to rethink the maritime agency model

Industry shifts	What’s changing?	Strategic implication
Digitisation of port infrastructure	Ports and terminals are using AI, IoT and predictive scheduling. Agencies must integrate to stay relevant. For example, in the UAE, cargo clearance and delivery orders are now handled only through digital trade platforms.	Agencies must plug into smart infrastructure.
Evolving client expectations	Clients now demand proactive service, cost transparency, and real-time updates through self-service portals and APIs.	Agencies must meet clients on a single platform, offering clarity and consistency instead of fragmented touchpoints.
Rising operational complexity	Trade routes, regulations, crew rotations, and disruption events (from pandemics to climate-related port closures) all require rapid, intelligent response.	Agencies need operating models that can detect disruption earlier, coordinate faster and give clients more reliable updates.

The industry is shifting from a **“doer”** model to a **“thinker-doer”** hybrid. Agencies can no longer be just executors, they must act as planners, advisors, integrators and risk mitigators.

The case for change – coordination isn't enough

Legacy versus modern agency models

Functional area	Legacy approach (fragmented)	Modern approach (integrated)
Crew rotation	Managed per port, paper-driven.	Regionally planned via smart crew scheduling tools.
DA reconciliation	PDF-based post-event tracking.	Client-visible dashboards in real time.
Compliance	Offline documentation, local-only.	API-integrated and centralised compliance repository.
Booking to execution	Handed off via email and phone.	Tracked in digital platforms with status alerts.

Implication

Agencies that fail to shift will be seen as cost centres, not partners. In contrast, the agencies that orchestrate end-to-end delivery will become embedded in their clients' workflows.

What's at stake?

Failure to modernise doesn't just risk inefficiency, it risks irrelevance. Customer expectations are increasing and agencies need to keep pace. As more shipping companies adopt digital twins, smart routing engines and platform integrations, maritime agencies must either evolve into orchestrators, or risk being leapfrogged by digital-first operators.

In a world where AI optimises vessel routing and blockchain secures cargo visibility, analogue agencies are increasingly out of place.

Defining the future – a new maturity model

The evolution from traditional operator to orchestrator is neither simple nor linear. It demands intentional investments in digital capability, service integration and leadership alignment. Our maturity model offers a framework to guide investment and sequencing:

Level 1

Foundational operator

Manual coordination, port-by-port delivery with no central data visibility.

Most small and mid-tier agencies operate here. Processes are driven by local expertise, spreadsheets and informal relationships. Service quality is inconsistent and data visibility is limited.

Level 2

Digitally enabled specialist

Tools for basic ops such as DA, tools and port call software, in functional silos.

Here, agencies begin deploying software for DA, compliance, or port calls. But systems remain siloed, with little integration across functions or with external partners.

Level 3

Integrated service platform

Bundled services, platform dashboards, basic automation, limited AI.

At this level, agencies offer clients unified dashboards, track performance metrics and standardise global operations.

Level 4

Intelligent orchestrator

Unified platform, AI-powered workflows, remote-enabled, predictive planning.

The final stage represents a fully modular, insight-led model. Services are delivered via platforms that integrate AI, data lakes, remote coordination and predictive automation at a global level. These agencies operate more like command centres than port agents.

Progression priorities

Each level demands different types of investments:

Level 1 to 2

Requires digitising core workflows for DA and port calls.

Level 2 to 3

Involves integrating service lines and client platforms.

Level 3 to 4

Requires deploying AI, establishing command centres and enabling global orchestration.

Insight

The jump from Level 2 to 3 is the most difficult, but it also creates the most value. It’s where agencies move from “doing the job better” to “offering a fundamentally better service.” But the rewards of cost advantage, client lock-in and scalable growth, make the investment worth it.

Mapping the market – the agency evolution matrix

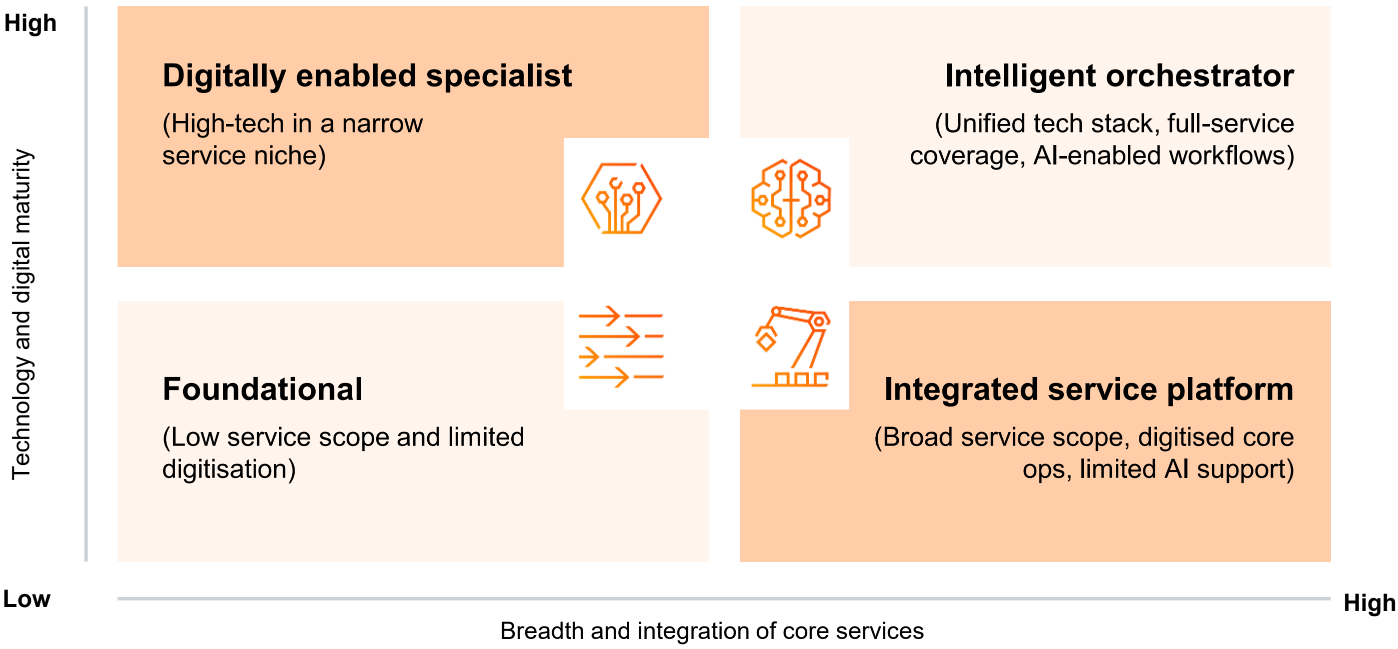
To validate the maturity model, we benchmarked leading maritime agencies globally, evaluating two critical axes:

Breadth and integration of services

The range of core functions (e.g., port agency, chartering, husbandry) and whether these are delivered through a unified platform.

Technology and digital maturity

The extent to which these services are digitised, automated and powered by analytics, AI or centralised systems.



Key insights

- Very few agencies occupy the top-right (orchestrator) quadrant. This indicates a significant clear gap in the market.
- Many traditional agencies are stuck in the bottom half, offering either breadth without tech or tech without breadth.
- Movement from lower-left to upper-right is possible, but requires investment in both services and systems.

The competitive advantage lies in mastering both axes:

Broad service capability plus high digital maturity

Unlocking the shift – four strategic levers for transformation

Achieving intelligent orchestrator status isn't just about digitisation. It requires reimagining workflows, decision-making, and delivery models. Our research shows four transformation levers:

Lever 1

Establishing a centralised intelligence layer

A unified, real-time operational view across vessel calls, port activities, and service requests, replacing fragmented branch-level tracking with a single source of truth.

- **Shift:** Fragmented local tracking moves to a centralised real-time intelligence layer across vessels, ports and services
- **Impact:** Faster decisions, proactive disruption management, and consistent client visibility

Lever 2

Rewiring the operating model

Outdated "one branch per port" model is costly and hard to scale.

- **Shift:** Hub-and-spoke with centralised billing and compliance
- **Impact:** Scalable, consistent, and reliable delivery that combines efficiency with the human trust that maritime clients depend upon

Lever 3

Scaling intelligence through AI

Many agencies have reporting tools. Few have intelligence. The difference? Intelligence acts before problems occur.

- **Shift:** AI for cargo operations, anomaly detection and smart scheduling including just-in-time solutions
- **Impact:** Moves from "what happened" to "what will happen." Cuts delays, strengthens compliance

Lever 4

Bridging the execution-commercial divide

Commercial activities (quoting, invoicing) are disconnected from operational delivery. The result is inefficiency, misalignment and a poor client experience.

- **Shift:** Replace disconnected handoffs between commercial and operations teams with one digital workflow that connects quoting, booking, port execution and billing in real time
- **Impact:** Faster approvals, synchronised updates, single client timeline

Lever 1: Establishing a centralised intelligence layer

A unified, real-time operational view across vessel calls, port activities, and service requests, replacing fragmented branch-level tracking with a single source of truth.

Key features

360° situational awareness

Real-time visibility across vessel calls, assets, ports, service milestones and incidents

Single source of operational truth

A single operational dashboard to monitor activities, pending actions, risks, KPIs and service performance from initiation to closure.

Integrated data feeds

Connectivity with port systems, terminal updates, AIS/vessel tracking, internal agency systems, finance tools and client platforms.

Performance, compliance and cost intelligence

Tracking of SLAs, turnaround time, billing accuracy, compliance checkpoints, resource use and operational efficiency.

Predictive alerts and response coordination

Automated alerts for delays, disruptions, missing documents, cost deviations and incidents, linked to defined SOPs and escalation paths

Scalable data foundation for AI-enabled operations

Structured operational data to enable anomaly detection, ETA prediction, smart scheduling, reporting automation and proactive client updates.

Together, these features create the foundation for a centralised intelligence layer that moves maritime agency operations from fragmented visibility to coordinated, data-led execution.

Scenario:

By connecting operational data, workflows, alerts and performance insights in one place, the agency can make faster decisions, manage disruption proactively, and build the platform needed for future AI-enabled operations.

Lever 2: Bridging the execution-commercial divide

Commercial activities (quoting, billing) and operational execution (port calls, crew handling, DA processing) often sit in separate systems and teams – creating inefficiency, misalignment and poor client experience.

Symptoms of the divide:

Pricing inconsistencies across ports and clients.

Manual handoffs from chartering to port ops.

Delayed disbursements due to misaligned workflows.

Clients receiving conflicting information from commercial versus operations teams.

Leading agencies are addressing this by:

01

Maintaining a centralised tariff management system with approval workflows.

02

Unifying rate management, booking and DA functions into a single client dashboard.

03

Integrating customer-facing platforms with port scheduling tools.

Potential use case:

An agency could create a unified customer portal that connects booking, customs clearance and vessel tracking in a single interface. This would reduce manual handoffs, give clients a consistent view of progress and help improve service level agreement (SLA) adherence, conversion and trust.

Lever 3: Scaling intelligence through AI

AI has the potential to shift maritime services from reactive execution to predictive, proactive orchestration. But adoption varies widely across the industry. While some agencies are experimenting with off-the-shelf analytics, few have scaled AI across their networks.

AI use case spectrum

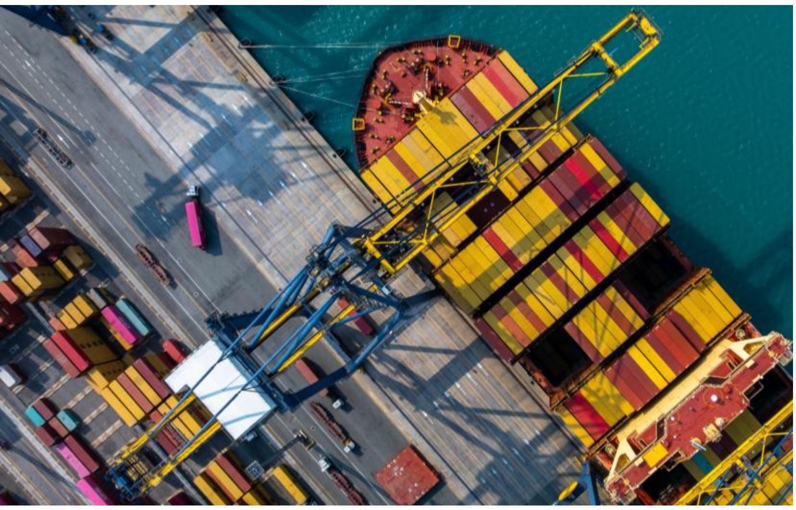
Capability	Use case example
Descriptive	Port call performance dashboards, KPI summaries
Predictive	Arrival time forecasting, congestion alerts, delay probability modelling
Prescriptive	Berth allocation planning, bunker consumption optimisation
Cognitive	Automated routing, crew scheduling with AI agents, anomaly detection

Internal efficiency levers

Data foundation and integration
Build a unified, high-quality data backbone to power AI across maritime operations.

AI-driven decision support
Embed AI into port and vessel workflows using existing information to enable predictive, prescriptive, and cognitive decision-making.

Capability building and governance
Strengthen skills, trust, and governance to scale AI adoption sustainably.



Potential use case:

Use AI to recommend optimal vessel arrival times and speed adjustments so ships reach port exactly when berths and services are ready, avoiding anchorage waiting, delays and extra berth hire costs.

Agencies should invest in three to five targeted AI pilots, aligned to measurable business outcomes, to begin unlocking value.

Lever 4: Rewiring the operating model for scale

Many agencies are limited not by technology, but by structure. The legacy model, with physical branch offices in every port, was built for a different era. Global clients now expect relationship-driven service, speed, standardisation and 24/7 support.

Challenges of the traditional model

- High fixed costs from staffing and rent
- Duplication of back-office functions (e.g., finance, compliance)
- Inconsistent service levels across regions, eroding trust

Potential use case:

Agencies could consolidate delivery into regional digital orchestration hubs, supported by cloud platforms and local port teams. This would empower port teams to focus more on client relationships and service quality.

Example:

Global delivery centres

Centralise billing, compliance and documentation, cutting costs while freeing local teams to focus on stakeholders.

Remote coordination platforms

Cloud systems coordinate services across countries, giving staff better tools to deliver consistent support.

Shared-service back offices

Regional hubs streamline finance and ops, reducing duplication

Benefits:

- **Lower cost per port**
- **Faster scalability across new geographies**
- **Higher standardisation and control**
- **Local teams freed from admin to strengthen client and stakeholder trust**

The roadmap to orchestration

Transformation can feel overwhelming, but successful agencies take a phased, use-case driven approach.

The journey to becoming an intelligent orchestrator unfolds across four pillars

01. Digital platformisation

- Consolidate systems across port operations, disbursement accounts, chartering, invoicing and compliance to create a more connected operating model. By moving from manual coordination to event-based workflows with clear service triggers, teams can improve visibility

02. Service line reinvention

- Introduce bundled offerings such as marketing with port call, DA and transparent SLAs
- Expand into adjacent and value-added services that enhance client experience and create new revenue streams. For example, reefer logistics, emergency support, offshore coordination and analytics subscriptions

03. AI enablement

- Build internal data science capabilities or partner with AI startups
- Focus on piloting narrow, high-impact use cases such as arrival prediction and smart crew planning

04. Remote delivery

- Create shared delivery centers for key regions
- Equip port-side teams with mobile tools to execute standardised, centrally managed workflows
- Execution should begin where friction is highest, either in process complexity, cost inefficiency, or client dissatisfaction

The business case for change

The case for investment strengthens when agencies connect digital spend to cost, revenue, service and risk outcomes.

Value area	Impact example
Operational cost	Reduction in overhead via automation and centralisation.
Revenue growth	New revenue streams from bundled services and data-driven offerings.
SLA compliance	Fewer service breaches, driving higher reliability and client trust.
Risk and compliance	Reduced audit failures and regulatory penalties.

In most cases, digital investment is offset within 18-24 months through efficiency gains and revenue uplift.

- Maritime agencies have long been enablers of trade. But in the age of real-time logistics, automation and digital trust, their role must evolve
- The agency of the future is not measured by how many ports it covers, but by how intelligently it connects all of them
- Agencies that invest in platformisation, intelligence and structural redesign will emerge as intelligent orchestrators, trusted, scalable and resilient partners in global supply chains
- Those that delay, however, risk being replaced, not by other agencies but by platforms. The path is clear. The tools are available. The clients are ready

The question is which agencies will move first.

How can PwC help you?

Assessment	**Current state assessment**	• Conduct current state assessment across agency systems, processes, and service lines including port operations, chartering and disbursement workflows • Benchmark against maritime industry peers and leading practices • Define transformation priorities and roadmap for agency operations
Design	**Operating model**	• Define future-state product lines, people and org structure, governance and systems and technology to enable orchestration • Establish service delivery approach, accountability mechanisms and performance management structures
	Technology blueprint	• Design target architecture integrating platforms such as port operations, vessel scheduling and invoicing along with data and automation • Define integration layers to ensure seamless workflows across systems • Build scalable, secure infrastructure to support future maritime innovation
	Governance mechanism	• Establish policies, standards and KPIs to ensure compliance with International Maritime Organization regulations, port authority requirements and other laws • Set up governance forums for oversight and decision-making • Create monitoring mechanisms to track agency performance and transformation progress
Planning	**RFP and supplier evaluation**	• Prepare RFPs including pre-qualification, scope of work and technical/functional specifications • Support on pre-bid meeting and clarification response • Vendor response analysis (technical and commercial)
Implementation	**Project management support**	• Provide programme and project management office (PMO) to oversee delivery • Support technology implementation and integration • Manage change, training and adoption • Ensure performance monitoring against defined SLAs

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