SAGARMALA
PORT-LED PROSPERITY

सत्यमेव जयते

पत्तन, पोत परिवहन
एवं जलमार्ग मंत्रालय
MINISTRY OF
PORTS, SHIPPING
AND WATERWAYS

Global Connect

வ.உ.சி துறைமுக ஆணையம்
वी.ओ.सी पत्तन प्राधिकरण
V.O.C Port Authority



Digital Currents : VOCPA

Charting a Smarter Future: Digital Transformation at VOCPA



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UNDER THE VISIONARY LEADERSHIP OF



Hon'ble Shri Narendra Modi
Prime Minister, Government of India

Hon'ble Shri Sarbananda Sonowal,
Minister of Ports, Shipping & Waterways, Government of India

Hon'ble Shri Shantanu Thakur
Minister of State,, Ministry of Ports, Shipping &Waterways, Government of India

PREFACE

In an era where technology is res[illegible] dustries across [illegible]e, port[illegible] pivotal role as gateways of trade and innovation. V[illegible]mbaranar Port A[illegible] (VOCPA), [illegible]s rich maritime legacy, has embraced this change with a clear vision — to lead the digital wave in the Indian port sector and set new benchmarks in operational excellence, transparency, and service delivery.

This coffee table book is a reflection of that vision. It chronicles the journey of VOCPA's digital transformation, highlighting key initiatives, technologies, and innovations that have modernized port operations and enhanced the Ease of Doing Business. From early IT systems to cutting-edge solutions like Digital Twin, AI-driven surveillance, Port GPT, and strategic collaborations, VOCPA has continually evolved to stay ahead of the curve.

Beyond technology, this transformation is powered by people, partnerships, and forward-thinking leadership. Through a combination of robust IT infrastructure, stakeholder-centric solutions, and capacity-building efforts, the port has created a strong digital foundation for future growth.

We hope this book offers readers a glimpse into VOCPA's progressive journey, celebrates the collective effort behind these achievements, and inspires continued innovation in the maritime ecosystem.

Our USPs

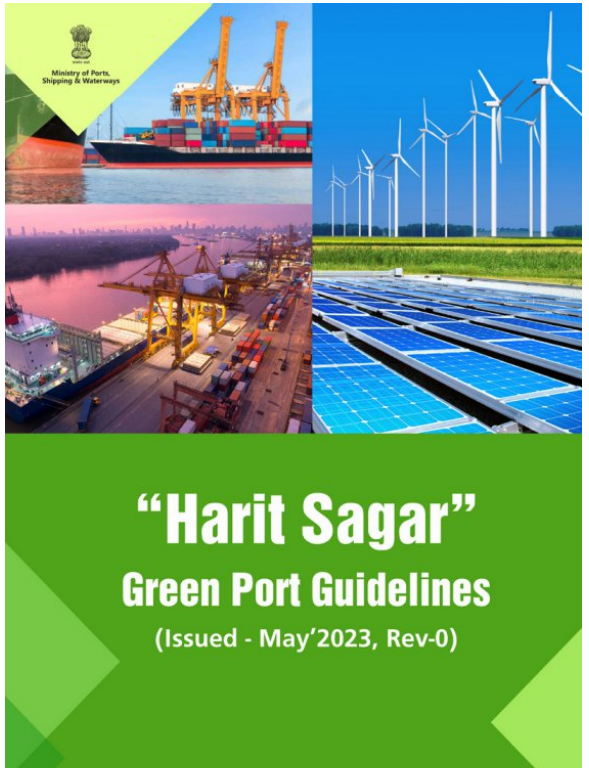
- All weather Port
- Excellent Connectivity
- Least Operating Ratio
- Least TAT & Container Loading
- Future GH & OW Energy Hub



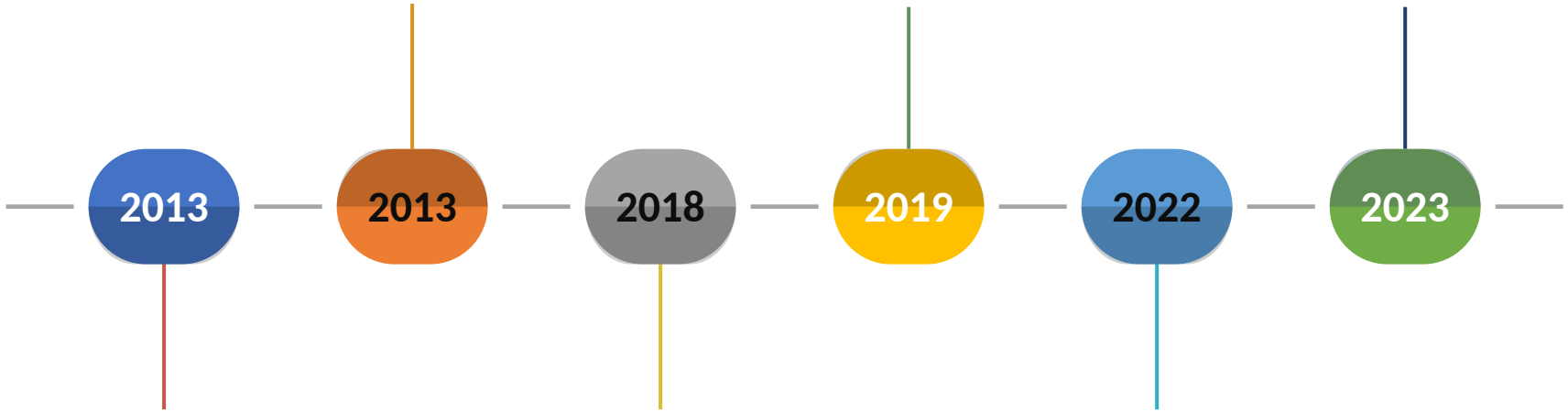
Compliance

The government’s vision was clear and multi-pronged: the Sagarmala Programme aimed to modernize ports, the Harit Sagar guidelines laid down a green roadmap, and the ambitious Maritime India Vision 2047 envisioned a future of sustainable maritime infrastructure. For the V.O. Chidambaranar Port Authority in Tuticorin, a bustling hub on India's southeastern coast, this wasn't just policy, it was a call to lead.





Timeline of major projects taken up at VOC Port



SAP (ERP)

Coverage& functioning of Facilitate Finance / Estate Management / HR / Material Management / Project Management and POS

POS system

Introduced to digitize cargo documentation and streamline stakeholder operations, significantly improving ease of doing business.

Website

Launched as a single digital gateway offering real-time data, online applications, and employee services, enhancing transparency and convenience.

E-office

Implemented to enable transparent, paperless file movement and anytime access, supporting sustainable operations.

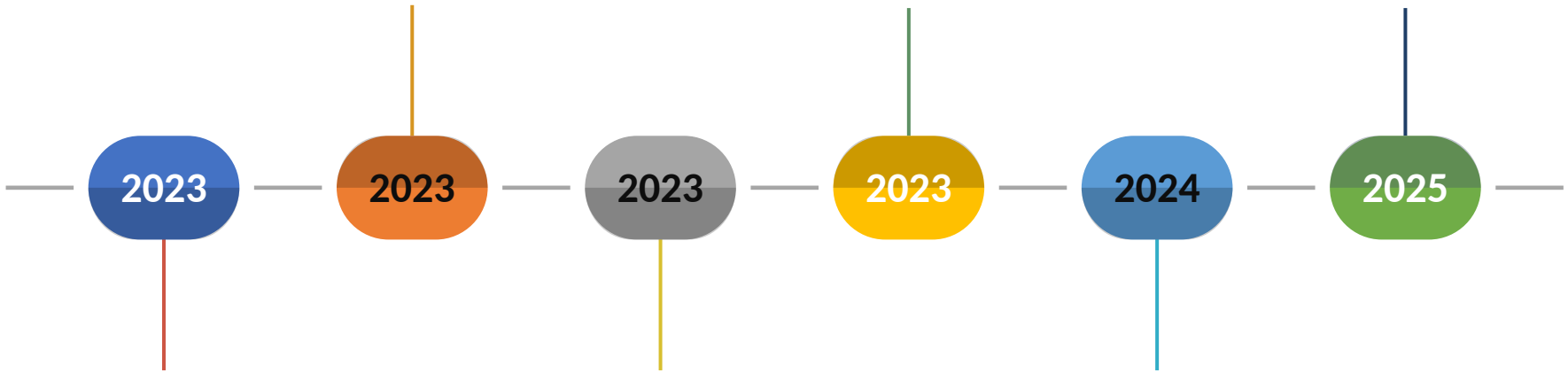
Indigenous Smart i-VTS

Artificial Intelligence driven Smart decisions on Navigation Aid. Better Vessel Traffic Visibility and real time monitoring

Cloud migration

To eliminate downtime risks, we have migrated to a cloud-based environment with both Data Center (DC) and Disaster Recovery (DR) setups. This ensures uninterrupted operations

Timeline of major projects taken up at VOC Port



GIS system

Enables Spatial Asset monitoring on Port Assets . To identify the Port land area and streamline the land monitisation

CPP portal

Process of tendering made completely online . Transparency in the Tendering Process .

NLP

Single Platform to perform all core activities of Importer / Exporter / Customs Broker . Complete domestic tracking of the shipment with notifications at each stage

E-DMS

Old records and current documents maintained in a digitized manner. Transparent governance arrangements for all activities

Network revamping

Complete wiring changed, new high availability core switches, new switches, implemented vlan

RFID based access control

Web enabled RFID enables seamless issuance of HEP and Container Tracking .


JMBAXi

Digital Solutions Implemented at VOCPA



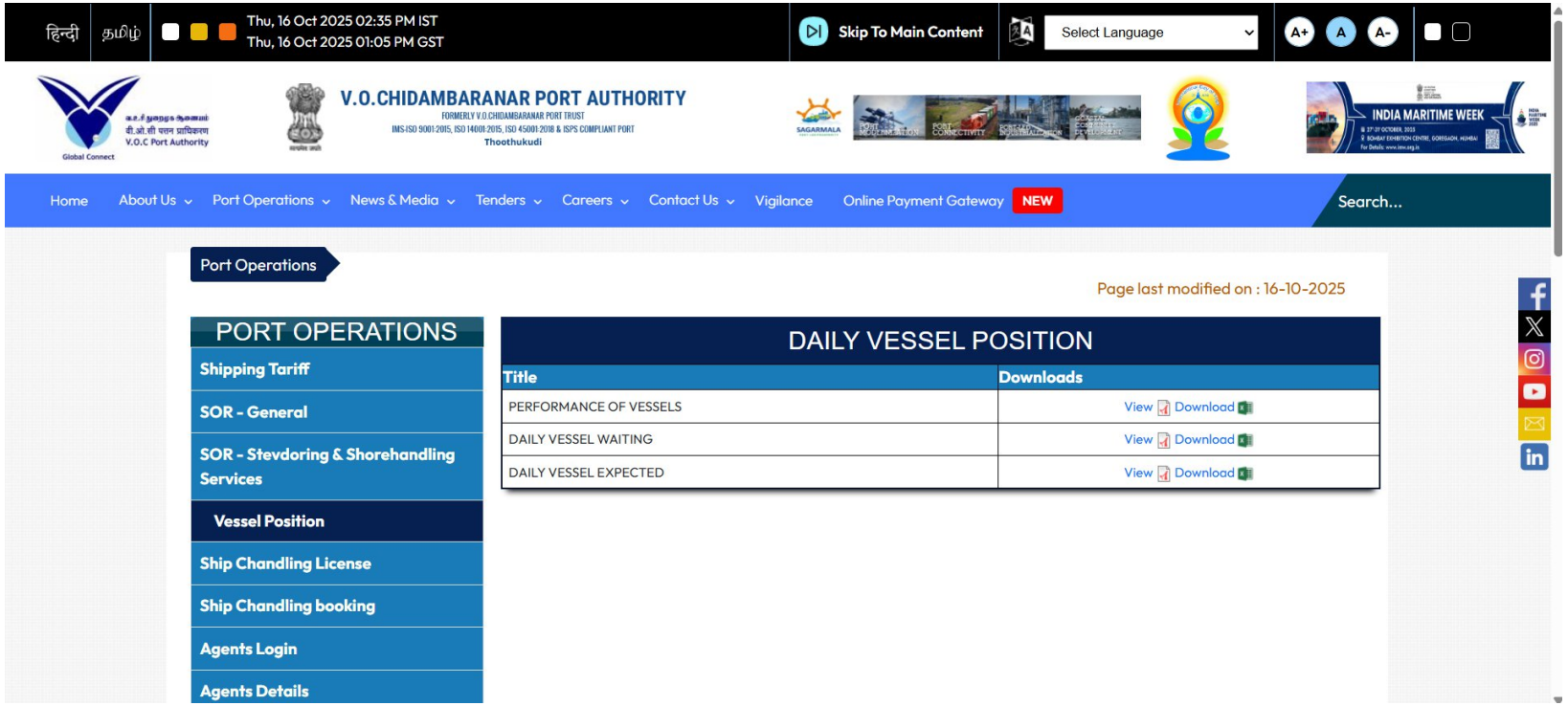
GIS System

Web GIS (Web based Geographical Information System) is implemented to visualise and identify the Block wise land parcel details with status and details. This eases the difficulty with respect to visualisation of large land parcels and their subsequent allotment and maintenance .



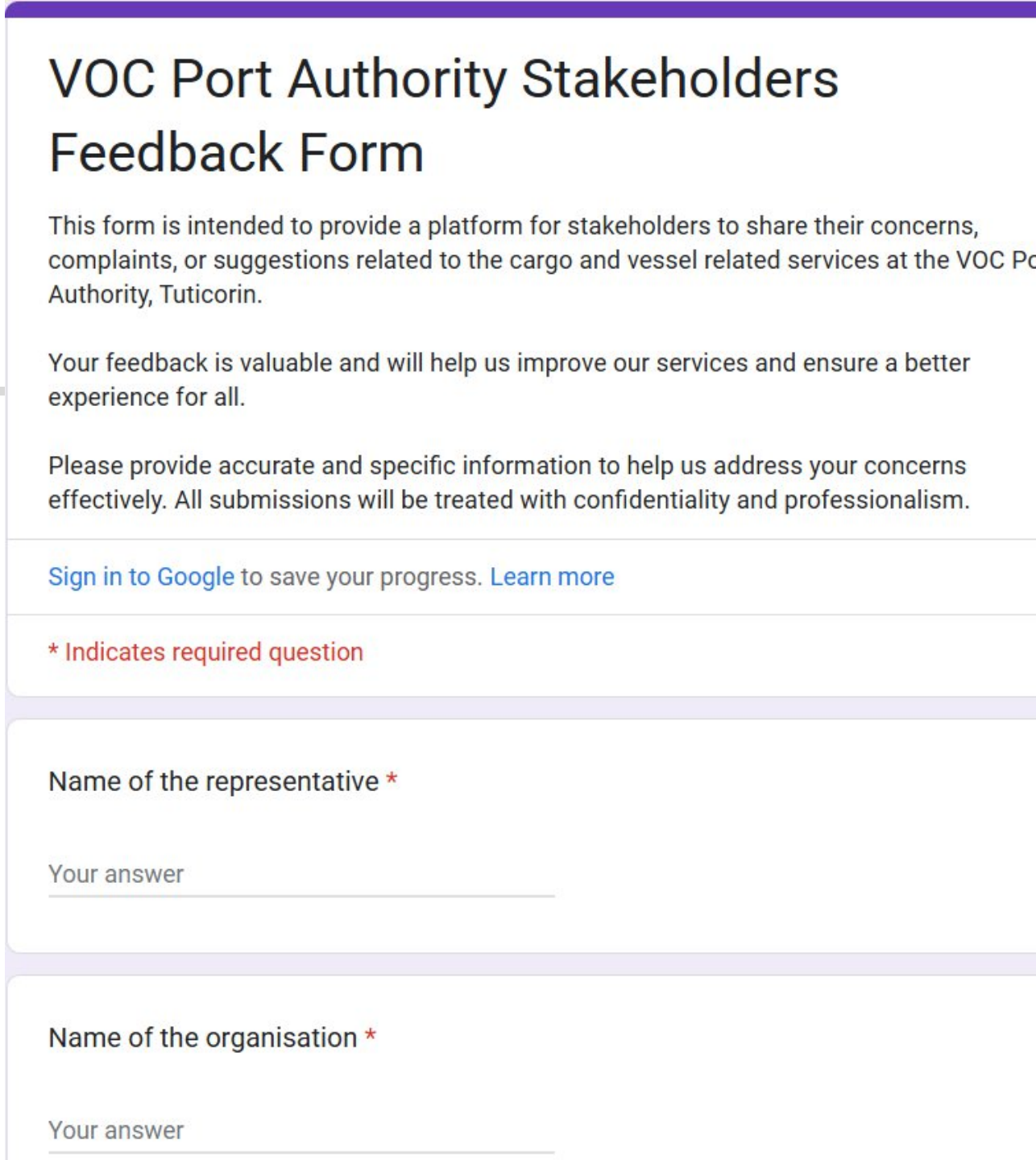
WEBSITE – ONLINE APPLICATION PORTALS

Launched in 2018, VOC Port's online portal has streamlined operations and improved transparency by providing real-time data, online applications, and employee services through a single platform. It enables stakeholders to access vessel and cargo information, submit various applications, and view official records, eliminating paperwork and reducing processing time significantly.



QR-code based feedback system

In 2025 , a QR code-driven feedback system was enabled for port users to instantly share their experience, fostering continuous improvement and a responsive service environment. All the feedbacks are collected and analysis is done in the backend through google forms interface . Every week the feedback is collected and necessary action is taken for the queries raised by various port stakeholders .



VOC Port Authority Stakeholders Feedback Form

This form is intended to provide a platform for stakeholders to share their concerns, complaints, or suggestions related to the cargo and vessel related services at the VOC Po Authority, Tuticorin.

Your feedback is valuable and will help us improve our services and ensure a better experience for all.

Please provide accurate and specific information to help us address your concerns effectively. All submissions will be treated with confidentiality and professionalism.

Sign in to Google to save your progress. Learn more

* Indicates required question

Name of the representative *

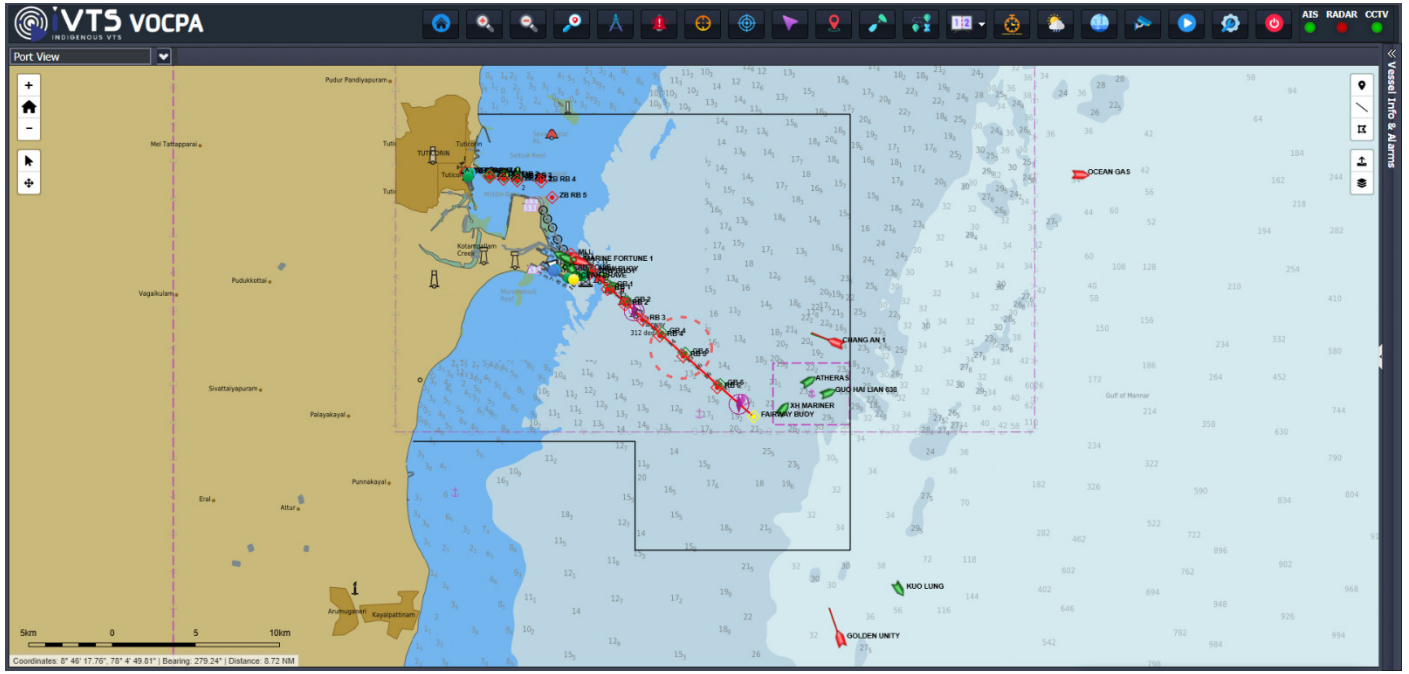
Your answer

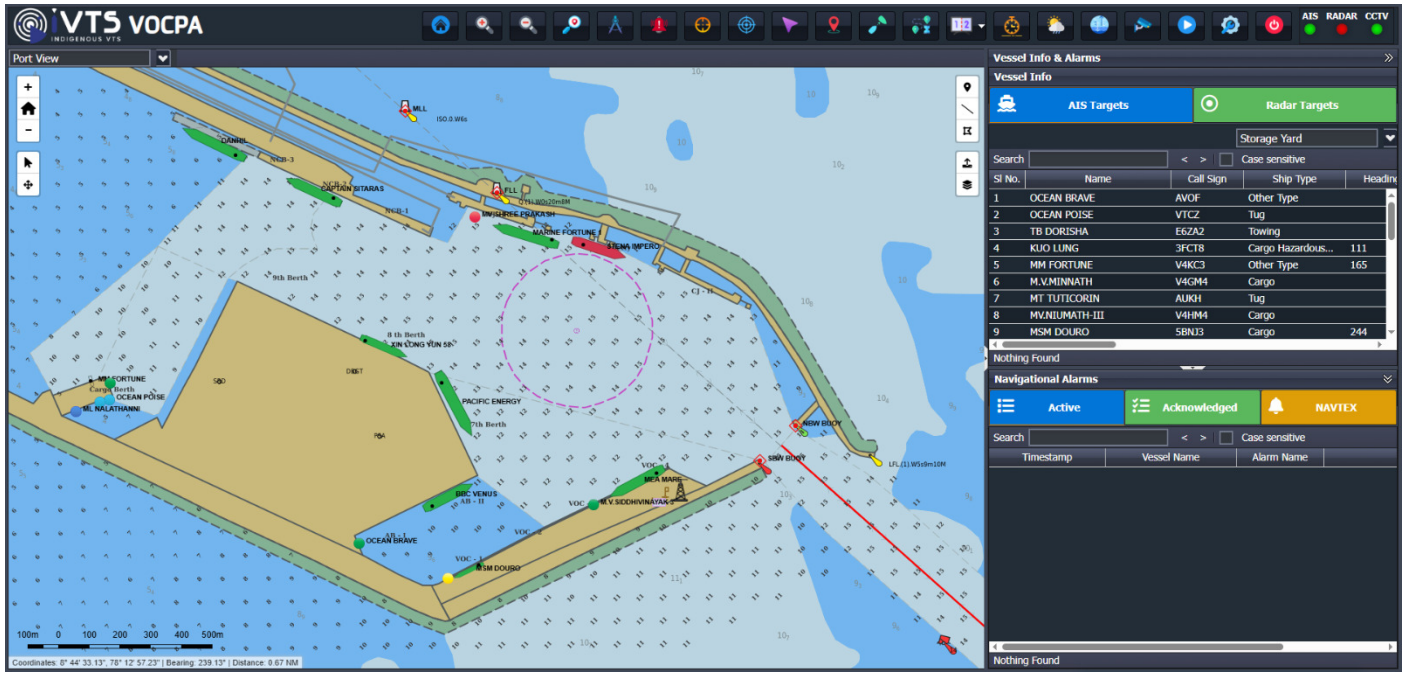
Name of the organisation *

Your answer

Indigenous Smart i-VTS

A state-of-the-art Vessel Traffic System (VTS) has been implemented at VOC Port in collaboration with IIT Madras to enhance navigational safety and operational efficiency. Key features include real-time tracking, identification, and analysis of shipping traffic, supported by the integration of radar, AIS, CCTV, and meteorological data into a single operator interface. Its open-architecture design allows seamless integration with existing port systems. Additionally, mobile applications for pilots, such as *Pilot Thagaval* for digital pilot card issuance and *Kappal Seithi/Sagar Drishti* for vessel traffic visualization, further improve situational awareness and decision-making.

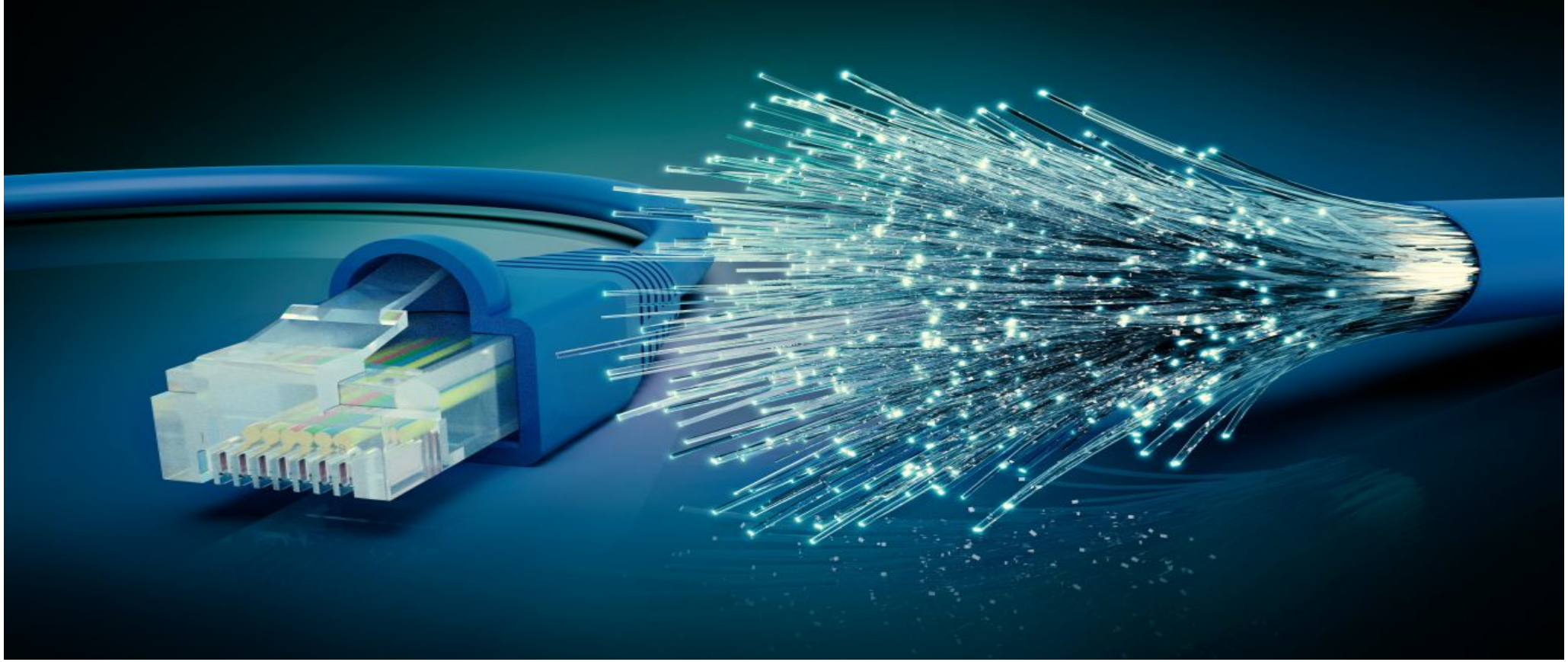






RFID BASED ACCESS CONTROL

Implemented in 2018, the RFID-based access control system automated gate operations and vehicle tracking across all entry and exit points. By digitizing pass applications, approvals, and fee collection, it enables faster gate clearance, seamless movement, and enhanced security. Fully integrated with port software and compliant with ISPS standards, it has improved throughput, reduced delays, and lowered costs for stakeholders.



Port Owned OFC Network

The Port-Owned Optical Fiber Cable (OFC) Network at VOC Port establishes a secure, high-speed communication backbone connecting all major operational areas, administrative buildings, and control centers. Implemented in two phases, this 24-core fiber network enhances bandwidth, reliability, and data security while eliminating dependency on external service providers and recurring costs. It seamlessly integrates key systems , improving connectivity, interoperability, and real-time information flow across departments.

Drive through Container scanning system

The Drive Through Container Scanning System is an advanced security and efficiency tool installed at the VOC Port Authority. this system uses an X-Ray source to conduct a thorough, non-intrusive inspection of cargo containers . The system dramatically helps the port and trade by offering a high-throughput operation of 100 containers per hour, which minimizes delays and maximizes efficiency. Furthermore, it enhances security by helping operators differentiate between low- and high-density objects for contraband detection and incorporates several automated features—including an Automated OCR System for container number fetching, an Automated Weigh In Motion system, and a Radar/Laser system for speed and scanning control—all of which ensure accurate data, regulatory compliance, and smooth, rapid traffic flow through existing lanes.

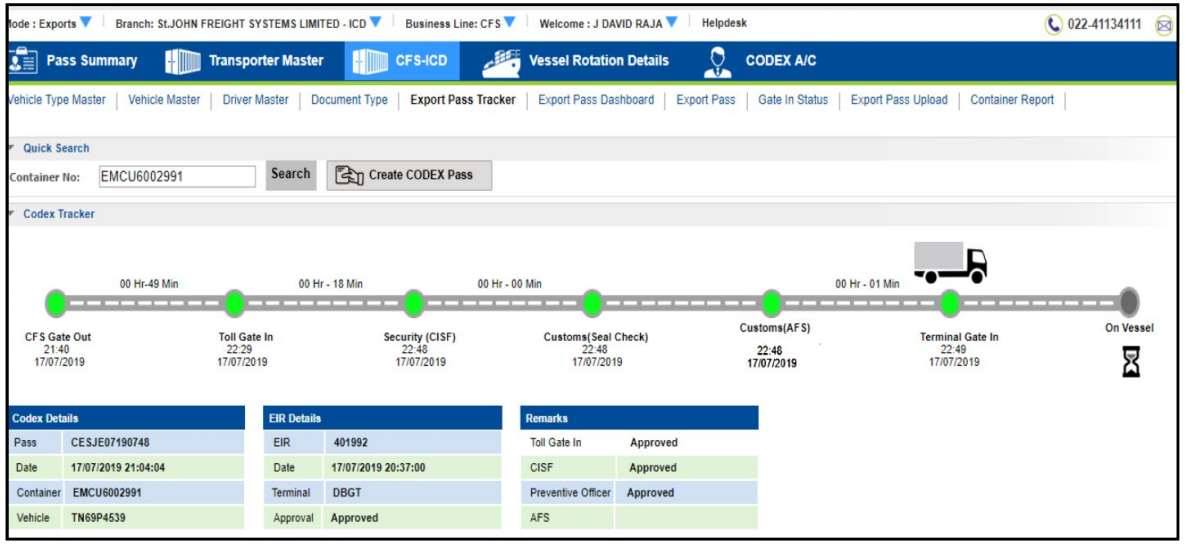


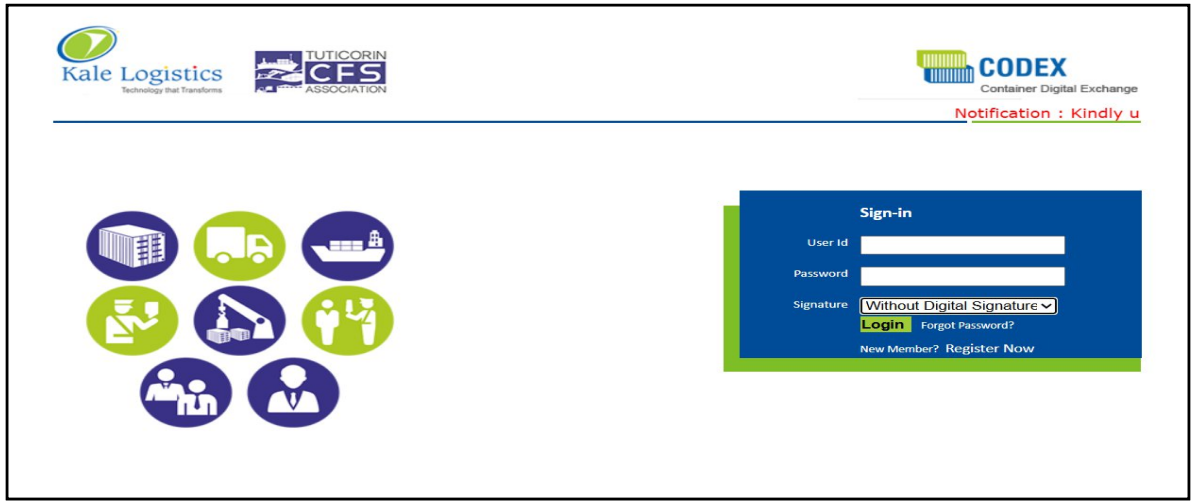


CODEX

The Container Digital Exchange (CODEX), is a state-of-the-art Port Community System (PCS) implemented at VOC Port to digitally connect every stakeholder in the maritime logistics chain — from exporters, importers, and customs to transporters and terminal operators. It enables real-time data exchange, digital document processing, and container tracking, replacing manual procedures with a centralized, paperless platform. With mobile accessibility and round-the-clock availability, CODEX has transformed how trade information flows across the port ecosystem.

For VOC Port and its users, CODEX has delivered remarkable results — 75% reduction in dwell time, 55% decrease in gate congestion, and 40% cost savings for stakeholders.

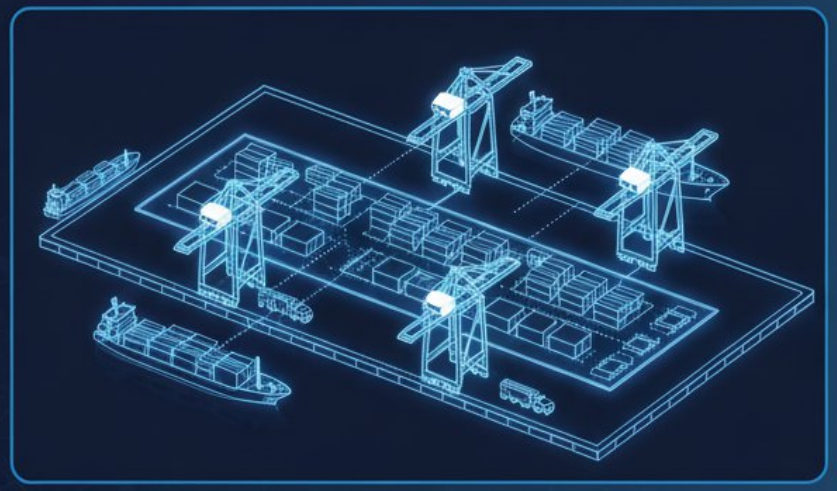




VOC Port Authority

EGM PRO: ENHANING PORT OPERATIONS

Comprehensive Cargo & Vessel Management



Regulatory Compliance

Efficiency & Reduced Delays

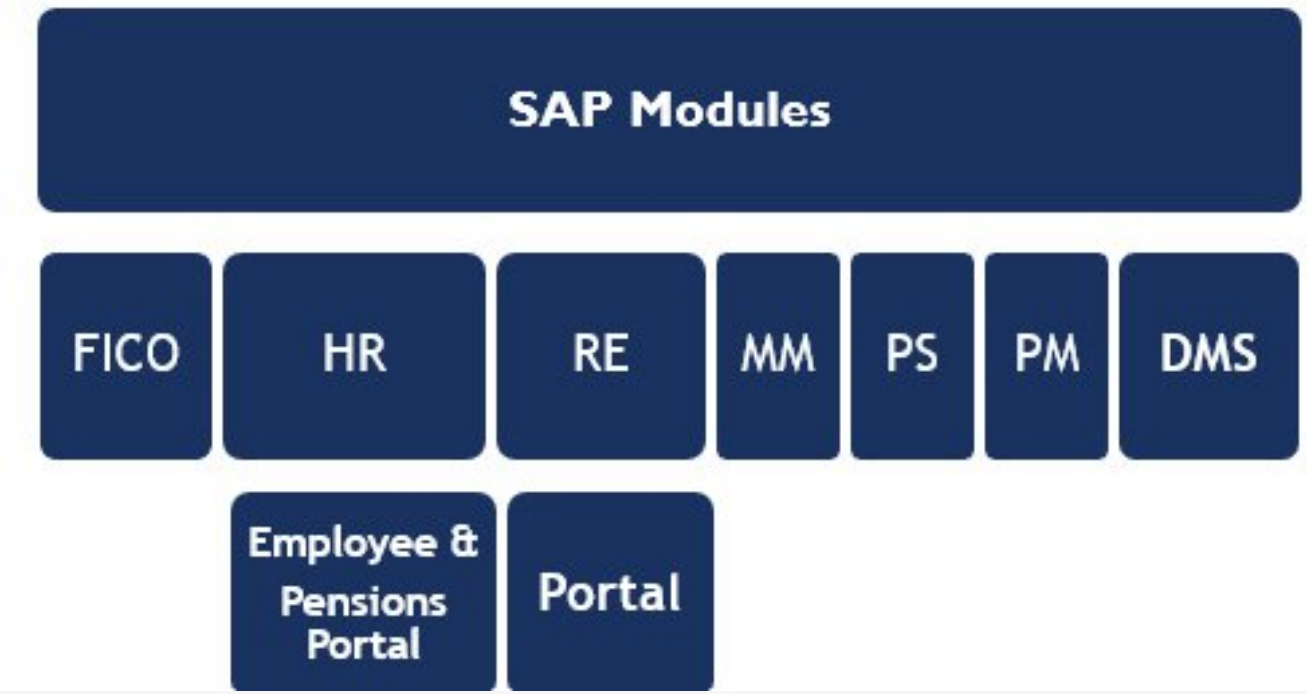
Transparency & & Visibility

Integrated Data Flow

Innovating Maritime Logistics

EGM – PRO

EGMPro is the V.O. Chidambaranar Port Authority's electronic manifest system for exporting goods. It benefits the port by automating data submission, minimizing manual errors, and preventing vessel delays by ensuring compliance. For users like exporters and Customs House Agents, it provides faster manifest processing, streamlines amendments, and helps secure GST refunds.



ERP SYSTEM

At V.O. Chidambaranar Port, SAP ERP serves as a unified digital backbone that integrates operations, finance, maintenance, and compliance, enabling seamless coordination across departments.

It streamlines cargo handling, inventory management, billing, and vendor payments while providing real-time data for vessel scheduling, equipment utilization, and operational reporting.

We are now transitioning from the current SAP ECC6 system


DUCHESS ROSARIO

Upcoming Digital Transformation Plans & Initiatives



DIGITAL TWIN

VOC Port is embracing the next wave of technological innovation with the implementation of Digital Twin technology — a transformative step towards smarter, data-driven port operations.

A Digital Twin is a dynamic virtual replica of the port’s physical infrastructure and processes. By integrating real-time data from sensors, systems, and equipment, it creates a living digital model that mirrors the port’s activities in real time.

Integrating Digital Twin into Port Operations

This technology enables the port to simulate scenarios, predict outcomes, and optimize operations with precision. From vessel movements and cargo flows to infrastructure utilization and maintenance planning, the Digital Twin empowers decision-makers with deeper insights and proactive control.

With this initiative, VOC Port is positioning itself at the forefront of smart port transformation, aligning with global best practices to enhance efficiency, sustainability, and resilience.



PORT GPT

Port GPT is an AI-powered digital assistant designed to make information and services accessible through natural, conversational interaction.

Whether it’s checking vessel schedules, tracking cargo, understanding procedures, or resolving queries, Port GPT provides instant, accurate, and user-friendly support to all employees.

Integrated across the port’s digital platforms, this intelligent assistant simplifies complex processes, reduces manual intervention, and enhances overall efficiency. It brings AI-driven responsiveness to daily operations,



ANTI DRONE SYSTEM



ANTI DRONE SYSTEM

As technology evolves, so do the challenges to port security. To stay ahead of emerging aerial threats, VOC Port is implementing state-of-the-art Anti-Drone Systems, reinforcing its commitment to safety, surveillance, and operational integrity.

Modern ports are increasingly vulnerable to unauthorized drone activity, which can disrupt operations, compromise sensitive areas, and pose safety risks. The Anti-Drone System is designed to detect, track, classify, and neutralize suspicious aerial intrusions with precision and speed.

By integrating radar, radio frequency scanners, electro-optical sensors, and intelligent analytics, the system provides real-time situational awareness of the airspace above the port. It enables security teams to respond swiftly and effectively, ensuring uninterrupted cargo movement and secure operations.

AI BASED SURVELLIEN CE





We are implementing an AI-based CCTV system to enhance surveillance across key areas of the port. The system will support applications such as PPE detection, oil spill identification, crane monitoring, and tarpaulin cover checks, among others. This will significantly boost operational efficiency while reducing the need for manual intervention.

Just-in-Time (JIT) Port Arrival

Just-in-Time (JIT) Port Arrival ensures vessels reach the port exactly when berths and resources are ready, eliminating waiting at anchorage. By using real-time data, predictive planning, and coordination across all stakeholders, JIT reduces congestion, fuel use, emissions, and operational delays. It improves berth utilization, speeds up vessel turnaround, and enhances transparency—ultimately making port operations smoother, faster, and more efficient for all users.



People at the Core of Digital Transformation

At the heart of every technological transformation lies people. For an organization like VOC Port, where many employees have decades of experience in traditional systems, effective people management is essential to ensure successful adoption of digital solutions such as AI, Digital Twins, and smart surveillance.

By building awareness, clearly communicating benefits, and involving employees early in the journey, the port fosters ownership, trust, and smooth integration of new technologies.



Change management ensures a smooth transition from legacy processes to digital workflows. By clearly defining roles, providing structured support, and addressing concerns through dialogue and demonstration, resistance is transformed into participation. Leadership communication and visible sponsorship become critical in setting the tone for change.



Capacity building

Capacity building is the foundation of long-term success. Through targeted training programs, hands-on workshops, and continuous upskilling, employees are empowered to use new technologies confidently. This not only enhances efficiency but also builds internal champions who drive innovation from within.

Focus on people, process, and technology together ensures that digital transformation is inclusive, sustainable, and impactful—bridging the gap between tradition and technology.

At VOCPA, we regularly organize training sessions to keep employees updated on the latest technological developments and the digital initiatives being implemented at the port.



IT CELL – Brainstorming

V.O.C. Port has a dedicated IT cell that drives the port's digital transformation. The team generates new ideas, conducts brainstorming and strategy sessions with executive leadership, and oversees the implementation of ongoing IT initiatives.



Empowering Port Users through Smart Digital Solutions

The digital initiatives at VOC Port have greatly enhanced the efficiency, transparency, and accessibility of port operations, directly benefiting all stakeholders and improving the Ease of Doing Business. By digitizing core processes such as documentation, payments, vessel tracking, access control, and cargo handling, the port has reduced manual interventions, eliminated delays, and minimized paperwork. Systems like the Port Operating System, RFID Access Control, e-Office, Web Portal, and CODEX enable users to complete tasks online anytime, ensuring faster approvals and seamless coordination among port authorities, agents, and logistics partners. Real-time access to information through integrated digital platforms allows stakeholders to make better operational decisions, while automation ensures accuracy and reliability. Together, these initiatives have transformed VOC Port into a smart, user-centric, and transparent hub, making trade operations smoother, faster, and more cost-effective for all its users.

The Road Ahead for Digital Transformation

The way ahead for VOC Port is defined by its vision to evolve into a fully digital, smart, and sustainable port that sets new standards in efficiency and innovation. Building on the strong foundation of existing IT systems, the port aims to leverage emerging technologies such as Artificial Intelligence, Digital Twins, and advanced analytics to enable predictive, data-driven operations. Continued focus on cybersecurity, capacity building, and stakeholder engagement will ensure that digital adoption remains inclusive and resilient. Through strategic collaborations, modernization of infrastructure, and a commitment to continuous improvement, VOC Port is poised to lead India’s maritime digital transformation and enhance the overall ease of doing business in the years to come.

