

Johor Port: Powering a Smart, Always-On Port



INTRODUCTION

In an era where global trade demands speed and precision, Johor Port Berhad (JPB) is setting new standards through its digital transformation. A recent industrial visit revealed how the port integrates large-scale physical operations with advanced digital systems, including unmanned weighing, low-code application development, and a resilient metrocluster infrastructure. By embracing emerging technologies such as AI and data analytics, JPB is not only enhancing current cargo operations but also shaping the future of the maritime industry for the next generation of digital professionals.



OVERVIEW OF THE VISIT

Johor Port Berhad (JPB) is undergoing a major digital transformation, evolving from a multipurpose port into a highly automated, data-driven logistics hub. Core operations are powered by an integrated Terminal Operating System (TOS) and RAMCO ERP, while low-code development, Python, and Power BI enable faster application delivery and real-time performance dashboards. A resilient dual-data center Metrocluster ensures zero downtime, supported by strong security through PAMS and continuous cybersecurity monitoring. Looking ahead, JPB is exploring AI, IoT, and AR-based training and welcomes academic collaboration to develop a future-ready, digitally skilled workforce.

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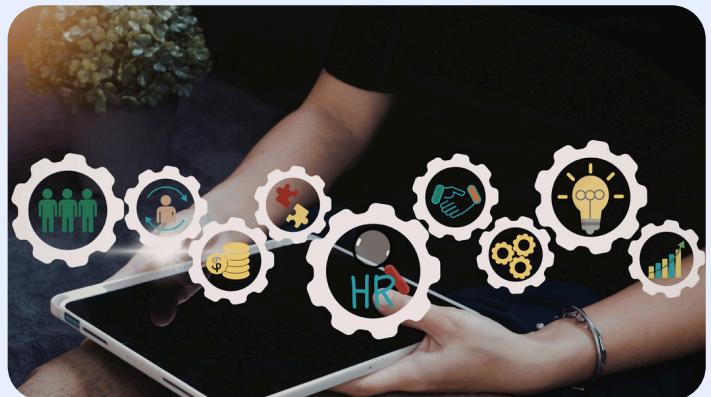
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Core Systems and Development Strategy

Johor Port utilises a comprehensive suite of applications to ensure operational efficiency, anchored by the Terminal Operating System (TOS) and RAMCO ERP for resource management. Ground logistics and security are optimised through Vehicle Management Terminal (VMT) applications, an unmanned weighing system for faster gate clearance, and the Port Access Management System (PAMS) with mandatory police verification. To remain competitive with regional neighbours like Singapore, the IT department is transitioning to low-code development to accelerate application deployment and enhance digital adaptability.



Digital Transformation, AI, and Data Analytics

Johor Port is actively pursuing a digital transformation roadmap, with plans to implement Artificial Intelligence (AI), Internet of Things (IoT) technologies, RFID, and Python-based solutions. Data analytics plays a central role in this transformation. Using tools such as Python and Power BI, Johor Port provides real-time operational and financial dashboards to the top management. These dashboards allow the CEO to monitor daily profits and performance metrics, enabling faster and more accurate decision-making.

Resilient Infrastructure and Cybersecurity

During the visit, we learned that Johor Port operates a reliable IT infrastructure supported by two data centers running twenty-four hours a day, seven days a week, ensuring continuous operations even if one system fails. Over 50 km of fiber connectivity supports automatic failover and smooth system updates. Security is maintained through regular training, system assessments, continuous external monitoring, and a strong disaster recovery plan, although minor 4G signal interference may occur due to the port's proximity to Singapore.



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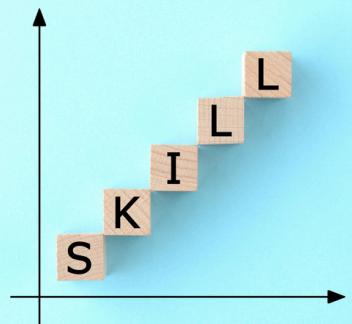
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Skills, Careers, and Innovation Opportunities

During the Q&A session, industry-relevant skills were emphasized. Technical roles often require proficiency in Java, PHP, and Linux, while aspiring data analysts are encouraged to learn Python and Power BI. For management roles, strong communication and relationship-building skills are essential. Johor Port is also exploring innovative training methods such as AR and hologram-based learning, allowing new staff to safely learn equipment operation and repair in high-risk environments. Students were informed that Johor Port is open to collaborating on Final Year Projects, following real-world SDLC practices and industry standards.



REFLECTION

The industrial visit to Johor Port Berhad provided us exposure to its dynamic industrial environment and taught us how its large-scale operations are being upheld by integrated digital systems. The sharing session given by the speaker, Ts. Mohamad Taufik Abdul Razak, IT manager of Johor Port, highlighted that the usage of disaster-resilient infrastructure demonstrated that information system excellency plays a central role in the logistics sector. The emphasis he gave on the practical skills required, adaptability and the communication skill level needed to function well in an organisation reinforced the our preparation plans for becoming industry fitted. Overall, the visit served as an eye-opening experience to us, as it has strengthened our understanding of real-world industrial systems while providing a clear direction on the mindset and skills required to excel in the industry. It was truly one of our best experiences and we wish to participate in more industrial visits in the near future.



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